Intercomparison of Satellite Rainfall Estimates in the PrecipAMMA Framework for the 2004 Rainy Season in the Sahel.

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Satellite Rainfall estimates intercomparison is carried out in the framework of PrecipAMMA which is the African Monson Multidisciplinary Analysis (AMMA) group coordinating the satellite estimates. The validation ground-based data are provided by the AGRHYMET Regional Center based at Niamey, Niger, and include the national raingauge networks of nine countries in the Sahel. These raingauge data are gridded using the method of regression block kriging. The satellite estimates are provided by the "Laboratoire de Météorologie Dynamique" (LMD) in France, the University of BONN and the IBIMET Center in Italy and are respectively named as LMD, BONN and IBIMET. The intercomparison period is the 2004 rainy season. Different methods (bias, root mean square error, correlation coefficient, distribution comparisons, error maps) are used for the intercomparison. All these methods lead to the same conclusion that LMD is the best product, followed by BONN and IBIMET with large errors for IBIMET. For example, the average bias and root mean square error of the LMD, BONN and IBIMET estimates at dekadal and 0.5°x0.5° grid cell scales are respectively 2% and 40%, 7% and 55%, 65% and 109%. The LMD values have the more correct magnitude but they miss the high rainfall values. The BONN product overestimates rainfall values, but it has the most correct high values. IBIMET systematically largely over-estimates everywhere. The spatial analysis shows that the LMD bias is positive in the East of Sahel and negative in the West. BONN spatial bias distribution is homogeneous. IBIMET has a large positive bias almost everywhere in the studied region. These results may help to improve these three satellite rainfall algorithms for

the Sahel.