

# **A new initiative of research and applications: Cloud-prone and Rainy areas Remote Sensing (CARRS)**

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## **Abstract**

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The regional impact of the global change is an important issue in today's changing world. An increased cooperation among international communities has been formulated to address this issue and to establish the costs and benefit of the anticipated changes within the context of regional sustainable development. Thus far assessments on regional impact of the global change were mainly made for geographic regions defined by the administrative units (e.g. country or several countries combined), such as those implemented by the IPCC and WMO. Alternatively, such assessments can also be carried out for regions defined by a unique physical characteristic, such as climate or ecological condition.

In this paper a new initiative named "Cloud-prone and Rainy-area Remote Sensing" (CARRS) was presented. The main objective of the CARRS is to formulate a framework under which a series of theoretical and applied researches can be carried out for observing, monitoring, and modeling world cloudy and rainy areas through advanced remote sensing technology. The heritage of the CARRS initiative roots from the great advancements achieved by the various global change programs conducted since the 1990s (e.g. the Earth Radiation Budget Project, the International Satellite Climatology Program, The Global Precipitation Program, Global Energy and Water Cycle experiment). Although significant progresses have been made through these projects and using remote sensing data to quantify physical and biophysical processes and to characterize atmospheric, terrestrial and marine ecosystems, such progress is still lagging behind for regions with frequent cloud cover, haze, and/or precipitation. It is within this context that the CARRS program was initiated aiming at advancing our understanding on the roles that this region plays as a unique and important component of the Earth system.