Seminar on Information Technology of Geological Survey for Developing Countries
Project Overview

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<tr><td>Project Name</td><td colspan="3">Seminar on Information Technology of Geological Survey for Developing Countries</td></tr>
<tr><td>Organized by</td><td colspan="3">Development and Research Center of China Geological Survey</td></tr>
<tr><td>Period:</td><td>Nov. 9 - Nov. 22，2023</td><td>Language</td><td>English</td></tr>
<tr><td>Mode</td><td>Online</td><td>Platform</td><td>ZOOM platform</td></tr>
<tr><td>Counties to attend</td><td>Developing countries</td><td>Planned number of attendees</td><td>25</td></tr>
<tr><td>Objectives</td><td colspan="3">The world has ushered in the “Era of Big Data Information” oriented by data research and application, and big data is becoming a means of production and a rare asset, which has been fully integrated into social production and life. This Seminar serves to introduce the application of geoscience big data and satellite remote sensing image data in the field of geology and mineral resources, and describe geophysical and geochemical data processing software and digital geological mapping system with independent intellectual property rights in China, so as to further promote the global sharing and application of digital geology, effectively improve the informationization level in the field of geology and mineral resources in developing countries, and enable governments to mare more scientific decisions in natural resources and public management.
After the Seminar, candidates can obtain geochemical data processing software free of charge; After signing the cooperation agreement, remote sensing images obtained by China’s high-resolution natural satellites can be accessed for use in the field of geology and mineral resources.</td></tr>
<tr><td rowspan="5">Requirements of Trainees</td><td>Professional background</td><td colspan="2">--- Field or specialty: Natural resources management, satellite remote sensing, mineral resources, etc.;
--- Post: Officials in mineral resources, energy resources, ecological environment, etc.
Experts, scholars or technicians;
- Grade, academic degree or other relevant qualification requirements: None
- Working years in related fields: None
- Priority qualification: None
- Others</td></tr>
<tr><td>Age</td><td colspan="2">Not higher than the legal retirement age of the recipient country</td></tr>
<tr><td>In good health</td><td colspan="2">Able to attend online seminar on time.</td></tr>
<tr><td>Language competence</td><td colspan="2">Trainees should be able to listen, speak, read and write in the working language of the project</td></tr>
<tr><td>Others</td><td colspan="2">Able to use VOOV Meeting or Zoom</td></tr>
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About the Contents of Seminar	**I. About the Courses and Contents of the Seminar** **(I) Chinese National Conditions** (1) Chinese national conditions and Chinese leaders' new thoughts, new ideas and new strategies in national governance: Introduce China's achievements since reform and opening up and China's development path. The concept of community with a shared future for mankind put forward by President Xi Jinping, the "Belt & Road Initiative", and the new theory of international relations. (2) China's Foreign Aid - China's International Development Cooperation in the New Era: Introduce the initial intention and mission of China's international development cooperation in the new era, explain the policy proposition of China's international development cooperation in the new era, comprehensively introduce the actions and contributions of China's international development cooperation since 2013, and introduce China's foreign aid through specific foreign aids. (II) Construction and sharing of geo-science big data platform **（1) China's "geological cloud" architecture and data application:** China's "geological cloud" portal integrates massive geological survey data developed by national geological work since the founding of the People's Republic of China, including scientific data in the fields of oil and gas, minerals, energy resources, mineral resources, geological environment, geological disaster investigation, etc., realizing the integration of core data at national level in China. This Seminar shall describe China's experience in the construction of "geological cloud" and the current situation of data application. **(2) 3D geological modeling method and technology:** Based on 3D environment, with geostatistics and spatial information management technology and prediction technology, the geological data (such as borehole data, topographic data, rock and soil data, etc.) are interpreted. With a super-large manganese ore concentration area in China as an example, the modeling method and effect shall be described. **(3) 3D geological modeling and development of major geological survey institutions abroad:** This Seminar shall describe the development and application of 3D geological model technology in the world, the development course of Britain, America, Germany and other countries, and the present situation and characteristics of 3D geological modeling of geological survey institutions in various countries, so as to provide technical reference for the development of 3D geological mapping in developing countries. **(4) Geoscience data sharing and standards:** This Seminar shall describe the deep-time digital earth (DDE) metadata standard and data standard framework supporting Open Science and FAIR principles (foundable, accessible, interoperable and reusable), and the progress of geoscience data information sharing and application in East Asia and Southeast Asia. **(5) Introduction and practical operation of RGIS-IGDP software for geophysical data processing and interpretation:** This Seminar shall introduce and demonstrate the geophysical data processing software with independent intellectual property rights in China. Candidates can get the right to use the software in a single version free of charge in case of any need. **(6) Application of Huawei Big Data in geology and mineral resources:** This Seminar shall introduce Huawei's unmanned mine overall solution named "Yugong", which is integrated into the cloud through mine car unmanned driving system, unmanned transportation simulation system, V2X vehicle-road collaborative sensing system, remote driving system and excavator collaborative operation management system. Huawei's 5G technology is used in the mining area to realize the collaborative parallelism of multiple sensing and operating systems. **(7) 4D urban geological modeling:** By describing the achievements of 4D urban modeling in China, this Seminar shall introduce the method of developing dynamic (4D) urban underground space model, so as to better monitor the urban underground attributes in real time, provide accurate urban underground

information, and promote the investigation of underground space into urban planning and management.

(III) Current Status, Technical System and Remote Sensing Image Data Sharing of Satellite Remote Sensing in China

(8) China's high-resolution satellite system and application: China has 14 natural resources satellites. The increase of satellites is not only an increase in quantity, but also a leap in quality. The spatial resolution, spectral resolution and temporal resolution of satellite data have been greatly improved. At present, China has cooperated with Mongolia, Egypt and other countries in data sharing and China is now able to provide data services for more developing countries.

(9) Application of remote sensing technology in geological prospecting: The methods and technologies of using the response characteristics of geological bodies, geological structures and geological phenomena to electromagnetic wave spectrum, measuring or obtaining geological parameters, filling out geological maps, studying geological problems, carrying out prospecting prediction, and discovering ore bodies indirectly or directly through data image processing and remote sensing geological interpretation will be introduced.

(10) Application of satellite remote sensing images in intelligent identification and analysis of hidden dangers of geological disasters: From the point of view of optical remote sensing, InSAR, lidar and other comprehensive remote sensing measurements, the intelligent identification and analysis technology and method of geological disasters are put forward, which takes "shape, deformation and situation" as observation contents, qualitatively identifies the hidden danger position of disasters, quantitatively monitors the deformation range of disaster bodies, and relies on comprehensive remote sensing dynamic monitoring data to improve the identification ability of hidden dangers

II. Presentation of the Seminar

1. Current situations of information geological survey for developing countries
2. The greatest challenge facing geological survey informationization in developing countries
3. Necessity and feasibility of basic geoscience information sharing in developing countries
4. Orientation of cooperation between China and developing countries in the field of geoscience informationization

III. About the Cloud-based Visits

Visit The Geological Museum of China, Palace Museum, Dunhuang Mogao Grottoes and so on online.

IV. About the Presenters

(1) Zhang Minghua: Ph.D., researcher, and Deputy Chief Engineer of Development Research Center, China Geological Survey, has been engaged in geophysical exploration and geological information construction for a long time. He has ever presided over the construction, updating and maintenance of national geological database, the series maps of China's land and sea geophysics, and the application of gravity data for the national mineral resources potential evaluation.

(2) Wu Chonglong: Ph.D., professor and doctoral supervisor, director of Key Laboratory of Quantitative Prediction and Evaluation of Geology and Mineral Resources, Ministry of Natural Resources. He is engaged in pioneering research in the field of geological information science and technology, and has made systematic achievements in the informationization of geological and mineral work and geological informatics.

(3) Ye Fanghong: bachelor, senior engineer, director of Foreign Affairs Office, Land Satellite Remote Sensing Application Center, MNR, who has been engaged in the international cooperation of satellite remote sensing, served UN and other international organizations, and involved in the construction and design of Ziyuan-3 satellite application system. He is now the expert of Capacity Building Group of GEO and

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<tr><td></td><td colspan="3">Advisory Group of Pacific Islands.
(4) Jiang Zuoqin: Researcher, expert of Key Laboratory of Geological Information Technology, Ministry of Natural Resources, is engaged in the research of natural resources information standardization for a long time, has been a role in the formulation of ISO19100 geographic information series international standards and natural resources information standards, and presided over the development of technical standards for geological data quality inspection and evaluation. He has had in-depth research on the metadata standard of geoscience information, the framework of geological information service system and the informationization strategy of geological work, and made fruitful achievements.
5. Data to be prepared by participants
In order to facilitate the exchange with Chinese experts, participants should prepare the exchange data related to the research topics in your country, and experts from various countries are invited to discuss the following two: (1) the evaluation methods of mineral resources potential in your country; (2) present situation of geoscience information system construction; In order to better carry out future cooperation, it is suggested to arrange special reports as appropriate.
6. Please install online classroom software in advance:
https://voovmeeting.com/download-center.html?from=1001 or ZOOM terminal</td></tr>
<tr><td>Venue</td><td>Beijing</td><td>Visiting cities</td><td>N/A</td></tr>
<tr><td>Notes</td><td colspan="3">1. Responsibilities and obligations: Participants should be the representatives of the government, country and people of their host country, responsible for their own behaviors and performances, abide by Chinese laws and relevant regulations of the seminar, and fulfill corresponding obligations.
2. Disciplinary requirements: During the implementation of the project, participants must strictly abide by the project agenda, not arrange activities unrelated to the seminar without authorization, not skip the seminar without reason, not have pending administrative and/or criminal cases, not have another plan/training project to be nominated, and have fulfilled the obligations required for the previous training projects.</td></tr>
<tr><td>About the organizer</td><td colspan="3">Development and Research Center of China Geological Survey, established in 2002, serves as a public institution directly under the China Geological Survey, undertakes geological and mineral prospecting, development strategies and deployment research, is committed to the receiving, storage and service of geological data nationwide, and serves the informatization construction of geological survey and business support for major geological projects. It has been authorized as “National Geological Archives of China”. It has been staffed with 249, and equipped with 6 management offices and 15 business offices. Since its establishment, under the leadership of ministries and bureaus, it has worked out fruitful results in strategic research, information construction, geological data services and special support. It undertakes two core Geology in China and Geological Bulletin of China.

Under the unified leadership of the Ministry of Natural Resources and China Geological Survey, it has succeeded in 84 foreign-aid seminar programs by the end of 2019, including 1 ministerial seminar, 38 officials’ seminars, 21 technical seminars, 4 overseas seminars, and 20 trainings online. Nearly 3,000 experts, scholars and technicians from more than 100 countries and regions around the world have ever participated in the seminars, and their working languages included English, French, Russian, Spanish and Portuguese.</td></tr>
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