



ASSESSMENT OF WATER SURFACE ELEVATION PRODUCTS OF THE SWOT SATELLITE IN THE NORTHEAST BRAZIL

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INTRODUCTION

Water level monitoring is crucial for water resources management and addressing the challenges of climate change. In Brazil's Northeast region, ensuring power generation, flood control, and water availability for consumptive use, especially in its semiarid region, are some of the main current and future challenges. Different SWOT data can support strategies to promote sustainable water use and prevent disasters.

OBJECTIVES

The objective of the study was to evaluate the accuracy of water surface elevation (WSE) SWOT estimates over a set of reservoirs and river reaches in Northeast Brazil.

STUDY AREA

The water bodies are located, part in Pernambuco state and part in the São Francisco river basin, one of the most important in the region.

DATASET

- WSE SWOT time series of the products L2_HR_LakeSP Prior, L2_HR_RASTER 100m and L2_HR_RiverSP Node;
- Observed water level time series from stations.

METHOD

The accuracy of the WSE SWOT values was evaluated applying the Pearson correlation coefficient r , mean absolute error (MAE), root mean square error (RMSE) and mean absolute percentage error (MAPE).

RESULTS

The results showed that the WSE SWOT time series obtained a good fit to the in-situ water level monitoring as can be seen in Table 1. In some cases, WSE SWOT data had some difficulty to represent properly the in-situ time series and need more investigation.

Table 1. Average values of statistical metrics

Products	r	MAE (m)	RMSE (m)	MAPE (%)
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SWOT LakeSP	0.95	0.13	0.29	0.06
SWOT RiverSP	0.77	0.16	0.32	0.11
SWOT Raster	0.82	0.26	0.46	0.33

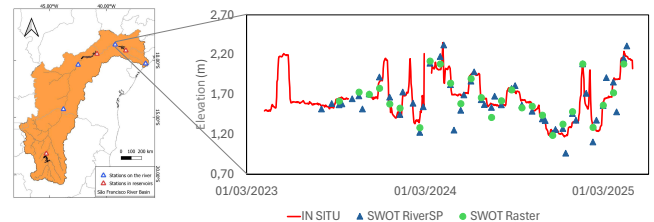


Figure 2. WSE in a cross section of the São Francisco River.

CONCLUSIONS

- The SWOT products showed potential for use in monitoring water elevation in the rivers and lakes selected for assessment, with good accuracy and trend detection capabilities;
- Better filtering of outliers and improved accuracy in river reaches with sandbars would help to increase the accuracy of the products.

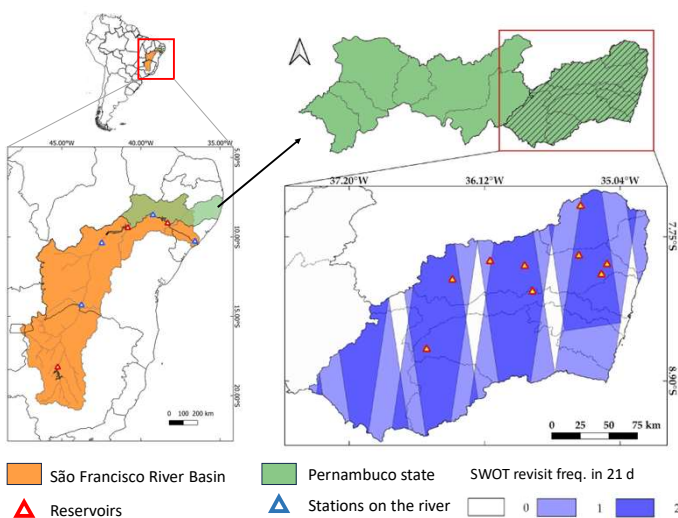


Figure 1. Location of reservoirs and river cross sections.

