

CERISE: CopERnIcus climate change Service Evolution

Description

The Copernicus Climate Change Service Evolution (CERISE) project aims to enhance the quality of the C3S reanalysis and seasonal forecast portfolio with a focus on land-atmosphere coupling. It will support the evolution of C3S by improving the C3S climate reanalysis and seasonal prediction systems and products towards enhanced integrity and coherence of the C3S Earth system Essential Climate Variables.

CERISE will develop new and innovative coupled land-atmosphere data assimilation approaches and land initialisation techniques to pave the way for the next generations of the C3S reanalysis and seasonal prediction systems. These developments will include innovative work on observation operators using Artificial Intelligence to ensure optimal data fusion integrated in coupled assimilation systems. They will enhance the exploitation of Earth system observations over land surfaces, including from the Copernicus Sentinels and from the European Space Agency Earth Explorer missions, moving towards an all-sky and all-surface approach. CERISE Research and Innovation will bring the C3S tools beyond the state-of-the-art in the areas of coupled land-atmosphere data assimilation, observation operators, and land initialisation methodologies. CERISE will develop diagnostic tools and prediction skill metrics that include integrated hydrological variables to go beyond the traditional skill scores to assess Earth system coupled reanalysis and seasonal prediction. It will deliver proof-of-concept prototypes and demonstrators, to demonstrate the feasibility of the integration of the developed approaches in the operational C3S.

CERISE outputs aim to contribute to medium to long-term upgrades of the C3S systems with targeted progressive implementation in the next three years and beyond. CERISE will improve the quality and consistency of the C3S reanalysis and multi-system seasonal prediction, directly addressing the evolving user needs for improved and more consistent C3S Earth system products.

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