HORIZON-CL5-2022-D1-02-04: Supporting the formulation of adaptation strategies through improved climate predictions in Europe and beyond

Specific conditions	
Expected EU contribution per project	The Commission estimates that an EU contribution of around EUR 10.00 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Indicative budget	The total indicative budget for the topic is EUR 20.00 million.
Type of Action	Research and Innovation Actions
Admissibility conditions	The conditions are described in General Annex A. The following exceptions apply: The page limit of the application is 60 pages.
Eligibility conditions	The conditions are described in General Annex B. The following exceptions apply: If projects use satellite-based earth observation, positioning, navigation and/or related timing data and services, beneficiaries must make use of Copernicus and/or Galileo/EGNOS (other data and services may additionally be used).

Expected Outcome: Project results are expected to contribute to all of the following expected outcomes:

- Support to the implementation of the new EU Adaptation Strategy and the Mission on adaptation to climate change, including societal transformation, through better access to improved knowledge about climate impacts and fit-for-purpose data on individual and collective climate risks for all levels of government and stakeholders.
- Reduced vulnerability to climate change impacts based on decadal predictions which are a key source of information for better planning of adaptation options.
- Improved assessment of risks for people and systems exposed to extreme weather and climate events.
- Enhanced scientific collaboration and exploitation of synergies across the EU and Associated Countries for the provision of climate information to stakeholders engaged with the implementation of the EU Adaptation Strategy.

- Enhanced European cooperation and leadership in climate sciences e.g. in the frame of the Euro-CORDEX initiative, a part of WCRP's Coordinated Regional Climate Downscaling Experiment project (CORDEX).

Scope: Proposals should aim at improving seasonal to decadal prediction to boost their quality at regional to local scale in particular for Europe and for variables of high societal relevance. Actions will enable progress in closing the gap between current skill and potential predictability estimates, as well as better aligning with immediate adaptation needs of end-users and making those predictions actionable. Ultimately, methodologies need to be developed to merge simulations from long-term weather forecast to climate predictions and projections, resulting in seamless climate information from sub-seasonal to seasonal and decadal predictions for the next 30 years.

Proposals should also improve assessments of risk through extreme climate-related events on a range of temporal and spatial scales, as well as early detection of tipping points. Tackle uncertainties regarding regional patterns and magnitude of changes and improve understanding of how existing model biases affect the representation of extremes regarding the intensity and frequency of hazards, including the co-variability of different risk factors, and ultimately reducing the biases.

Better exploiting climate variables can enhance consistency with impact models and avoid potential mismatches, leading to better understanding of interactions between climate system and other natural and socio-economic systems (e.g. insurance practices) as well as feedbacks related to land use and cover, urban dynamics, air quality, etc., which are very relevant for model simulations at regional scale. Actions should explore novel ways of coupling existing impact models with climate models to provide quality forecast at the local scale, focussing for example on cities. Actions are encouraged to develop guidance on selection or aggregation of model data for local impact assessments, with clear justification of the procedures, allowing transformation of uncertainty into a manageable package of information.

Coordination with the Destination Earth initiative can be proposed to ensure the timely development of "climate replicas" building on the new state-of-the-art IT infrastructure, including access to European high performance computing resources and an operational platform to upload and integrate the models and data developed in the course of the projects. Data should be FAIR[1] and based on standards. Models should also be fully documented in terms of assumptions, architecture, code and data.

Participants should also ensure synergies with relevant projects and initiatives (e.g. Digital Twin of the Ocean under the EU Green Deal call LC-GD-9-3-2020: Transparent & Accessible Seas and Oceans: Towards a Digital Twin of the Ocean and the Digital Europe Programme).

Model development should be properly connected with major programmes in the domain of Earth Observation such as the Copernicus Programme and the ESA science satellite missions

[1] FAIR (Findable, Accessible, Interoperable, Reusable). Further information: https://www.go-fair.org/fair-principles/; and Final Report and Action Plan from the European Commission Expert Group on FAIR Data, "TURNING FAIR INTO REALITY" (https://ec.europa.eu/info/sites/info/files/turning_fair_into_reality_0.pdf)

in Europe, as well as the Group on Earth Observations (GEO) and the Global Earth Observation System of Systems (GEOSS) at global level.

Actions should ensure the dissemination of project results to policy-makers and stakeholders to support long-term planning. International cooperation is encouraged with the aim to ensure the sharing of knowledge and experience between Europe and third countries on climate change impact and adaptation option modelling and assessment.

This topic requires the effective contribution of SSH disciplines and the involvement of SSH experts, institutions as well as the inclusion of relevant SSH and gender expertise, in order to produce meaningful and significant effects enhancing the societal impact of the related research activities.