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The sea surface temperature and surface current signals of the Iberian Poleward Current (IPC) in the Bay of Biscay from hourly SEVIRI SST and HF-Radar data.

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A warm Sea Surface Temperature (SST) signal related to the Iberian Poleward Current (IPC) is often observed during winter over the Iberian and French slopes and shelves of the Bay of Biscay. The winter-time surface signal of the IPC in the inner Bay of Biscay is deduced from hourly SEVIRI SST images covering the 2004-2014 period. First the missing data found in the SEVIRI images is reconstructed using the Data Interpolating EOFs (DINEOF) technique and verified using in-situ observations from the ICOADS dataset. Then, after removing open ocean pixels, a Principal Component Analysis is used to deduce a time-series of the surface signal of the IPC from reconstructed SEVIRI SST data. This series is compared with previous daily-scale estimations of the signal deduced for the 1981-2010 period from DINEOF reconstructed AVHRR SST data.

Two HF-radar antennas are placed in the Basque coast in the inner Bay of Biscay. The antennas provide hourly-scale surface current estimations over the corner of the Bay. Those surface current measures are combined here with the hourly time-series deduced for the IPC from SEVIRI SST data using a composite analysis, i.e. comparing positive and negative SST and surface current patterns related to the extremes of the IPC time-series.

The results show that reliable reconstructions of SEVIRI SST data can be obtained over the Bay of Biscay using the DINEOF technique. In addition, a very good agreement is observed between the daily-scale estimations of the IPC obtained in previous studies, and hourly signal estimations deduced here. Finally, the HF-Radar composite analysis based on the IPC time-series shows that a northward flowing current pattern following the slope is observed for both positive and negative phases of the IPC time-series. This flowing pattern, however, is strengthened during positive IPC phases.