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TRMM Version 7 Level 3 Gridded Monthly Accumulations of GPROF Precipitation Retrievals

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TRMM scientists and algorithm developers have been working on the improvement of rain retrievals, over those found in version 6, for several years. In July 2011 improved versions of the retrieval algorithsms were approved for TRMM. All data starting with June 2011 are produced only with the version 7 code. At the same time version 7 reprocessing of all TRMM mission data was started. By the end of August 2011, the 14+ years of the reprocessed mission data became available online to users. This reprocessing provided the opportunity to redo and enhance upon an analysis of V7 impacts on L3 data accumulations that was presented at the 2010 EGU General Assembly. This paper will discuss the impact of algorithm changes made in the Level 2 GPROF swath retrieval on the Level 2 swath products. Perhaps the most important change in that retrieval was to replacement of a model based a priori database with one created from Precipitation\ Radar (PR) and TMI Tb data. The radar pays a major role in the V7 GPROF (GPROF2010) in determining existence of rain. The level 2 retrieval algorithm also introduced a field providing the probability of rain. This combine use of the PR has some impact on the retrievals and created areas, particularly over ocean, where many areas of low-probability precipitation are retrieved whereas in version 6, these areas contained zero rain-rates. This paper will discuss how these impacts get translated to the space/time averaged monthly products that use the GPROF retrievals. The level 3 products discussed are the gridded text product 3G68 and the standard 3A12 and 3B31 products. The paper provides an overview of the changes and explanation of how the level 3 products dealt with the change in retrieval approach. Using the .25 deg x .25 degree, the paper will show that agreement between the swath product and the level 3 remains very high. It will also present comparisons of V6 and V7 GPROF retrievals as seen both at the swath level and the level 3 time/space gridded accumulations. It will show that the various L3 products based on GPROF level 2 retrievals are in close agreement. The paper concludes by outlining some of the challenges of the TRMM version 7 level 3 products.