



The Evaluation and Quality Control of gridded observational ECVs for the Copernicus Climate Change Service

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The Climate Data Store (CDS) is a cornerstone of the Copernicus Climate Change Service. Comprehensive data sets on past and projected future climate are collected in the CDS and made available to a wide range of users. To allow users a confident utilization of the data served via the CDS, an independent Evaluation and Quality Control (EQC) is essential. Due to the huge number of different data sets, guidance for users is necessary to allow them to make informed choices based on detailed information on suitability, quality and reliability of the CDS products for their applications.

The EQC functionalities are implemented by combining an automated system based on the ESMValTool (extended and further developed to characterize observational products) and scientific expertise in order to deliver reliable quality assessments in an efficient and timely manner. Observational and reanalyses products assessed, e.g. ESA-CCI data sets and ERA5 data respectively, include essential climate variables (ECVs) from land, ocean and the atmosphere.

The EQC consists of an independent scientific quality assessment providing key information summarized in a consistent manner across all analyzed ECV products through generalized quality briefs. These briefs are based on a consolidated set of analysis functions addressing: (i) the functional maturity of data records and compliance to GCOS requirements via an independently performed assessment; (ii) a quantitative Fitness4Purpose assessment for specific use cases; and (iii) a summary of the resulting assessments based on an application performance matrix to guide users. The use cases will focus on the applicability of CDS single- and multi-data products, and are based on a cross-comparison of available observations and reanalyses covering a wide range of pre-selected problems that CDS users may wish to address.