Global, Multi-satellite Precipitation Analysis at Fine Time Scales using TRMM plus other Satellites: Real-time and Research Products and Applications

Robert Adler[1], George Huffman[3], David Bolvin[3], Scott Curtis[4], Eric Nelkin[3], Harold Pierce[3], Jeffrey Halverson[4], and Guojon Gu[2]

1) NASA/Goddard Space Flight Center USA, (2) University of Maryland Baltimore County (UMBC), NASA/GSFC, (3) SSAI, NASA/GSFC, (4) East Carolina U..

Quasi-global precipitation analyses at fine time scales (3-hr) are described. TRMM observations (radar and passive microwave) are used to calibrate polar-orbit microwave observations from SSM/I (and other satellites instruments, including AMSR) and geosynchronous IR observations. The data sets are then merged using a priority order based on quality to form the Multi-satellite Precipitation Analysis (MPA). This TRMM standard product will be available for the entire TRMM period (January 1998-present) in 2003 as product 3B-42 of the TRMM Version 6. A real-time version of this merged product is being produced and is available on the U.S. TRMM web site (trmm.gsfc.nasa.gov) at 0.25° latitude-longitude resolution over the latitude range from 50°N-50°S. Application of these real-time estimates in monitoring floods is explored using case studies in the U.S. (for validation) and in many locations worldwide. Numerous heavy rain events are detected, both small localized cases and those resulting from larger-scale events. Limitations due to orographic processes are examined. Application of the MPA to detection of Indian Ocean precipitation variations related to the initiation of El Nino are also shown.