EVALUATE

It

CHARACTERIZE

THE

IN

RESULTS

OVER

Close Real

American surroundings

VOLUME

PDFs

02/10/2008 31/12/2010

BIAS%

NRMSE

02/10/2008 31/12/2010

42h accumulated rainfall (12 UTC)

Surface stations available over South America

Average value was assigned to the central grid of 25 km resolution

DATA

Stations with more than the 70% of the days with available data.

Not all the dataset is included in GTS. This is a large effort of collection and consistency.

Source of the data:

- SMN - APA - SREH - U de La Punta - AIC - INTA - Bolso de Cereales - DNM Uruguay - DNAC Paraguay - CTMGG - SAGyP - CPTEC - NOAA

RESULTS

OBJECTIVES

- Evaluate the performance of different satellite precipitation estimates over South America: 3B42 V7, V6 and Real Time, CMORPH, HYDRO and CoSch.

- Characterize the errors considering different climatic regions and seasons focusing on La Plata Basin area and mountain areas.

METHODOLOGY

Normalized RMSE and BIAs%

Seasons:

DJF, MAM, JJA, SON

CLIMATIC REGIONS

Complete Area (AC)
- Northeastern Argentina (NE)
- Southern Brazilian Coast (BS)
- Central Argentina (CE)

- Northwestern Patagonia (MS)
- Eastern Brazil (RE)
- Western Brazil (BO)

VALUES RELATED TO THE AVERAGE PRECIPITATION RATES

- More reliable values over northeastern Argentina, Uruguay, Paraguay, southern and northwestern Brazil.

- In the region south of 20°S.
  - Best performance CoSch.
  - Close Real-time estimates -> best result for 3B42 RT.
  - 3B42 V7 shows improvement.

GRAPHICS BASED ON RAINFALL THRESHOLDS

BOXPLOTS

FUTURE WORK

- The inclusion of surface observations, as in the case of CoSch and 3B42 V6 and V7, improves performance over studied regions.
- Extreme precipitation values are overestimated over SESSA, except HYDRO that underestimates observed precipitation in most of the thresholds.
- Results show an error dependence with season and worse performance associated with CoSch and HYDRO precipitation.
- Hydrometeorological region extending south of 15°S. In the comparison between 3B42 RT, CMORPH and HYDRO (products closest to real time), 3B42 RT presents a better result mainly in summer and in the NE region, while HYDRO improves performance in winter and in the CE region.
- In the region extending south of 20°S, the comparison between 3B42 RT, V6 and V7, 3B42 V7 shows better results reducing the overestimation.
- Over mountain areas associated with snow precipitation, 3B42 V7 shows a better estimation of precipitation over all thresholds, less underestimation. MN region dominated by deep convection shows similar results than before.

CONCLUSIONS

- It is necessary to study these products in relation to the topography, areas where precipitation is solid and more frequently than every 24 hours (3 hours).
- Determine the atmospheric conditions that favor a better performance of the precipitation estimates, and study the extreme cases related to a peak in the distribution of errors.

VALIDATION OF SATELLITE PRECIPITATION ESTIMATES OVER SOUTH AMERICA WITH A NETWORK OF HIGH SPATIAL RESOLUTION OBSERVATIONS

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- Evaluation
- Characterization
- Results
- Validation