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## Enhancing Precipitation Data Accuracy in Burkina Faso: A Comparative Analysis of Satellite-Based Products and Ground Measurements, with Soil Moisture Integration

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This paper investigates the quality of long-period precipitation data in Burkina Faso by integrating ground measurements from the Agence Nationale de la Météorologie (ANAM) with satellite-derived precipitation products such as PERSIANN and IMERG data. The primary objectives are to detect rainfall events, assess measured quantities, and identify outliers or erroneous data in the precipitation records. The study employs a comprehensive comparison approach to evaluate the accuracy and reliability of different satellite precipitation products against ground-based observations. To enhance the precision of precipitation data, ESA Climate Change Initiative Plus Soil Moisture data are introduced as a complementary dataset. A bottom-up approach is applied, utilizing soil moisture data to estimate precipitation quantities and refining the detection of rainfall events. Special attention is given to the correction of biases, particularly in regions characterized by sandy soils within tropical zones. The paper highlights the significance of integrating soil moisture information for improving the quality of precipitation data and addresses the challenges and advantages associated with this approach. The findings contribute to the understanding of the strengths and limitations of satellite-based precipitation products in a region with diverse soil characteristics, offering valuable insights for hydrological modeling, water resource management, and climate studies in Burkina Faso and similar tropical environments.

Keyword: ground measurements, satellite precipitation products, soil-moisture, bottom-up approach, missing data

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