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:	Future Weather: An Investigation of Storm Scenarios for Ireland
Computer Project Account:	spieclan
Principal Investigator(s):	Colm Clancy
Affiliation:	Met Éireann
Name of ECMWF scientist(s) collaborating to the project (if applicable)	N/A
Start date of the project:	1 January 2022
Expected end date:	31 December 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)			10M	77k
Data storage capacity	(Gbytes)			10000	0

Summary of project objectives (10 lines max)

The objective of this project is to investigate the effect of a warming climate on extreme post-tropical storms impacting Ireland. The "future weather" framework will be used, employing the high-resolution HARMONIE-AROME NWP model to simulate storm events in hypothetical, but physically plausible, climate settings.

Summary of problems encountered (10 lines max)

There has been a delay due to difficulties in recruiting a post-doctoral fellow for this project. The position will be re-advertised in the coming weeks and it is hoped that they will be in place in Q3 of 2022.
Some initial technical tests (described below) were started on cca. However, a number of memory issues were encountered, which may have been due to the domain size.

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

Cycle 43h2.2 of HARMONIE-AROME has been built and is running successfully on the new Atos supercomputer. This will be used from now on for all work in the project.
The immediate next phase will involve technical tests in terms of running HARMONIE-AROME on very large domains. Previous work has found problems with the generation of the climate and physiography input data.
Once these have been successfully generated, and any other memory issues have been overcome, the main simulations outlined in the project proposal for Year One can commence, namely the reforcasting of historical Storms Ophelia and Lorenzo using idealised SST perturbations.

List of publications/reports from the project with complete references

None

Summary of results

Parallel work on the proposed UWC-W operational suite has raised some issues of stability of the HARMONIE-AROME model on large, complex domains. Initially cca was used for some technical testing of these for the purposes of the current project. Cycle 43h2.2 was built and some preliminary technical tests attempted. However, a number of memory issues were encountered. Subsequent tests with aa have been more successful.

June 2022