Scatterometer winds assimilation in HARMONIE-AROME for a domain over the Iberian Peninsula

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1. Introduction – HARMONIE-AROME @ IPMA

HARMONIE-AROME activities started in 2018 have been two-fold:
- **Targeting** delivering daily short range weather forecasts;
- **Research** in support to operations focussing on optimal use of observations from satellite instruments.

A daily HARMONIE-AROME suite has been running since August 2020 for a domain over the Iberia Peninsula (Fig.1) at ECMWF/HPC infrastructure. Conventional observations used in DA are obtained from surface stations over land (SYNOP) and sea (SHIPS and DRIBU), radiosondes (TEMP) and aircrafts (AMDAR and AIREP).

Non-conventional observations include scatterometer winds obtained from ASCAT on the 3 METOP satellites (ASCAT-A, ASCAT-B and ASCAT-C).

For more details and information on HARMONIE-AROME daily suite consult M. Monteiro et al. “2021 ACCORD highlights for IPMA, I.P.”

2. Optimal use of scatterometer winds: ASCAT in HARMONIE-AROME 4D-Var

These activities have been carried out in collaboration with KNMI in the scope of EUMETSAT funded project MIDAS (Proj. Ref. No. EUM/CO/1/19/4600002345/EO) with the main goal of taking advantage of the unprecedented coverage of scatterometers using 4D-Var.

Verification over the ocean against ScatSat-1: 07 - 22 Feb2020

![Verification](image)

**Fig. 2** (a) wind speed bias m/s, and (b) RMSE m/s for u-component and (c) RMSE (m/s) for v-component. Verification performed against ScatSat-1 winds for all OSEs described.

For more details and information on HARMONIE-AROME 4D-Var attend Jan Barkmeijer et al. talk on Tuesday “Status of HARMONIE-AROME 4D-Var”.

3. Outlook

Extend the use of ocean winds from the international constellation of scatterometers:
- Functionality tests on the use of HY-2B in CY46 were successfully conducted. (Fig. 3).
- The impact of improved temporal coverage provided by HY-2B ~06UTC/18UTC in complement to ASCAT ~09UTC/21UTC will be assessed and explored.

The combination of ATOVS+ASCAT in 4D-Var looks promising and it will be further explored.