Geophysical Research Abstracts
Vol. 16, EGU2014-3649-1, 2014
EGU General Assembly 2014
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Dryness changes over the Iberian Peninsula using observations and CMIP5 models

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This study aims at analysing variability of standardized Gaussen index (GI) over the Iberian Peninsula. Climographs are used to characterize local climate by representing both temperature and precipitation monthly mean. The GI derives from climographs and may be considered as an index of dryness or aridity. Here we compared the Standardized Gaussen Index obtained from E-OBS dataset, at present climate, and Coupled Model Intercomparison Project phase 5 (CMIP5) for the coming decades. The question of how regional GI might change it is of high interest for planning and adaptations issues. However, the projections differ from one model to another due to the internal variability. We combined the standardized Gaussen index of different CMIP5 models to provide robust information of their changes over the Iberian Peninsula. First, the GI from model data are evaluated against the one of E-OBS for periods 1951-1980, 1981-2010, then we would provide climographs for periods 2016-2035, 2036-2055, 2056-2095, focussing on the trend and interannual variability. We applied different statistical procedure to extract the leading signals of spatial and temporal variability as, for example, Empirical Mode Decomposition and Partial Least Square regression. Relationships between GI and Atmospheric large-scale variables at the surface, upper levels, Sea Surface Temperature are considered to explore the GI variability.