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ANALYSIS OF CLIMATE CHANGE AND SATELLITE POLICY IN THE UNITED STATES

Abstract

Climate change is widely seen as the greatest challenge facing mankind today. To improve our understanding of climate change, we rely on information gathered through monitoring networks on Earth as well as systems of Earth-observing satellites. Understanding the potential risks is necessary in order to develop the adaption and mitigation strategies to be undertaken by the United States.

Unfortunately, the continuity of the U.S. space-based observation system is currently in danger. Because satellites have a limited life-span, it is important that they are regularly replaced by new generations of systems, and an overlap in these systems is necessary both to avoid gaps in data collection and also to allow calibration of instruments. However, in the United States, older satellite systems are reaching the end of their missions faster than new systems are being deployed to replace them. These delays will may cause gaps in land imagery data needed for understanding the impacts of climate change on issues such as agriculture, biodiversity, and ecosystems. According to the senate testimony of the Director of the Office of Science and Technology Policy, John Holdren, "Over the next eight years, 50% of the world's current and planned suite of Earth observing satellites will be past their useful life." Due to the long lead-times needed for development of new satellite systems, this could lead to a significant loss of observing capability in the next decade. It is essential that the United States continue to collect and maintain its stable, accurate, long-term global measurements of climate change. Gaps in this data limit progress in all aspects of climate research and applications.

This paper provides an overview of the current state of climate change satellite operation and development in the United States, and considers the feasibility, advantages, and challenges of three policy options for alleviating potential future data gaps. These options include: 1) increasing efforts to develop bi-lateral climate change data-sharing agreements with close allies, such as Europe and Canada, 2) increasing funding for Earth-observing satellites most critical to maintaining the ability to monitor and understand climate change, and 3) increasing efforts to engage the United Nations Framework Convention on Climate Change (UNFCCC) and Global Earth Observation System of Systems (GEOSS) groups and speed the development of multilateral data-sharing agreements.