SESSION: (B4) S2D forecasts for decision making

(B4-08)

Seasonal and decadal prediction services of the Copernicus Climate Change Service (C3S) - current status and plans for the future

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Copernicus is the European Commission's flagship Earth observation programme that delivers freely accessible data to an operational schedule and information services. ECMWF has been entrusted to operate two key parts of the Copernicus programme, which will bring a consistent standard to the measurement, forecasting and prediction of atmospheric conditions and climate change.

The Copernicus Climate Change Service (C3S) currently provides a portfolio of products and services that include seasonal as well as centennial time scales, as well as the use of such products for key economic sectors in need of tailored climate information. Here we present the current role of seasonal prediction in the service, as well as future plans for climate prediction in the service.

An important element of C3S, at present, is a seasonal forecast service, based on a multi-system framework. Data from state-of-the-art seasonal forecast systems with operational status at a number of European institution is collected by C3S, where forecast products are generated and made available to the public in graphical and digital format. Some of the elements of the participating forecast systems have been harmonised, to optimise the benefits available to users (e.g. minimum hindcast period and ensemble size). The outputs - which include real-time forecasts and hindcasts, as well as graphical products from the individual contributing systems and as a combination - are available at a standard resolution, in standardised formats. The systems currently participating in the C3S seasonal service are from ECMWF, UK Met Office, Meteo France, CMCC and DWD; in the next year non-European Centres are also likely to join the service as in-kind contributors.

A large fraction of the sectoral users are keen to obtain information on the short time-scales (e.g., seasonal and sub-seasonal). Seasonal predictions from C3S models have been used for energy and water applications. In particular, one C3S contract implemented an operational hydrological service operating at a pan-European level. The analysis of the skill of this system has revealed areas where the skill is in river-flow is significantly larger than the skill that exists in the atmospheric drivers of river-flow variability.

The seasonal component of the C3S will continue to expand: in the near-term by increasing the number of graphical and digital products, and in the longer term by increasing the number of contributors to the multi-model system, thus providing enhanced information in support of climate services (e.g. WMO Regional Climate Centres, Regional Climate Outlook Forums).

Even though many users have also shown an interest in obtaining information on the longer time scale, decadal prediction products were not included in the initial C3S portfolio, due to the lack of maturity of the science to make it an operational service from the outset. C3S is now taking stock of the progress that has been made since then, to reconsider whether decadal predictions could be part of the new C3S portfolio. An important element of this component would be the provision of a scientifically sound framework for the evaluation of decadal hindcasts and the statistical post-processing of decadal predictions.