

Kick-off meeting minutes

The meeting starts at 14:30 and ends at 17:30 of Wednesday 13 December 2023. Location: meeting room DIAT12, 2nd floor, Politecnico di Torino, C.so Duca degli Abruzzi 24, Turin.

Participants

Alberto Viglione (AV)	-	PoliTo
Luca Lombardo	-	PoliTo
Paola Mazzoglio	-	PoliTo
Susanna Corti (SC)	-	CNR-ISAC
Ignazio Giuntoli	-	CNR-ISAC
Enrico Arnone (EA)	-	UniTo
Olivia Ferguglia	-	UniTo

Discussion on the project as a whole

Round of introductions.

AV shows a presentation with the following points:

1. Description of the Clim2FIEx objectives
2. Description of the study area (Greater Alpine Region)
3. Working packages and tasks
4. Dissemination options
5. Meeting strategy
6. Choice on how to share documents and data

In particular, the following is discussed/chosen:

- One or two sessions should be submitted for EGU2025 (in HS, CL, AS or NH), possibly together with partners in similar projects (e.g., Giuseppe Zappa);
- The final meeting should include as stakeholders AdB-Po, CLIMAX-Po members, Regional Climate-Change observatory. Synergies with other projects should be sought;
- AV shall draft a dissemination plan to be modified by SC and EA;
- AV has created a web-page for [Clim2FIEx](#);
- AV shall create a Twitter (X) account for the project;
- AV shall create a dropbox space for storing project documents;
- Data sharing tools will be decided when needed.

Technical discussion of unit activities

AV shows a presentation on PoliTo activities with the following points:

1. Set-up of the regional hydrologic model in WP1 (the model, the calibration method, the data for calibration)

2. The three tasks of WP4 on mapping of climate to flood extremeness (event separation and characterisation, regional events, ETCCDI correlation to flood indices)

The following emerges from the discussion:

- The reanalysis products UERRA and CERRA should be used for calibration;
- An alternative could be ERA5 with stochastic downscaling (thus leading to an “ensemble calibration”);
- The effects of spatial aggregation should be considered in the calibration process.

SC presents the ideas of CNR-ISAC for WP2 and the following points are noted:

- For Task 2.1: the work should start from reanalysis data identifying weather regimes related to annual maxima (ETCCDI of precipitation). The weather patterns should be then correlated to flood statistics over all area of interest. Extreme precipitation cumulated in space and time should be analysed;
- For Task 2.2: the emergent constraints technique should be used for selecting more accurate models in reproducing ERA5 precipitation extremes (not new) and hydrological extremes (this would be new). Models should not be discarded but ranked. Different storylines could be identified from models with similar behaviour and the reasons for the behaviours should be sought;
- For Task 2.3: It would be great to identify cluster of models that work well for the historic period but then diverge, thus leading to storylines. For megafloods (e.g. 2002 flood in central europe) models with multiple members (say 20 ensembles) should be used to understand uncertainties and dominant processes in the simulations.

EA shows a presentation on UniTo activities for WP1 and WP3 with the following points:

- For Task 1.2: Data download: Earth System Models (ESMs) of the Coupled Model Intercomparison Project version 6 (CMIP6) for the large scale. High resolution models adopted to extend the analysis to regional scales (HighResMI, CMIP6 ESMs and the CORDEX regional dynamical downscaling). Multiple resolution simulations of the EC-Earth ESM developed during the SPHINX project. Reanalysis and gridded datasets (ERA5, EOBS, GPCC, HistAlp);
- For Task 3.1: A first sensitivity study will adopt the SPHINX dataset of simulations at five different spatial resolutions, from 16 to 125 km, for the CMIP EC-Earth ESM and ERA5 data spatially downgraded in the range from 25 km to 200 km.
- For Task 3.2: Hierarchy of models: ESMs at large scale, ESMs at high resolution from HighResMIP and high-resolution Regional EURO-CORDEX and the convective-permitting CORDEX-FPS models (down to 3 km resolution). Use of ERA5 data and test the effects of downscaling techniques on the extremes.
- For Task 3.3: Adopt the ESMValTool suite of model evaluation diagnostics and performance metrics and include new diagnostics if needed.

Alberto Viglione