Official Program

GEM 2019 Xi'an
International Workshop on Gravity, Electrical & Magnetic Methods and Their Applications

Chang'an University
Xi'an, China
19–22 May 2019

Society of Exploration Geophysicists (SEG) www.seg.org
Chinese Geophysical Society (CGS) www.cgs.org.cn
Welcome to GEM 2019 Xi’an

On behalf of the Organizing Committee, we would like to welcome you to Xi’an and “GEM 2019 Xi’an”, an International Workshop on Gravity, Electrical & Magnetic Methods and Their Applications, co-organized by the Society of Exploration Geophysicists (SEG) and the Chinese Geophysical Society (CGS).

This is the third GEM Workshop. The CGS and SEG joined hands to organize the first workshop in Beijing in 2011 and the second in Chengdu in 2015. Held every four years, The GEM Workshops are becoming an attractive and significant event for geophysicists working on gravity, magnetic, and electromagnetic exploration methods. The goal of the GEM Workshops is to bring together experts from academia, government agencies, resources companies, and contractors to share successful experiences and the latest technological and methodological developments, as well as to discuss challenges, future directions and needs. Gravity, electrical, electromagnetic, magnetic, and nuclear magnetic resonance methods are among the primary tools for exploring natural resources (oil and gas, minerals, geothermal energy) as well as for tackling geotechnical and environmental problems. Sensors, tools, acquisition techniques, processing and interpretation methods are common among these different applications. This Workshop covers the technologies and methodologies and brings a suite of applications to a common forum, so that we can enjoy and learn from related applications of the same technologies.

We have received a large number of abstract submissions, even at a time when the resource industries are still recovering from their long downturns. Unfortunately, we were able to accept only 70% of them, as there is not enough room in the technical program to accommodate all submitted papers in a three-day Workshop. GEM 2019 Xi’an truly appreciates every author’s interest and effort in preparing and submitting abstracts. Special thanks to the Technical Committee led by Jiajia Sun and other experts who reviewed and edited abstracts. Their unselfish and diligent work has helped produce a fascinating technical program. Great efforts made by Xiu Li, Chang’an University and the Local Organizing Committee are essential in ensuring the Workshop’s success.

Xi’an is the oldest of the Four Great Ancient Capitals of China and the starting point of the famed Silk Road. Xi’an boasts a great wealth of historical and cultural heritages, as well as its world-class tourist attractions such as the Terracotta Army of Emperor Qin Shi Huang and nearby Mount Huashan for adventurous hiking. May is a beautiful and pleasant month of the year in Xi’an. While you are here, we encourage you to take the opportunity to explore the city, traditional culture, and delicious cuisine. We also hope that the Workshop will provide networking opportunities for geophysicists from China and around the world.

Thank you for participating in and supporting GEM 2019 Xi’an. We hope that you will join us for what promises to be a memorable Workshop!
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Society of Exploration Geophysicists

CO-ORGANIZER

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Shaanxi Geophysical Society

中煤科工集团西安研究院有限公司
CCTEG Xi’an Research Institute

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Secretary of the Local Organizing Committee
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# WORKSHOP SCHEDULE

## Sunday May 19, 2019

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<th>Time</th>
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<tr>
<td>09:00 - 19:30</td>
<td>Registration</td>
<td>5th Floor, Holiday Inn X’ian Big Goose Pagoda</td>
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<tr>
<td>16:30 - 17:30</td>
<td>Meeting of Technical Session Chairs</td>
<td>Room 307, 3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
</tr>
<tr>
<td>17:30 - 19:00</td>
<td>Icebreaker</td>
<td>3rd Floor, Yanbo Garden Canteen, (East) Main Campus of Chang’an University</td>
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## Monday May 20, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>08:00 - 10:30</td>
<td>Opening Ceremony and Plenary Session (Chairs: Zhenhong Li)</td>
<td>Academic Exchange Center, (North) Main Campus of Chang’an University</td>
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<tr>
<td>08:30 - 08:50</td>
<td>Welcome Addresses</td>
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<tr>
<td>08:50 - 09:25</td>
<td>Keynote address: Machine learning and its applications in geophysics: Current status and road ahead.</td>
<td>Gaishan Zhao</td>
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<tr>
<td>09:25 - 10:00</td>
<td>Keynote address: Geologically consistent inversion of geophysical data: A role for joint inversion.</td>
<td>Randall L. Mackie</td>
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<td>10:00 - 10:50</td>
<td>Workshop Photo and Morning Tea</td>
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<tr>
<td>10:50 - 12:10</td>
<td>Session A: Magnetotelluric Applications (Chairs: Randy Mackie and Yixian Xu)</td>
<td>3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
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<tr>
<td>10:50 - 11:10</td>
<td>Deep electrical resistivity structure of Tongbai-Dabie profile from 3D magnetotelluric inversion.</td>
<td>3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
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<tr>
<td>11:10 - 11:30</td>
<td>Three-dimensional electrical structure of the Xihuang Volcanic Basin, Southeast China revealed from MT inversion.</td>
<td>3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
</tr>
<tr>
<td>11:30 - 11:50</td>
<td>Exploration for Devonian reef in southern China with 3D MT Inversion result.</td>
<td>3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
</tr>
<tr>
<td>11:50 - 12:10</td>
<td>Temperature analysis of the upper mantle of North China Craton based on three-dimensional magnetotelluric conductive model.</td>
<td>3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
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<tr>
<td>12:10 - 13:30</td>
<td>Lunch</td>
<td>1st Floor, Yanbo Garden Canteen, (East) Main Campus of Chang’an University</td>
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<tr>
<td>13:30 - 14:50</td>
<td>Poster Session PA: Gravity and Magnetics - Methodologies and Technologies (Chairs: Joseph Capriotti and Zhengyong Ren)</td>
<td>3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
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<tr>
<td>14:50 - 16:10</td>
<td>Poster Session PB: Electromagnetics - Methodologies and Technologies (Chairs: Johannes B. Stoll and Dikun Yang)</td>
<td>3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University</td>
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## Poster Sessions

- **Poster Session PA: Gravity and Magnetics - Methodologies and Technologies**
  - **Title:** Denoising airborne gravity data using equivalent source method. **Authors:** Hassan Ali Al Janobi, Ahmed Salem, Ion Dumitru, and Emad Muzayyen
  - **Title:** Applying the correlation imaging method of magnetic susceptibility anomaly to detect steel bars in concrete. **Authors:** Jiaqiang Shi, Yang Zhong, and Feng Xiao
  - **Title:** Gravity inversion method based on quasi-radial basis function neural network. **Authors:** Peng Xiang
  - **Title:** GraPy: A C++ program for computing gravity gradient tensors of polyhedrons with polynomial density constraints. **Authors:** Yiyuan Zhong, Zhengyong Ren, Jingtian Tang, Thomas Katscheuer, Chaqian Chen, and Huairui Hu
  - **Title:** Gravity inversion based on model feature decomposition. **Authors:** Huizhen Yu and Jinduo Wang
  - **Title:** Calibration of airborne EM systems at a conductive ground. **Authors:** Xiuyan Ren, Changchun Yin, Yunhe Liu, Bo Zhang, Cong Wang, and Jing Cai

- **Poster Session PB: Electromagnetics - Methodologies and Technologies**
  - **Title:** Surface borehole EM technique and its application in oilfield development. **Authors:** Zhigang Wang, Xuejun Liu, Lin Zhang, and Yalin Chai
  - **Title:** Distortion effects caused by the target abnormal bodies in CSAMT exploration. **Authors:** Xian-Xiang Wang and Jun-Zhi Deng
  - **Title:** On semi-airborne transient electromagnetic survey: Numerical modeling and field survey results. **Authors:** Huafeng Sun, Chengdong Chen, and Yang Yang
  - **Title:** 2D imaging by SFCW based MIMO array radar system with Vivaldi antennas. **Authors:** Zhipeng Hu, Ming Hu, Peng Sun, and Xingbing Xie
  - **Title:** Research on remote time synchronization technology of MCSEM detection instrument. **Authors:** Xian C. Li, Meng Wang, Gong X. Wang, Ming Deng, Xiao X. Ma, Ni N. Duan, and Kai Chen
  - **Title:** A fast and effective method on lock-in amplifier to detect the weak SNMR signal. **Authors:** Yang Zhang, Jian Chen, and Suhang Li
  - **Title:** Double trapezoidal wave transmitting system with controllable turn-off edge. **Authors:** Yanju Ji, Yuan Zhang, and Fei Liu
  - **Title:** 3D microgravity inversion for SAGD development. **Authors:** Yi Wang and Zhenli Wang
  - **Title:** New instrumentation for large 3D electrical resistivity tomography and induced polarization surveys. **Authors:** Anna C. Truffert, J. Gance, O. Leite, and B. Texier
Potential field data discrete smooth interpolation using conjugate gradient. Shijing Zheng, Xiaohong Meng, Jun Wang, and Zhaoxi Chen

Calculation of the subsalt gravity anomaly based on the minimum curvature technique for potential field data separation. Xiaolin Ji, Wanyin Wang, Xiangdong Du, and Xuliang Feng

Reference noise cancellation based on multi-vector underground MRS. Jian Zhang, Guanfeng Du, Jun Lin, and Chuandong Jiang

Tuesday May 21, 2019

08:00 - 16:00 Registration

Lobby, 1st Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University

08:30 - 10:15 Plenary Session (Chairs: Xiong Li, Yaoguo Li, and Jiajia Sun)

Location: Bosheng Lecture Hall, 1st Floor, Library, (East) Main Campus of Chang’an University

08:30 - 09:05 Keynote address: Gravity and magnetic signatures of the shallow covered area of Jining, Inner Mongolia and its mining application. Xiaohong Meng

09:05 - 09:40 Keynote address: Advances towards useful airborne induced polarization surveys. James Macnae

10:15 - 10:30 Morning Tea

Session G: Gravity and Magnetic for Mining and Geothermal Applications

(Chairs: Tianyou Chen and Zhanxiang He)

Location: (East) Main Campus of Chang’an University

10:30 - 12:10 Session G: Gravity and Mgnetics for Mining and Geothermal Applications

(Chairs: Zuzhi Deng and Adalene Moreira Silva)

Location: Library, (East) Main Campus of Chang’an University

10:30 - 10:50 

Session H: Electromagnetics for Petroleum Applications

(Chairs: Tianyou Chen and Zhanxiang He)

Location: 3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University

10:50 - 11:10 

Session H: Electromagnetics for Petroleum Applications

11:10 - 11:30 Inversion of magnetic data applied to the characterization of the IOCG prospect in Aurora, Ceará State - NE / Brazil. Frederico R. F. R. O. Sousa, Adalene M. Silva, Catarina L.B. Toledo, Telma Asengart, and Juliana S. Sampaio

11:30 - 11:50 Implementation of magnetic method to delineate the subsurface structural features in part of Delhi Fold Belt, North Western Part of India. Bangaru Babu Siniboyina, Ajay Vinayak Kulkarni, Lakshmanu Muddinenni, and Dinesh Gupta

12:10 - 12:45 Afternoon Tea

Session I: Geophysical Imaging and Interpretation

(Chairs: Xiaohong Meng and Ahmed Salem)

Location: 3rd Floor, Geoscience Technology and Interpretation

12:45 - 14:30 Session I: Geophysical Imaging and Interpretation

(Chairs: Xiaohong Meng and Ahmed Salem)

Location: (East) Main Campus of Chang’an University

14:30 - 15:50 

Session J: Advanced Methods in Geophysics

(Chairs: Tianyou Chen and Zhanxiang He)

Location: Library, (East) Main Campus of Chang’an University

15:50 - 16:10 Session J: Advanced Methods in Geophysics

16:10 - 17:10 Session E: Electromagnetic Modeling

(Chairs: Xiaohong Meng and Ahmed Salem)

Location: Library, (East) Main Campus of Chang’an University

17:30 - 19:30 Buffet Dinner (Location: 1st Floor, Yanbo Garden Canteen, (East) Main Campus of Chang’an University)

An Evening on Diversity - Opening Our Eyes to Diversity and Equality in Geophysics Around the World. Coordinators: Elizabeth Miga- Capriotti and Aline T. Melo

Location: 1st Lecture Hall, 4th Floor, Yanbo Garden, (East) Main Campus of Chang’an University
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<th>Session</th>
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<th>Time</th>
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<tr>
<td>Session I: Electromagnetic Modeling</td>
<td>Location: Library, (East) Main Campus of Chang’an University</td>
<td>15:00 - 16:00</td>
<td>(Chairs: Xuben Wang and Michael Weiss)</td>
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<tr>
<td>Session J: Integration and Joint Inversion</td>
<td>Location: (East) Main Campus of Chang'an University</td>
<td>15:00 - 15:20</td>
<td>(Chairs: Jeremie Giraud and Qingtian Lv)</td>
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<tr>
<td>Session K: Electromagnetic Modeling and Processing</td>
<td>Location: (East) Main Campus of Chang’an University</td>
<td>16:10 - 17:10</td>
<td>(Chairs: Jeremie Giraud and Qingtian Lv)</td>
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<tr>
<td>Session L: Gravity and Magnetic Modeling and Processing</td>
<td>Location: (East) Main Campus of Chang’an University</td>
<td>17:10 - 18:10</td>
<td>(Chairs: Jeremie Giraud and Qingtian Lv)</td>
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**Poster Session PC: Integration and Joint Inversion**

- **Application of gravity magnetic and EM method in exploration of bedrock reservoirs.** Dechun Li, Caifu Wang, Zhi Zhao, Dabing Yun.
- **Joint inversion of marine controlled-source electromagnetic and magnetotelluric data: A synthetic study.** Gang Li, Qingrui Chen, and Jiaxuan Ling.
- **Focusing joint inversion of gravity and magnetic data using weighted fuzzy clustering.** Zhengwei Xu, Guangzhou Zou, Jiang Wang, Jing Tian, Yue Mao, and Nengyi Fu.
- **The Application of TFEM in Tungsten detection in Zhuzhi, Jiangxi Province.** Weibin Dong, Xuejun Liu, Zhanxiang He, Yongshen Zhu, and Fan Yu.

**Poster Session PD: Electromagnetic Modeling**

- **Research on response characteristics of surface-to-underground transient electromagnetic to water-filled goaf.** Lian Liu, Zhihai Jiang, Shucai Li, and Gongjin Zhang.
- **Research on definition method of airborne transient electromagnetic apparent resistivity.** Kailiang Lu and Xi Li.
- **Joint inversion of marine controlled-source electromagnetic and magnetotelluric data: A synthetic study.** Gang Li, Qingrui Chen, and Jiaxuan Ling.
- **An element-free Galerkin method based on hybrid background cells for 2.5D DC resistivity modeling.** Shangying Ma, Jianxin Liu, Wenwu Tang, Haifei Liu, Rongwen Guo, Yuan Cui, and Zhenwei Guo.
- **Full-domain apparent resistivity definition for loop source TEM with arbitrary transmitting waveform.** Xu Jing, Xu Li, and Han Zhao.

**Session PC: Integration and Joint Inversion (Chairs: Martin Bates and Peng Yu)**

- **Application of multi-method joint modeling and multi-attribute forward in igneous rock interpretation.** Deqiang Tao, Wenju Zhao, Weibin Dong, and Wentao Hu.
- **Joint inversion of marine controlled-source electromagnetic and magnetotelluric data: A synthetic study.** Gang Li, Qingrui Chen, and Jiaxuan Ling.
- **The Application of TFEM in Tungsten detection in Zhuzhi, Jiangxi Province.** Weibin Dong, Xuejun Liu, Zhanxiang He, Yongshen Zhu, and Fan Yu.
- **Geological-geophysical interpretation and structural modelling of the western margin fault zone of the Sichuan Basin.** Zhaoliang Li, Haifang Lu, Lingfeng Wang, Shengqiang Xiong, Xiuhua Zhou, and Ziqiang Zhu.

**Session PD: Electromagnetic Modeling (Chairs: Ping-Yu Chang and Jingsong Shen)**

- **Rational Krylov method for 3D time-domain airborne EM modeling.** Changkai Liu, Chang-chun Yin, Yunhe Liu, Bo Zhang, Xiuyan Ren, Cong Wang, and Jing Cai.
- **3D finite-volume time-domain electromagnetic modeling of the Close Lake graphitic faults using unstructured grids.** Xushan Lu, Colin G. Farquharson, Jean-Marc Miehé, and Grant Harrison.
- **A spectral-element approach to 3D controlled-source electromagnetic forward modelling.** Michael Weiss, Thomas Katscheuer, Maya Meytecheva, and Zhengyong Ren.
- **Nonlinear conjugate gradient method for the joint inversion of full tensor gravity gradiometry.** Zhenlong Hou, Yujun Zheng, and Pengbo Qin.
- **The Application of conformal technique in numerical simulation of ATEM.** Yanju Ji and Guiying Ren.
17:50 - 18:10 Offset errors in probabilistic inversion of small-loop frequency- domain electromagnetic data: A synthetic study on their influence on magnetic susceptibility estimation. Christin Bobe and Ellen Van De Vijver

18:30 - 20:30 Buffet Dinner

10:30 - 10:50 Joint equivalent source processing of gravity and gravity gradient data. Joseph Capriotti and Yaoguo Li

10:10 - 10:30 Plenary Session (Chairs: Xiong Li, Yaoguo Li, and Jiajia Sun)
Location: Boosheng Lecture Hall, 1st Floor, Library, (East) Main Campus of Chang’an University

10:00 - 10:20 Keynote address: Advances in geophysical exploration: Sensors and platforms. Dan DiFrancesco

09:50 - 10:10 Keynote address: Gravity, magnetic and electromagnetic surveys’ applications and challenges. Haicong Chen

09:40 - 09:50 Break

09:50 - 10:50 Session M: Airborne Gravity (Chairs: Dan DiFrancesco and Baihong Wen)
Location: Library, (East) Main Campus of Chang’an University

10:00 - 10:20 Strapdown airborne gravimetry: Dynamic effects and leveling approaches. Tianyou Chen

10:20 - 10:40 Quasi-3D imaging of CSAMT data collected from dense profiles in the Zhaishang Carlin-type gold deposit, western Qinling, China. Liuyang Li, Yaotian Yin, Wenbo Wei, Shengjun Liang, and Bin Chen

10:40 - 11:00 Flight test comparison of an advanced airborne gravity meter and a National Geodetic Survey TAGS-7 meter for mapping the geoid in the USA. Nigel Brady

11:00 - 11:20 Fast 3D gravity forward-modeling and inversion in spherical coordinates. Guangdong Zhao, Jianxin Liu, and Bo Chen


11:40 - 12:00 Effects of anisotropic magnetic susceptibility in data interpretation and potential in application. Zhuo Liu and Yaoguo Li

09:05 - 09:40 Session N: Electromagnetics - Case Histories (Chairs: James Macnae and Changchun Yin)
Location: 3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University

09:10 - 09:30 Low level radioactivity with electromagnetic data for prospecting of shallow sub-surface uranium mineralization. Saurabh Mittal, D. Sengupta, and S. P. Sharma

09:30 - 09:50 The application of TEM in surface structure analysis. Zhongdong Du, Deming Sha, Hengfei Huan, and Tai Gao

09:50 - 10:10 Structural controls of gold mineralization in western Mali: insights from Electromagnetic data analysis. Adama Youssouf Koné, Imen Hamdi Nasr, Wajdi Belkhiria, Mohamed Hedi Inoubli, Souleymane Sangaari, and Baco Traoré

10:00 - 10:20 Joint equivalent source processing of gravity and gravity gradient data. Joseph Capriotti and Yaoguo Li

10:20 - 10:40 The proper system for detecting TEM signal with induced polarization effect. Yanju Ji, Shangyu Du, and Colin G. Fanquharson

10:40 - 11:00 Imaging subsurface using multiple-source semi-airborne TEM data. Zhipeng Qi, He Li, Xi Li, and Yingying Zhang

09:40 - 09:50 Session Q: Electromagnetics - Acquisition (Chairs: Liangjun Yan and Gang Yu)
Location: 3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University

09:50 - 10:10 Three-dimensional audio-frequency magnetotelluric imaging of Zhuxi copper-tungsten polymetallic deposits, south China. Yuan Shi, Yixian Xu, and Bo Yang

10:10 - 10:30 An application of borehole-to-surface electro-magnetic methods in bead-shaped fractured vuggy carbonate hydrocarbon reservoirs. Guo Zhao, Xuejun Li, Zhengang Wang, Guoshang Yang, Yingtao Zhang, Guofeng Xia, and Yongfu Cui

10:30 - 10:50 Understanding the mineral system using AMT/MT data. Lanfang He, Xuefeng Zhao, Xiaolu Xi, Rujun Chen, and Hongchun Yao

10:50 - 11:00 Preliminary structure framework and concealed structures in northeast China disclosed by large-scale two-dimensional audio-magnetotelluric sounding. Weijun Zhao, Deming Sha, Hengfei Huan, and Tai Gao

11:00 - 11:20 The application of TEM in surface structure investigation of loess tableland. Zhongdong Du, Yudong Ni, Yaduo Wang, and Lin Cui

11:20 - 11:40 Deep electrical conductivity structure of Yuxuan block. Min Kang, Jian Kang, and Jian-Zeng Qin

11:40 - 12:00 Structural controls of gold mineralization in western Mali: insights from Electromagnetic data analysis. Adama Youssouf Koné, Imen Hamdi Nasr, Wajdi Belkhiria, Mohamed Hedi Inoubli, Souleymane Sangaari, and Baco Traoré

12:10-13:30 Lunch (Location: 1st Floor, Yanbo Garden Canteen, (East) Main Campus of Chang’an University)

13:30 - 14:50 Poster Session PE: Electromagnetics - Applications (Chairs: Liangjun Yan and Gang Yu)
Location: 3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University

13:30 - 14:50 Poster Session PE: Electromagnetics - Applications (Chairs: Liangjun Yan and Gang Yu)
Location: 3rd Floor, Geoscience Technology Building, (East) Main Campus of Chang’an University

14:10 - 14:30 Preliminary study on electrical structural of crust-mantle in Lianghe- Lusi SW Yunnan, Yong Liu, Nian Yu, Xuben Wang, Xuelin Cai, and Xiating Chen

14:30 - 14:50 Model-based layer stripping FWI of Ground Penetrating Radar data. Nan Hua, Zhaofa Zeng, Jing Li, and Zhipeng Hu

14:50 - 15:10 Possible seismo-magnetic effect of the Sunan yugu autonomous county earthquake - The characteristics of “The difference in Daily Amplitude” derived from the wavelet transform for the Z-component in geomagnetic observatories. Chen Dou, Weidong Wang, and Yi Zheng

15:10 - 15:30 Deep electrical conductivity structure of Yuxuan block. Min Kang, Jian Kang, and Jian-Zeng Qin


15:50 - 16:10 Lithospheric electrical structure of Bangong-Nujiang suture and its significance in the central Tibetan Plateau. Yue Sheng, Sheng Jin, Wenbo Wei, Gaofeng Ye, Hongda Liang, and Zhanwu Lu
Geophysical logging response characteristics of brine potassium salt mine in W Area of Haixi Prefecture, Qinghai Province. Shengpeng Yang, Junwei Diao, Ping Zhao, Changyong Ma, Yubang Zhou, Zunyi Niu, and Guifang Zhang

Inversion of marine CSEM data using general measures. Xuan Wang and Jinsong Shen

Study on electrical characteristics and mechanism of shale rocks in different sedimentary environments. Kai Yang, Bing Zhang, Xuben Wang, Hongyu Yang, and Wei Liu

A damped least squares inversion scheme with lateral and vertical constraints. Xingyuan Lin, Binghu Zhong, Yifu Liu, and Longzhou Chen

Detection of hidden dangers associated with dams based on multi-source transient electromagnetic method. He Li, Hang Liu, and Xiu Li

Preliminary study on the electrical structure of the profile of Yingjiangxima-Zhenkangjunong in western Yunnan. Xiating Chen, Nian Yu, Xuben Wang, Xuejin Cai, and Yong Liu

Simulation and application of time-frequency electromagnetic exploration of deep geothermal resources. Xinping Qu, Houjie Guo, Yongbing Wu, Huadong Song, Biao Xi, and Haonan Zhang

The normalized data inversion of time-lapse resistivity method for resolving small changes. Huan Ma, Yue Guo, Handong Tan, Pingping Wu, Huadong Song, Biao Xi, and Haonan Zhang

Progressive inversion based on corner-and-edge detector and model sensitivity message. Zhiyong Zhang

3D magnetization vector inversion applied to the Rio Capibaribe Terrain, Borborema Province, NE Brazil: Modeling Ni-Cu-PGE ore bodies and proposing new exploratory targets. Frederico R. F. R. O. Sousa, Marcelo Leão Santos, and Telma Aisengart

Parameter selection workflow for a discrete-valued gravity inversion with guided fuzzy c-means clustering. Elizabeth Maag-Capriotti and Yaoguo Li

Three-dimensional inversion of magnetic data with simultaneous remanent magnetization and self-demagnetization. Shuang Liu, Maurizio Fedi, Xiangyun Hu, and Yang Ou

Analysis of parameter determination for UMRS inversion in tunnel detection. Tingting Lin, Xiaoxue Lin, Ling Wan, and Ying Yang

Advances in 3D magnetization clustering inversion: Numerical strategies and uncertainty analysis. Jiajia Sun and Yaoguo Li

14:50 - 15:00 Afternoon Tea

15:00 - 16:20 Session R: Inversion of Geophysical Data

(Chair: Tingting Lin and Elizabeth Maag-Capriotti)

Location: Library, (East) Main Campus of Chang'an University

Gravity inversion based on polynomial density-contrast functions. Jie Liu, Jianzhong Zhang, and Zhihui Zou

3D sparse inversion of magnetic amplitude data. Zelin Li and Changyi Yao

Parameter selection workflow for a discrete-valued gravity inversion with guided fuzzy c-means clustering. Elizabeth Maag-Capriotti and Yaoguo Li

Three-dimensional inversion of magnetic data with simultaneous remanent magnetization and self-demagnetization. Shuang Liu, Maurizio Fedi, Xiangyun Hu, and Yang Ou

Progressive inversion based on corner-and-edge detector and model sensitivity message. Zhiyong Zhang


Analysis of parameter determination for UMRS inversion in tunnel detection. Tingting Lin, Xiaoxue Lin, Ling Wan, and Ying Yang

Advances in 3D magnetization clustering inversion: Numerical strategies and uncertainty analysis. Jiajia Sun and Yaoguo Li

1600 - 16:20 Analysis of parameter determination for UMRS inversion in tunnel detection. Tingting Lin, Xiaoxue Lin, Ling Wan, and Ying Yang


17:30 - 19:30 Buffet Dinner (Location: 1st Floor, Yanbo Garden Canteen, (East) Main Campus of Chang'an University)
Beijing Orangelamp Geophysical Exploration Co., Ltd.

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The products of Orangelamp cover these technical fields as solid mineral exploration, marine exploration, petroleum exploration, geological investigation, and environmental protection. It involves geology, energy, minerals, earthquakes, surveying and mapping, water Conservancy and hydropower, railways, highways, bridges, forestry, meteorology, archeology, and education.

Honesty and diligence, let us win the trust of the majority of domestic customers, so that the market share of the Orangelamp is steadily rising. Efficient management, transparent mechanisms, humane treatment. It allows the Orangelamp to attract more outstanding talents here to enjoy the industry and settle down, thus creating the largest and most stable professional research team in the domestic geological industry. Modesty and enterprising let us win the honor of majority of experts and scholars and achieve outstanding and effective development in the technologies and human resources which become the rapid development booster of Orangelamp.

Beijing Ouhualian Technology Co., Ltd.

Beijing Ouhualian Technology Co., Ltd. specializes in seismic exploration and interpretation software and hardware solutions. We have developed a comprehensive range of software products for seismic exploration, including GMECS, GeoGME, and GeoEast. Our company has a strong focus on non-seismic data acquisition, processing, integrated interpretation, research, and development. By providing professional competitive services of gravity, magnetic, electromagnetic, geochemical surveys and comprehensive geological interpretation, we bring our clients success.

We have been expanding services steadily and continuously from the core business of oil and gas exploration to other areas such as oil and gas field development, mineral exploration, unconventional resources exploration, groundwater investigation and engineering survey. Our business spreads around the world based on the international marketing network in the Middle East, South America, Central Asia, North Africa and East Africa. We have conducted more than 100 non-seismic projects for at least 50 international oil companies.

Now we not only grasped 8 conventional techniques such as land gravity and magnetic, marine gravity and magnetic, underwater gravity, MT, TEM, TDEM, geochemical detection and other near-surface techniques, but also developed 3 independent technologies including time-frequency domain electromagnetic (TFEM); 3D gravity, magnetic, electromagnetic (3D GME); comprehensive exploration technique integrating with gravity, magnetic, electromagnetic and seismic survey based on GeoEast software package and 3 new technologies including Marine CSEM; Borehole EM; Time-lapse Non-seismic. We have developed GMECS V2.0 and Geo GME V3.0 software for gravity, magnetic, electromagnetic data acquisition, processing and integrated interpretation with seismic data. During last five years more than 50 patents have been applied or granted, more than 100 papers have been published, and the numbers of registered software copyright and drafted technical standards are nearly 40 separately.

Booth #09

Beijing Orangelamp Geophysical Exploration Co., Ltd. is dedicated to the development of advanced technologies and human resources, becoming a rapid development booster for the Orangelamp.

Booth #10

Beijing Ouhualian Technology Co., Ltd. has established a majority of experts and scholars and achieved outstanding and effective development in the technologies and human resources which become the rapid development booster of Ouhualian.
Booth #11

Colorado School of Mines is an internationally renowned research and teaching university in Golden, Colorado, USA. Mines graduates are in great demand by companies and government entities around the world and are involved in solving the major technical and societal challenges of our times. Its graduate programs in Geophysics and Geophysical Engineering are highly regarded in industry, government, and academia.

Founded in 1926, the Department of Geophysics at Mines is recognized and respected around the world for its programs in applied geophysical research and education. Students receive individualized attention in a close-knit department. The undergraduate curriculum educates students to become thoroughly familiar with mathematical, physical theories, data science, and geology in addition to the various geophysical methodologies. The mission of our program is to educate undergraduates in the application of geophysics to help meet global needs for energy, water, food, minerals, and the mitigation of natural hazards.

We offer both traditional, research-oriented graduate programs and non-thesis education programs designed to meet specific career objectives. The program of study is selected by the student, in consultation with an advisor and thesis committee approval, to be suited to the student’s career needs and interests. We carry out research on a wide range of topics including oil and gas exploration, mineral exploration, hydrogeophysics, environmental geophysics, imaging Earth’s interior on all scales, and planetary geophysics.

CGG

CGG has the largest diversified non-seismic geophysics presence in the industry. We provide integrated flexible high-end software and services to meet the ever-evolving expectations of the geoscience community.

CGG specializes in commercial software technologies, analysis, inversion, and interpretation of multiple domain data. We develop Gravity, Magnetic, Seismic, Magnetotelluric, CSEM and TDEM techniques within our commercial software technologies Geotools™ and LCT™. We provide comprehensive exploration techniques integrating the intelligent use of data driven modeling and inversion. Our focus is on generating geologically reliable solutions to geoscience problems.
Booth #13

China Oilfield Services Co., Limited is a world-leading company in the integrated exploration and development of oil and gas. Our comprehensive exploration services include seismic and non-seismic data acquisition, processing, and interpretation. We have developed several successful technologies, including time-frequency domain electromagnetic (TFDEM), comprehensive exploration techniques integrating with gravity, magnetic, electromagnetic and seismic survey based on GeoEast software package and 3 new technologies. We have also developed GMECS V2.0 and Geo GME V3.0 software for gravity, magnetic, electromagnetic data acquisition, processing and integrated interpretation with seismic data. During the last five years, more than 50 patents have been applied for or granted, with more than 100 papers published. The numbers of registered software copyright and drafted technical standards are nearly 40 separately.

GME and Geochemical Surveys, BGP Inc., CNPC, has earned an unrivalled reputation as one of international leaders in non-seismic data acquisition, processing, integrated interpretation, research and development. By providing professional competitive services of gravity, magnetic, electromagnetic, geophysical surveys and comprehensive geological interpretation, we bring our clients success.

We have been expanding services steadily and continuously from the core business of oil and gas exploration to other areas such as oil and gas field development, mineral exploration, unconventional resources exploration, groundwater investigation and engineering survey. Our business spreads around the world based on the international marketing network in the Middle East, South America, Central Asia, North Africa and East Africa. We have conducted more than 100 non-seismic projects for at least 50 international oil companies.

Now we not only grasped 8 conventional techniques such as land gravity and magnetic, marine gravity and magnetic, underwater gravity, MT, TEM, TDEM, geophysical detection and other near-surface techniques, but also developed 3 independent technologies including time-frequency domain electromagnetic (TFEM); 3D gravity, magnetic, electromagnetic (3D GME); comprehensive exploration technique integrating with gravity, magnetic, electromagnetic and seismic survey based on Geo East software package and 3 new technologies including Marine CSEM; Borehole EM; Time-lapse Non-seismic. We have developed GMECS V2.0 and Geo GME V3.0 software for gravity, magnetic, electromagnetic data acquisition, processing and integrated interpretation with seismic data. During the last five years more than 50 patents have been applied or granted, more than 100 papers have been published, and the numbers of registered software copyright and drafted technical standards are nearly 40 separately.

Booth #15

Beijing Mingjie Sci&Tech Co. Ltd. is a leading non-seismic data acquisition, processing, and interpretation company. With over 30 years of experience in the industry, we have developed a comprehensive suite of services for gravity, magnetic, electromagnetic, and seismic measurements. Our services include marine CSEM, borehole EM, and time-lapse non-seismic data. We have successfully applied or granted more than 50 patents and have published over 100 papers. Our software, Geo GMECS V2.0 and Geo GME V3.0, are widely used for gravity, magnetic, and electromagnetic data acquisition, processing, and interpretation with seismic data.

We have expanded our services steadily and continuously from the core business of oil and gas exploration to other areas such as oil and gas field development, mineral exploration, unconventional resources exploration, groundwater investigation and engineering survey. Our business reaches around the world based on the international marketing network in the Middle East, South America, Central Asia, North Africa, and East Africa. We have conducted more than 100 non-seismic projects for at least 50 international oil companies.

Now we not only grasp 8 conventional techniques such as land gravity and magnetic, marine gravity and magnetic, underwater gravity, MT, TEM, TDEM, geophysical detection and other near-surface techniques, but also developed 3 independent technologies including time-frequency domain electromagnetic (TFEM); 3D gravity, magnetic, electromagnetic (3D GME); comprehensive exploration technique integrating with gravity, magnetic, electromagnetic and seismic survey based on Geo East software package and 3 new technologies including Marine CSEM; Borehole EM; Time-lapse Non-seismic. We have developed GMECS V2.0 and Geo GME V3.0 software for gravity, magnetic, electromagnetic data acquisition, processing and integrated interpretation with seismic data. During the last five years more than 50 patents have been applied or granted, more than 100 papers have been published, and the numbers of registered software copyright and drafted technical standards are nearly 40 separately.
Our company has a bunch of technical supporters and sales engineers who have sufficient professional knowledge and experience, in the meantime of promote geosciences products, with the business aim of “performance outstanding, quality excellent, service considerate”, to provide the perfect pre-sales and after-sales solutions of the most advanced geosciences instrument for all of the clients is the identical pursuing of all of the EUSCI employee, and the ultimate goal of the EUSCI survival and development. In the past several decades, the development and expansion of EUSCI was really rely on the support and help of all of our clients. We will continuously do our best to pay back to the trust of all of our clients base on our best products solutions and optimum technical support and service.

Booth #18
Beijing Eusci Technologies Ltd. is a new type of science and technology enterprise which is engage in R&D, manufacture, sales agent the geosciences instruments, introduce the global advanced geophysical exploration and geological science instrument and the laboratory equipment system, including Trimble Reftek (USA), Bartington(UK), AGICO(Czech), ASC(USA), Selfrag(Switzerland), etc. The range of products is as following:

- Earthquake early warning, monitoring and measurement instrument: broadband seismic recorder and seismometer, short-Period seismometer, micro and strong motion Monitor seismometer, seismic intensity instrument etc.
- Geomagnetism observation instrument: Magn-01H/DI fluxgate theodolite, proton magnetometer, GPS orientation indicator
- Vector magnetic field measurement instrument: MAG-03 series fluxgate magnetometer, land and submersible gradient magnetometer, environment magnetic field measurement and evaluation instrument
- Paleomagnetism and rock magnetism research instrument: magnetic susceptibility instrument, rock residual magnetism measurement instrument, demagnetizing instrument, magnetizing instrument, portable rock sampling drilling machine, rock specimen cutting equipment, magnetic screened room design and construction, various shape and specification magnetic screened barrel producing.

Booth #19
We are a professional exploration technology softwares company, and have been focusing on the research and development, sales and technical services of geophysical and geological softwares in last decade. We have rich experience of gravity/magnetic data processing and interpretation softwares, and can provide high-quality software solutions and technical services for electromagnetic data processing and 3D geological modelling. We own the Intellectual property of Horin geophysical software, at the same time acting as agent for several series of international leading geophysical and geological softwares. We have been providing high-quality software products and technical services for domestic high-end exploration and scientific research institutions, and keep a good reputation in this industry in China.

We can help you configure the software products that are most suitable for your work needs, and support you with high-quality after-sales training and technical services, so that ensure you can work effectively with high-quality commercial exploration softwares in the shortest time. Our tenet: help you improve your working efficiency and technical methods with first-class products and services, and help you effectively improve the return on investment in exploration projects.
GENERAL INFORMATION

Onsite Contact of Local Organizing Secretary

- Registration, Pre-conference Meeting, Special Program during the Conference
  Baoliang Lu, +86.180-4946-7425
- Onsite Conference Hall, Main Venue & Parallel Sessions
  Jianqing Ma, +86.134-7450-1424
- Icebreaker, Lunch & Dinners
  Naiquan Sun, +86.131-1913-2865
- Volunteers, other Assistance Issues
  Yu Li, +86.187-2929-8221

Hotel Telephone Numbers

- Holiday Inn Xi’an Big Goose Pagoda--------------------------------------------- +86(0)29-8866.8877;
- Xi’an Yige International Business Hotel---------------------------------------- +86(0)29-8525.2888;

Onsite Rules and Instructions

- All participants will need to wear the name badges of GEM 2019 Xi’an Workshop to enter all the meeting rooms, exhibition area and poster sessions.
- During the Workshop, the participants shall not copy, photograph or video record any materials without the consent of the presenters or the organizing committee.
- Please comply with the venue disciplines during the meetings and smoking is forbidden in the meeting area.
- Please mind your own safety, take care of your belongings and prevent accidents in any forms. If any unexpected event occurs, please contact the onsite staff immediately so that measures can be taken appropriately.
- If the fire incident or other disasters occur during the meeting, the participants should be lead to leave through the nearest exit immediately and congestion should be prevented.
- Please remain calm if fire incident occurs in the rooms. If evacuation is needed, please follow the instructions by the onsite staff and leave according to the evacuation instructions posted in the rooms and the corridors.
- If any emergencies happen outside the meeting venues, please call 110 for police and emergencies, 119 for fire accidents and 120 for ambulances.