EU researchers are leading the way on developing skilful computer models that can predict the climate in Atlantic and Arctic regions, from within seasons up to decades into the future. Recent partnership workshops, coordinated by Horizon 2020 project Blue-Action, brought together top scientists from across Europe to solve current issues and discuss the next steps for cutting-edge climate science.

A major aim of climate predictions for seasonal to decadal timescales is to allow individuals, governments and businesses to plan and adapt to the changes to come. An exciting body of research demonstrates growing skill in providing reliable predictions, and there is huge potential to improve this with further work. The importance of the outputs, along with the complex nature of climate models, underline the need for international collaboration to accelerate and enhance research in this area.

Over forty observational and theoretical researchers came together in April 2019 for a series of in-depth discussions focused on oceanography in Arctic and sub-Arctic seas, and its role in climate. This workshop was jointly organised by Horizon 2020 project Blue-Action [2] and the ASOF [3] programme at the Danish Meteorological Institute, Copenhagen, Denmark. A further workshop on climate predictions was organised in June 2019 by the Bjerknes Climate Prediction Unit [4] and the EU Climate Modelling Cluster [5] in Bergen, Norway.
A key message was the importance of improving understanding of fundamental climate processes, which requires sustained, long-term ocean and atmospheric observation networks. Observational data such as that provided by the OSNAP [6] programme are critical to improving model resolution and reducing errors, as well as continuing to monitor real-world climate change. Climate modellers and observational scientists are working together to define and provide these data in large-scale partnerships that will improve knowledge transfer between disciplines.

Massive investment in computing infrastructure is also required for the next generation of high-resolution climate models. Computing is rapidly evolving, and future researchers will need to respond by adopting a community approach, working on shared infrastructure in large teams, and allowing simulation data to be analysed by the wider scientific community. These new ways of working throw up a range of challenges, from effective funding and knowledge sharing, to data storage and management.

Overall, the underlying theme of both workshops was the importance of cooperation: between research teams, across scientific disciplines, and between the scientific community and other stakeholders. The EU Climate Modelling Cluster promotes cooperation among EU funded projects to boost their impact and optimize use of resources, avoiding potential overlaps as well. Improving the predictive capacity of the models goes hand in hand with targeting the results to where they can have the most impact, working with stakeholders to design climate services for the benefit of both science and society.

The Horizon 2020 modelling cluster projects:

Blue-Action [7]
APPLICATE [8]
PRIMAVERA [9]
CRESCENDO [10]

Are you interested in discovering other Horizon 2020 projects in the same domain? Check our Data Hub [11]!

Published on 21/08/2019

Source URL (modified on 21/08/2019 - 10:26):

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[4] https://bcpu.w.uib.no
[8] https://applicate.eu/
[10] https://www.crescendoproject.eu/