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On the use and potential use of seasonal to decadal climate predictions for decision-making in Europe

Marta Bruno Soares (1) and Suraje Dessai (1,2)

(1) Sustainability Research Institute, School of Earth and Environment, University of Leeds, Leeds, United Kingdom, (2) Centre for Climate Change Economics and Policy, School of Earth and Environment, University of Leeds, Leeds, United Kingdom

The need for climate information to help inform decision-making in sectors susceptible to climate events and impacts is widely recognised. In Europe, developments in the science and models underpinning the study of climate variability and change have led to an increased interest in seasonal to decadal climate predictions (S2DCP). While seasonal climate forecasts are now routinely produced operationally by a number of centres around the world, decadal climate predictions are still in its infancy restricted to the realm of research.

Contrary to other regions of the world, where the use of these types of forecasts, particularly at seasonal timescales, has been pursued in recent years due to higher levels of predictability, little is known about the uptake and climate information needs of end-users regarding S2DCP in Europe. To fill this gap we conducted in-depth interviews with experts and decision-makers across a range of European sectors, a workshop with European climate services providers, and a systematic literature review on the use of S2DCP in Europe. This study is part of the EUropean Provision Of Regional Impact Assessment on a Seasonal-to-decadal timescale (EUPORIAS) project which aims to develop semi-operational prototypes of impact prediction systems in Europe on seasonal to decadal timescales.

We found that the emerging landscape of users and potential users of S2DCP in Europe is complex and heterogeneous. Differences in S2DCP information needs across and within organisations and sectors are largely underpinned by factors such as the institutional and regulatory context of the organisations, the plethora of activities and decision-making processes involved, the level of expertise and capacity of the users, and the availability of resources within the organisations.

In addition, although the use of S2DCP across Europe is still fairly limited, particular sectors such as agriculture, health, energy, water, (re)insurance, and transport are taking the lead on the use of seasonal forecasts. The potential to use decadal predictions across European sectors was also noted although these are currently not used due to the limitations of the science and the experimental nature of existing predictions. Despite the limited use of these types of climate predictions there is a general understanding that information on the uncertainty of such predictions is a fundamental component of S2DCP although approaches for dealing with such uncertainty also tend to differ across organisations.

Perceived barriers to the uptake of these types of climate predictions are mainly associated with low skill and reliability of the models but also with other factors such as relevance, usability, and accessibility of S2DCP by end-users. Potential solutions to overcome such barriers include the potential to explore existing ‘windows of opportunity’ in Europe, improve current understanding of users’ needs, and increase accessibility and awareness of users to available S2DCP in Europe.

This paper will present findings from our analysis and consider some of the broader issues raised by the emergence of S2DCP for climate services in Europe.