



Variability of Coastal Low-Level Jets using an Ensemble of Global Reanalyses

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Coastal Low Level Jets (CLLJ) are coast-parallel wind features within the MABL, where the maximum of the wind speed profile occurs in the first 1000 m from the sea level. CLLJs occur along the eastern flank of the semi-permanent subtropical mid-latitude high pressure systems, with one exception in the Arabian Sea. The high-pressure systems over the ocean and a continental thermal low, which develops due to the intense heating inland, are the key elements to the synoptic forcing of along coast parallel winds, where CLLJ take place. The study of the global coastal jets systems, simultaneously in the region of occurrence, is only possible using modelling data, preferably hindcast or reanalysis. The latter having higher and higher resolution and increasing observational data assimilated, allows a 3-dimensional inspection of wind and temperature. In the present study, three global reanalyses, the European Centre for Medium-Range Weather Forecasts (ECMWF) Interim Reanalysis (ERA-Interim), the Japanese 55-year Reanalysis (JRA-55) and the Modern Era Retrospective-analysis for Research and Applications (MERRA2), are used to build an ensemble of reanalyses, for a common period encompassing 1980-2010. A detailed global climatology of CLLJ is presented based on a reanalysis ensemble. The annual and diurnal cycle as well as the inter-annual variability are analysed in order to evaluate the differences between the ensemble and the spread of reanalyses. This reanalysis ensemble will allow exploring with a new perspective these valuable datasets.

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