

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 year01-06 / 2021.....

Project Title:
Black Sea Ensemble forecasting system
.....

Computer Project Account: ...spbebulc.....

Principal Investigator(s): ...Luc Vandebulcke.....
.....

Affiliation: ...Université de Liège, Belgium.....

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

Start date of the project: ...01/01/2021.....

Expected end date: ...31/12/2023.....

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)	/	/	650.000	/
Data storage capacity	(Gbytes)	/	/	2.000	/

Summary of project objectives (10 lines max)

The aim of the project is to convert a deterministic NEMO implementation used in the CMEMS Black Sea Forecasting Center, into an ensemble model. The ensemble members will have different initial conditions, scalar model parameters e.g. in the turbulence module, the light penetration scheme, the surface bulk formulae, etc The uncertainty obtained from the ensemble will be quantified and the ensemble reliability and consistency will be studied.

Next, SST and in situ temperature and salinity will be assimilated using an EnKF method.

The impact of the uncertainty coming from the physical model, on a coupled biogeochemical will also be investigated. In particular, it will be analyzed if spurious adjustments of the vertical velocity lead to artificial nutrient upwellings.

Finally, some biogeochemical variables will be assimilated in the coupled biogeochemical model as well.

Summary of problems encountered (10 lines max)

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not applicable
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Summary of plans for the continuation of the project (10 lines max)

The project has not started on the ECMWF facility yet. The models preparation is ongoing (at Univ. Liege premises). The first runs are expected to take place on the ECMWF facilities during the second half of 2021.

The project is not late with respect to the schedule, as only a limited amount of SBU were scheduled on the ECMWF computers during the projects first year

List of publications/reports from the project with complete references

.....not applicable
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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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...not applicable