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:	Assessment of model responses to emission changes in the frame of the FAIRMODE CT9 platform
Computer Project Account:	spcrgasp
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)	-	-	5 000 000	-
Data storage capacity	(Gbytes)	-	-	3000	-

Summary of project objectives (10 lines max)

The goal is to evaluate the robustness of the WRF-Chem model and to address the issue of the sensitivity of model responses to emission changes. This will be done by testing model performance and responses to emission reductions (changes) over urban areas of Croatia. Exercise is a part of Fairmode CT9.

Summary of problems encountered (10 lines max)

Only minor problems were encountered during:

- emission reduction preparation – making general program setup for emission reduction automation
- selecting micro-location for further analysis in terms of data availability (rural background monitoring stations in the vicinity), possible industrial areas, etc.-

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

For the first year (first phase): defining parameters for planned control and emission reduction simulations. Making preliminary analysis, exchange of results, and best practices with other colleagues from Fairmode. In the first phase, the main focus is on sensitivity analysis and simulations of PM.

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.

The main focus of the first 6 months was on collecting measurements (mainly from rural background air quality and meteorological stations) and emission data, preparing all input data for simulations (IC, BC, boundary, static data, etc) and finally defining desired period for simulations based on data availability: (i) all simulations will be done for the year 2015. (ii) domain will encompass entire Croatia, however focus will be on the urban areas of city of Zagreb, Slavonski brod and Rijeka.

Further on, algorithm for emission reduction was developed in order to automatize all needed work for emission preparation. For sensitivity analysis of the PM, the emissions of SOx, VOCs, NH3, NOx are reduced for separate runs and all together by 25% and 50%.