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 2024 (1st year of the project)

Project Title: Implementation of a new method for eddy diffusivity parameterizations in WRF-Chem model

Computer Project Account: spcrgas2

Principal Investigator(s): Goran Gašparac

Affiliation: Croatia Control Ltd.

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

Start date of the project: 1.1.2024.

Expected end date: 31.12.2026.

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
High Performance Computing Facility	(units)	-	-	20 000 000	-
Data storage capacity	(Gbytes)	-	-	3000	-

Summary of project objectives (10 lines max)

Implement new proposed scheme in the WRF-Chem model, perform sensitivity analysis and finally test new scheme against different chemical parametrizations. Preliminary results with only WRF model showed increase of modelling performance for wind speed in the lower boundary layer. The main objective is to see how and to which extent is this reflected to the surface concentrations of NOx, SOx, PM, etc.

Summary of problems encountered (10 lines max)

Implementation of new scheme in the WRF-Chem is challenging. Many variables are hard coded or calculated among various scripts, therefore it take some time to make final compiled version of modified model.

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

Start with simulations with default and modified version of WRF-Chem. In the first year of project main focus is on sensitivity analysis and validation against various measurement data sets as planned.

List of publications/reports from the project with complete references

During first 6 months, no publication/reports were done.

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.

During first six months of the project all activities were focused on the implementation of the new scheme in the WRF-Chem model. It was done on the local computer in order to save SBU for simulation only purposes. Model is successfully compiled. Expected start of simulations is end of August.
All data needed for sensitivity analysis are prepared: airborne measurements, mast mounted and various surface station measurements (both air quality and meteo) and input data for WRF-Chem model.