Geographic Data for Sciences and Sustainability —Summary of 2019 Conference of Geographic Big Data Working Committee of Geographical Society of China

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The sustainable development goals (SDGs) of the United Nations and their realization pathways are important research fields for geographers. 2019 marks the 110th anniversary for the Geographical Society of China (GSC). The 2019 Conference of the Geographic big data working Committee of GSC (BigData_WC/GSC) was held in Liaoning Normal University during 21-23 September, Dalian, China, with the theme of "Sustainable Development Goals Supported by Geographic Big Data". In the meantime, the "Lin Chao Geographic Museum" commemorated the 110th anniversary for GSC, 110th birthday of Mr. Lin, Chao, and the 100th birthday of Mr. Liu, Jingtang. The 3G products with geographic feature, geographic indication protection, and geographic tradition, were also exhibited in the conference. This is the first national conference for the WC_GBD/GSC, which was sponsored by the GSC and hosted by the School of Geography, Liaoning normal University with co-organizers of Liaoning Geography Society, Research Center of Marine Economy and Sustainable Development of Liaoning University, Institute of Geographical Sciences and Natural Resources of Chinese Academy of Sciences (IGSNRR/CAS), Lin Chao Geographic Museum of GSC (online), and Philatelic Association of CAS.

The opening ceremony was presided over by Han, Zenglin, former President of Liaoning Normal University. Li, Xueming, President of Liaoning Normal University, Fu, Bojie, Vice Chairman of the International Geographic Federation, Chief Supervisor of the GSC, academician of the CAS, Minister of Geoscience School of Beijing Normal University, Song, Xianfang, Director of the Institute of Geoscience and Resources of the Chinese Academy of Sciences, Zhang, Wei, Dean of the School of Geoscience, Liaoning Normal University, and Liu, Chuang, Secretary General of the BigData_WC/GSC, Chairman of the Lin Chao Geographic Museum, Professor of IGSNRR/CAS delivered the speeches. Meanwhile, in order to better implement the new measures of outstanding and the construction of first-class undergraduate major, the School of Geography (former: School of City and Environment) of Liaoning normal University was officially established. Academician Fu, Bojie, Deputy Di-

rector General Liao, Xiaohan of IGSNRR/CAS, Principle of Gong, Fuqing and President Li, Xueming of Liaoning Normal University, jointly unveiled the nameplate. The School of Geography, Liaoning Normal University, was initiated in 1951, and has persisted in the directions of geography education and geographic research, although experienced several name changes.

After the opening ceremony, Prof. Liu, Chuang guided the participants to the collection exhibition of "Lin Chao Geographic Museum", which was initiated for remembering the contribution of Professor Lin, Chao. The collections in the museum were mainly denoted by Mr. Liu, Jingtang, one of the originators of the School of Geography, Liaoning Normal University. Many stamps and first-day covers on International Geographic Federation, International Geophysical Year, Great Wall of China, etc., were exhibited (Figure 1).

Figure 1   Prof. Wang, Hui introduced the exhibition to Li, Xueming, Fu, Bojie, and Song, Xianfang on three geographers (Zhang, Xiangwen, Lin, Chao, Liu, Jingtang) and collections in the Lin Chao Geomuseum.

On the afternoon of 21 September, Academician Fu, Bojie, Prof. Liao, Xiaohan, and Professor Li, Guoqing from Aerospace Information Research Institute, CAS, provided the keynote presentations.

The Fu, Bojie's presentation focused on "Sustainable Development Goals of United Nations and Historical Tasks of Geoscience". Academician Fu analyzed the differences between millennium development goals (MDGs) and SDGs of United Nations and the interaction degree among SDGs, and put forward the existing problems in impelling SDGs and six important revolutions to realize SDGs. Based on this, he introduced the research theme and paradigm of geography in the new era.

Professor Liao, Xiaohan gave a presentation on "Geography Development of China in the Big Data Era" (Figure 2). First, he introduced the development process of big data era and the characteristics of geography in the big data era, and put forward that geographical spatio-temporal data is an important part of big data, and the development of new technologies (such as remote sensing technology) promoted the generation of geographic big data. Second, he introduced big data development policy, scientific data management method, 20 national scientific data centers established by the Ministry of Science and Technology of P. R. China. Finally, as the director of the BigData_WC/GSC, he put forward the six primary task for BigData_WC/GSC: (1) data management and data sharing; (2) data intellectual property protection and scientific evaluation system; (3) weakness of global data; (4) disconnection between academic papers and scientific data; (5) the construction of data computing environment; (6) the scientific popularization of geographic data

Figure 2   Professor Liao, Xiaohan delivered an presentation on "Chinese Geography in the Big Data Era"

for sustainable development; (7) the talent team construction of geographic big data; (8) data security, scientific morality, and ethics.

As the head of the National Earth Observation Science Data Center, Prof. Li, Guoqing elaborated the development ideas and key tasks of the Center. First, he introduced the position of the National Scientific Data Center (belong to basic support and condition guarantee), and its system establishment. Second, he introduced the National Earth Observation Science Data Center, including the structure, data definition, definition standards, the technical system, the service system, the data policy system, etc., and put forward the key tasks of the Center: (1) resource collection and preservation; (2) collection of scientific and technological resources formed by the Science and Technology Plan; (3) resource mining and application; (4) data sharing and service; (5) development of common technologies and resources; (6) dynamic monitoring in the world scale; (7) international exchange and cooperation.

After the three presentations, Prof. Liu, Chuang announced the "calculation method of the data impact score for global change data in 2019". Zhang, Guoyou, Vice Chairman and Secretary General of the GSC, declared the "Global Change Research Data Publishing & Sharing Rankings" on behalf of the GSC, and awarded the most influential data publishing center certificate to the IGSNRR/CAS and the Geological Data Library of Geological Survey, Ministry of Natural Resources of P. R. China.

In order to increase the interaction between the experts and the participants, the forum was adopted instead of the traditional sub-venue. Focusing on the "Geographic Data for Sciences and Sustainability", seven forums were held: (1) Geographic big data and Global Vision; (2) New technology, new standards and intelligence of geographic big data; (3) Data computing environment, platform construction, and data-driven scientific discovery; (4) Data publishing, integration development of academic journals; (5) Scientific data center; (6) Digital ocean and blue economy; and (7) 3G product habitat data. The discussion during the forum was warm with excellent questions and answers. The participants showed a strong interest in the topics, especially for data publishing. Finally, the participants discussed and agreed the "Initiative for geographic big data promoting scientific discovery and sustainable development" by GSC.

Nearly 200 experts and scholars from more than 30 institutions participated in the conference (Figure 3).

Figure 3   Group photo of 2019 conference of BigData_WC/GSC (September 21, 2019, Dalian, China)