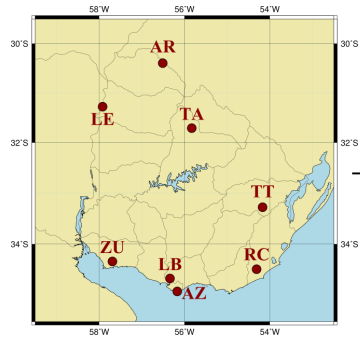
Benchmarking of modeled solar global horizontal irradiation (GHI) data in Uruguay at a daily time scale

Six databases of GHI information validated

LCIM
CAMS
CERES
GL1.2
NSRDB
MERRA-2

models based on geostationary satellite information (except reanalysis MERRA2)

Region of study
Validation over 7 sites



4 years of high quality GHI measurements from local network used as reference

Validation and analysis

analysis of overall performance

seasonal dependence performance

cloudiness dependence performance

CONCLUSIONS

From the models analyzed; LCIM, NSRDB, and GL1.2, are recommended in this region for applications in which the solar input uncertainty is critical. All of them are based on GOES-East imagery

The LCIM model resulted as the best option, showing better overall metrics with spatial consistency. NSRDB and GL1.2 are well-positioned in the overall, with even better consistency across sky conditions. A third group of models is conformed by CERES and Heliosat-4, with higher uncertainty than the previous ones, but still accurate.

MERRA2 shows high uncertainty and it should not be used for solar resource assessment in the region without an important post-processing procedure.