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Developing prototype decadal climate prediction services

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Here we present an overview of results emerging from a project to develop prototype decadal climate prediction services, funded by the EU Copernicus Climate Change Service (C3S). The field of interannual to decadal climate prediction has matured rapidly over the last ~15 years, becoming an established part of the Coupled Model Intercomparison Project (CMIP) process with multi-model decadal climate predictions made in CMIP5 and CMIP6 (DCPP MIP). It has further been highlighted by the recent creation of the WMO Lead Centre for Annual-to-Decadal Climate Prediction. Whilst these activities have led to rapid development in our understanding of decadal climate predictability and mechanisms driving global and regional annual to decadal climate variability, the creation of useful climate services on this timescale is still in its infancy.

This EU funded project was designed to start to address decadal climate services and brings together many of the key European institutions involved in decadal climate predictions from four different countries: Germany (DWD), Italy (CMCC), Spain (BSC) and the UK (Met Office). Each partner is working with a different sector: infrastructure, energy, agriculture and insurance where they have been developing a prototype decadal climate service in partnership with a user in that sector. Here we report on the progress made so far and highlight a number of key lessons learned along the way. These include the use of both large multi-model ensembles and more predictable large-scale circulation indicators in order to give skilful regional predictions of user relevant variables. We also describe the development of a common product format to present forecast information to users, this contains essential information about the current probabilistic forecast, retrospective forecast skill and reliability.