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INCENTIVES AND BARRIERS TO INTERNATIONAL SHARING OF CLIMATE SATELLITES DATA: EVIDENCE FROM NATIONAL AND INTERNATIONAL CASE STUDIES

Abstract

Climate change is one of the most pressing issues facing the global community, and understanding and addressing this issue requires the collection of environmental data. Although satellites can best collect much of this data, it is not possible for one nation to collect all relevant climate data on its own, and there are currently gaps and overlaps in relevant satellite data collection. Further, much of the data that is collected is not shared freely, but has barriers to access that limit its use for both scientific research and operational purposes.

Using a comprehensive database of Earth observation satellites and their associated data-sharing policies, I characterize the current data sharing situation and present a quantitative analysis that provides a first take at identifying drivers of data sharing policies. To gain greater understanding of these drivers and the motivations for data sharing policy changes, I then carry out case studies of the space and meteorological agencies in the United States, Europe, and Japan, using document analysis and personal interviews. Finally, I look at data sharing policy discussions within the World Meteorological Organization and the Group on Earth Observations and examine the role of these organizations in affecting national data sharing policy changes.

Based on this analysis, I find that data sharing policy development is driven by 1) economic viewpoints, in particular whether data is viewed as a public good or a commodity, 2) normative views on the proper role of government, and 3) views on the inherently global nature of both climate change and environmental monitoring. Further, I show that international organizations, and GEOSS in particular, play an important role in encouraging data sharing by clearly defining data needs, enabling discussions on political and economic impacts of policies, and demonstrating the value of existing open data sharing policies.

These findings help to illuminate important areas for future policy action and research. Additional research providing concrete evidence of the economic effects of free and open data sharing versus cost recovery efforts could provide useful input and allow for better-informed policy-making. Also, an examination of the role of normative and institutional arguments in the weather and climate communities could help to identify ways in which sharing for climate could be improved. Finally, increased international cooperation that focuses on ensuring mutual benefits from data sharing is an effective method to influence policy development.