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Prepared by NOAA
Agenda Item: II/5
Discussed in WG II

A RAINFALL DATA SET OVER SOUTH AFRICA FOR VALIDATING NOAA AND EUMETSAT SATELLITE RAINFALL PRODUCTS

In response to CGMS action 38.26

Action/Recommendation proposed: None.

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1 INTRODUCTION

SEVIRI has been a highly valuable resource for GOES-R algorithm development, particularly for applications where the current state of numerical weather prediction models limits the usefulness of simulated data. One such application has been in the area of rainfall estimation and nowcasting, where the GOES-R Algorithm Working Group (AWG) Hydrology Algorithm Team (AT) has been developing a trio of algorithms: current instantaneous grid-scale Rainfall Rate, Rainfall Potential accumulation during the next 3 hours, and Probability of Rainfall of at least 1 mm during the next 3 hours.

Because the intensity and frequency of rainfall and the physical mechanisms involved (e.g., convective vs. stratiform; orographic enhancement via the “seeder-feeder mechanism”) varies considerably in both time and space, validation data are needed over as wide a variety of climate regimes and seasons as possible to develop robust algorithms and properly evaluate their performance. However, obtaining ground validation data sets of suitable quality at short time scales (instantaneous to 3 h) has proven to be exceedingly difficult. The Nimrod radar/gauge data set provided by the British Atmospheric Data Centre (BADC) has provided excellent ground validation data for all 3 GOES-R algorithms over Western Europe, while the Tropical Rainfall Measuring Mission (TRMM) Precipitation Radar (PR) has been highly useful for validating the Rainfall Rate algorithm over the tropics and lower midlatitudes. However, high-quality rainfall data sets have otherwise been quite difficult to obtain aside from very limited data sets associated with field campaigns such as the NASA African Monsoon Multidisciplinary Analyses (NAMMA) and the planned Chuva project over Brazil.

2 CONCLUSIONS

Therefore, collaboration among EUMETSAT, NOAA, and the South African Weather Service to develop a high-quality validation data set for satellite rainfall product development and validation would be highly valuable to the research and operational communities. NOAA intends to participate in any proposed collaboration.