Preface of Special Issue on Big Earth Data for Implementing the Sustainable Development Goals

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The United Nations (UN) "Transforming Our World: The 2030 Agenda for Sustainable Development" (hereinafter referred to as the "Agenda for Sustainable Development") has been progressed for more than 1/3 of its journey. The achievement of this ambitious plan consisting of 17 goals and 169 targets will enable the world and humankind to embark on a path of comprehensive sustainable development. However, achieving the global sustainable development goals (SDGs) faces a series of challenges such as lack of data. For this reason, the UN has launched a Technology Facilitation Mechanism (TFM) to provide support for the achievement of SDGs. This TFM is composed of three parts: UN inter-agency task team (UNIATT) on science, technology and innovation for the sustainable development goals and 10-member group, the collaborative multi-stakeholder forum on science, technology and innovation (STI Forum) for the sustainable development goals, and the online platform, which can give full play to the role of scientific and technological innovation in achieving SDGs.

Big data is one of the core elements of scientific and technological innovation. It is a strategic highland in the era of knowledge economy and a new type of national and global strategic resource. It is bringing new methodology and new paradigm to scientific research to change human life and to deepen the understanding of the world. Big Earth Data is an important part of big data, which integrates earth science, information science, and spatial science and technology to become the "new key" for humankind to understand the earth and the "new engine" for knowledge discovery. It is expected to play full role in promoting sustainable development. Particularly, the macro and dynamic monitoring capability of Big Earth Data provides an important means for SDGs evaluation, and Big Earth Data can integrate multi-source data, to generate more relevant and richer information for decision-making support.

At the 75th session of the General Assembly of the United Nations on September 22, 2020, President Xi Jinping announced that China would establish an International Research Center of Big Data for Sustainable Development Goals to provide further assistance for the implementation of the "Agenda for Sustainable Development." Prepared for almost a year, the International Research Center of Big Data for Sustainable Development will be officially established on September 6, 2021. Under the guidance of TFM of UN SDGs, the Center will offer data service and scientific and technological support capacity advancement, and provide all-round data sharing, scientific and technological support, decision-making support, and think tank service for relevant UN agencies and member states. The Center aims at the cutting-edge frontiers of cross-discipline of earth system science, social economic science, and sustainable development science, conducts systematic research on SDGs indicator monitoring, evaluation and prediction in the fields of big data-driven environmental commons, urban and rural development, food security, and energy decarbonization, develops the theoretical system and technical methods of big data serving SDGs, establishes the big data platform and decision-making support system that serves SDGs, and provides basic theories, technical methods, decision-making support, and think tank service for solving major sustainable development problems in China and the world.

At the time of International Research Center of Big Data for Sustainable Development being officially established, and the 50th anniversary of the restoration of China's lawful seat in the United Nations, *Bulletin of Chinese Academy of Sciences* launched a special issue on Big Earth Data for Imple-

menting the Sustainable Development Goals. It is hoped that this special issue will present you how the scientific and technological innovation facilitating sustainable development, and the significance of Big Earth Data to support sustainable development. At the same time, I would like to take this opportunity to thank all the contributors of this special issue and all colleagues who have diligently worked for this journal.

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