S5E2

CERA-20C: a 20th century record of consistent ocean-atmosphere states

Eric de Boisseson

ECMWF

Within the ERA-CLIM2 project, ECMWF has developed an ocean-atmosphere coupled data assimilation system (CERA) that aims at producing a self-consistent estimate of the climate system. In CERA, ocean and atmospheric observations are simultaneously ingested, and the coupled model constraints of the variational method imply that the assimilation of an ocean observation can impact the atmospheric state, and vice-versa. An ensemble technique is also used to take into account uncertainties in the observational record. CERA is being used to generate the first climate reanalysis of the 20th century (CERA-20C) at moderate resolution using historical conventional observations from ISPD, ICOADS, HadISST and EN4 datasets. In CERA-20C, 3-hourly estimates of the coupled ocean-atmosphere state are available from 1901 to 2010. CERA-20C can be used for past climate reconstruction, climate monitoring, the detection of signals of decadal variability, as a set of initial conditions (and verification states) for extended-range forecasts. CERA-20C will also provide further insights into the impacts of the various observing systems on the reanalysed climate states. After completion and evaluation, CERA-20C will be made available to the research community to identify its strengths but also its weaknesses and ways forward to address them. In this presentation, the CERA system will be described, and preliminary results from CERA-20C will be presented.

Oral

- **Reconstructing past climates (products)**