

Brazilian Ground Validation Activities for GPM: Understanding the Physical Processes of Intense Precipitation Events

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Abstract

Climate change is increasing the frequency of extreme events over the globe (IPCC, 2012). The number of victims and the damage these events are very high. The extreme weather events may be related to drought or excessive rain. This subproject will address this second type of event, precipitation extremes and severe weather. The statement of the problem is basic and simple: how to measure and describe the physical processes of extreme events using ground based instrument and GPM constellation and products. Mesoscale Convective Systems (MCS) are usually associated with severe weather events such as hail, heavy precipitation on the surface, high winds and even tornadoes. The understanding of the physical processes and the microphysical structure of rainfall associated with these kinds of systems and how GPM retrievals are describing them is a major topic cover of this research activity.

The main goal of this subproject is to describe the physical process of the intense rainfall events and propose a methodology to describe the physical properties using satellite remote sensing data and evaluate how the retrieval techniques employed by GPM are adequate to describe these rainfall systems.