

# SPECIAL PROJECT PROGRESS REPORT

All the following mandatory information needs to be provided. The length should *reflect the complexity and duration* of the project.

**Reporting year**

2020

**Project Title:**

On the 4-D consistency of satellite wind products for regional NWP data assimilation (WIND-4D)

**Computer Project Account:**

SPESPORT

**Principal Investigator(s):**

Marcos Portabella Arnús

**Affiliation:**

Institute of Marine Sciences (ICM-CSIC)

**Name of ECMWF scientist(s) collaborating to the project**  
(if applicable)

Federico Cossu (ICM-CSIC), Isabel Monteiro (IPMA), Javier Calvo (AEMET), Ad Stoffelen (KNMI), Gert-Jan Marseille (KNMI)

**Start date of the project:**

January 1<sup>st</sup>, 2019

**Expected end date:**

December 31<sup>st</sup>, 2021

**Computer resources allocated/used for the current year and the previous one**  
(if applicable)

Please answer for all project resources

		Previous year		Current year	
		Allocated	Used	Allocated	Used
<b>High Performance Computing Facility</b>	(units)	2500000	0	10000000	0
<b>Data storage capacity</b>	(Gbytes)	2000	0	10000	0

**Summary of project objectives** (10 lines max)

An accurate and consistent initialization of the evolution of the 3-dimensional (3-D) wind structure is essential in regional weather analysis. The project focuses on a comprehensive characterization of the spatial scales and measurement errors for the different operational space-borne wind products currently used and/or planned to be used in regional models. In addition, the project will thoroughly investigate and improve the 4-D (including time) consistency between the different horizontal and/or vertical satellite wind products (scatterometer, IASI, AMVs, ADM-Aeolus) under study. Densely sampled aircraft wind profiles (Mode-S) will be used to verify and characterize the satellite products. Data assimilation experiments of the consistent datasets into the Harmonie-AROME regional model will be carried out in two different regions, i.e., the Netherlands and the Iberian Peninsula regional configurations.

**Summary of problems encountered** (10 lines max)

As reported last year, the start of the project was substantially delayed by a variety of reasons. The 3-year post-doctoral fellowship contract associated to this project (granted to Federico Cossu) finally started in mid-September 2019. Moreover, the Covid situation has negatively impacted Federico’s training plans on HPC use and data assimilation, which included two extended visits to KNMI this year, one of which has been cancelled and the other is TBC (depending on potential Covid-related travel restrictions in fall). This has resulted in an overall delay of about a year and a half in the project, which in turn may cause an overall delay of the use of ECMWF IFS resources of about 2 years. I sincerely apologize for this delay.

**Summary of plans for the continuation of the project** (10 lines max)

Federico Cossu is currently focused on the remote sensing aspects of the WIND-4D project. Note that during the first year of WIND-4D, the focus is on remote sensing rather than on data assimilation (now aggravated by the Covid situation), while for the second and third year, the focus is on data assimilation, as specified in the resources request of the SPESPORT. As such, I expect very little use (if any) of ECMWF IFS in 2020. As already mentioned in last year’s progress report, the project would greatly benefit from an extension of the currently granted HPC capabilities through 2022, to guarantee HPC access during the third year of the WIND-4D research fellowship (which will run until mid-September 2022).

**List of publications/reports from the project with complete references**

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**Summary of results**

If submitted **during the first project year**, please summarise the results achieved during the period from the project start to June of the current year. A few paragraphs might be sufficient. If submitted **during the second project year**, this summary should be more detailed and cover the period from the project start. The length, at most 8 pages, should reflect the complexity of the project. Alternatively, it could be replaced by a short summary plus an existing scientific report on the project attached to this document. If submitted **during the third project year**, please summarise the results achieved during the period from July of the previous year to June of the current year. A few paragraphs might be sufficient.

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