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	…………2022…………………………………….……
Project Title:	… LARGe ensemble fOrecast and attribution of events (LARGO) ………………………………….……
	………………………………………………….……
Computer Project Account:	…… SPGBNEVE ………………………………….……
Principal Investigator(s):	…… Neven Fuckar …(neven.fuckar@ouce.ox.ac.uk)..……
	………………………………………………….……
Affiliation:	… University of Oxford, Environmental Change Institute
Name of ECMWF scientist(s) collaborating to the project (if applicable)	………………………………………………….……
	………………………………………………….……
Start date of the project:	……01.01.2020………………………………….……
Expected end date:	……01.01.2023………………………………….……

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)	27 200 000	0	27 200 000	
Data storage capacity	(Gbytes)	40 000	0	60 000	

Summary of project objectives (10 lines max)

This special project LARGO (spgbneve) will compare the impacts of the SPPT and/or SPP perturbed-physics schemes on the ensemble spread, forecast skill, and attribution of extreme events in large ensembles produced with the IFS and/or OpenIFS using numerical single precision (and potentially EC-Eearth3). We are primarily interested in forecasting and attribution of heat waves, droughts, and high precipitation events, so we put the focus on the boreal summers of 2018 and 1976 (the hottest and the second hottest summer in England), as well as the boreal winter and spring of 2020, and the boreal spring and summer of 2021. Our experimental setup (potentially utilizing multiple ECMWF models) will allow us to examine a wide spectrum of extreme events taking place in the selected seasons. We consider different methods for generation of counterfactual ensembles based on ERA5 and/or CERA-20C that could benefit event attribution science. ………………………………….

Summary of problems encountered (10 lines max)

… The simulation phase of project LARGO has been unfortunately delayed due to the public health situation, so the planned IFS and/or OpenIFS and/or EC-Earth3 runs did not start yet. However, the use of ERA5 data for the generation of EC-Earth3 IC of a set of extreme events has been completed and the production runs with EC-Earth3.3.3.1 will start in July or August 2022 on cca in Reading. Thus, we expect to report the results of the forecast skill and event attribution assessments in September 2022, with the intention to spend annual SBU allocation by October 2022.
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Summary of plans for the continuation of the project (10 lines max)

…The main objective is to catch up with the project timeline as much as possible in the final year. This project represents opportunity to substantially advance extreme event attribution science through systematic exploration of an encompassing series of extreme events pushing the capability of EC-Earth3 prediction systems to the limits along with having opportunity to explore growing socio-economic relevance of such extremes in a changing climate……
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List of publications/reports from the project with complete references

…… No publication yet
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Summary of results

The NH summers in 2018, 2019, 2020, and 2021 provided climate science community with series of exceptional as well as unprecedented temperature and hydrological extreme events that resulted