COMPARATIVE ANALYSIS OF DIFFERENT SATELITE-BASED RAINFALL RETRIEVAL MODELS OVER SOUTH AMERICA

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INTRODUCTION

The distribution and intensity of rainfall are some of the most important parameters in the earth energy balance. Much effort has been employed over the years in order to collect measurements of precipitation over land. However, the observation network is very heterogeneous, favoring some areas and leaving others virtually with no coverage. Within this context, satellite data can address this lack of information on clouds and precipitation. However, the accuracy of satellite precipitation estimates at high spatial and temporal resolutions is still limited, especially those using the infrared (IR) techniques, given the character's of indirect estimate. Thus, the objective of this study is to investigate the quality of these precipitation estimates over South America making a temporal and spatial analysis of those results.

DATA AND METHODOLOGY

Algorithms validated:
Ground truth used:
- Regional networks and synoptic stations reported regularly by the “Global Telecommunication System” (GTS),
Statistical Analysis Methodology
- False Alarm (FAR), Prob. of Detection (POD), Bias e Correlation. Region and Period:
- South America and political regions of Brazil (see figure above);
- January 1st, 2009 - June 30th, 2012 – 1275 days.

RESULTS

Four satellite-based rainfall retrieval models have been validated. It was observed that all estimates perform better in the summer caused by the greater amount of convective events (Figure 1). In regions where convection is predominant, as the northern region, the models have less dispersion in the results, on the other hand, in regions with a greater variety of systems, such as the South and Southeast, the dispersion is quite pronounced, as can be seen Figures 2 and 3.

REFERENCES


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