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ABSTRACT OF THE PLENARY SPEAKER

Knowledge Discovery for Global Sustainability

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We are living during a rare period that happens once in a hundred generations when humankind invents a new communication medium. We also are living within the century when humankind created the capacity for synoptic measurement of features, phenomena and impacts across the Earth on a planetary scale. As a consequence, our generation has unprecedented capacity with our technologies and data to look across time, backwards and forwards, on a planetary scale to address issues and impacts that are relevant to the future of our civilization. How can we empower individuals globally with the capacity and curiosity to utilize these information assets in a manner that contributes to our sustainable development?

Overarching global sustainability is stability and peace among nations. Looking across our planet, we see that nearly thirty percent of the Earth's surface falls within the boundaries of nations. The remaining seventy percent exists in areas that humankind collectively established beyond national jurisdictions, starting with the high seas in 1958. This dichotomy of nations and international spaces underscores the challenge of our civilization forever to balance national interests and common interests, promoting cooperation and preventing conflict across the Earth with science as a tool of diplomacy.

Moreover, our sustainability requires balance between economic prosperity, environmental protection, social equity and societal welfare in view of present urgencies and future needs. Setting expectations correctly, such balance involves ongoing iteration in response to ever-changing circumstances as a process that must operate over decades to centuries on a planetary scale. In our shared journey, science offers continuity from the present into the distant future as an evolving platform of knowledge.

Along with inclusive stakeholder perspectives and integrated governance strategies, geospatial data from the natural and social sciences are essential for the progress of our global society. We have opportunities and responsibilities to reveal options that contribute to informed decision making, especially for sustainable infrastructure development, involving both built elements and governance

mechanisms. Reflected by aspirations of the United Nations Sustainable Development Goals and Future Earth initiative of the International Council of Science, we are at a special time in human history to facilitate knowledge discovery and act for the lasting benefit of all on Earth.