

AN APPROACH TO FINER-SCALE TRMM-CALIBRATED PRECIPITATION ESTIMATES

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Improvements in the availability of global satellite observations have allowed the development of progressively finer-scale global precipitation estimates over the last six years. This history is briefly reviewed, from the monthly Global Precipitation Climatology Project (GPCP) "Satellite-Gauge" Combined Product and the monthly TRMM 3B-43 "TRMM and Other Data" Combined Product, to the daily TRMM 3B-42 "TRMM and Other Satellite" Adjusted GPI, to the GPCP "One-Degree Daily" Product. In each case, the product is designed to use the sparse, high-quality microwave-based precipitation estimates to calibrate frequent IR observations that are less directly related to precipitation. Where possible, gauge data are included in the combination. At present the authors are developing the next generation of precipitation algorithms, focusing on estimates on space and time grids of 1x1 degrees latitude/longitude and 3 hours, respectively. The initial target data domain is the period January 1998 to the present and the latitude band +/-40 degrees. TMI precipitation estimates are used to calibrate Special Sensor Microwave/Imager estimates, then the merged microwave estimates are used to calibrate IR observations. Sample years will be shown at the conference demonstrating convective evolution in relation to ENSO and the major monsoon systems. Major issues will be discussed, including the choice of IR algorithm and the approach to developing a combination product that features a merger of the (more-frequent) IR estimates with the (sparser) microwave estimates. As well, an extension to a 0.25x0.25-degree grid extending to +/-50 degrees latitude will be described. This work is laying the groundwork for effective use of the NASA Global Precipitation Mission, which is planned to provide full global coverage by low-orbit passive microwave satellites every three hours beginning around 2007.