Evaluation and Quality Control for the Copernicus Seasonal Forecasts and Products

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The EU funded Copernicus Climate Change Service (C3S) will provide authoritative information about past, current and future climate for a wide range of users, from climate scientists to stakeholders from a wide range of sectors including insurance, energy or transport. It has been recognized that providing information about the products' quality and provenance is paramount to establish trust in the service and allow users to make best use of the available information. This presentation outlines the approaches and achievements within the Quality Assurance for Multi-model Seasonal Forecast Products project (QA4Seas), where a strategy has been developed for the evaluation and quality control (EQC) of the multi-model seasonal forecasts provided by C3S. First, we present the set of guidelines the data providers must comply with, ensuring the data is fully traceable and harmonized across data sets. Second, we discuss a provenance and metadata model that has been developed and is able to encode such information, and that can be extended to describe the steps followed to obtain the final verification products such as maps and time series of forecast quality measures. The metadata model is based on the Resource Description Framework W3C standard, being thus extensible and reusable. It benefits from widely adopted vocabularies to describe data provenance and workflows, as well as from expert consensus and community-support for the development of the verification and downscaling specific ontologies. Third, we describe the developed open source software to generate fully reproducible and certifiable seasonal forecast products, which also attaches provenance and metadata information to the verification measures and enables the user to visually inspect the quality of the C3S products. The partners involved in the project are seeking collaboration with similar initiatives, as well as extending the discussion to interested parties outside the C3S community to share experiences and establish global common guidelines or best practices regarding data provenance.