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	2020
Project Title:	Production of regional climate model projections for Europe in the framework of Copernicus C3S project PRINCIPLES
Computer Project Account:	SPFRVAUT
Principal Investigator(s):	Robert Vautard, Nikolay Kadygrov
Affiliation:	National Centre for Scientific Research (CNRS), Institut Pierre Simon Laplace (IPSL)
Name of ECMWF scientist(s) collaborating to the project (if applicable)	………………………………………………….…… ………………………………………………….……
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)	---	---	30,000,000	0
Data storage capacity	(Gbytes)	---	---	350,000	0

Summary of project objectives (10 lines max)

The main objective of the project is to perform high-resolution runs ($0.11^{°}$) of the regional climate model downscaling different Global Climate Models (GCMs) under different future and historical scenarios. Despite the relatively large set of projections completed under the EURO-CORDEX framework, the matrix of available GCM-RCM simulations is far from sufficient to satisfactorily cover the entire dimensions of model spread let alone overall uncertainty in current projections. The overarching goal is to produce a further well-coordinated set of RCM simulations for the European domain. This set of simulations will expand the set currently available from EURO-CORDEX to provide an optimal GCM-RCM matrix that better characterizes the sources of spread in variability in climate projections over the European region. The specific goal of this special project is to complete the runs by simulations of 150 years of WRF model downscaling at least two GCMs.

Summary of problems encountered (10 lines max)

We have encountered several problems with compilation of WRF model as we have to set up exactly same WRF model configuration at ECMWF HPC to match one set up at CEA computer centre. The problem is now resolved, but still there are some issues remain with compilation of WPS program for WRF. The work was highly affected by COVID-19 pandemic that constrain our work flow.

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

With decline of COVID-19 crisis and lifting confinement, we plan to come back to initial timeline of developments, although with certain delay, i.e. to start simulations in a time frame from July to September 2020. Our goal is to start with testing our WRF381P code in order to optimise its performance on ECMWF computer. Then we are going to transfer all necessary data (prepared boundary conditions etc.) to ECMWF and perform first simulations of MPI GCM downscaling for the period of 150 years.

List of publications/reports from the project with complete references

None

Summary of results

Due to above-mentioned problems the simulations runs were not produced according to initial time line. However, WRF381P model configuration was transferred to ECMWF computer and successfully compiled with Intel environment. We are working now on preparing of boundary conditions from MPI GCM model to be used in the next step of the project.