

# GOES-East satellite images processing in Uruguay and future perspectives

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Satellite images provide valuable information on the state of the Earth's atmosphere. The derived satellite products have a variety of applications in fields such as meteorology, agriculture, energy assessment, among others. However, the processing of GOES satellite information in Uruguay is still in its initial stages. Historically, the images were used only for visual assistance to the meteorological forecast. A first product for solar resource assessment, based on GOES-East visible channel digital counts, was locally implemented four years ago at the national University [1, 2]. Since then, GOES satellite image processing has been gradually improved. Currently, satellite counts are being calibrated and converted into physical magnitudes, such as reflectance factor for the visible channel and brightness temperature for the infrared channels. This information allows us to work on products with a higher level of complexity.

Our local GOES-East images database has been constructed and is maintained via NOAA's CLASS service. We have downloaded images from January 2000 to date, for a spatial window that includes the whole territory of Uruguay, the southern part of Brazil and the area of Buenos Aires' province. The calibration of the images is done following the recommendations in NOAA/STAR's and NOAA/OSPO's websites [3, 4]. The resulting solar assessment product is now based on the reflectance factor instead of the visible channel's counts. Its estimates have been used for solar resource characterization [5] and to generate solar data for ad-hoc sites both for energy and agriculture applications. We are currently working in a cloud index and a cloud classification products.

In spite of these useful applications, Uruguay did not host an operational GOES-East receiver in its territory. In a joint project supported by the national telecommunication company (ANTEL), efforts are now underway to install such a receiver. Images will be obtained and served in real-time for the national meteorological institute (INUMET), the national University and other public institutions. Access to real time satellite information will allow local research groups to develop operational forecasting tools such as nowcasting or to include the information in numerical weather prediction models. This experience is intended to be a first step in preparation for the next generation of NOAA's geostationary satellites which will have a much higher data rate.

**Keywords:** GOES satellite, image processing, satellite products.

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