

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 year2020.....

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).....

...Co-investigators (outside of ECMWF): Friederike Otto, Myles Allen, Pirkka Ollinaho (FMI, Finland)...

Affiliation: University of Oxford, Environmental Change Institute ...

Name of ECMWF scientist(s) collaborating to the project (if applicable) ...Peter Dueben, Peter Bechtold

Start date of the project: ...01.01.2020.....

Expected end date: ...01.01.2022.....

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)	N/A	N/A	27 200 000	0
Data storage capacity	(Gbytes)	N/A	N/A	40 000	0

Summary of project objectives (10 lines max)

...This special project will compare the impacts of the SPPT and SPP perturbed-physics schemes on the ensemble spread, forecast skill, and attribution of extreme events in large ensembles produced with the IFS using numerical single precision. We are primarily interested in forecasting and attribution of heat waves, droughts, and heavy 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 spring and summer this year, but our experimental setup will allow us to examine a wider spectrum of events. We put forward a template for the generation of counterfactual ensembles based on ERA5 and CERA-20C that could benefit a potential quasi-operational attribution system.

Summary of problems encountered (10 lines max)

...The first simulation phase of project LARGO has been a bit delayed due to the current public health situation, so the IFS runs did not start yet. However, the preliminary analysis of ERA5 and CERA-20C data for the generation of IC of the selected extreme events has commenced and the aim is to start production of IFS runs in August 2020. Furthermore, we expect that Step 1, and most likely Step 2, of the project’s plan will be completed by the end of 2020.....

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

...Following our analysis of ensemble spread and skill of actual/factual large-ensemble forecasts with applied SPP scheme versus forecasts with the default SPPT scheme (that all will be produced later this year), we will generate the associated large counterfactual ensemble forecasts (more precisely, scaling back the anthropogenic forcing factors to the beginning of the 20th century as used in CERA-20C) by summer 2021. The last step performed by the end of 2021 will be event attribution of the selected extreme events using generated large factual and counterfactual ensemble forecasts.....

List of publications/reports from the project with complete references

...No publication yet.....

Summary of results

...The analysis of ERA5 and CERA-20C reanalyses in parallel with the analysis of selected observations guide us in the preparation of IC for the extreme event forecast and attribution study of boreal summers of 2018 and 1976. Furthermore, this year so far has proved to be very far from uneventful since England experienced the wettest February and then the driest May on the record.