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Part I　Conference Schedule

Time: June 1-3, 2021
Location: Guilin Grand Link Hotel (桂林桂山华星酒店)

Date	Time	Location	
June 1	**14:00-17:00**	**Registration (Lobby)**	
		Location: Conference Room 5 (叠彩厅), 2nd Floor	**Location: Conference Room 6 (临桂阳朔厅), 2nd Floor**
June 2	**08:30-12:00**	**Psychology:** **Keynote Speech Session I** Prof. Darcy Haag Granello, Dr. YANG Lan (Joy), Prof. Dipl. rer. soc. Ulrich Sollmann, Prof. Qiuping LI, Dr. Xie Jianfei **Chair: Prof. Qiuping LI** **Coffee Break: 09:50-10:10**	**Earth & Geology:** **Keynote Speech Session I** Dr. Pinnaduwa Kulatilake, Dr.Huan Yu, Prof. Sergey Simonenko, Dr. Dong Xu **Chair:** **Coffee Break: 10:00-10:20**
	12:00-13:30	**Lunch** ［Whisper Garden Lounge [叮咛吧] Lobby］	
	14:00-18:00	**Psychology:** **Keynote Speech Session II** Miss Wang Xiaobin, Dr. Sampson Lee Blair, Prof. Anthony Pak-Hin Kong, Prof. Dariusz Krok, Prof. Hugues SCHARBACH, Dr. Lu Hua Chen **Chair: Miss Wang Xiaobin** **Coffee Break: 16:00-16:10**	**Earth & Geology:** **Keynote Speech Session II & Technical Session I** Prof. Dongfang Yang, Dr. Victor Novikov, Prof. Zhihan Lv, Dr.Muhammad Shakir **Chair: Prof. Dongfang Yang** **Coffee Break: 15:30-15:50**
	18:00-19:30	**Dinner** ［Whisper Garden Lounge [叮咛吧] Lobby］	
		Location: Conference Room 5 (叠彩厅), 2nd Floor	**Location: Conference Room 6 (临桂阳朔厅), 2nd Floor**
June 3	**08:30-12:00**	**Psychology:** **Keynote Speech Session III & Technical Session** Dr. Nate O. Fuks, Prof. Hai Luo, Dr. Tim Xu Tianma, Prof. Mustafa ‘Mike’ Z Younis **Chair: Dr. Xie Jianfei** **Coffee Break: 10:30-10:40**	**Earth & Geology:** **Technical Session II** **Chair:** **Coffee Break: 10:30-10:40**
	12:00-13:30	**Lunch** ［Whisper Garden Lounge [叮咛吧] Lobby］	
June 4	**6:00-18:30**	**One Day Tour (on pending)**	

Part II Keynote Speeches

Psychology: Keynote Speech Sessions

Keynote Speech 1: SUICIDE PREVENTION FOR ADOLESCENTS (14-18) in HIGH SCHOOLS (New 2021) (Video)

Speaker: Prof. Darcy Haag Granello, The Ohio State University, USA
Time: 08:30-09:10, Wednesday Morning, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Global rates of suicide among adolescents continue to increase. Suicide prevention efforts that focus on strategies to reduce risk in this age group often help peers to recognize risk factors and warning signs for suicide. In this presentation, the Director of The Ohio State University (OSU) Suicide Prevention Program and co-author of a forthcoming book on Suicide and Self-Injury in K-12 Schools (Oxford University Press, 2021) discusses suicide prevention in the school setting. A universal, public health approach to suicide prevention involves the entire school in a comprehensive suicide prevention program. This presentation will discuss the major components of this type of prevention program with specific strategies for how to develop and implement a suicide prevention program designed specifically for adolescents (ages 14-18). Those who watch this speech can learn more about each of the evidence-based components of a comprehensive suicide prevention program, as well as what they can do to begin to implement this type of programming in their schools.

Keynote Speech 2: Teacher feedback is powerful only when it is valued and used by students to enhance learning: Assessing Chinese students' feedback orientation towards teacher feedback (Video)

Speaker: Dr. Lan Yang (Joy), Department of Curriculum and Instruction The Education University of Hong Kong
Time: 09:10-09:50, Wednesday Morning, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract

Among over one hundred influences relating to student achievement, feedback was found as a powerful influence with a desirable effect size of .79 based on 196 independent studies with over six thousand effect sizes (Hattie, 1999; Hattie & Timperley, 2007). In an updated synthesis study, Hattie (2017) found the stable effect size of feedback (d = .70) in association with student achievement based on 1400 meta-analyses of over 80,000 independent studies. However, feedback researchers also argued although feedback is powerful, it is also variable (e.g., Hattie, 2018; Shute, 2008; Yang et al., 2014). Only when students are able to convert external feedback from teachers to learning opportunities by valuing and using feedback, would feedback be effective in engaging student in learning for further improvements (Yang & Yang, 2018; Yang, in-press). Based on the Ecological Feedback Model (Yang et al., 2014), this study examined the multidimensionality of students' feedback orientation, namely, perceived usefulness of feedback (FBUT), self-efficacy of using feedback(FBSE), accountability for using feedback(FBAT), and social-awareness of using feedback(FBSO) to maintain and enhance student-teacher relationships. 1349 Chinese secondary students participated in this study. The results supported the four-factor solution fits the data best as compared to other competing CFA models. In addition, this study also explored the relationships of the four dimensions of feedback orientation based on a control-value approach. The results showed students' accountability/responsibility for using teacher feedback was predicted by their perceived academic value (FBUT) and social value (FBSO) and capability (FBSE) of using teacher feedback to enhance learning. Furthermore, indirect effects of FBSE on FBAT through both FBUT and FBSO were also identified. Theoretical and practical implications to research on harnessing the power of feedback to maximize student learning are discussed.

Keywords: Teacher feedback, feedback orientation, Chinese students, harnessing the power of feedback

Keynote Speech 3: Dyadic relationship and mutual impact of anxiety and depression between Chinese cancer patients and their family caregivers

Speaker: Prof. Qiuping LI, Wuxi Medical School, Jiangnan University, China
Time: 10:10-10:50, Wednesday Morning, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Cancer and its treatment can result in psychological distress in both cancer patients (CPs) and their family caregivers (FCs). This psychological distress acts as a significant adverse factor in both CPs and FCs. The study purposes included: (i) to assess the anxiety and depression of CPs and their FCs, and examine the dyadic relationships of anxiety and depression between CPs and their FCs; (ii) to investigate factors that may modify these relationships. Participants consisted of 641 dyads of CPs and FCs. Three types of variables were collected as potential modifying factors, including CP-related variables, FC-related variables, and

family-related variables. Descriptive statistics, T-test, Pearson correlations, sub-group analysis were applied to conduct the data analysis. Findings showed that nearly one-third of participants experienced anxiety and depression (the Chinese version of the Hospital Anxiety and Depression Scale, C-HADS). CPs and FCs experienced a similar degree of C-HADS. Correlations (r) of C-HADS between CPs and FCs ranged from 0.25 to 0.32. Various factors influencing the anxiety and depression of dyads between CPs and their FCs were identified, including CP-related variables, FC-related variables, and family-related variables. Study findings call attention to the anxiety and depression, as well as the related factors in dyads of CPs and FCs. The underlined essential components and focus of intervention, which will be developed to decrease psychological distress and improve quality of life in dyads of CPs and FCs, included such areas as individual characteristics of CPs and FCs, family relationship.

Keynote Speech 4: Relevance of body language and nonverbal communication in counselling psychotherapy (Video)

Speaker: Prof. Dipl. rer. soc. Ulrich Sollmann, Shanghai University of Political Science and Law, China
Time: 10:50-11:30, Wednesday Morning, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
It is commonly said that 90% of the communication is nonverbal. Understanding and utilizing key concepts of nonverbal communication is crucial to effective communication in all contexts. Some are: functioning of awareness, the look on first sight, elements of communication, bodily expression of emotions.

Each physiological expression of the body has a meaning. If this expression is fixed and changed to a life habit, it tells a story of past experiences, encounter with people and survival patterns. Insofar the body tells the story of one`s own life.

So body language can be understood:
as meaningful expression of a person
as a relevant result of childhood development
as an important part of communication and relationship in the here and now and connection to different levels of personality like: body, reaction under stress, patterns of behavior, core values, typical life-conflicts, contact to reality.

The better you can be aware of this in yourself and in the other the better you can imagine how the other feels, how life is for him and how the other`s patterns of behavior are.

Body language always means : expression and impressionThe lecture will introduce a new way of understanding of what body language is. It will relate to concepts and tools to utilize this form for your advantage in counselling, therapy and daily life and how it can improve communication.

"He that has eyes to see and ears to hear may convince himself that no mortal can keep a secret. If his lips are silent, he chatters with his fingertips; betrayal oozes out of him at every pore."
(Sigmund Freud)

Keynote Speech 5: Effect of Two Interventions on Sleep Quality for Adolescent and Young Adult Cancer Survivors: A Pilot Randomized Controlled Trial

Speaker: Dr. Jianfei Xie, Third Xiangya Hospital, CSU
Time: 11:30-12:10, Wednesday Morning, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract

Background: Sleep disturbance was common among in adolescent and young adult (AYA) cancer survivors. Physical activity (PA) and behavioral activation (BA) therapy were effective for enhancing sleep quality. However, there were few researches on the effects of different interventions that were rigorously designed and combined with the technology to promote sleep quality in AYA cancer patients. **Objective:** Aimed to investigate the feasibility and effects of intelligent wearable device-based PA therapy and Internet-based modified BA therapy to improve sleep quality among AYA cancer patients. **Methods:** A randomized controlled trial with 143 AYA cancer patients from a hospital and public media was conducted. Randomly assign participants to control group (N=48), which performed routine care, PA group (N=47), which received 8-week PA therapy based on intelligent wearable devices, and BA group (N=48), which participated internet-based modified BA therapy for 8 weeks. **Results:** At 1 week and 3 months after the intervention, for sleep quality, there were statistically significant differences between the PA group and the control group (P=.020), while no statistically significant difference between the BA group and the control group. **Conclusions:** The intelligent wearable device-based PA therapy has more advantages than internet-based modified BA therapy in improving the overall state of AYA cancer patients, and the intervention effect sustained at least 3 months. **Implications for practice:** Developing PA plans and implement for appropriate AYA cancer survivors were effective methods to improve sleep quality. Social media, intelligent wearable devices and mobile health applications have unique advantages in promoting healthy among AYA cancer patients.

Keynote Speech 6: On the art therapy of female partner's extramarital trauma

Speaker: Dr. Xiaobin Wang, senior lecturer and supervisor of China's empowerment sex education team, China
Time: 14:00-14:40, Wednesday Afternoon, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
It is not only female partners who have an affair, and not all women who experience a partner's affair will feel traumatized. But for women who are traumatized after experiencing an affair with their partner, it is worthy of our study. Some women are devalued because of the devaluation of women, some are because the stability of the family they value in their hearts is undermined, some women are oppressed because of the root cause of gender inequality, while for some it is because of jealousy... I will analyze the causes for the trauma, and the treatment based on those for these groups of people. Sex and intimacy counseling and art therapy are what I have been researching and practicing in recent years. When I combine them, it has a very good consulting effect. I will use case presentation, evidence-based and analysis to share with you the effective art therapy for sexual and intimacy trauma.

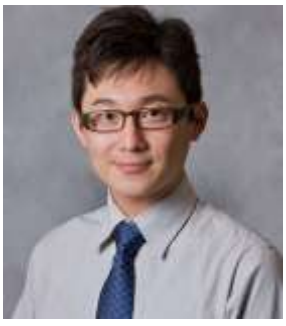
Keynote Speech 7: Expectations for Marriage and Childbearing: Understanding the Aspirations of Young Chinese Women and Men (Video)

Speaker: Dr. Sampson Lee Blair, The State University of New York (Buffalo), USA
Time: 14:40-15:20, Wednesday Afternoon, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Young women and men in China are similar to their counterparts in other nations, wherein they need to make decisions concerning their transition into adulthood. These transitions are often of the familial variety, such as whether (and when) to marry, as well as whether to have children (including the issues of timing and number)(Lloyd, 2005). For contemporary youth, these aspirations are occurring within a time of considerable economic and cultural change. Although Chinese culture has long promoted the expectation that individuals should marry and have children, thereby continuing the lineage of their family (Qi, 2004), the combination of modernization and an accompanying emphasis upon materialism (Schwartz, 2004) have coincided with considerable shifts in intimate relationships and behaviors. Over recent years, premarital sex has increased (Higgins et al., 2002), as have cohabitation rates (Zhang, 2017). Among those who marry, the age at first marriage has increased (Feng and Quanhe, 1996), and divorce rates have been

steadily rising (Chen et al., 2012). Despite recent changes to childbearing regulations, fertility rates in China have been declining (Jones, 2007). All of these shifts are, of course, directly linked to how young women and men formulate aspirations for themselves concerning marriage and childbearing.
The aspirations of youth do not develop within a social vacuum, rather, they are readily influenced by cultural factors (Hynie et al., 2006) and structural factors (Paat and Hope, 2015). The linkages between aspirations and eventual adult statuses and behaviors are quite strong (Miller, 1994), and the aspirations developed during adolescence concerning marriage and childbearing have been shown to be reliable predictors of subsequent behaviors (Willoughby, 2010). Within the context of China, the various cultural and structural changes which have occurred over recent decades have affected the institution of the family. In order to better understand how marriage and childbearing patterns are likely to be in the future, it is necessary to better understand the aspirations of young women and men, as these will likely provide a fairly accurate picture of marriage and childbearing in coming years.
Using data from a multi-year survey of young women and men enrolled in colleges and universities in China, this study examines the preferences and expectations concerning marriage and childbearing among young women and men. The analyses show that females and males both express a strong preference for marriage and childbearing. However, the data suggest that there is a steady shift toward aspirations for a later age at marriage, fewer numbers of births, and a later age at first birth. Both parental and peer influence are shown to affect aspirations, although these are more substantial among females, as compared to males. The findings are framed within the developmental paradigm, and the implications for future marriage and childbearing patterns in China are discussed.

Keynote Speech 8: Mental health of persons with aphasia during the COVID-19 pandemic: Challenges and opportunities for addressing emotional distress (Video)



Speaker: Prof. Anthony Pak-Hin Kong, University of Central Florida, USA
Time: 15:20-16:00, Wednesday Afternoon, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Aphasia refers to the acquired language deficits, most commonly caused by a stroke, that affect one's verbal understanding, oral expression, reading, and writing. Approximately 31% of stroke survivors exhibit depression or some depressive symptoms that can impede functional recovery. Since the onset of the COVID-19 pandemic in March 2020, many reports have discussed its psychological and mental impacts on different people worldwide, including both unimpaired individuals and those with chronic illnesses or medical conditions. At present, relatively little has been published on the topic of mental health changes,

distress, and/or concerns among persons with aphasia (PWA). Nevertheless, the current evidence reported thus far suggested that PWA had equally suffered from emotional symptoms as a result of the coronavirus outbreak, similar to other disorder populations. With reference to recent reports, the challenges posed to management of aphasia are summarized. Some potential opportunities to address PWA's needs, with an emphasis on their emotional distress, amid and after the pandemic are proposed and discussed.

Keynote Speech 9: Coping with stress and mental health in the COVID-19 pandemic: The role of counselling strategies (Video)

Speaker: Prof. Dariusz Krok, Department of Psychology, Opole University, Poland
Time: 16:10-16:50, Wednesday Afternoon, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
The global pandemic caused by the coronavirus SARS-CoV-2 (COVID-19) has noticeably affected the mental functioning of many people. The potential risk of infection associated with new cases and systematically implemented quarantine procedures are significantly influencing the ways in which individuals cope with stressful experiences. This situation generates unique conditions that have profound effects on coping mechanisms and mental health. Recent studies have demonstrated that risk of COVID-19 infection is significantly associated with poorer psychological functioning and higher levels of stress, as well as higher use of specific coping strategies (Krok, Zarzycka, & Telka, 2021; Polizzi, Lynn & Perry, 2020; Yan et al.,, 2021).

The aim of this talk is to examine relationships among risk perception of COVID-19, meaning-based resources, stress, and mental health measures (subjective and psychological well-being) in the mediating perspective of coping strategies. The results revealed that the way in which individuals cope with stress depends on the level of risk perception and the characteristics of the perceived COVID-19 threat. The two mediating strategies are predominately based on cognitive (problem-focused coping) and motivational (meaning-focused coping) processes. In contrast, emotional coping proved to be a less significant way of coping with stress during the pandemic. Stress and meaning-making also play different mediating roles in the relationship of risk of contracting COVID-19 and personal resources with the cognitive and affective dimensions of subjective wellbeing. In addition, the tendency to overestimate (over-estimation bias) the coronavirus-related risk and threat factors caused strong psychological distress, resulting in irrational patterns of behaviour.

During the personal experiences of intense stress, fatigue, and anxiety, meaning-based counselling strategies can help people find additional sources of meaning in life related to e.g., family, goals,

values, or personal strengths. Main meaning-based counselling strategies will be thus presented as they are likely to reduce stress and strengthen people's resilience, leading to higher levels of well-being.

Keynote Speech 10: Complex Psychic Disturbances of Teenagers and great Adolescents including Dysharmonic Borderline and Sociopathic Features

(Video)

Speaker: Dr. Scharbach Hugues, PARIS's University, France
Time: 16:50-17:30, Wednesday Afternoon, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
This conceptualization results of a long experience in the field of pedo-psychiatry practice. Within the framework of the psychic forensic examination in legal psychiatry, including expertises, as well in therapeutic assumption of clinical band therapeutic responsability in office or in an institutional environment - in young's home and in hospital -, the psychiatrist meets more and more often children, teenagers, who have comitted transgressive actings, in a minor or deviant mode. Their improper conduct may sometimes have taken place in a group or small clan context. Anyway, the underlying psychopathological disorders are often complicated, especially since these youngs people often present to realize an alliance and have defiant-opposant contact. The references about the studies devoted to the étiopathogenesis of dysharmonic personality disorders is therefore precious both to elaborate the diagnostic as well on a therapeutic point of view.(B.BOWLBY, M. KLEIN, D.W. WINNICOTT) The clinical, affective-emotional, instinctual and behavioral aspects mainly lead to highlighted borderline structural arrangments entangled with sociopathic features, with ease of implementation, sometimes less by challenge in an oedipianized register implying an aggressive strategy but linked to a pulsional defusion with weak implication of a guilt in a context of instinctual discharge close to rage. That one imply the sacking of the attack of a third one in an archaic fashion like « me or the other », the fragility of the ego going to the decongenerization. The mutation of the new society is to take in consideration, as well in the technological than economical levels and the decrease of the transgenerational reference marks. It's also to mention the dysqualification of certain collective ideals.

Keynote Speech 11: The Impacts of Bullying on Mental Health and Well-being in Adolescents (Video)

Speaker: Dr. Lu Hua Chen, University of Hong Kong, Hong Kong
Time: 17:30-18:10, Wednesday Afternoon, June 2, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Accumulating evidence has indicated that bullying experience, for example in school, is associated with mental health problem. It is found that peer victimization in childhood, particularly if it is chronic or severe, may gradually lead to psychosis in adolescence. A dose-response positive relationship between childhood trauma and psychotic symptoms has been suggested, with the psychotic symptoms increasing in line with the increased levels of bullying experience. Moreover, early traumatic events are also related to the development of psychotic symptoms in later adulthood. The short-term and long-term impacts of bullying on mental health and well-being will be reviewed and further discussed.

Keynote Speech 12: Culturally, Linguistically, and Scientifically Informed Psychotherapy with Lesbian, Gay, Bisexual, Trans, Queer/Questioning, Intersex, Asexual, 2 Spirited (LGBTQIA2S*) Clients (Video)

Speaker: Dr. Nate O. Fuks, Department of Educational & Counselling Psychology, McGill University, Canada
Time: 08:30-09:10, Thursday Morning, June 3, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Most of mental health practitioners are quite clear that their interventions and treatment plans need to be informed and supported by scientific research. However, when it comes to working with minorities, this quite often happens to not be the case. As a psychologist, researcher, and clinical supervisor, specialized in working with minorities, including LGBTQIA2S* clients, immigrants, refugees, and people of color, I have observed many cases where the clients were mistreated, stigmatized, and sometimes further retraumatized by well-meaning but ill-informed practitioners. I will use an example of therapeutic response to gender identity in clinical practice to illustrate this. As a clinical supervisor, I have heard seasoned psychologists trying to find a quote

unquote cause or childhood trauma to explain their clients' gender dysphoria and use it as an explanation to mental health symptoms they are presenting with, while APA Guidelines for Psychological Practice with Transgender and Gender Nonconforming people clearly state that mental health problems experienced by a trans or gender nonconforming person may or may not be related to that person's gender identity. It further explains that in many cases there may not be a relationship between a person's gender identity and a co-occurring condition, and that the symptoms the clients present with are often the result of external factors such as minority stress, transphobia, and institutional discrimination. I have seen clients diagnosed with and treated for Gender Identity Disorder, even though the diagnosis didnt exist as of 2013. The current diagnostic label in DSM is gender dysphoria, which is dramatically different from gender identity disorder, as it reflects recent research findings on gender identity and removes stigma associated with the term "disorder." For instance, while old diagnostic label often stigmatized and treated gender nonconformity, the DSM 5 clearly states that "gender nonconformity is not in itself a mental disorder. The critical element of gender dysphoria is the presence of clinically significant distress associated with the condition." This new diagnostic label is supported by researchers and members of the trans community who agree that the diagnosis of Gender Identity disorder pathologized gender variance and reinforced the binary model of gender, which is inconsistent with current scientific understanding of the phenomenon. The new treatment suggested by the DSM for gender dysphoria therefore is also significantly different as it usually takes on an affirmative approach and focuses on supporting the individual through exploration and acceptance of their identity. So psychologists working with trans clients, following APA Guidelines and the DSM 5, instead of stigmatizing their client's gender identity, engage in helping their clients navigate normative systems, which often make them experience transphobia and discrimination at institutional level. Furthermore, practitioners familiar with current research on systemic challenges faced by trans individuals, often engage in advocacy to help their clients. For example, we often write letters of support for our clients to facilitate their access to gender affirmative medical treatments, such as gender reassignment surgery. I would like to conclude by reiterating the need for mental health practitioners to consistently rely on recent evidence when treating minority clients. For example, such easily accessible resources as APA Guidelines for Psychological Practice with LGB clients, the Report of the APA Task Force on Appropriate Therapeutic Responses to Sexual Orientation, the APA Guidelines for Psychological Practice with Transgender and Gender Nonconforming people, as well as the DSM 5, can be instrumental in helping practitioners provide culturally sensitive and evidence based care to their clients, and will help prevent stigmatizing or retraumatizing them. This presentation will provide mental health practitioners with an overview of much needed cultural and linguistic competences to provide effective support for clients exploring their sexuality and gender.

Keynote Speech 13: How is Active Aging practiced in remote rural areas: *An example of later life in Indigenous villages in Taiwan* (Video)

Speaker: Prof. HAI Luo, University of Manitoba, Canada
Time: 09:10-09:50, Thursday Morning, June 3, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
While many cultures generally uphold a respectful attitude toward older adults, many of them experience poverty and financial marginalization, which could lead to factors that negatively impact on active aging. Appling ethnographic methods, the researcher aimed at exploring the episteme (i.e., understanding and/or perceptions) and practice of active aging (WHO, 2002) among older adults of indigenous cultural backgrounds in remote rural areas. Data were gathered mainly in two Indigenous villages in South Taiwan from January to June 2018. The research involved prolonged observations as well as in-person interviews with 27 individuals.
Support and barriers were both found in examining the major components of the active aging framework (physical environment, social determinants, behavioral and economic determinants, and health and social services) in remote rural areas. Indigenous views on aging and death were also examined to further understand the relationship between values and practice in Indigenous older adults' lives. The results could serve as guidelines when designing and delivering social services to Indigenous older adults. Different generations revealed varied views related to later life. Policy makers and service providers should consider emerging and different need and expectations in order populations in order for effective service establishment and delivery.

Keynote Speech 14: Frailty and falls in community-living older adults (Video)

Speaker: Dr. Tim Xu Tianma, Singapore Institute of Technology, Singapore
Time: 09:50-10:30, Thursday Morning, June 3, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
The prevalence of frailty and falls are increasing with the rapid ageing population worldwide. Both frailty and falls can have a significant impact on older adults' physical and psychosocial functions and community participation leading to an increased burden of care to their family and the society. Evidence in frailty management and falls prevention are well established given the extensive research being conducted in well-developed countries in the past few decades.
Besides giving an overview of the topic of frailty and falls in community-living older adults, this

session will talk about the common risk factors of frailty and falls in the target population and standardized outcome measures used in both research and clinical settings. Up-to-date evidence-based frailty management and falls prevention programs will be shared followed by some new research works. The session will conclude with a brief discussion on potential adaptation of the existing programs for future implementation in the different cultural context.

Keynote Speech 15: A Review of Health care Reform in USA & the Affordable Care Act (CA) (Video)

Speaker: Prof. Mustafa 'Mike' Z Younis, Jackson State University, USA
Time: 10:40-11:20, Thursday Morning, June 3, 2021
Location: Conference Room 5 (叠彩厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
On March 23, 2010 President Barak Obama signed the health insurance reforms adopted in the Patient Protection and Affordable Care Act (PPACA), and the subsequent reconciliation bill, which are to be phased-in over the next 10 years. Most provisions will not take effect until Jan. 1, 2014. However, some new provisions must be implemented when plans renew after Sept. 23, 2010.

The new healthcare reform was passed with strong partisan support and faced significant opposition due to ideological and political differences and the expected outcomes of its implementation.

In this presentation the author will provide some background about the American healthcare system, and some proposals and ideas to reform the system. Then we will discuss the main theme of Obama's healthcare reform and some expected positive and negative outcomes of such reform. The Supreme Court rulings on June 28, 2012 on the future of Obama's Health Care Reform and the Trump Administration effort to repeal the reform will be discussed.

Earth & Geology: Keynote Speech Sessions

Keynote Speech 1: Rock mass Stability Investigations Around Tunnels in 3-D in an Underground Mine in USA

Speaker: Prof. Pinnaduwa H.S.W. Kulatilake, Jiangxi University of Science and Technology, China
Time: 08:30-09:15, Wednesday Morning, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Stability and deformation of rock masses around tunnels in underground mines play significant roles on the safety and efficient exploitation of the ore body. Therefore, understanding of geo-mechanical behavior around underground excavations is important. In this study, a three-dimensional numerical model was built and stress analyses were performed by using 3DEC software for an underground mine in USA using the available information on stratigraphy, geological structures and mechanical properties of rock masses and discontinuities. Investigations were conducted to study the effect of the lateral stress ratio (K0), material constitutive models and rock support system on the stability of rock masses around the tunnels. Results of the stress, displacement, failure zone, accumulated plastic shear strain and post-failure cohesion distributions were obtained for these cases. Finally, comparisons of the deformation were made between the field deformation measurements and numerical simulations.

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Xing, Y., Kulatilake, P.H.S.W., and Sandbak, L.A. (2020) Rock Mass Stability Around Underground Excavations in a Mine: A Case Study. A Book published by CRC Press/Balkema, Taylor & Francis Group, London, UK, DOI: https://doi.org/10.1201/9780429343230.

Keynote Speech 2: Integrating Geospatial and Geochemical Methods to Explore Environmental and Ecological Issues

Speaker: Prof. Huan Yu, Chengdu University of Technology, China
Time: 09:15-10:00, Wednesday Morning, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
It is difficult to describe the behaviors of a landscape scaling up from an ecological system of communities, it is more difficult to study landscapes in chemical levels, thus in-depth explorations of the relationships between landscape patterns and ecological processes in geochemical levels are necessary. This macroscopic and microscopic interaction will be a crucial challenge for studying on the ecological and environmental issues in the coming decades. Thus, a fundamental question concerning whether we can detect, describe and predict ecological effects at the geochemical level has been proposed. Then, applying geospatial and geochemical integrated methods to analyze ecology and environment has its theoretical basis and practical needs.

Keynote Speech 3: The Confirmed Validity of the Explanatory Aspect of the Thermohydrogravidynamic Theory Concerning the Evaluated Maximal Magnitude of the Strongest Earthquake During the Considered Intensification of the Global Natural Processes from December 7, 2019 to April 18, 2020 AD (Video)

Speaker: Prof. Sergey Simonenko, Far Eastern Branch of Russian Academy of Sciences, Russia
Time: 10:20-11:05, Wednesday Morning, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
We present the confirmed validity of the significant explanatory aspect of the thermohydrogravidynamic theory (Simonenko, 2013; 2014) concerning the evaluated (on April 7, 2021) maximal magnitude ($M_{up}(2020,\ loc.\ max.) = 7.725$) of the possible most strongest earthquake during the predicted (in advance in unpublished article (Simonenko, 2019b) presented on December 9, 2019 to the journal Energy Research, then presented on the 10th International Conference on Geology and

Geophysics and then finally published in the Journal of Geoscience and Environment Protection, Simonenko, 2020, 8, 351-367) intensification of the global natural processes of the Earth from December 7, 2019 to April 18, 2020 AD. To obtain the satisfactory explanation (in the frame of the thermohydrogravidynamic theory of the Earth subjected to the combined non-stationary cosmic integral energy gravitational influences (Simonenko, 2013; 2014; 2019a) of the planets (Mercury, Venus, Mars and Jupiter) and the Sun owing to the gravitational interaction of the Sun with Jupiter, Saturn, Uranus and Neptune) of the maximal magnitude M=7.7 (according to the U.S. Geological Survey) of the strongest earthquake occurred (123 km NNW of Lucea, Jamaica) on January 28, 2020 AD near the calculated (Simonenko, 2020) mean date (February 5, 2020 AD) of the probable most strongest earthquake during the considered (Simonenko, 2019b; 2020) range from December 7, 2019 to April 18, 2020 AD, we have analyzed the following strongest earthquakes (of the Earth occurred near the local maximal values of the calculated combined integral energy gravitational influences on the Earth of the planets and the Sun) occurred on (according to the U.S. Geological Survey): 1964-03-28 (M=9.2, Southern Alaska), March 11, 2011 (M=9, near the east coast of Honshu, Japan), February 27, 2010 (M=8.8, offshore Bio-Bio, Chile), April 11, 2012 (M=8.6, off the west coast of northern Sumatra), 1938-02-01 (M=8.5, Banda Sea), 1922-11-11 (M=8.5, Atacama, Chile), 2001-06-23 (M=8.4, near the coast of southern Peru) and additionally the strongest earthquakes (of the Earth occurred near the local maximal values of the calculated combined integral energy gravitational influences on the Earth of the planets and the Sun) occurred in the range from 1980 AD and before 1992 AD.

Considering and analyzing the strongest earthquakes (occurred near the local maximal combined integral energy gravitational influences on the Earth of the planets and the Sun) on the plane $(M_{up}(i, \text{loc. max.}), \Delta_{g,S,P}(i)\sin\varphi(i))$, where $M_{up}(i, \text{loc. max.})$ is the maximal magnitude of the strongest earthquake occurred near the local maximal combined integral energy gravitational influence (for the year i) on the Earth of the planets and the Sun, $\Delta_{g,S,P}(i)$ is the established (Simonenko, 2019b) calculated (for the corresponding year i of the occurred strongest earthquake) normalized dimensionless numerical function (related with the local maximal and minimal combined integral energy gravitational influences (for the year i) on the Earth of the planets and the Sun), $\varphi(i)$ is the angle (for the strongest earthquake occurred in year i near the local maximal value of the calculated combined integral energy gravitational influence on the Earth of the planets and the Sun) between the projection of the Earth axis (of rotation) on the ecliptic plane and the approximate line (in the ecliptic plane) Earth – Sun – Jupiter (characterized by the equal angle deviations of the Earth and Jupiter from the approximate line), we have established that the dimensionless range $\Delta_{g,S,P}(i)\sin\varphi(i) = 2000 \div 2600$ contains only 3 strongest earthquakes (from the all analyzed strongest earthquakes) occurred on (according to the U.S. Geological Survey): 1984-02-07 (M=7.6, Solomon Islands), 1992-12-12 (M=7.8, Flores region, Indonesia) and 1994-10-04 (M=8.3, Kuril Islands). Taking into account that the strongest earthquake occurred (123 km NNW of Lucea, Jamaica) on January 28, 2020 AD corresponds to the calculated value $\Delta_{g,S,P}(2020)\sin\varphi(2020) = 2220.3855$, which belongs to the range $2000 \div 2600$ (related with the considered above 3 strongest earthquakes), we have evaluated (based on the linear interpolation) the corresponding first magnitude $M_{up}(2020, \text{loc. max.}, 1) = 7.6593$ (for the first combination of strongest earthquakes occurred on 1984-02-07 and on 1992-12-12) and the corresponding second magnitude $M_{up}(2020, \text{loc. max.}, 2) = 7.7908$ (for the second combination of strongest earthquakes occurred on 1984-02-07 and on 1994-10-04) of the probable most strongest earthquake during the considered (Simonenko, 2019b; 2020) range from December 7, 2019 to April 18, 2020 AD. The mean magnitude $M_{up}(2020, \text{loc. max.}) = 7.725$ (of the obtained magnitudes 7.6593 and 7.7908) is in good agreement with the maximal magnitude M=7.7 (according to the U.S. Geological Survey) of the strongest earthquake of the Earth occurred on January 28, 2020 AD near the calculated (Simonenko, 2020) mean date (February 5, 2020 AD) of the probable most strongest earthquake during the predicted (Simonenko, 2019b; 2020) range from December 7, 2019 to April 18, 2020 AD.

This research is based on the V.I. Lenin's formula (given in his *Materialism and Empiriocriticism*): "From an abstract to the concrete, and then from the concrete to the truth" applied to the investigation of the Earth in the frame of the Solar System.

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Keynote Speech 4: Numerical simulation of geomorphologic dynamics of fluvial braided rivers using iSWEM

Speaker: Prof. Dong Xu, Tianjin University, China
Time: 11:05-11:50, Wednesday Morning, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Braided river is one of the most common river pattern in nature. The multi-branched shapes and alternatively distributed sand bars implies complex flow and sediment dynamics insides. The mechanism of the formation and evolution of braided rivers in nature remain unclear. In order to investigate the geomorphologic dynamics of braided rivers, a mathematical model is established, including a shallow water flow solver using the finite volume method(FVM), bedload sediment transport model, bed evolution solver using the Exner equation and drying-wetting boundary treatment. The model is incorporated into the software iSWEM and used to simulate the bar formation and braiding process of a fluvial river imitates from a flat bed. The simulation results comply with the real development of braided rivers in nature.

Fig.1 Numerical simulation of the development of a braided river using iSWEM

Keynote Speech 5: The migration rule of Pb content transported from different sources

Speaker: Prof. Dongfang Yang, College of Chemistry and Environmental Science, Guizhou Minzu University, China
Time: 14:00-14:45, Wednesday Afternoon, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
According to the survey materials of the waters of Jiaozhou Bay in May, September and October 1993, this article studied the content of Pb and its horizontal distribution in the surface water bodies. The results showed that the Pb content in the waters of Jiaozhou Bay ranged within 0.62-3.05μg/L, which conformed to the seawater standard of Class I and II. And it also indicated that in terms of the Pb content, the water bodies of Jiaozhou bay were mildly contaminated by Pb content in May, September and October. The Pb content in Jiaozhou bay mainly had three sources, the transportation of rivers, surface runoff and offshore ocean currents. The Pb content was 2.13μg/L transported from the rivers, 2.74μg/L from the surface runoff and 3.05μg/L from the offshore ocean currents. It demonstrated that the transportation of rivers, surface runoff and offshore ocean currents had been moderated polluted by Pb content. Three different migration paths of Pb content, from land, ocean to Jiaozhou Bay water bodies, have been expressed in model block diagram. In the migration process of Pb content transported from different sources, the author found out the migration rules: 1) the Pb content was continuously decreased with the extension of migration distance; 2) the Pb content in the ocean water body was very high with the accumulation of Pb content in the ocean.
Keywords: Pb content, sources, process, rules, Jiaozhou Bay

Keynote Speech 6: The problem of interrelation of severe space weather and earthquakes: Current state and future Russian-Chinese cooperation for earthquake hazard mitigation (Video)

Speaker: Prof. Victor Novikov, Joint Institute for High Temperatures of Russian Academy of Science, Russia
Time: 14:45-15:30, Wednesday Afternoon, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract

The state-of-the-art research of possible interrelation of space weather with the earthquake source is discussed. The results obtained recently demonstrated again, in spite of certain skepticism, that this interrelation may be used for seismic hazard mitigation. Both impacts of the earthquake source on ionosphere, as well as impacts of space weather on deformation processes in the Earth crust resulted in earthquake triggering are considered. Based on the results obtained to-date the Russian-Chinese cooperation project "Space weather and earthquakes" was launched this year. The project is directed to further study of interconnection of processes in the "ionosphere-atmosphere-lithosphere" system in the seismic-prone regions for solving the problem of seismic hazard mitigation relevant for Russia and China. The specific objectives of the project are to refine existing models of the relationship between the earthquake source and space weather parameters based on data of space monitoring by Chinese satellite CSES-1, as well as to analyze the degree of an influence of variations of the space weather parameters on deformation processes in the earthquake source and the possibility of triggering the seismic events by strong ionospheric disturbances. The scientific novelty of the project is to obtain new results on possible ionospheric precursors of strong earthquakes according to new data from the CSES-1 satellite and their theoretical justification, as well as the physical justification (or rejection) of the possibility of earthquake triggering by strong bursts of geomagnetically induced currents in conducting seismogenic faults of the Earth crust during severe space weather. The project provides for an analysis of satellite observations over the seismic-prone regions of Russia and China, the refinement of the model of ionospheric-lithospheric relations, a numerical analysis of induction of telluric currents in the conducting zones of the Earth crust (faults) by strong geomagnetic disturbances and their effect on deformation processes in the earthquake sources. Physical modeling will be performed at laboratory set-ups for studies of the process of generating telluric currents and their concentration in the conducting model fault, the laboratory "earthquake" triggering by electric pulses at spring-block models of seismogenic fault, as well as the process of rock failure under electromagnetic impact. The results of the project will have a fundamental importance in terms of understanding the relationship between space weather and Earth seismicity and can be used in future technologies of the short-term earthquake prediction. The first results of the statistical analysis of the impact of space weather on the parameters of repeating earthquakes observed in China, Russia, Japan, and the USA are presented. It is shown that electromagnetic perturbations in ionosphere resulted in the flash of geomagnetically induced currents in lithosphere lead to shortening the recurrence interval of the repeating earthquakes similar to dynamic impact of remote strong earthquakes that strongly supports the idea of specific earthquake triggering from space.

The reported study was funded by RFBR, project number 21-55-53053 and NSFC, project number 4201101274.

Keynote Speech 7: Towards Virtual Reality

Speaker: Prof. Zhihan Lv, Qingdao University, China
Time: 15:50-16:35, Wednesday Afternoon, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
Virtual reality technology is a computer simulation system that can create and experience a virtual world. It uses a computer to generate a simulation environment that immerses users into the environment. Virtual reality technology is the use of real-life data, electronic signals generated by computer technology, combined with various output devices to make it into a phenomenon that people can feel, these phenomena can be real objects in reality It can also be a substance that we can't see with the naked eye, which is expressed through a three-dimensional model. Because these phenomena are not what we can see directly, but the real world simulated by computer technology, it is called virtual reality. In my research, I studied the application of virtual reality in geographic informatics, molecular biology, and neurorehabilitation, and developed some augmented reality interaction technologies. Finally, I introduced the research of Hash geocoding and blockchain in virtual reality geographic information system.

Keynote Speech 8: Cropwatch through Remote Sensing (Video)

Speaker: Dr. Muhammad Shakir, Institute of Space Technology, Pakistan
Time: 16:35-17:20, Wednesday Afternoon, June 2, 2021
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor, Guilin Grand Link Hotel, China

Abstract
The unprecedented increase in population is putting us humans in a situation where we have to think more wisely and efficiently. Remote sensing technology is one way to solve the problems in a more efficient and sophisticated way. Pictures/images concisely convey information about positions, sizes, and interrelationships between/among objects. By their nature, they portray information about things that we can recognize as objects. These objects in turn can convey deep levels of meaning. Because humans possess a high level of proficiency in deriving information (by using simple to complex programs) from such images, we experience little difficulty in interpreting even those scenes that are visually complex. The development of computer technology and internet make us able to solve the complex problems in the matter of minutes that were once impossible. Each picture, therefore, can truthfully be said to distill the meaning of at least a thousand words. Remote sensing is one among that process which can help us to take information about any object/phenomenon over a large area in a limited amount of time in the form of images. In this talk emphasis will be made on its applications in agriculture and how it can solve the problems in more efficient way compared to the already existing methods.

Part III Technical Sessions

Psychology: Technical Session

Session Chair: Dr. Xie Jianfei, Third Xiangya Hospital, CSU
Location: Conference Room 5 (叠彩厅), 2nd Floor 08:30-12:00, June 3, 2021

No.	Paper Title	Author	Affiliation
Keynote Speech	Culturally, Linguistically, and Scientifically Informed Psychotherapy with Lesbian, Gay, Bisexual, Trans, Queer/Questioning, Intersex, Asexual, 2 Spirited (LGBTQIA2S*) Clients	Dr. Nate O. Fuks	McGill University
Keynote Speech	How is Active Aging practiced in remote rural areas: *An example of later life in Indigenous villages in Taiwan*	Prof. HAI Luo	University of Manitoba, Canada
Keynote Speech	Frailty and falls in community-living older adults	Dr. Tim Xu Tianma	Singapore Institute of Technology, Singapore
10:30-10:40	**Group Photo & Coffee Break**		
Keynote Speech	A Review of Health care Reform in USA & the Affordable Care Act (CA)	Prof. Mustafa 'Mike' Z Younis	Jackson State University, USA
Oral	The dyadic effects of self-efficacy on quality of life in advanced cancer patient and family caregiver dyads	Prof. Qiuping LI	Wuxi Medical School, Jiangnan University
Oral	The post-intensive care syndrome in children: A concept analysis	Tang Maoting	West China Second University Hospital, Sichuan University
Oral	'Accept who I am': The exploration of self-acceptance among Chinese lesbian women	Yanming He	University of Edinburgh
Oral	Sensory and Anxiety Phenotypes of Autism Spectrum Disorder and Attention-Deficit/Hyperactivity Disorder	Zining Ding	Western University
Oral	Investigation and research on mental health problems of poor college students in old revolutionary areas	Xiaoqin Qi	Huanggang Normal University, China

Oral	The effect of short-term mindfulness training on the emotional state of college students with different levels of mindfulness Evidence from neurophysiological signals	Ruonan Li	School of Psychology, Nanjing Normal University, Nanjing, China
Oral	Impact of community care services utilisation on elderly health in China: a survey- based analysis with propensity score matching method	Liu Yang	School of Public Policy and Administration, Xi'an Jiaotong University
Oral	Impact of Policy Mix on Utilization of Elderly Care Service in China	Xiaodong Di	School of Public Policy and Administration, Xi'an Jiaotong University, No 28 Xianning West Road, Xi'an 710049,Shaanxi, China
Oral	System Simulation and Policy Response: Long-term Care Needs of the Elderly with Disabilities in China (2021-2050)	Qiyini Ma	School of Public Affairs, Zhejiang University
Oral	Clinical characteristics of older patients infected with COVID-19: A descriptive study	Shengmei Niu	Beijing Emergency Medical Center
Oral	The role of nutritional supplements in aging	Zhu Dan Lin	Shanghai University of sport, China
Poster	Disrupted topological organization of brain functional network is associated with the cognitive function in Alzheimer's disease patients with depressive symptoms	Zhongwei Guo	Tongde Hospital of zhejiang province

Earth & Environment: Technical Session I

Session Chair: Prof. Dongfang Yang, College of Chemistry and Environmental Science, Guizhou Minzu University

Location: Conference Room 6 (临桂阳朔厅), 2nd Floor 08:30-12:00, June 3, 2021

No.	Paper Title	Author	Affiliation
Keynote Speech	The migration rule of Pb content transported from different sources	Prof. Dongfang Yang	College of Chemistry and Environmental Science, Guizhou Minzu University
Keynote Speech	The problem of interrelation of severe space weather and earthquakes: Current state and future Russian-Chinese cooperation for earthquake hazard mitigation	Dr. Victor Novikov	Joint Institute for High Temperatures of Russian Academy of Sciences
15:30-15:50	**Group Photo & Coffee Break**		
Keynote Speech	Towards Virtual Reality	Prof. Zhihan Lv	Qingdao University, China
Keynote Speech	Cropwatch through Remote Sensing	Dr. Muhammad Shakir	Department of Space Science, Institute of Space Technology, Islamabad Pakistan
Oral	Simulation monitoring for rainfall infiltration in soil based on high density electrical method	Shanshan LV	School of Geoscience and Surveying Engineering, China University of Mining and Technology (Beijing)
Oral	Effect of topography conditions on debris flow runout behavior	Chao Ma	School of soil and water conservation, Beijing Forestry University
Oral	Evaluation of oil-bearing properties and oil mobility of continental shale: An instance analysis of the lower 1st member of the Shahejie Formation in the Raoyang Sag, Bohai Bay Basin	Yongbo Wei	China University of Petroleum (East China)

Oral	Comparative study on the L1 and L2 norm inversion effects of layered medium by semi-airborne Transient electromagnetic method	Guo cai YI	Chengdu University of Technology
Oral	Discussion on the best observation area of uav semi-aerial transient electromagnetic method	Shi xing Wang	Chengdu University of Technology
Oral	Application and contrast of machine learning in carbonate lithofacies log identification	Chang Li	PetroChina Hangzhou Research Institute of Geology
Oral	The indicative significance of lithologic and lithofacies to shale oil sweet spot	Zhaojing Song	China University of Petroleum (East China)
Oral	Structural style and hydrocarbon accumulation model in the southern margin of Junggar Basin: a case study of Well Gaotan-1	Wenxin Dong	College of Geosciences, China University of Petroleum (East China)
Oral	Aryl isoprenoids in the Cambrian source rocks and oils of the Tarim Basin	Ying Junfeng	China University of Petroleum

Earth & Environment: Technical Session II

Session Chair:
Location: Conference Room 6 (临桂阳朔厅), 2nd Floor 08:30-12:00, June 3, 2021

No.	Paper Title	Author	Affiliation
Oral	Velocity profile of debris flow based on quadratic rheology model	Cui Du	School of Civil Engineering, Henan University of Science and Technology, Luoyang, China
Oral	Identification of altered volcanic rocks and its impact on Productivity: a case study of Carboniferous Formation in Chepaizi area, Junggar Basin	Chengjingyu Xing	China University of Petroleum, China
Oral	Study on the influence of mineral components of shale oil from the Chang 7 member in	Qiyuan Zhao	China University of Petroleum (East China)

	Longdong area on mobility		
Oral	Characterization of Paleo-uplifts/lows of the Permian strata and Implications on Hydrocarbon Exploration in the Sichuan Basin, SW China	Ben Feng	School of Geosciences, China University of Petroleum , China
Oral	Characteristics of micro-scale faulting deformation with high P-T and implications on petroleum significance,Ying-Qiong Basin, South China Sea	Jing Wang	China University of Petroleum (East China)
Oral	the study of multi-stage fault structure style superposition in Sichuan Basin.	YICHENG MOU	China University of Petroleum (East China)
Oral	Fine depiction of Mesozoic Era strata contact relationship and its tectonic geological significance in Sichuan Basin	Yu Qiu	China University of Petroleum(Tsingtao)
Oral	Key Controlling Factors for Biogenic-gas Accumulation in Deep-Water Rakhine Basin Offshore Myanmar	Xuefeng Wang	PetroChina Hangzhou Research Institute of Geology
Oral	Study on logging response characteristics and identification methods of solid bitumen	Yong Li	Southwest Petroleum University, China
Oral	The impact of subsidence on the heterogeneity of the black shale of the Early Silurian Longmaxi Formation in the western Yangtze Block, South China	Xiangdong Yin	South West Petroleum University, China
Oral	Study on migration characteristics and accumulation regulation of tight oil in Chang 8 Member of Yanchang Formation in Ordos Basin	Lei Junjie	Southwest Petroleum University, China
10:30-10:40	**Group Photo & Coffee Break**		
Oral	Characteristics and evolution of faults in Western Lunnan Low Uplift of Tabei Uplift	Su Zhao	China University of Petroleum(East China)
Oral	Mechanical Behavior and Microstructure Characteristics of Ultra-Deep Carbonate Rocks with Different Burial Depths	Ran Zhang	China University of Petroleum

Oral	Genesis mechanism of deep-water massive sandstone in continental lake basin and its significance in micro-nano reservoir storage system: A case study of the Yanchang Formation in the Ordos Basin	Jianbo Liao	School of Geoscience and Technology, Southwest Petroleum University, China Research Institute of Petroleum Exploration and Development Northwest Branch, CHina
Oral	Sedimentary characteristics and favorable reservoir prediction of fan-delta — A case study of Cretaceous Xiagou Formation in Kulongshan structural belt, Qingxi Sag, Jiuquan Basin	Wenting Zhang	Research Institute of Petroleum Exploration and Development Northwest Branch, China
Oral	The application of adaptive weighting high resolution inversion method in Changbai Mountain volcanic characteristics inversion	Tingyi Wang	Jilin University, China
Oral	Joint Inversion of Gravity and Seismic Data on Unstructured Grids	Tong Gao	Jilin University, China
Oral	Preliminary Study on the Classifications of Superimposing Units in Sichuan Basin	Shuai Dong	China University of Petroleum (East China)
Oral	Canonical analytical solutions of wave-induced thermoelastic attenuation for Cavity and fined layered	Zhiwei Wang	China University of Petroleum (East China)
Oral	Brittleness Evaluation of the Triassic 7th member of Yanchang Formation in Ordos Basin	Liying Zhang	Chengdu University of Technology, China
Oral	classification of burial dolomite and development of burial dolomite reservoir	Zhanfeng Qiao	State Key Laboratory of Oil and Gas Reservoir Geology and Exploitation, Southwest Petroleum University
Oral	Research on baseline-removing drift filtering method for semi-airborne transient electromagnetic	Yi Jiang	Chengdu University of Technology, China

Oral	Genetic types and geological significance of micro pores in tight sandstone reservoirs: a case study of the ultra-deep reservoir in the Kuqa foreland thrust belt, NW China	Chun Liu	Southwest Petroleum University, China
Oral	Paleocave identification from 3D seismic data using deep learning in the Tarim Basin, Northwest China	Guoyin Zhang	China University of Petroleum (East China)
Oral	Seismic facies analysis and application of shale gas in Luzhou area, Sichuan Basin	Kang Kun	BGP
Oral	Classification of void space types in fractured-vuggy carbonate reservoir using geophysical logging: A case study on the Sinian Dengying Formation of the Sichuan Basin, Southwest China	Kunyu Wang	Chengdu University of Technology, China
Poster	Lithology identification of collapsed formation based on logging curve reconstruction technology	He Meng	PetroChina Hangzhou Research Institute of Geology
Poster	Anisotropic media tomography based on automatic horizons picking	Shuo Xu	China University of Petroleum (East China)
Poster	Seismic Data Reconstruction Using Shearlet and DCT Dictionary Combination	Deying Wang	China University of Petroleum (East China)
Poster	Travel time tomography in elastic wave imaging domain based on ADCIGs	Zhonghua Wei	College of Geoscience, China University Of Petroleum (East China)
Poster	Application of 3D acquisition design technology in HCX gas storage project	Jun Wu	BGP Southwest Geophysical Branch, CNPC
Poster	A new method for evaluating the fractureability of deep carbonate reservoirs	Xueyin Feng	China University of Petroleum (East China)

Part IV Abstracts

Psychology

ID: PHC2021_20100

Title: The dyadic effects of self-efficacy on quality of life in advanced cancer patient and family caregiver dyads

Name: Qiuping LI

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Abstract

A cancer diagnosis, particularly a diagnosis of advanced cancer, cancer treatment, and survivorship are adverse and stressful events for both cancer patients (CPs) and their family caregivers (FCs). This study was designed to explore the dyadic interdependence of self-efficacy, benefit finding, anxiety, depression, and QOL in cancer patient (CP) and family caregiver (FC) dyads, and to ascertain the dyadic effects of self-efficacy on quality of life (QOL) in CP-FC dyads. Conducted from November 2014 to December 2015, participants comprised 772 CP-FC dyads. The study surveyed participant characteristics, self-efficacy, benefit finding, anxiety, depression, and QOL. Data were analysed using Pearson's correlation, T-test, and actor-partner interdependence mediation model (APIMeM). Findings showed that CPs' self-efficacy was positively correlated with both their own and FCs' benefit finding and mental component summary (MCS), and negatively associated with anxiety and depression (all Ps<0.01, |r|=0.144~0.432). However, CPs' self-efficacy was only positively correlated with their own physical component summary (PCS) (r=0.193), but not FCs' PCS. The same profile was identified in FCs' self-efficacy (all Ps<0.01, |r|=0.100~0.468). FCs reported higher levels of self-efficacy and PCS compared to CPs (both Ps<0.001). Significant positive correlations (r=0.168-0.437) were identified among all paired variables in CP-FC dyads (all Ps <0.001). To some extent, dyads' self-efficacy influences dyads' MCS and PCS through improving positive emotions (benefit finding) and relieving negative emotions (anxiety and depression). Study findings not only support the dyadic interdependence of self-efficacy, benefit finding, anxiety, depression, and QOL in CP-FC dyads, but confirm the hypothesis that dyads' self-efficacy may impact their MCS/PCS via an indirect approach to improve benefit finding and relieve anxiety and/or depression in CP-FC dyads.

Keywords: cancer; oncology; positive aspects of caregiving; caregiving experience; spousal caregivers

ID: PHC2021_20001

Title: The post-intensive care syndrome in children: A concept analysis

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Affiliation: West China Second University Hospital, Sichuan University

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Abstract

We aimed to clarify the concept of post-intensive care syndrome in the pediatric population (PICS-p). The Walker and Avant's strategy for concept analysis was employed. The literature was searched using the following keywords: "post-intensive care syndrome," "PICU," "children," and "concept analysis." PICS-p is characterized by new or worsening impairments in the physical, cognitive, or mental health status arising after critical illness. These impairments "persist beyond acute care hospitalization." The occurrence of PICS-p can significantly affect the patients' quality of life and daily activities, increases the risk for treatment complications and memory impairment, and adds stress to the family. Our findings provide insight into PICS-p and opens new avenues for research and interventions. The definition of PICS-p presented in

this article can be used by nurses to promote symptom management. Further research is needed to determine the relationships between the antecedents, attributes, and consequences of PICS-p and to develop effective interventions.

ID: PHC2021_20002
Title: 'Accept who I am': The exploration of self-acceptance among Chinese lesbian women
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Abstract
Background: (Camp & Rimes, 2020) has pointed out that self-acceptance is associated with lower psychological distress and greater well-being among sexual minority. An interpretative phenomenological analysis was employed to understand Chinese lesbian women's meaning making of self-acceptance and sexual identity. Method: three Chinese lesbian women were interviewed about their same-sex relationships, family life, social support and individual struggles. Semi-structured interviews were designed to allow participants to be the experiential experts to describe, explain or interpret of their own words (Smith, Flowers, and Larkin 2009). Interpretative phenomenological analysis (IPA) was applied to interpret transcripts, discussing the interplay between researchers' insider perspectives and the participants' rich experience. Findings: four themes associated with subthemes captured their understandings of self-acceptance and sexual identity: 1. Being silent or being open; 2. Where does the fear come from; 3. Negotiation between self-acceptance and labelling; 4. Living in 'the' context. Discussion: the interaction between the self and the society shaped the degree to which the individuals accept themselves, and how they view the significance of sexual identity. Distinctive subthemes such as 'Am I sick?' and 'No labels' provided person-centered perspectives that internalized incongruency may bring about psychological distress, as well as critiqued existing models of sexual identity. Conclusion: accepting one's sexual identity as one aspects of the authentic self is a dynamic process, which may contribute to minority distress. This study also offered implication to counselling and psychotherapy aimed at sexual minority.

ID: PHC2021_20004
Title: Sensory and Anxiety Phenotypes of Autism Spectrum Disorder and Attention-Deficit/Hyperactivity Disorder
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Abstract
Sensory processing difficulties and anxiety are commonly found in ASD and ADHD. The high heterogeneity in the type and severity of these symptoms was shown to hinder the development of treatments and etiology-tracing efforts. Despite some efforts on identifying subtypes of individuals with similar patterns of sensory features to parse the high heterogeneity, no consensus has been reached on the optimal model of sensory subtypes and few studied anxiety phenotypes. The current study aimed to examine whether meaningful anxiety and sensory phenotypes could be identified from ASD and ADHD, and if so, whether there is a relationship between anxiety and sensory phenotypes. 421 participants aged between 3 and 19 with a diagnosis of either ASD or ADHD were included. A K-means cluster analysis was conducted on the Short Sensory Profile and Revised Child Anxiety and Depression Scale subscale scores to explore possible sensory and anxiety phenotypes, respectively. A 5-cluster solution ("Sensory Adaptive", "General Sensory Difference", "Under-responsive/Sensory Seeking", "Taste/Smell Sensitive" and "Low energy/weakness with Movement Difficulty") was considered the best-fit sensory model, which provides well-differentiated sensory subtypes based on sensory processing patterns and sensory systems with low error variance. All the resultant anxiety clusters varied in anxiety severity instead of

types of anxiety and thereby, no meaningful anxiety phenotypes were identified from ASD and ADHD. Phenotypes with general and movement-related sensory difficulties were associated with specific anxiety symptoms. The findings of this study provide implications for treatments or special clinical care that are tailored to an individual's sensory and anxiety profiles.

ID: PHC2021_20003

Title: Investigation and research on mental health problems of poor college students in old revolutionary areas

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Abstract

In August 2015, General Secretary Xi Jinping stressed at the National Health and Health Conference that "we should increase basic research on mental health issues, do a good job in popularizing knowledge about mental health and mental diseases, and standardize the development of psychological treatment, counseling and other mental health services".Use "little bees" team visiting poor students information collection, one-on-one follow-up support four years in a row, using the relevant study to investigate the parent-school cooperative education, employment, interpersonal relationship, academic and career planning interaction of poor college students mental health problem, the result shows that give full play to the leading role of impoverished college students' own self education is the most critical and important.

ID: PCP2021_20000

Title: The effect of short-term mindfulness training on the emotional state of college students with different levels of mindfulness Evidence from neurophysiological signals

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Abstract

Objectives The objective of this study was to explore the effects of short-term mindfulness training on the emotional state of individuals with different levels of mindfulness, especially from the perspective of autonomic neurophysiological mechanism.

Methods 52 college students were divided into higher or lower dispositional mindfulness groups. Then they underwent the measurement periods of baseline, short-term mindfulness training and recovery. During these periods, wrist-worn wearable devices were used for recording their autonomic nervous system activities, including heart rate (HR), galvanic skin response (GSR) and pulse rate variability (PRV). The Positive and Negative affect Scale (PANAS) and the State Anxiety Inventory (S-AI) were used before and after the experiment.

Results The results showed that in both groups, instead of positive emotion, negative emotions and state anxiety reduced significantly after the training. In terms of physiological signals, in lower-dispositional group, the HR of the recovery period were significantly lower than that of the other two periods, and the PRV of the recovery period were significantly higher. In higher-dispositional group, the GSR of recovery period was significantly higher than that of the other two periods.

Conclusions The results suggest that short-term mindfulness training works mainly by reducing negative emotions rather than increasing positive ones. Our findings also provide neurophysiological evidence for a better emotional intervention effect of short-term mindfulness training on individuals with lower dispositional mindfulness.

ID: ICAG2021_20001

Title: Impact of community care services utilisation on elderly health in China: a survey- based analysis with propensity score matching method

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Abstract

Abstract

Background: Elderly care and elderly health is an enormous challenge in such an aging society such as China. Community care services have been developing rapidly in recent years in China as an increasingly mainstream care resource to promote el-derly health in China. The purpose of this study is to examine the impact of using community care services on self-rated health (SRH) among Chinese elderly.

Methods: A cross-sectional survey was conducted in 2019 and 612 elderly people from 7 counties (districts) of China's Shaanxi province were enrolled. The multivari-able linear regression (MLR) was first employed to explore the association between community care services utilisation and elderly health. Given the potential selection bias issue, the propensity score matching (PSM) method was hired to generate com-parable samples between the elderly who used these services and the elderly who did not, and further examine the impact of using four types of services on the elderly in-dividuals' SRH.

Results: The results of MLR showed that the use of all types of community care ser-vices predicted a better health status of elderly individuals. Additionally, with the nearest neighbors matching algorithm, using daily care services was significantly associated with a 0.246 increase in the SRH scores of the elderly (T = 1.83). For med-ical care services, the mean of SRH scores of elderly individuals who used these ser-vices was 3.542, significantly higher than those who didn't (T = 2.15). For spiritual comfort services, elderly individuals using these services showed a significant in-crease by 0.280 in the SRH scores compared with those who did not (T = 1.82). For social and recreational services, the estimated ATT from the nearest neighbor match-ing method was not statistically significant, while the results of kernel matching method and the mahalanobis matching method showed a significant increase in the SRH scores among elderly individuals using these services (T = 2.03, T = 2.03, re-spectively).

Conclusions: The findings imply that policy-makers in China could continue ex-panding community care services coverage and promoting the quality of these ser-vices to increase access to care resources for senior citizens, thus improving their health status.

ID: ICAG2021_20002

Title: Impact of Policy Mix on Utilization of Elderly Care Service in China

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Abstract

As the problems of the aging society emerging, the elderly care service policy has gradually shifted from comprehensive contents to specific detail, emphasizing the balance of supply and demand in the utilization of elderly care service. However, with the continuous increase of elderly care service policy, the policy system has become more and more complex, and the interaction between policies with different administrative levels and characteristics has gradually increased, so the conflicts among policy goals will inevitably increase. Therefore, firstly, this article divides the elderly care service policy into two dimensions of policy objectives and tools from three aspects of the breadth of policy application, the interaction between policies and the development of policies. On the basis of policy quantification, it measures the comprehensiveness, consistency and balance of policy mix, and analyzes policy trend. Then, this article constructs an econometric model to analyze the impact of the different-types policy mix, the same-tapes policy mix within the same objectives, the same-tapes policy mix within the same tools on the utilization of elderly care service. Finally, from the perspective of policy portfolio design, coordination and implementation, this article puts forward feasible suggestions to improve the utilization of elderly care

service.

ID: ICAG2021_20008

Title: System Simulation and Policy Response: Long-term Care Needs of the Elderly with Disabilities in China (2021-2050)

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Abstract

Background: In the near future, pressures on long-term care (LTC) are expected to grow with demographic transition. Higher demand for formal services is emerging in China also because of people's expectations for high-quality care. This study aims to provide quantitative estimates of the associated LTC financial liability in the medium to long run to 2050, and is expected to further facilitate policy design on national LTC systems, which begin to be formulated and debated. Methods: We first analyze the health status of Chinese elderly through the Sample Survey of the Aged Population in Urban and Rural China (SSAPUR) in 2015, 2016 and 2017, the largest database of research on aging in China. Subsequently, we estimate LTC needs and the government's financial burden for the next 3 decades according Qingdao model. Results: The average elderly disability rate is 4.4% in 2015-2017, and the gender differences (3.9% for males, 4.67% for females), disparities between rural and urban areas, age differences exist. The proportion of public expenditure on long-term care costs will increase from 0.35 per cent in 2021 to 0.68 per cent in 2050, and that of proportion in GDP will increase from 0.1 per cent to 0.2 per cent. Conclusions: Compared with OECD countries, China's LTC system started late and developed relatively slowly. The "policy window" between 2021 and 2036 is critical for China in developing LTC policies. In the period of "gradually getting wealthy and quickly getting old", policy-makers should give priority to achieve "healthy aging" instead of "survival aging".

ID: ICAG2021_20011

Title: Clinical characteristics of older patients infected with COVID-19: A descriptive study

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Abstract

Objectives: Since the outbreak of 2019 novel coronavirus (COVID-19), which has spread in the world rapidly.Population have a susceptibility to COVID-19, older people were more susceptible to have a variety diseases than younger, including COVID-19 infection with no doubt. This study focused on older patients with COVID-19 infection and analyzed the epidemiological and clinical characteristics of them. Methods: We collected information on confirmed older patient transferred by Beijing Emergency Medical Service (EMS) to the designated hospitals from Jan 20 to Feb 29, 2020. The information including demographic, epidemiological, clinical, classification of severity and outcomes. All cases were categorized into three groups and compared the difference between aged 50–64 years, 65–79 years and older than 80 years. Results: 56.7 % of elderly confirmed patients were male, fever (78.3 %), cough (56.7 %), dyspnea (30.0 %), and fatigue (23.3 %) were common symptoms of COVID-19 infection. Classification of severity has statistically significant differences between the three groups, compared with middle-aged patients and aged 65–79 years group, older than 80 years group had significant statistical differences in contacted to symptomatic case in 14 days. As of Feb 29, 38.3 % patients had discharged and 53.3 % patients remained in hospital in our study, the fatality of COVID-19 infection in elderly was 8.3 %. Conclusions: The COVID-19 infection is generally susceptible with a relatively high fatality rate in older patients,we should pay more attention to the elderly patients with COVID-19 infection

ID: ICAG2021_20007

Title: Disrupted topological organization of brain functional network is associated with the cognitive function in Alzheimer's disease patients with depressive symptoms

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Abstract

In Alzheimer's disease (AD) and major depression disorders, resting state functional magnetic resonance imaging (rsfMRI) studies have frequently employed graph theory approaches to investigate the topological structure of brain neural network. The aim of this study was to explore the topological properties of AD patients with depressive symptoms (D-AD) based on graph theoretical analysis. Methods: We obtained 3-Tesla rsfMRI data from 24 D-AD patients and 20 non-depressed AD patients (nD-AD). Resting state networks were identified using graph theory analysis. Our results showed that D-AD patients did show decreased nodal centrality in the pallidum, putamen and right superior temporal gyrus; and increased nodal centrality in the right superior parietal gyrus, left inferior frontal gyrus, right posterior cingulate gyrus, right superior frontal gyrus and right calcarine gyrus. Moreover, the nodal centrality in the right pallidum and putamen was positively correlated with the score of Mini Mental State Examination scale in D-AD patients. These results indicate that D-AD is associated with the disruptions of topological structure. Our study provides new insights into the brain neural mechanism of D-AD.

ID: ICAG2021_20010

Title: The role of nutritional supplements in aging

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Abstract

With the development of society and medical technology and the increase of the average life expectancy of the global population, the global population is continuously expanding.With the expansion of the elderly population, the aging of population is one of the most significant population changes in the 21st century, and also one of the influential factors of social reform.In China, as the number of elderly people continues to increase, the aging phenomenon is becoming increasingly severe.And the speed of development is fast, and it is faster than the level of economic development, which not only causes the imbalance of the population structure, but also causes the imbalance of the social and economic distribution. The current trend is that the aging of the population is positively correlated with the average life expectancy of the population, which clearly indicates that the elderly population of the population is increasing, and the incidence of senile diseases is rising, and the degree of aging is becoming more and more significant with increasing age.Faced with the advent of an aging society, it is particularly important for the elderly to achieve healthy aging. With a thorough understanding of the laws of aging and the biological mechanisms of aging, the health of the elderly can be improved through nutritional interventions with reasonable supplements. Help the special group of the elderly to achieve healthy aging, thereby reducing the medical burden of the society and promoting the healthy and sound development of the economy and society.Therefore, effectively solving the series of problems caused by aging and aging is of great significance to the long-term and healthy development of society. A reasonable diet can maintain human health and delay the process of aging.Adequate nutrition can have a positive impact on the aging process, thereby improving the quality of life and preventing chronic diseases and death.However, due to the physiological and social changes associated with aging, malnutrition, overnutrition and imbalance will significantly accelerate the aging process. Adequate nutrition plays an important role in maintaining the health of the elderly and preventing or delaying the progression of age-related diseases.Among them, the dietary balance of macronutrients has a greater impact on aging. It is known that increasing protein intake to varying degrees in the elderly can slow down the risk

of aging and prolong lifespan.Reasonable use of micronutrient supplements (vitamin D, B2, B12, folic acid, calcium, etc.) can also promote health and delay aging.Therefore, the use of dietary supplements to combat aging is the most active, effective, and simplest method. It plays a role in promoting health, preventing diseases, and delaying aging in daily life. The key lies in perseverance and long-term adherence to the above-mentioned principles of reasonable nutrition.

Earth & Environment

ID: GRP2021_20000

Title: Simulation monitoring for rainfall infiltration in soil based on high density electrical method

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Abstract

Rainfall infiltration is a porous medium flow problem with variable saturation. Based on the theoretical analysis of the flow field, electrical conductivity of rocks, the electrical field, the paper simulates the coupling relationship between the water saturation in soil and the apparent resistivity distribution. It combines the Richards equation, the Archie formula and the Laplace equation. The experiment simulates the potential field data by the Wenner setting in electrical exploration on a two-layers geologic model with continuous rainfall during 5 days, which shows that the effec-tive saturation in soil is increasing with the rainfall time, while the apparent resis-tivity is decreasing. This can provide a theoretical basis for the analyzing the rainfall infiltration and porosity of the soil by using high-density electrical method in the future.

ID: GRP2021_20003

Title: Effect of topography conditions on debris flow runout behavior

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Abstract

Empirically-based debris flow runout methods generally derive from angle of reach model, volume balance and area inundation model, which commonly neglects the effect of topography conditions. In this work, a dimensionless index firstly separates the debris flows into three types including, landslide type, landslide-erosion and channelized flow. The mobility index, drainage area-slope gradient, debris flow deposits were analyzed. The results reveal that landslide type flow exhibits higher mobility than other two types and their drainage area-slope gradient relationships are distinctive. The steepness index, was undated by the channel width ratio, can separate the three flow types. The power-law functions between total inundation area and depositional area and volume were fitted with given exponent of 2/3. The coefficient of channelized flow is higher than other two types. Finally, a dimensionless index considering the volume and topography conditions is proposed to highlight the effect of topography condition on mobility index. The results of work can be helpful for potential inundation area and risk analysis of debris flows if the material resources are mainly from rainfall-induced landslides.

ID: ICGG2021_20000

Title: Evaluation of oil-bearing properties and oil mobility of continental shale: An instance analysis of the lower 1st member of the Shahejie Formation in the Raoyang Sag, Bohai Bay Basin

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Abstract
More than 200 wells in the special lithology section of the lower 1st member of the Shahejie Formation in Raoyang Depression have seen oil and gas displays. However, due to the low degree of research on the oil-bearing distribution and mobility (movement ratio of shale oil and fluid elastic energy (formation pressure)) of the shale formations in the Raoyang Sag, few wells have obtained industrial oil flow. A large number of geological and geochemical data are used to carry out the oil content and mobility of 81 wells systematically in this research based on the relationship between total organic carbon (TOC) and free hydrocarbons (S1), △LogR method, hydrocarbon generation thermal simulation test and Eaton method. The results show that: ① The shale oil resource classification evaluation boundary in the study area is: dispersed resources: TOC<0.6, S1<1; inefficient resources: 0.6<TOC<1.7, 1<S1<2.5; enriched resources: TOC>1.7, S1>2.5; ② We establish the hydrocarbon generation potential profile and saturation exponent (OSI) of shale oil in the study area, and determine the formula of movable oil in the shale: S1m=S1-TOC×0.75, and the movable ratio of shale oil after recovering light and heavy hydrocarbons ranges from 0 to 30%, with an average of 15.71%; ③The pressure coefficient of the lower 1st member of the Shahejie Formation ranges from 0.9 to 1.5, and the overpressure (>1.1) basically appears below 3000m, and it develops on the Hejian Sub-sag and the Maxi Sub-sag; ④The shale oil on the profile is mainly enriched in sandstone interbeds, carbonate interbeds and concentrated sections of organic-rich shale in the shale system. The interlayer shale oil has a higher ratio of movable oil. On the plane, the shale oil in the Hejian Sub-sag, Maxi Sub-sag and Zhaohuangzhuang area are more enriched, with a high ratio of movable oil and large fluid elastic energy.

ID: ICGG2021_20009
Title: Comparative study on the L1 and L2 norm inversion effects of layered medium by semi-airborne Transient electromagnetic method

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Abstract
The semi-airborne transient electromagnetic method uses ground launch and aerial acquisition for detection. By launching a bipolar square wave pulse current underground, a pulsed magnetic field is established. During an electromagnetic field interval, the measurement coil carried by unmanned aerial vehicle is used to collect the induced secondary electromagnetic field which changes with time and is generated by the vortex field caused by the excitation of the underground good conductor. By analyzing and processing the information of the secondary field, the general distribution of the underground medium is obtained. Compared with the traditional ground transient electromagnetic method, The semi-airborne transient electromagnetic method has the advantages of convenience, efficiency, large detection range, high signal-to-noise ratio, and good spatial resolution. It is especially suitable for detection in areas with complex terrain. There are obvious advantages and effects in finding large-scale underground mineral deposits, groundwater detection or landslide detection. Inversion has always been one of the key issues in geophysics research. Its purpose is to find a mathematical model conforming to the geological law to fit the measured data from the inversion theory. In this paper, L1 and L2 norms are used to invert and calculate the responses of theoretical layered geoelectric model respectively in the Semi-airborne transient electromagnetic method. The results show that L1 norm inversion can reflect the abrupt electrical interface of layered media more accurately, and its reflecting ability to low resistivity target layer is equivalent to L2 norm inversion. The geological model obtained by L2 norm inversion is relatively smooth, so it is not as good as L1 norm inversion in terms of the accurate identification of the

electrical interface, nor as good as L1 norm inversion in the ability to reflect the high-resistance target layer. In the inversion of measured data, the proper inversion method should be selected according to the collected geological data.

ID: ICGG2021_20010

Title: Discussion on the best observation area of uav semi-aerial transient electromagnetic method

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Abstract

The semi-airborne transient electromagnetic method (SATEM) works by laying a long wire source on the ground to provide power underground, which generates secondary field signals from a good conductor and collects time-domain electromagnetic response data in the air via a receiving system mounted on a UAV. This makes transient electromagnetic method no longer affected by the terrain and greatly improves the actual work efficiency, realizes repeatable measurement and time-shifting exploration of the target body, and greatly improves the safety operation of the surveyors in the field. This method is suitable for detecting in mountainous areas, undulation terrains and marshes, and has obvious advantages and effects for detecting underground good conductors, such as low-resistivity overburden, shallow coal seam, and water-filled goaf. Through the forward modeling of the vertical magnetic field response in the horizontal layered frequency domain, Hankle transformation and Gauss integration are performed, and then the induced electromotive force in the time domain is obtained through frequency-time conversion. The error is compared with the analytical solution of the transient electromagnetic response of the long conductor source of uniform earth ground deduced by Nabighian et al., which shows that the forward derived electromagnetic response results are accurate and reliable. Then, forward modeling of the uniform half-space model was carried out to analyze its electromagnetic field diffusion rule. The response value of the Vz component was mainly distributed on both sides of the online source in a symmetric distribution with equal magnitude and opposite direction. With the increase of time, the field value gradually diffuses to the outer space and gradually fills the whole space. The electromagnetic field in uniform half space diffuses slowly in the low-resistivity geological body and the field attenuation is slow, while in the high-resistivity geological body it diffuses quickly and the field attenuation is fast. With the increase of time, the forward derived response values decay exponentially, and the attenuation law is consistent with the smoke ring theory of Nabighian. However, in practical application, it is necessary to select the appropriate observation area under different device parameters for different target bodies with different characteristics to ensure that the intensity and distribution of signals are suitable for observation, post-processing and interpretation, so as to achieve the best detection effect. The preliminary conclusion is that the sensitivity of Vz component to the low-resistance target layer is much higher than that to the high-resistance target layer. The sensitive area of the target layer is located near the emission source, and with the increase of line source, the sensitive area will also respond to the increase.

ID: ICGG2021_20012

Title: Application and contrast of machine learning in carbonate lithofacies log identification

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Abstract

The machine learning method is the main technical means of carbonate lithofacies log identification. According to different geological conditions and data, choosing the appropriate machine learning method is the key to high-precision identification of lithofacies. However, for machine learning identification methods There are few researches on the applicability of, so this

article gives examples of the 4 most commonly used machine learning methods for identifying lithofacies, including self-organizing neural network cluster analysis (SOM), image-based multi-resolution Rate clustering analysis method (MRGC) and K nearest neighbor classification algorithm (KNN), and neural network method (ANN), by comparing the principle of the method and the practical application effect of the method, summarize the advantages, disadvantages and applicability of the four machine learning methods. In the case of a small number of core samples, MRGC is preferred Method, in the case of a certain amount of core data, KNN method is preferred. The application of lithofacies identification in the Longwangmiao Formation in the MX area of the Sichuan Basin shows that the MRGC and KNN method, have the best effect, then the SOM method, and the ANN method has the worst effect. Through the comparative study of the application effects of machine learning methods, it provides guidance for other layers and carbonate rock facies identification job in other regions, and has strong practical value.

ID: ICGG2021_20013

Title: The indicative significance of lithologic and lithofacies to shale oil sweet spot

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Abstract

Continental shale series are mostly formed through fine-grained deposition, resulting in complex lithology and lithofacies, and unclear understanding of which seriously restricts the exploration and development process of shale oil. In this study, neural network, decision tree and other methods are used to predict lithologic lithofacies based on logging response characteristics of different lithologic and lithofacies. On the other hand, organic geochemistry, scanning electron microscopy, nuclear magnetic resonance and other experiments were used to characterize the geochemical characteristics and reservoir characteristics of the samples. The coupling relationship between different geological parameters and lithologic and lithofacies is analyzed to determine the dominant lithologic and lithofacies, which provides some theoretical support for subsequent exploration and development.

Taking the lower 1st member of Shahejie formation in Raoyang sag as an example, multiple lithology developed in this area, such as dark gray mudstone, calcareous shale, oil shale and dolomitic mudstone, and it can be divided into six lithofacies, mainly felsic-rich shale and clayey-rich shale. The study found that shale and cloud rock organic matter content is high (between 0.14% and 5.54%, the average value is 1.99%); Sandstone, cloud rock and shale are highly frackable (brittleness index is between 0.41-0.96, the average value is 0.70); Calcium-rich shale and calcium shale have high oil content (S1 between 0.02 mg/g-2.25mg/g, the average value is 0.86 mg/g); The movable oil content of felsic-rich shale and calcium-rich shale are higher(between 0.001 mg/g-3.64mg/g, the average value is 0.33mg/g). The middle and upper part of the lower 1st member of Shahejie formation in Zhaohuangzhuang-Suning area, southwest of the study area, which lithology are mainly mudstone, shale and dolomite, and the lithofacies are mainly calcareous-rich shale, calcareous shale and felsic shale. It has good exploration and development prospects and can be used as a favorable area for shale oil exploration and development.

ID: ICGG2021_20043

Title: Structural style and hydrocarbon accumulation model in the southern margin of Junggar Basin: a case study of Well Gaotan-1

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Abstract

The southern margin of the Junggar Basin is rich in oil

and gas resources, with multiple sets of reservoir-cover assemblages developed. Similar to the typical pre-mountain tectonic zone in the world, the southern margin develops reversible thrusting structures, forming three rows of reversible folded zones with complex tectonic deformation. The Well Gaotan-1 is located in the Sikushu Depression, an alluvial zone on the southern edge of the Junggar Basin, and has set a high production record of over 1,000 tons of oil per day from a single well in an onshore clastic reservoir in China, indicating the great potential for oil and gas exploration on the southern edge. The tectonic style and combination, hydrocarbon reservoir formation mode and main control factors in this area are still unclear, which is an important factor limiting the in-depth exploration in this area. The Well Gaotan-1 has developed several sets of effective hydrocarbon source rocks, with various types of raw storage and cover combinations, rich trap types, superior hydrocarbon formation conditions and high exploration potential. In this study, based on the interpretation of seismic data, the combination of faults is determined according to the genesis linkage, key profiles are selected, and on the basis of well seismic combination, the profile characteristics and formation relationship of faults at all levels are analyzed through fine interpretation of seismic data to clarify the oil and gas filling process, and the matching relationship between tectonic evolution and oil and gas formation time and period is studied, and the results show that:(1) The southern margin has developed several sets of hydrocarbon source rocks, such as Paleo-Precord, Cretaceous, Jurassic, Triassic, Permian, etc., and the oil and gas from the Jurassic hydrocarbon source rocks in the Well Gaotan-1, and the Jurassic source rocks have the characteristics of oil and gas syngenesis and high hydrocarbon generation efficiency. (2) Large back-slope structures are developed in rows and bands, and the back-slope type tectonic trap is the most favorable target for reservoir formation with high oil and gas filling. (3) The Sikushu Depression Aika Tectonic Zone and Gaoquan Tectonic Zone are characterized by "two-phase superposition and double-layered structure", with Mesozoic compressional-torsional slip structures in the deeper layers and Cenozoic slip and punch structures in the shallow layers. (4) The southern edge of Junggar has the basic characteristics of continuous burial, successive hydrocarbon generation, multi-phase filling and late reservoir formation.

ID: CAGG2021_20000

Title: Aryl isoprenoids in the Cambrian source rocks and oils of the Tarim Basin

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Abstract

Correlation between oil and source rock in the Tarim Basin has been lasted for half a century, and a set of shallow conventional oil source correlation systems have been formed. However, the biodiversity of deep-ultra deep old strata is weak and the ground temperature is high. As a result, the common biomarker parameters have changed greatly, and the significance of the original indication of biological sources and sedimentary environment was lost, which cannot be used for oil source correlation of the Lower Paleozoic and older strata. Through the gold tube thermal simulation experiment, the saturated hydrocarbons and aromatics in the thermal simulation products were extracted and separated, and then GC-MS tests were carried out. The results show that the aryl isoprenoids changes little with the thermal evolution, and the relative concentration of aryl isoprenoids and other aromatic compounds can be used as an indicator for Cambrian oil and source correlation.

ID: GRP2021_20006

Title: Velocity profile of debris flow based on quadratic rheology model

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Abstract

Estimation of debris flow velocity generally bases on back analysis or Manning–Strickler equation. This paper presents a new approach for exploring the debris flow velocity distribution based on the quadratic rheology model. A total of 17 mature flow cases, including 10 granular flows and 7 muddy flows, were used to verify the validity of constant viscosity function with the results of experimental data, numerical method, and Takahashi method. The results prove that the velocities from constant method fit well with the numerical method, while Takahashi method always overestimate the velocity at upper layer for all cases and lower layer for muddy flows. Therefore, the quadratic rheology model is also applicable for muddy flows though it is developed on the experiments results of silt and sand. The Karman constant and depth with zero velocity at specified volumetric concentration in constant function is smaller than Takahashi method, which neglects the yield strength and viscous shear stress. Additionally, empirical relationships between Karman constant and depth with zero velocity at specified volumetric concentration were developed by the results of constant function and Takahashi method. Therefore, the newly developed constant function is suggested in debris flow numerical simulation work in future, as it performs better than Takahashi method.

ID: ICGG2021_20057

Title: Identification of altered volcanic rocks and its impact on Productivity: a case study of Carboniferous Formation in Chepaizi area, Junggar Basin

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Abstract

There are two characteristics of alteration in volcanic reservoir evaluation:①The formation of clay minerals, chloritization,claytization and kaolinization under strong alteration all make the physical properties and pore connectivity of the reservoir worse;②The clay produced by alteration usually contains a large amount of crystal water, which is filled in the pores and fractures of rocks，causing the false appearance of high neutron logging value， the decrease of density logging and resistivity logging while the increase of acoustic logging. The logging characteristics of two low and two high show good reservoir characteristic. However, the actual seepage characteristics of alteration zone are poor, which are invalid reservoir or poor reservoir.

Therefore, it is of great significance to identify the volcanic alteration zone. Taking the intermediate-basic volcanic rocks in Chepaizi area, Junggar Basin as an example， firstly analyzing the response characteristics of the cast thin section and logging curve, then the identification chart of the alteration degree of RT-Φ CNL reservoir was established by using sensitive logging curve. Based on the neutron and resistivity logging values, the alteration index Al was established and the alteration grade was divided into three: weak or no alteration (Al <12), moderate alteration (12<Al<27) and strong alteration (27<Al<80). With the increase of the alteration degree and clay content, most of the T2 spectrum of NMR logging shows micropores and small pores, while the number of large pores decrease, electrical imaging porosity spectrum is from wide to narrow, and the porosity spectrum of heavily alteration is narrow and discontinuous. The above methods are used to identify the alteration zone and analyze the effect of alteration on productivity. The results show that the chart of alteration index Al and test production can indicate the production capacity. Strong alteration will reduce reservoir productivity. This study has reference significance for the identification and evaluation of volcanic alteration zones in other areas.

ID: ICGG2021_20060

Title: Study on the influence of mineral components of shale oil from the Chang 7 member in Longdong area on mobility

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Abstract

With the expansion of the exploration and development of unconventional oil and gas resources, shale oil resources have become a hot spot for exploration and development. Shale reservoirs have small porosity and extremely low permeability, resulting in a large difference between actual resources and recoverable resources. Among them, the mobility of shale oil is an important indicator, and the amount of movable resources can be effectively estimated by evaluating the mobility. At present, there are still many difficulties in logging evaluation of movable oil that need to be tackled and studied. With the goal of establishing the dominant lithofacies and their planar distribution, this paper proposes the concept of component oil control for the first time, and establishes the relationship between mineral components and movable oil saturation. First of all, through elemental logging data, the lithofacies are divided into five main types of lithofacies using the component triangle diagram. Secondly, perform nuclear magnetic resonance experiments on the original core samples to obtain their T1-T2 spectra, and then vacuumize them for 100% oil saturation and centrifugal experiments. NMR experiments were performed on oil saturation and centrifugation respectively. The movable oil saturation can be obtained by removing the influence of kerogen in the original sample by the difference between oil saturation and centrifugation. Finally, by establishing the relationship between the components and the movable oil saturation, the indication of the dominant lithofacies and their planar distribution is realized, and favorable targets for future exploration in this area are optimized.

ID: ICGG2021_20016

Title: Characterization of Paleo-uplifts/lows of the Permian strata and Implications on Hydrocarbon Exploration in the Sichuan Basin, SW China

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Abstract

The Sichuan Basin has a great potential for hydrocarbon exploration. In recent years, high production wells have been discovered in deep hydrocarbon reservoirs, such as the Weiyuan and Anyue gas fields. Our recent studies suggest that the hydrocarbon accumulation in the Permian reservoirs in these two gas fields might be closely related to the distribution of paleo-uplifts/lows. Therefore, this research aims at understanding the characteristics of paleo-uplifts/lows of the Permian strata and their controlling effects on hydrocarbon migration/accumulation in the Sichuan basin. Firstly, the distribution patterns of paleo-uplifts/lows in the Permian strata at each critical geological period will be constructed by integrating stratigraphic contract characterization and spatial erosion calculation. The temporal evolution of the Permian strata at each critical geological period will then be revealed by restoring the upper strata sequentially. The distribution of paleo-uplifts/lows of the Permian strata at each critical geological period will be compared with the current oil/gas wells in the Sichuan basin, to investigate the important control of the paleo-uplifts/lows on the hydrocarbon migration and accumulation. The results of this research may provide useful hints for the hydrocarbon exploration of the Sichuan basin in the future.

ID: ICGG2021_20017

Title: Characteristics of micro-scale faulting deformation with high P-T and implications on petroleum significance,Ying-Qiong Basin, South China Sea

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Abstract

It is reported that over 75% of the hydrocarbon resources of the Ying-Qiong Basin are distributed in middle to deep depth, with high pressure and temperature. Therefore, it is of importance to understand both the micro-structural features (including micro-faults and fractures) high P-T deformation mechanisms, and their contribution to fluids flow. This research will firstly employ core sampling and micro-scale observation to identify and classify the micro-scale faults/fractures. The link between rock properties (including lithology and clay/quartz contents) and resultant micro-faults/fractures will be then evaluated. High P-T physical experiments will also be utilized to investigate the controlling effects of pressure and temperature on the development of micro-faults/fractures, improving our understanding in the deformation mechanisms of micro-faults/fractures with high pressure and temperature.Finally, petrophysical assessments will be conducted to reveal the impacts of micro-faults/fractures on the fluid flow properties of reservoir rocks in the Ying-Qiong Basin.

ID: ICGG2021_20018

Title: the study of multi-stage fault structure style superposition in Sichuan Basin.

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Abstract

abstract：In recent years, some areas, including Sichuan Basin, have achieved major breakthroughs in the Sinian and Cambrian Longwangmiao Formation. It is necessary to carry out a large number of exploration and research work around the basin. In particular, the multi-stage structural superposition in Sichuan Basin has formed a complex fault system, and its structural style and formation mechanism are not clear, which to some extent restricts the exploration progress. In order to cooperate with the research work of deep fault system in Sichuan Basin, the fault system developed under the background of multi-stage structural superposition in Sichuan Basin is selected as the research object to carry out physical simulation experiments. The formation mechanism of complex fault system in Sichuan Basin is proved, and its influence and control effect on oil and gas migration and accumulation in key areas are discussed.

ID: ICGG2021_20019

Title: Fine depiction of Mesozoic Era strata contact relationship and its tectonic geological significance in Sichuan Basin

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Abstract

The sedimentary sequence of Sichuan Basin from Sinian Period to Middle Triassic Epoch is dominated by marine carbonate rocks, and from Late Triassic Epoch to late Jurassic Epoch is dominated by continental clastic rocks. Due to the collision of the South China, North China and Qiangtang plates in the Late Triassic Epoch, the Longmenshan foreland basin was formed in Western Sichuan, and a large number of marine continental deposits were developed in the Triassic Period. Although a large number of studies have been carried out on the tectonic evolution of Sichuan Basin, the process of " marine continental conversion" and its control on sedimentation are still unclear. Based on 3D structural fine modeling technology, 42 sections in the basin were interpreted, and the roof-floor contact relationship of key strata in Mesozoic and Cenozoic Era in Sichuan Basin was finely depicted. The strata contact relationships of parallel-parallel unconformity, overlap-parallel unconformity, parallel-truncation unconformity and overlap-truncation unconformity were identified, and the plane distribution map of unconformity type was drawn up. The unconformity distribution map has a high degree of coincidence with the convex concave pattern of paleogeomorphology in each layer of Sichuan Basin, and can better reflect the control effect

of the "marine continental conversion" process on the marine and continental sedimentary range of Sichuan Basin, which is of great significance for the structural modeling of Sichuan Basin and the study of "structural sedimentary response" in the process of " marine continental conversion".

ID: ICGG2021_20028

Title: Key Controlling Factors for Biogenic-gas Accumulation in Deep-Water Rakhine Basin Offshore Myanmar

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Abstract

The Rakhine Basin is a Tertiary foredeep basin along the eastern fringe of the Bay of Bengal. Consecutive discoveries of biogas fields (Shwe, Thalin, Pyi Thit and Aung Siddhi) show that the Rakhine Basin has great exploration potential. However, the accumulation of biogas fields is complex and the main controlling factors of accumulation are still uncertain.

Based on the anatomical and statistical analysis of the 36 major biogas fields in the world, the biogas fields generally have eight main controlling factors, including young sediments, shallow burial depth, high sedimentation rate, rich content of organic matter, tectonic setting or structural traps, cap rocks, in-situ generation & charge and low temperature gradient. However, through analysis of TOC index and mechanisms of biogas accumulation, three factors are of great importance in Rakhine Basin.

First, according to geochemical analysis, when TOC is above 0.46%, the biogas generated can be greater than biogas adsorbed in the formation and dissolved in the formation water, and thus free biogas can be accumulation. In Rakhine Basin, the TOC is identified with the minimum of 0.5%.

Second, thin inter-bedded sandstones provide plenty of biochemical reaction interfaces, favoring methanogens to thrive and produce large amounts of biogas. The area of gas reservoir is only 40-60 km2, but the large-scale inter-bedded sandstones of the Shwe biogas field in the Rakhine Basin is 1500-2000 km2. It can be inferred that more than 1000 km2 of sandstone is conducive to the capture of biogas.

Lastly, the positive structure controls the enrichment and accumulation of biogas. The biogas fields are all on the north-south anticlines in the Rakhine Basin.

The study of the three key control factors can be applied to the biogas exploration in other deep-water sedimentary basins of continental margin in the world.

ID: ICGG2021_20035

Title: Study on logging response characteristics and identification methods of solid bitumen

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Abstract

Solid bitumen is widely distributed in many petroliferous basins around the world. Solid bitumen not only strongly damages the reservoir properties, but it is easily confused with oil and gas in the conventional classification logging interpretation, which seriously affects the effective recognition of oil and gas. Thus, it leads to a deceptive estimation of the reserve. Above all, present studies on bitumen are focused on the origin, geochemistry features and the effect on hydrocarbon migration and reservoir performance instead of logging identification. The effect of solid bitumen on logging parameters is only limited to qualitative and semi-quantitative studies.

Therefore, this study takes solid bitumen from the Jurassic Toutunhe Formation in Santai-Northern Santai of the Junggar Basin as an example and aims to quantitatively evaluate the impact of solid bitumen on the porosity, permeability, the mercury injection curve, resistivity, acoustic (AC) and NMR (Nuclear Magnetic Resonance) before and after the dissolution of bitumen-containing cores, as well as to establish the NMR identification method for solid bitumen, which provides a reliable basis for the quantitative calibration

of solid bitumen and the reserve calculation of hydrocarbons in the development and exploration of oil and gas.

The results show that solid bitumen can damage the pore structure of the reservoir and cause a reduction of porosity and permeability. The content of solid bitumen is linearly correlated with the change of porosity and permeability. After solid bitumen dissolved, the resistivity decreased, the longitudinal wave time difference (Vp) and shear wave time difference (Vs) increased, and the shear wave time difference changed noticeably. The content of solid bitumen is exponentially correlated with the change of resistivity, and linearly correlated with the change of longitudinal wave time difference and shear wave time difference. Solid bitumen had a short transverse relaxation time and a response range of 10-1000 μs (Peak 1) on the T2 map. Bitumen-containing sandstone had 3 peaks on the T2 map. Peak 1 decreased, while Peaks 2 and 3 increased after the solid bitumen dissolved. Solid bitumen can be characterized by a typical short time lag of the transverse wave, a bigger density porosity than the NMR porosity and small values of T1LM and T2LM, which led to an effective recognition of the layers of solid bitumen. The results are significant for the exploration and development of oilfields.

ID: ICGG2021_20041

Title: The impact of subsidence on the heterogeneity of the black shale of the Early Silurian Longmaxi Formation in the western Yangtze Block, South China

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Abstract

The Late Ordovician-Early Silurian is a period characterized by widespread strong tectonics, drastic climate change, and remarkable biological evolution. Although there is a consensus that the Yangtze Block was under a weak extruding tectonic setting during the Early Silurian the basin type remains under debate. However, others believed that the western Yangtze Block was an intra-continental basin of a passive continental margin resulting from a weak compressional setting. Thus, the process and mechanism of tectonic subsidence during the Early Silurian in the western Yangtze Block is unclear because of these two distinct interpretations of the tectonic background. The effect of the weak extrusion on the tectonic subsidence resulting from the collision between the Yangtze Block and the southeastern Cathaysia Block should not be neglected because of the remote transmission effect of compressive stress along the lithosphere

In fact, compared to the facies method and the geochemistry method, the paleontological method is the most effective means to calculate paleo-bathymetry. In this study, we used stratigraphic forward modeling constrained by oxygen isotope dating, graptolite zonation, and the paleobathymetry inferred by paleobiota to quantitatively reconstruct the tectonic subsidence history during the Early Silurian in the western Yangtze Block, South China, to understand the tectonic evolution of Yangtze Block at the northern margin of Gondwana.

Numerical modeling suggests that the convergence of the Yangtze Block and Cathaysia Block of the South China continent may have accelerated during the Early Silurian.It inferred from modeling results showing that the late tectonic subsidence rate during the regression (444.43–441.33 Ma) was at least three times that during the transgression (441.33–439.11 Ma). The accelerated tectonic subsidence was likely a result of extrusion stress because of the remote transmission effect of compressive stress along the lithosphere. The western Yangtze Block was not a true foreland basin at least during the Early Silurian. This subsidence acceleration during the deposition of the Lower Longmaxi Formation fundamentally controlled the evolutionary history of the paleoenvironment, paleoclimate and paleobiota. Tectonic-environmental change further controlled the formation of the marine graptolite-rich black shale, as well as its heterogeneity. Finally, it may provide quantitative clues linking the dynamic mechanism of the block motions of the

Chinese continent.

ID: ICGG2021_20044

Title: Study on migration characteristics and accumulation regulation of tight oil in Chang 8 Member of Yanchang Formation in Ordos Basin

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Abstract

The tight sandstone reservoir of Chang 8 member in Ordos Basin is adjacent to the high quality source rock of Chang 7 member, which constitutes the reservoir forming combination mode of “upper generation and lower storage” and has the geological conditions for forming large area continuous (quasi-continuous) tight oil. However, the exploration results found that some large sets of sandstone with good physical properties produced water during production test, while the well sections with relatively poor physical properties and changed frequently sand bodies produced oil during production test, which had the special phenomenon of "having holes and no oil, having sand and no oil, and producing water with good sand". In addition, there are obvious differences in the enrichment degree of tight oil in different blocks and different parts of the same block. The oil-water relationship is complex, and the characteristics of tight oil migration and accumulation and the main controlling factors of reservoir formation are unclear.

In view of the above problems, this study selected Jiyuan-huanxian, Xifeng, Huachi, Heshui and Ganquan five blocks, collected and collated a large number of stratification, logging, oil testing and other related data, Guided by the theories of petroleum and natural gas geology, reservoir geology and oil and gas geochemistry, and based on the previous research results, through core observation, microscopic thin section, scanning electron microscopy, high pressure mercury injection, microscopic fluorescence, saturated hydrocarbon chromatography, hydrocarbon generation simulation and other related experimental analysis and testing, the distribution of sand body, reservoir characteristics, combination and superposition of sand body, characteristics of source rock products of different small layers, oil-source correlation and accumulation dynamics in the study area have been studied, combined with the oil-water distribution characteristics of different blocks, through the analysis of tight oil accumulation in different blocks, the main controlling factors of tight oil accumulation in Chang 8 member are clarified, and the “three-dimensional accumulation, upper and lower distribution, differential accumulation” accumulation models of tight oil in different blocks are established.

The oil-water distribution of Chang 8 member in Ordos Basin is complex, and the enrichment degree of tight oil in different blocks is obviously different, which has the characteristics of “three-dimensional accumulation, upper and lower distribution, differential accumulation”, and the tight oil accumulation models in different blocks are established. In Jiyuan area, the source rocks of Chang 71 and Chang 72 are relatively developed, which can hinder the upward migration of crude oil generated by Chang 73, thus, the condition of "holding pressure" is formed, which is conducive to the accumulation of crude oil pour to Chang 8 member. In Xifeng area, Chang 71 and Chang 72 source rocks are not developed, but the overlying Chang 6 reservoir is very dense, which can also be used as a barrier layer to hinder the upward migration of crude oil. Chang 7 source rocks have three-dimensional hydrocarbon expulsion effect. Chang 71 and Chang 72 source rocks and Chang 6 tight reservoirs can be used as cap rocks of Chang 73 source rocks, thus forming a “hold pressure” condition, resulting in high enrichment of Chang 8 tight oil in Jiyuan and Xifeng areas and good exploration results. In Huachi and Heshui area, the source rocks of Chang 71 and Chang 72 are not developed. At the same time, the reservoir physical properties of the overlying Chang 6 member are good, which has the hydrocarbon accumulation characteristics of upper and lower distribution, the filling power is limited in the Chang 8 reservoir. Under the condition of limited charging force, tight oil in Chang 8 member is mainly controlled by the

combination of interlayer between source and reservoir and the change of internal structure of sand body. Thick homogeneous sand lacks shielding conditions and the degree of crude oil enrichment is low, the thin sand with frequent internal structure changes is easy to pinch out laterally, and the crude oil is highly enriched. In Ganquan area, the thickness of Chang 7 source rock is thin, and Chang 9 source rock is developed. The crude oil of Chang 8 member comes from Chang 9 source rock. Therefore, Chang 82 crude oil adjacent to Chang 9 source rock has high enrichment degree and good exploration effect.

ID: ICGG2021_20047

Title: Characteristics and evolution of faults in Western Lunnan Low Uplift of Tabei Uplift

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Abstract

The Lunnan Low Uplift, located on the Tabei Uplift of the Tarim Basin, is a giant compound oil and gas accumulation area with rich oil and gas reserves and a series of fracture-cavity oil and gas reservoirs controlled by faults. The research and analysis of the characteristics and evolution of the western faults in the Lunnan Low Uplift are beneficial to the later oil and gas exploration and development. Starting from the three aspects of geometry, kinematics and dynamics, through a comprehensive analysis of the characteristics and evolution of faults in the study area, it is found the tectonic movement of the Lunnan Low Uplift is based on the tectonic evolution of the Tarim Basin and is controlled by the Tarim stress field. It is different from the evolutionary stages of the predecessors. Based on the tectonic movement background and the characteristics of the fault profile in the area, this article will focus on the tectonic evolution of Western Lunnan Low Uplift. The fracture evolution is mainly divided into three phases: (1) The Lunnan Low Uplift formed the second and third grade strike-slip faults due to the nearly north-south weak extrusion stress in the Caledonian, for example, the Lungu West Fault and Lungu East Fault., this period mainly forms NNE, NNW, NE trending compressional and torsional strike slip structures, and its faults are mainly composed of basement conjugate "X" shear faults with NNE and NNW orientations. (2) The Lunnan area entered a compression-uplifting period during the Hercynian period. Due to the continuous action of the compressive torsional stress in the NW direction, the first grade thrust faults were formed, which formed the nearly east-west Sangtam fault and Lunnan fault, as well as the NE-direction Lunxi and Luntai faults, and some NW trending strike slip faults (3) The movement of the Lunnan Low Uplift in the Indosinian period was relatively stable. With the gradual relaxation of the compressive stress in the NW direction, the second grade thrust faults were formed and the fault distances were generally small, multiple groups of conjugate shear fault zones distributed in the NE and NEE directions were formed.

ID: ICGG2021_20055

Title: Mechanical Behavior and Microstructure Characteristics of Ultra-Deep Carbonate Rocks with Different Burial Depths

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Abstract

The rapid growth in energy demand brings more attention to the exploration and development of oil and gas in ultra-deep reservoirs. However, deep buried rocks in the special geological environment of the "three high" exhibit significantly different mechanical response characteristics and micro-structural features compared with shallow rocks, which requires more targeted experiments and theoretical researches. In this work, the carbonate rocks obtained from five different burial depths ranging from 6077m to 6738m are used to carry out quasi in situ triaxial compression tests under dry and saturated state respectively. Combined with the

digital rock modeling based on CT scan of partial samples, the variation laws of the macro-mechanical parameters and micro-structural parameters of the target formation with depth are analyzed. The results indicate that peak strength, residual strength, static and dynamic elastic modulus have no obvious correlation with burial depth, but the deeper samples show more remarkable ductility, the ratios of residual strength to peak strength increase as the burial depth. The developed fractures and caves result in poor correlation between the dynamic and static mechanical parameters, and the difference between saturated elastic modulus and dry elastic modulus decreases with burial depth. The distribution of pore radius, throat radius, pore-throat ratio and throat length for different depths are presented, and the results reveal that the mean pore-throat ratio is an important factor for the difference between dynamic elastic modulus and static elastic modulus. These results could provide certain reference to the research on deep rock mechanics.

ID: ICGG2021_20045

Title: Genesis mechanism of deep-water massive sandstone in continental lake basin and its significance in micro-nano reservoir storage system: A case study of the Yanchang Formation in the Ordos Basin

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Abstract

Genetic mechanisms of deep-water sandstones have attracted considerable attention in both the petroleum industry and sedimentology research. Deep-water gravity flow deposit processes are extremely complex, and the evolution of their internal fluid properties is variable. Current studies can only infer sedimentary genesis but cannot determine the overall sedimentary processes and their evolution, which could limit our understanding of the genetic mechanisms and distribution of deep-water sediments. Deep-water gravity flow deposits include rockslides, slumps, liquefied sediment flows, sandy debris flows, muddy debris flows, and turbidites. Of these deposits, debris-flow sandstones have good reservoir properties such as great thickness and wide distribution that have been gradually attracted more attention. Due to the lack of targeted research on debris-flow sandstones, especially the lack of reliable experimental data, there is controversy over the origin and genesis of floating mudstone clasts which are important sedimentary structures developed within massive sandstones.

In order to solve the above problems, this study takes the Yanchang Formation in the Ordos Basin as an example to obtain samples and experimental data. Based on field geological survey of two deep-water sedimentary outcrops in the southern Ordos Basin, X-ray diffraction analysis, elemental geochemical analysis and polarizing microscope observations were conducted to investigate the causes of various sedimentary structures inside the massive sand bodies from deep-water debris flow.

A genesis model of deep-water debris-flow sandstone is established. The results show that during the handling of the mass transport complexes in the basin slope, the soft sandy sedimentary layer with relatively strong shear resistance tears the soft muddy sedimentary layer with weak shear resistance and pulls various clumps inside the muddy layer. Finally, debris-flow massive sandstones with rich sedimentary structures are formed. Through argon ion polishing and field emission scanning electron microscopy analysis technology (FESEM), the debris-flow sandstones mainly develops micron-scale pores, and the pore radius is mainly distributed in the range of 1-8 um. The sedimentary rocks from the semi-deep lake to deep lake facies only have a small number of nano-scale pores, and the pore radius is distributed between 20 and 120 nm.

Controlled by multiple periods of geological events, debris-flow sandstone of different periods can be stacked on top of each other and interconnected in the

horizontal direction. Therefore, the sedimentary thickness is large and the distribution range is wide. Debris-flow sandstone has formed a "sweet spot" reservoir in the deep water sedimentary system. In addition, it is close to the lake basin hydrocarbon generation center, which is conducive to preferential capture of oil and gas. Although the storage performance of this type of reservoir is generally not as good as that of river-delta reservoirs, and the heterogeneous multi-porous medium formed by this kind of reservoir is also relatively complex. However, with the progress of oil and gas development technology, this kind of oil and gas resource has great exploitation potential and considerable commercial value.

ID: ICGG2021_20052

Title: Sedimentary characteristics and favorable reservoir prediction of fan-delta — A case study of Cretaceous Xiagou Formation in Kulongshan structural belt, Qingxi Sag, Jiuquan Basin

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Abstract

Fan-delta is a kind of sedimentary body formed by alluvial fan advancing from adjacent highlands to stable water bodies such as lakes and seas, and is an important type of oil and gas reservoir. The fan-delta sandy conglomerates are characterized by near provenance, fast accumulation, large variation of sand body thickness, complex lithology, low structural maturity and compositional maturity, and strong reservoir heterogeneity. According to the relationship between sediment supply rate and the increase rate of accommodation space, fan-delta can be divided into three categories which are progradation, retrogradation and accretion. Scholars have made abundant achievements in the concept, genesis and sedimentary model of fan-delta, but most of them focus on the progradation fan-delta. However, the research on the sedimentary period, distribution range, control factors of high-quality reservoir formation and prediction methods of degradation fan-delta is still weak, which restricts the fine exploration and development of fan-delta sandy conglomerate reservoirs.

Therefore, this study took the Cretaceous Xiagou Formation (K1g) of Kulongshan structural belt in Qingxi Sag of Jiuquan Basin as an example, using logging and seismic data, guided by high resolution sequence stratigraphy theory, to establish fine isochronous stratigraphic framework. Combined with core description, rock mineral composition analysis, sedimentary distribution and evolution of main producing strata were clarified. Through a large number of statistical analysis of experimental data, observation of casting thin sections and cores, the reservoir characteristics, types and main controlling factors of favorable reservoir were summarized. Deep learning nonlinear inversion technology which was with combination of well and seismic data was used to predict favorable reservoir distribution.

The results show that the Cretaceous Xiagou Formation (K1g) in Kulongshan structural belt was a complete long-term base level cycle as a whole. The transform surface between descent and ascent half cycle was the maximum flooding surface which was located in the middle of K1g1. The main production layers K1g1 and K1g0 can be divided into four medium-term base level cycles (MSC1~MSC4), which were equivalent to sand sets, and eight short-term base level cycles (SS1~SSC8), which were roughly equivalent to oil groups. The fan-delta was dominated by regressive fan-delta, and three major provenance systems were developed in the west, south and east of Kulongshan structural belt. With the continual rise of base level, the development of the sandy conglomerates in fan-delta was gradually weakened. And with the gradual migration of sandy conglomerates to the edge of the sag, and the distribution area of fan-delta was gradually reduced. Reservoir physical properties were generally poor, most of which were ultra-low porosity and ultra-low permeability. Fractures were an important factor in improving reservoir physical properties, which

together with secondary pores constituted the main reservoir space. The formation of favorable reservoir was closely related to sedimentation and structural transformation, and favorable reservoir area was predicted to be 14.7km2.

ID: ICGG2021_20064
Title: The application of adaptive weighting high resolution inversion method in Changbai Mountain volcanic characteristics inversion
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Abstract
In order to improve the vertical resolution of three-dimension density inversion, we propose a high-resolution gravity inversion method with adaptive weighting based on the fact that using different weighting functions for different depth sources in the inversions can obtain more convergent inversion results. The adaptive weighting function is designed depending on the slope of the radial logarithmic power spectrum of gravity anomaly to improve the vertical resolution, and the cross-gradient technique is introduced as a structural constrain in the inversion objective function to further improve the resolution of the density results. Through model tests, it can be proved that the spatial resolution of the inversion results has been significantly improved by the proposed method, and this method is robust to noise.
Tianchi volcano in Changbai Mountain is a dormant volcano. If the volcano erupts again, it will cause unpredictable damage. Therefore, the academia has been carrying out the exploration and monitoring of the volcano, and the core problem is to determine the location and scale of magma chamber. The magma chambers are low velocity, low resistivity, high temperature and low-density pasty materials. The location of magma chamber is deep, so using gravity data is one of the most ideal research methods. However, the vertical resolution of gravity data is insufficient, so it is difficult to get the accurate location of magma chamber and magma channel by traditional density inversion method. This method is applied to the inversion of gravity data from Grace in Changbai Mountain area. According to the inversion results, the positions of magma chamber and magma channel are obtained, which is of great significance to the observation of volcanic activity in Changbai Mountain area.

ID: ICGG2021_20065
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Abstract
At present, all geophysical inversion methods are troubled by multiple solutions. The gravity and magnetic equipotential field methods have relatively high horizontal resolution, while the seismological methods have strong vertical resolution. Therefore, the joint inversion of seismic and gravity data underground structure can complement and constrains each other and improve the spatial resolution. The combination of the two data also weakens the limitation of data volume and makes the inversion results more stable and reliable. Existing joint inversion methods including sequence inversion, simultaneous inversion, cross-gradient inversion, the former two are restricted by speed-density experience relationship, joint inversion and cross-gradient for different model of physical parameters of structural similarity, velocity and density is a reflection of the structure which has the very good consistency, Therefore, the joint inversion method of gravity and seismic data based on the constraint of cross-gradient function is commonly used. This inversion method uses structured grid for calculation, but for terrain relief, irregular model and other cases, it is difficult to obtain high-precision inversion results under regular grid.
The unstructured grids are more flexible in building the model of any shape, and can better fit the situation of

undulating terrain, and finally obtain high resolution inversion results. Therefore, a joint inversion method of cross-gradient of gravity and seismic data under 2D unstructured grid is proposed to solve complex problems such as topographic relief, regular model and irregular model.

The results of theoretical model tests show that, the joint inversion under irregular grids has higher resolution results compared with the joint inversion under regular grids. It also can better recover physical parameters and obtain more accurate position information for both rugged terrain and irregular models, and has strong anti-noisy. We also applied this method to real data in Luzong ore concentration area, and the results show that, the proposed method can accurately estimate the distribution of underground potential mining areas, and obtain higher resolution inversion results compared with the joint inversion method under regular grids.

ID: ICGG2021_20073

Title: Preliminary Study on the Classifications of Superimposing Units in Sichuan Basin

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Abstract

As a typical superimposed basin in western China, the Sichuan Basin has undergone complex tectonic evolution. Its evolution includes following five episodes: the basement development stage before the Sinian, the marine craton basin from the Sinian to the end of the Middle Triassic, entering the continental craton basin after the Late Triassic, the foreland basin development stage during the Cretaceous, and extensive uplifting and denudation stage after the Late Cretaceous. The Sichuan Basin has different uplift or sag patterns in different geological historical periods, with distinct superposition of deposition areas and erosion areas. This article is based on the analysis of the basin superimposition process and the vertical superimposition relationship between the main uplift and the rift (trough), combined with the theory of basin superimposition units. The superimposing units in Sichuan Basin are divided into three types: intense denudation type (Ⅰ), gentle denudation or residual type (Ⅱ), and composite type (Ⅲ). Among them, type Ⅰ is featured by suffering so intense denudation that little stratum left in specific time, including two sub-types such as denudation in Caledonian (Ⅰ1) and denudation in Indosinian (Ⅰ2). Type Ⅱ can also be subdivided into Silurian strata left (Ⅱ1), Cretaceous strata left (Ⅱ2) and Carboniferous left (Ⅱ3). It's characteristic of type Ⅲ that it suffered both intense denudation and gentle denudation in different historical periods. The superimposing units of the three major categories and six sub-categories have experienced different burial denudation processes and burial histories, and thus have different petroleum geological conditions. The division of superimposing units in the Sichuan Basin can be used to analyze and evaluate the petroleum geological conditions of the Sichuan Basin. This paper provides a new idea and methods to support for the discovery of favorable exploration areas.

ID: ICGG2021_20023

Title: Canonical analytical solutions of wave-induced thermoelastic attenuation for Cavity and fined layered

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Abstract

Thermoelastic attenuation is similar to wave-induced fluid-flow attenuation (mesoscopic loss) due to conversion of the fast P wave to the slow (Biot) P mode. In the case of thermoelastic, the energies of P wave and S wave are lost due to thermal diffusion. The heat mode is diffusive at low frequencies, while, wave-like at high frequencies, as same as the Biot slow mode in term of manner. This means that thermoelastic equation and poroelasticity equation can be compared mathematically without considering the external force.

We study thermoelastic dissipation for elliptical cavities (or pores) in two dimensions, and a succession of thin layers with a random, uncorrelated distribution of the Grüneisen ratio is allowed to vary. The results of typical quality-factor relaxation and phase velocity curves are similar to Zener's calculation. For elliptic cavities. For layers a random, uncorrelated distribution, the peak of random is broader than that of layered harmonic, suggests that a distribution in slab thickness will further reduce the frequency dependence of Q, and the low frequency limit and high frequency limit of velocity is independent with thickness. Although these canonical solutions are ideal, which are helpful for study the physics of thermoelasticity and testing the numerical algorithm code that simulate thermoelastic dissipation.

ID: ICGG2021_20053

Title: Brittleness Evaluation of the Triassic 7th member of Yanchang Formation in Ordos Basin

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Abstract

The brittleness evaluation of shale is systematically studied by means of experimental test, theoretical analysis and case study. The purpose of this study is to calculate the brittleness index of the 7th member shale of the Yanchang formation of the Triassic by using the mineral analysis of shale samples and combining the conventional logging data with the degree of foliation. The mineral composition of shale samples was determined by X-ray whole rock diffraction (XRD). The content of brittle minerals was obtained. The rock mechanical parameters of 30 samples with different stratification tendencies drilled from the same outgrowth shale in the field were determined by the uniaxial compressive strength (USC) test. Young's modulus and brittleness index were obtained. Based on the above research, it is concluded that the brittleness increases with the increase of bedding dip Angle. In addition, this paper also built a shear wave prediction model based on the shale logging data from well 5-10 in Zhenjing, Zhangjiatan, the 7th member of the Yanchang formation. The shear wave time difference of other Wells is calculated. Then, brittleness index of each well by elastic modulus and poisson ratio are also calculated. Five typical Wells were taken to evaluate their longitudinal brittleness index, and another 10 Wells were taken to comprehensively evaluate their transverse brittleness index through structural contour plot. Finally, the distribution characteristics of the study area is analyzed.

ID: ICGG2021_20056

Title: classification of burial dolomite and development of burial dolomite reservoir

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Abstract

Burial dolomite is one of the main components of thick massive dolomite, which is largely developed in the lower Paleozoic of the Tarim, Sichuan, and Ordos basins with huge potential for hydrocarbon exploration, however, there has been no greater breakthrough in oil and gas exploration, due to the lack of understandings of the formation process, identification marks and development rules of related reservoirs of burial dolomite. Lower Ordovician Penglaiba formation in Tarim Basin is considered as a typical buried dolomite, and it is well exposed in the northwest of the basin, which provides a good place for further study on the origin and development of burial dolomite and related reservoirs. This paper focuses on the Yonganba Outcrop in Aksu area. On the basis of detailed outcrop section measurement and sedimentary petrological analysis, we carried out detailed petrological analysis including thin section, cathodoluminescence, trace and rare earth elements mapping, order degree, and geochemical analysis of carbon and oxygen isotopes, strontium isotopes, trace elements and rare earth

elements, laser U-Pb dating technology and magnesium isotopes, in order to understand the formation mechanism and development of burial dolomite. Furthermore, this study provides the combination of petrological analysis and dissolution simulation experiment to understand the pore genetic mechanism and control factors of dolomite reservoir, so as to guide the oil and gas exploration of deep buried dolomite. Based on the petrological and geochemical analysis, it is considered that the burial dolomite of penglaiba formation should be further divided into two types: buried dolomite formed by recrystallization of penecontemporaneous dolomite in shallow burial period (type I burial dolomite), It includes algal laminar dolostone, fine to medium crystalline dolostone, and buried dolostone (type II) directly formed by replacement of Limestone during burial period, mainly coarse crystalline dolostone. Diagenetic sequence and laser U-Pb dating reveal that the two types of dolomites have different formation periods, the former was formed in the penecontemporaneous period to shallow burial period, the latter was formed in the shallow burial period and continued to the middle to deep burial period, corresponding to the tectonic activity stage; it is clear that there are three sources of dolomite fluid of synsedimentary seawater, seawater-derived formation fluid and Cambrian formation fluid. Based on the distribution characteristics of trace elements and magnesium isotopes, the model of dolomitized fluid migration and dolomitization process is established, and it is pointed out that the formation of large-scale dolomite is controlled by sedimentary background and tectonic evolution. Petrography analysis indicates that the formation and evolution of pores are closely related to lithofacies, dissolution, dolomitization and silicification. Furthermore, dissolution simulation experiments show that burial dissolution is controlled by preexisting porosity. Furthermore, It is concluded that the main controlling factors of large scale and high quality dolomite reservoir in penglaiba formation include four aspects: 1) dolomitized granular beach is the material basis of the large scale reservoir development; 2) penecontemporaneous dolomitization is the necessary condition for reservoir preservation; 3) multi-stage dissolution modification is the key to reservoir quality improvement; 4) tectonic and burial history determine the development state of large scale high-quality reservoir, which is mainly controlled by facies and by tectonic movement. Therefore, the large-scale and high-quality dolomite reservoir is the result of I-type burial dolomite and epigenetic transformation, which provides an important guideline for the exploration in deep burial dolomite realm.
KeyWords: burial dolomite, dolomite reservoir, Tarim Basin, Penglaiba Formation

ID: ICGG2021_20015

Title: Research on baseline-removing drift filtering method for semi-airborne transient electromagnetic

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Abstract

The semi-airborne transient electromagnetic method uses ground emission and aerial acquisition to detect. By transmitting bipolar square wave pulse current to the ground, a pulse magnetic field is established.During the interval of the primary electromagnetic field, the measuring coil carried by the UAV is used to collect the induced secondary electromagnetic field which changes with time and is generated by the vortex field caused by the excitation of the underground good conductor. By analyzing and processing the information of the secondary field, the general distribution of the underground medium is obtained.Baseline drift in semi-airborne transient electromagnetic signal processing is an important factor affecting the quality of transient electromagnetic signals. There are many methods to remove baseline drift.In this paper, two kinds of simple and practical fast filtering algorithms-moving window median filtering algorithm and low-pass filtering algorithm are introduced. Based on the simulated baseline drift signal and measured data, the results of two different filtering methods in removing baseline drift are compared and

analyzed. It shows that both filtering methods can effectively remove baseline drift, and moving window median filtering method is slightly better than low-pass filtering method.Both methods have certain reference value for removing baseline drift in semi-airborne transient electromagnetic signal processing.

ID: ICGG2021_20049

Title: Genetic types and geological significance of micro pores in tight sandstone reservoirs: a case study of the ultra-deep reservoir in the Kuqa foreland thrust belt, NW China

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Abstract

For many years, the influence of micro pores on hydrocarbon production in high porosity reservoirs was limited. However, micro pores show great reservoir significance in low or ultra-low porosity reservoirs. With the exploration and development of tight oil and gas, micro pores (pore diameter < 30 μm) in reservoir play an increasingly important role in the occurrence and migration of oil and gas. It is particularly urgent to study the types, characteristics, genesis of micro pores in tight sandstone reservoirs and the response to reservoir physical properties. Taking tight sandstone of Cretaceous Bashijiqike Formation in the ultra-deep (> 6000m) of Kuqa foreland thrust belt as an example, 122 representative experimental samples were selected. Based on the quantitative observation of casting thin sections and conventional porosity and permeability test, the types, characteristics, genesis and influence on porosity and permeability of specific samples were analyzed by means of laser confocal microscopy, field emission scanning electron microscopy, electron probe and high pressure mercury injection. Based on the gas molecular kinematics theory, the movement characteristics of CH4 gas molecules in micro pores under ultra-deep and ultra-high temperature and pressure were analyzed. Nanoscale micro pores are dominantly found in tight sandstone reservoirs of the ultra-deep Cretaceous Bashijiqike Formation in Kuqa foreland thrust belt, including intergranular micro pores, intragranular micro pores and intercrystalline micro pores. The intergranular micro pores are controlled by the particle size and shape structure, and are dispersed in the matrix, showing the level of micro-nano scale. There are two main types of intergranular micro pores. One is developed between the crystal of clay minerals, which is the product of recrystallization of clay minerals caused by dissolution of intergranular argillaceous matrix, among which illite and chlorite intergranular micro pores are the most common; the other is the residual intergranular micro pores of gypsum, calcite, dolomite and other intergranular cementation or fracture filling minerals after non-linear contact, and the shrinkage intergranular micro pores produced during dolomitization. The morphology of intergranular micro pores is controlled by the contact mode of crystal, and the size is controlled by the crystal size and shape, which is generally nanoscale. Intragranular micro pores refers to the part of pores developed in the interior of clastic particles and disseminated under the casting of microscope, but it is difficult to determine the geometric structure and plane porosity of the pores. It can also be divided into two types, one is developed in quartz and fractured dolomite filling crystals and the other is micro pores formed by partial dissolution of feldspar particles. The results show that the development degree of intragranular micro pores is the highest in the region, the long axis radius is generally within 1 μm, and the short axis radius is generally within 500 nm. Meanwhile, the intragranular micro pores are the main type of micro pores, and also distribute at the level of nanoscale. The micro pores are caused by secondary causes, supplemented by primary ones and the dissolution transformation is the key of secondary genesis. The porosity of the reservoir is about 2.8% in this region, and the contribution rate of micro pores to reservoir porosity decreases with the increase of porosity, indicating that the role of micro pores in high porosity reservoirs is very small. The throat of the reservoir connecting the micro pores distribute at the level of nanoscale, with pore throat

radius of 2-400 nm and peak value of 5-50 nm. The pore throat radius which plays a major role in permeability is 20-400nm. Under the condition of high temperature and pressure, the diffusion mode of CH4 in the micro pores is Knudsen diffusion, which shows viscous flow and makes a great contribution to natural gas production. Different types of micro pores typically possess different size, geometry, connectivity and gas occurrence and migration characteristics. Under the conditions of ultra-deep, ultra-high pressure and ultra-high temperature, the existence of a large number of micro pores breaks through the inherent reservoir significance of traditional reservoirs. Scientists can expand their horizons to the migration and storage of methane molecules in the field of micro materials, so as to provide references for promoting the scientific exploitation and production of tight oil and gas and improving recovery.

ID: ICGG2021_20026

Title: Seismic facies analysis and application of shale gas in Luzhou area, Sichuan Basin

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Abstract

Seismic facies is the appearance of reflected wave in seismic reflection time profile. Seismic facies analysis is to use seismic attributes to extract seismic information, make full use of the internal structure and external shape of seismic reflection, and combine the characteristics of amplitude, frequency and continuity to study the information about the geometric shape, kinematic characteristics, dynamic characteristics and statistical characteristics of seismic wave contained in seismic reflection wave, which can reflect the special geological phenomenon and subsidence from many aspects Seismic facies analysis has become an important means of fine reservoir description. For the shale formation in Luzhou area, Sichuan Province, although the current seismic resolution is still difficult to achieve the accurate identification of a single small layer, 3D seismic attribute analysis can objectively reflect the difference characteristics of the reservoir. Through drilling calibration and sedimentary facies analysis, this difference reflects the heterogeneity characteristics of the reservoir to a certain extent, and reflects the distribution of the reservoir thickness. Root mean square amplitude (RMS) represents the square root of the energy (amplitude square) in the time domain in the time window. It can be used to show isolated or extreme amplitude anomalies, and its lateral variation can be used to study the formation lithology change, physical property and gas bearing property. The root mean square amplitude attribute is sensitive to the formation amplitude information. This time, the root mean square amplitude is used for seismic facies prediction.

ID: ICGG2021_20051

Title: Paleocave identification from 3D seismic data using deep learning in the Tarim Basin, Northwest China

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Abstract

Paleocaves are important hydrocarbon reservoirs for many giant oilfields such as the Ordovician carbonates in the Tarim Basin, the collapsed paleokarst systems in the Fort Worth Basin. Especially, the Ordovician Paleocaves in the Tarim Basin are always non-filled or half-filled caves deeply buried below 5000m according to drilled wells, and are difficult to be identified precisely from 3D Seismic data with conventional seismic attribute methods. We propose a method based on deep learning to automatically identify paleocaves from 3D seismic data. The proposed deep learning model consists of Encoder and Decoder, and also employs convolutional layers and residual connections. The deep learning model is trained on synthetic paleocaves and simulated seismic data as input and labels. The synthetic paleocaves integrate geologic

knowledge such as the size and shape of paleocaves acquired from outcrops and drilled wells. Wavelets extracted from wells and field seismic data are employed to generate field-like simulated seismic data. Results on the field seismic data in the Tarim Basin show that the proposed method performs better than conventional seismic attribute methods and other pre-trained deep learning models. The visualized 3D feature maps inside the Black Box of deep learning models indicate that the deep learning model could automatically extract information related to paleocaves from 3D seismic signals. This help understand how deep learning works for paleocave identification and increase the confidence of its application in real cases.

ID: ICGG2021_20011

Title: Lithology identification of collapsed formation based on logging curve reconstruction technology

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Abstract

As essential data for petrophysical analysis, lithology identification using logging data is an important application of geophysical analysis technology, and the quality of logging curve plays an important role in lithology identification. In general, acoustic logging and density logging directly affect lithology identification. However, in some shale formation, borehole collapse leads to poor logging quality, acoustic logging is less affected, while density logging is distorted in the collapsed formation, resulting in low accuracy of lithology identification. In this paper, a petrophysical analysis method based on logging curve reconstruction technology is proposed. By reconstructing logging curve, the quality of logging curve, especially density logging, can be significantly improved, and then lithology identification can be carried out. Taking the collapsed formation as an example, because of borehole collapse, sandstone, shale and igneous rock cannot be identified by using the original logging data. By means of the cross plot method, sandstone, shale and igneous rock can be identified by using the reconstructed logging data. Through analysis, sandstone has low wave impedance, low P/S wave velocity ratio and low gamma; shale has high wave impedance, high P/S wave velocity ratio and high gamma; igneous rock has low P/S wave velocity ratio and high wave impedance. Therefore, for seriously collapsed borehole, the logging curve reconstructed by petrophysical modeling can be effectively used for lithology identification.

ID: ICGG2021_20030

Title: Anisotropic media tomography based on automatic horizons picking

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Abstract

Tomographic inversion is a widely used velocity modeling method in exploration seismic field, which can effectively invert the velocity of underground media velocity. However, in the conventional reflected wave tomography inversion method, it is difficult to pick up the traveling time information, which ultimately leads to low accuracy of the inversion result. Adding horizon position as a regularization constraint in the tomography process can solve the above problems, but the existing horizon picking relies on manual picking, which is time-consuming, laborious and low precision. This paper proposes a new strategy for automatic horizon picking. First, adaptively stacks the ADCIGs (angle domain common image gathers), then filters the profile in data domain, finally uses a seismic DNA algorithm based on cluster analysis and multiple connection algorithms to automatic pick horizons. The horizon is used to regularize the ray tracing and tomographic equations, and different parameters are updated according to the residual residuals of ADCIGs in different angle ranges to

achieve effective inversion of the anisotropy parameters of VTI media.

ID: ICGG2021_20034
Title: Seismic Data Reconstruction Using Shearlet and DCT Dictionary Combination
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Abstract
A single mathematical transformation will lead to incomplete sparse representation and harmful reconstruction effects during seismic data reconstruction. Morphological Component Analysis (MCA) provides a new solution to this problem. It decomposes the signal into different components, selects suitable dictionaries for component reconstruction according to each component's characteristics, and superimposes these reconstruction data to obtain the final results. This paper proposes a new dictionary combination of Shearlet and DCT under the MCA framework based on the former studies (Zhang YiKui, 2020) to fully represent the overall and partial characteristics of seismic data.

ID: ICGG2021_20046
Title: Travel time tomography in elastic wave imaging domain based on ADCIGs
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Abstract
First, in the framework of elastic vector wavefield, we derive the multi-wave joint tomographic velocity inversion equation and the conversion relationship between the travel time residual and the residual curvature of the ADCIGs. A travel time tomographic inversion method in the imaging domain using vector wave angle gathers to update the P-wave and S-wave velocities is also proposed. Secondly, considering that most of the calculations in the tomographic inversion iteration process are used for migration imaging and ADCIGs extraction, the elastic vector wave Gaussian beam pre-stack depth migration is a fast and flexible way to generate multi-wave joint angle gathers. The imaging method is based on elastic wave ray theory together with travel time tomography. It is a good method to construct multi-wave joint tomography inversion. Therefore, this process uses Gaussian beam migration to achieve vector wavefield imaging and extract ADCIGs. Finally, the correctness, effectiveness and practical value of this method are verified by model trial calculation and actual data processing, and it is proved that it can provide high-quality pre-stack velocity field for elastic vector wave combined depth migration.

ID: ICGG2021_20021
Title: Application of 3D acquisition design technology in HCX gas storage project
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Abstract
In view of the shallow buried depth of the target layer and it is difficult to obtain high-quality seismic data of HCX gas storage project, based on the acquisition pa-rameters of the adjacent area, the 3D acquisition technical scheme is designed for focusing on the imaging of the top of HCX high-steep anticline. By optimizing the ac-quisition parameters and the excitation and receiving conditions, the acquisition of high-resolution and high signal-to-noise ratio seismic data is guaranteed to meet the demand of fracture prediction and reservoir prediction.

ID: ICGG2021_20071
Title: Classification of void space types in

fractured-vuggy carbonate reservoir using geophysical logging: A case study on the Sinian Dengying Formation of the Sichuan Basin, Southwest China

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Abstract

The fractured-vuggy carbonate reservoirs show strong heterogeneity, and need to be classified into different types for finely characterization. In this study, a total of 134 cores from six drill wells and six outcrops of the Deng #2 and Deng #4 sections of the Dengying Formation, Sichuan Basin, Southwest China were selected to investigate the morphology characteristics, pore size distribution, and density of void spaces in the fractured-vuggy carbonate reservoirs . In this study, four void space types (VSTs) were observed: solution-filled type (SFT), cement-reduced type (CRT), solution-filled breccia type (SFBT) and solution-enlarged fractures and vugs type (SEFVT). The CRT void spaces have the largest porosity and permeability, followed by the SEFVT, SFBT, SFT. Geophysical logging techniques, including the density (DEN), sonic-interval transit time (AC), neutron logging (CNL), double lateral resistivity logs (RD and RS), the natural gamma (GR) and caliper (CAL), were employed to identify and predict the VSTs. CNL was used to distinguish the SFT and CRT from the SFBT and SEFVT because of the high average CNL of SFT and CRT. The average high DLL values of the SFT were used to distinguish the SFT from the CRT. Based on the geologging differences of four VSTs, an identification method of VSTs using the Bayes discriminant analysis (BDA) was proposed in this study. A test well was empolyed for validation of this method, and the results show that there is a good agreement between identification results and core description. Vertical distribution of VSTs shows that the SFT and SEFVT are well distributed in both the Deng #2 and Deng #4 sections, the CRT is mainly in the Deng #2 section, and the SFBT occurs in the top and middle of the Deng #4 section.

ID: ICGG2021_20058

Title: A new method for evaluating the fractureability of deep carbonate reservoirs

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Abstract

The development of the supply and demand of global oil and gas resources has made deep oil and gas development a strategic requirement for all countries. The traditional fracturing evaluation method of carbonate reservoirs is based on rock brittleness or mineral composition. However, due to the fracture-cave structure and complex in-situ stress state in deep carbonate reservoirs, it is difficult for traditional methods to achieve the expected results in the fracturing performance evaluation of deep carbonate reservoirs. In this paper, combining petrophysical experiments, well logging data and digital rock technology, a new method for evaluating the fracturability of deep carbonate reservoirs is proposed. This method comprehensively considers macro-mechanical parameters such as reservoir brittleness, in-situ stress state, and tensile strength; Introduce the fracture complexity based on digital rock modeling and the correction factor based on the variance of the porosity spectrum in the logging data; Fracturing evaluation parameters are constructed in a weighted manner. This method can provide technical support for deep carbonate reservoir development and potential tapping measures.

Part V Instructions for Presentations

Oral Presentation

Devices Provided by the Conference Organizing Committee:

- Laptops (with MS-office & Adobe Reader)
- Projectors & Screen
- Laser pointer

Materials Provided by the Presenters:

- PowerPoint or PDF files

Duration of each Presentation:

- Regular Oral Session: 10-15 Minutes of Oral Presentation
- Keynote Speech: 40-45 Minutes of Keynote Speech

Poster Presentation

Materials Provided by the Conference Organizing Committee:

- X Racks & Base Fabric Canvases (60cm×160cm, see the figure below)
- Adhesive Tapes or Clamps

Materials Provided by the Presenters:

- Home-made Posters

Requirements for the Posters:

- Material: not limited, can be posted on the Canvases
- Size: smaller than 60cm×160cm
- Content: for demonstration of the presenter's paper

Part VII Hotel Information

About Hotel

Guilin Grand Link Hotel 桂林桂山华星酒店
Guilin Grand Link Hotel locates on the bank of Li River in the beautiful city of Guilin which enjoys the fame as “having the best scenery in China”. Facing the city badge the Elephant Trunk Hill across the river and adjacent to the Seven Star Park and ZiZhou Island Park. It is only 10 minutes’ ride to the downtown city, the railway station, the Hi-tech Industrial Zone and International Exhibition & Conference Center, 45 minutes to Guilin Liangjiang International Airport. It is the only luxury garden resort hotel on the Li River bank and near the gardens.

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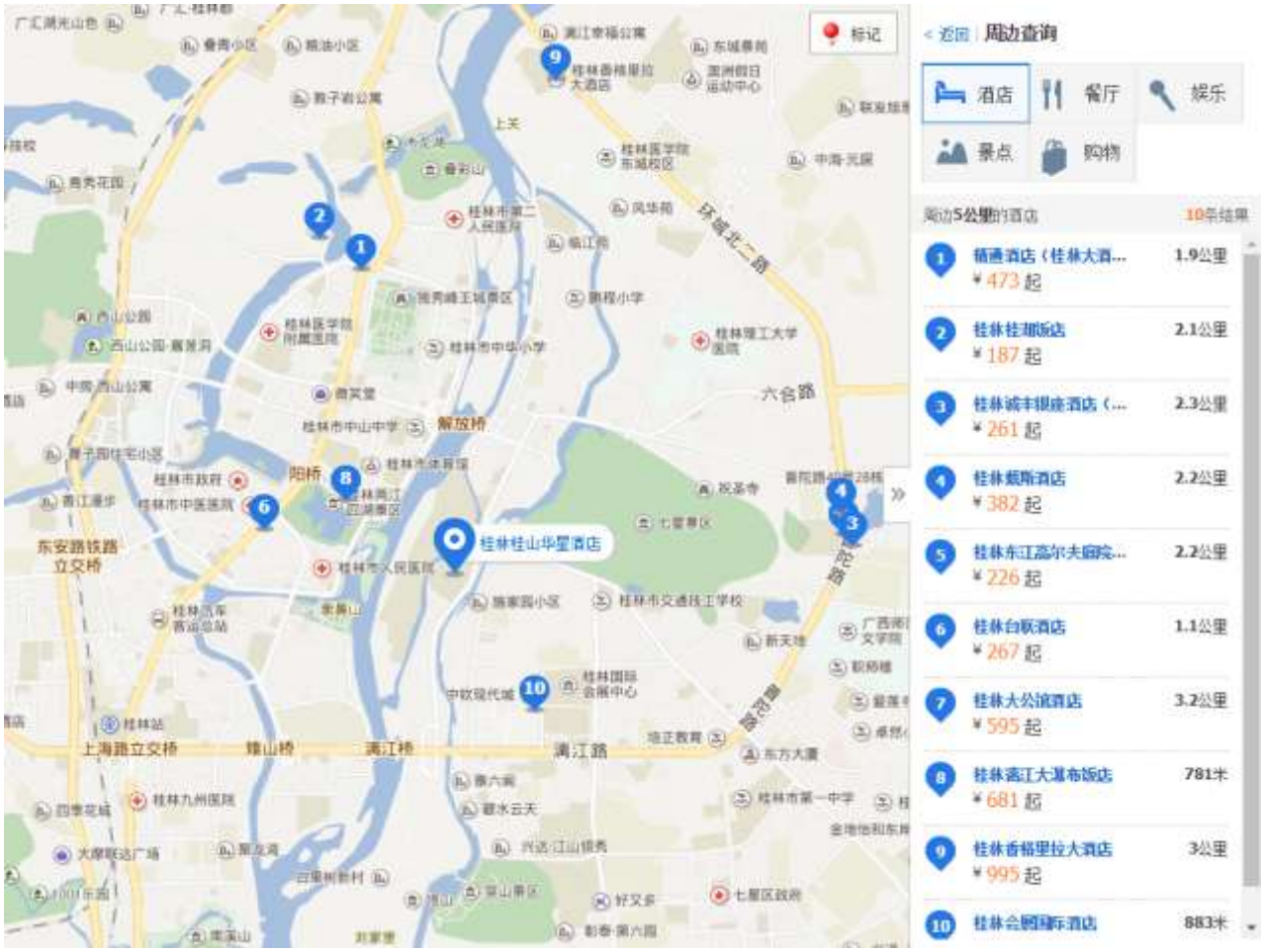

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