Joint verification and evaluation of seasonal forecasts from climate services: Experience from the H2020 CLARA project

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Assessing the information provided by co-produced climate services is a timely challenge given the continuously evolving scientific knowledge and its increasing translation to address societal needs. Here we propose a joint evaluation and verification framework to assess prototype services that provide seasonal forecast information based on the experience from the H2020 CLARA project. The quality and value of the forecasts generated by CLARA services were assessed for five climate services utilizing the Copernicus Climate Change Service seasonal forecasts and responding to knowledge needs from the water resources management, agriculture, and energy production sectors. This joint forecast verification and service evaluation highlights various skills and values across physical variables, services and sectors, as well as a need to bridge the gap between verification and user-oriented evaluation. We provide lessons learnt based on the service developers’ and users’ experience, and recommendations to deploy such verification and evaluation exercises. Lastly, we formalize a framework for joint verification and evaluation in service development, following a transdisciplinary (from data purveyors to service users) and interdisciplinary chain (climate, hydrology, economics, decision analysis). The diagnostics provided by the joint assessment improve on individual quality and skill assessment by bringing forth more dimensions and an in-depth analysis of the sources of service value. Service co-production should thus consider simultaneously and iteratively the quality of the hydro-climate information provided and its value for decision-making to inform robust enhancement strategies. Such effort, however, requires for prolonged collaborations between social and climate scientists, service developers and service users, beyond the lifespan of common research projects and for building communities that allow such long-term collaborations.

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