

SUMOS : A field campaign in support of the validation of CFOSAT observations

Danièle Hauser, LATMOS (CNRS, Univ. Versailles St Quentin, Sorbonne Université),

daniele.hauser@latmos.ipsl.fr

Peter Sutherland, peter.sutherland@ifremer.fr

Louis Marié, LOPS (Ifremer, CNRS, IRD, UBO), louis.marie@ifremer.fr

Raquel Rodriguez Suquet , CNES, Raquel.RodriguezSuquet@cnes.fr

Patricia.schippers, ACRI-ST, patricia.schippers@acrist-.fr

Gilles Guitton, Ocean Data Lab, gilles.guitton@oceandatalab.com

Frederic Nouguier , LOPS (Ifremer, CNRS, IRD, UBO), Frederic.nouguier@ifremer.fr

Marie-Noëlle Bouin (Meteo-France), nbouin@ifremer.fr

The SUMOS field campaign has been organized in February and March 2021 in the Bay of Biscay (Atlantic ocean near the coast of France and Spain) with deployment of in situ and remotely-sensed observations dedicated to provide reference observations to further assess the quality of CFOSAT's wind and wave products, and guide the necessary improvement of inversion algorithms. Initially planned in April 2020, this campaign has been postponed to February-March 2021 due to the Covid crisis.

During SUMOS two coordinated components are deployed in coordination with the CFOSAT cross-overs.

1) In situ measurements of waves, winds, fluxes, and currents carried out from the research vessel *L'Atalante*, with in particular a wave imaging X-band radar, video systems mounted on board, and drifting buoys deployed from that vessel.

2) Measurements from the Kuros radar mounted on-board the research aircraft ATR42 operated by SAFIRE (Meteo-France/ CNES/CNRS) to provide radar normalized radar cross-sections at near-nadir incidence and directional wave spectra

At the time of writing this abstract, four sequences of acquisition coordinated with CFOSAT passes have been carried out, and nine others are scheduled until March 2nd 2021.

Figure 1 below illustrates the sampling area for February 16th, when CFOSAT overpassed twice the experimental area (morning descending track and evening ascending track).

Figure 2 illustrates one sample of wave spectrum from a drifting Spondrit buoy.

Figure 3 illustrates one sample of wave spectrum from the 10° beam SWIM observations (from the L2 CWWIC product). The wave spectrum from the MFWAM model at the closest point is given for comparison.

During this meeting we will present an overview of the dataset and first results on the SWIM/buoys/ship/KuROS/SWIM intercomparison

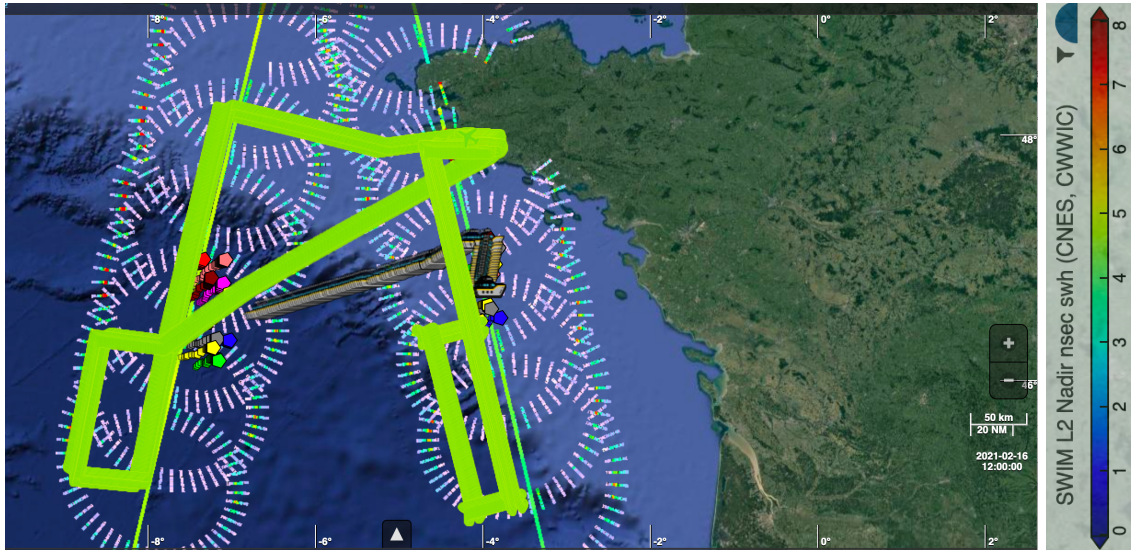


Figure 1: Experimental area on February 16th 2021. The nadir tracks of CFOSAT crossing the area on this day are shown in color with a color code indicating the significant wave height from the nadir measurements (color code on the write hand side). The small segments in color along cycloids represent radial wave spectra from the SWIM 10°beam measurements (from IWWOC processing). Pentagons in color give the wave buoy positions. Grey boat symbol: position of the research vessel *L'Atalante* on February 16th 2021. The continuous bold green lines show the aircraft tracks for the two flights carried out on February 16th. *Graphical tool developed by Ocean Datalab.*

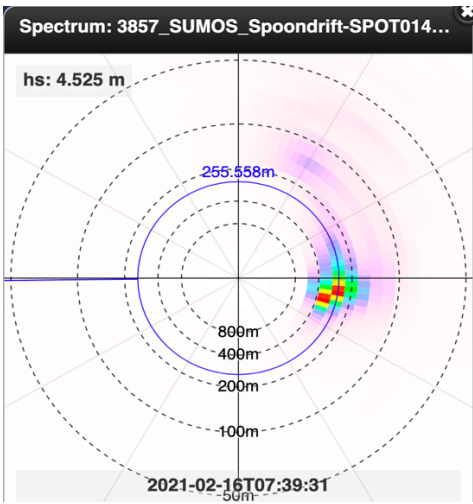


Figure 2 : Directional wave spectrum from one of the drifting Sponsdrift buoy at 12:40 UTC, position 46.2N, -7.39 W.

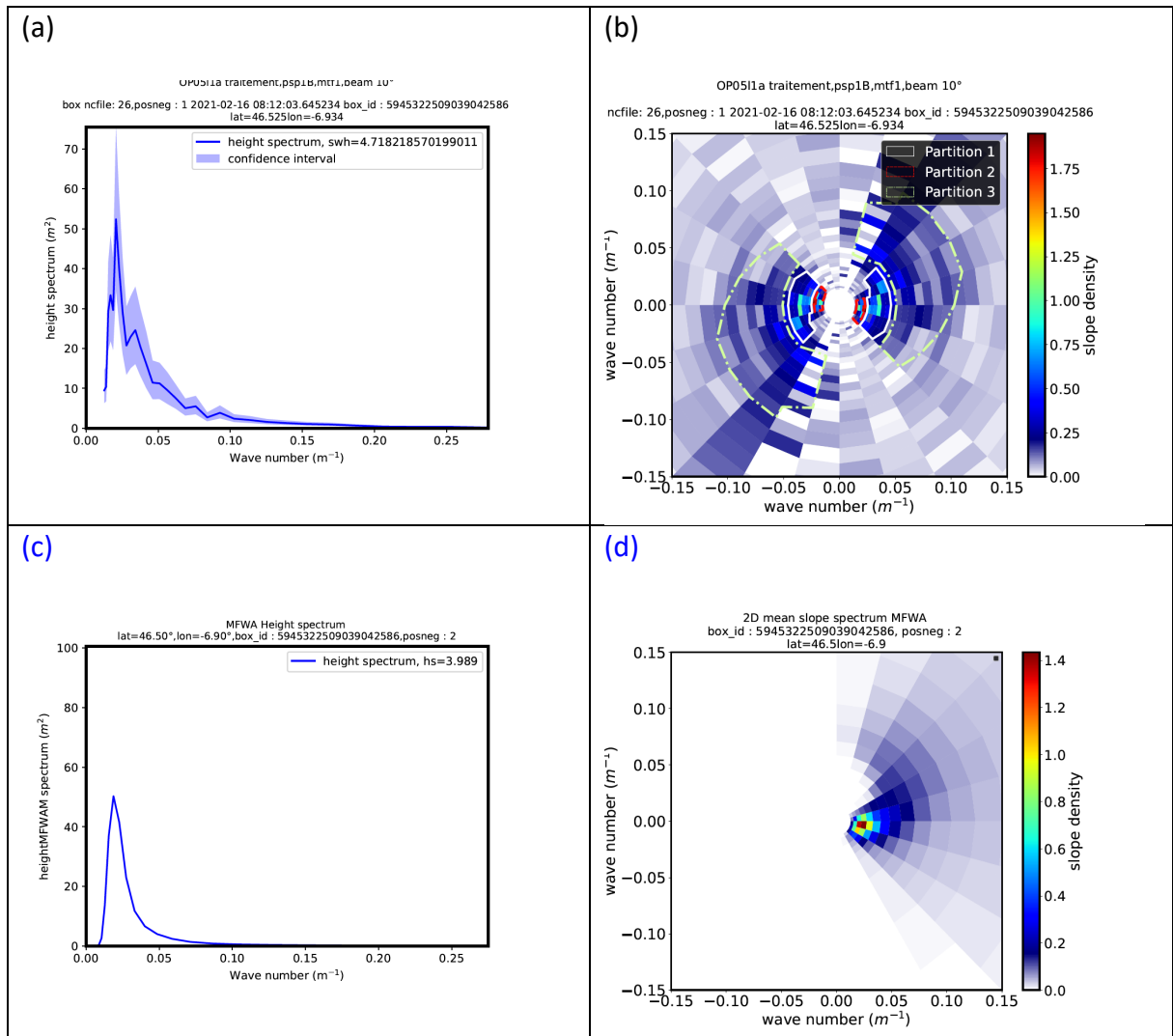


Figure 3: Omni-directional wave height spectrum (a, c) and two dimensional wave slope spectrum (b,d) from SWIM beam 10° on February 16th 0812 UTC at 46.52N , -6.93W (top) and from the MFWAM model (c,d, bottom).