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Delivering CMIP5-based climate scenarios for impact assessments in Europe

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Local-scale climate scenarios are required as input to impact models for assessment of climate change impacts. These scenarios incorporate changes in climatic variability as well as extreme events which are particularly important when used in conjunctions with process-based non-linear impact models. ELPIS is a repository of climate scenarios for Europe, which is based on the LARS-WG weather generator and future climate projections. Recently, projections from 18 global climate models (GCMs) from the CMIP5 multi-model ensembles used in the latest IPCC AR5 were incorporated into ELPIS. In ELPIS, the site parameters for climatic variables for the baseline period, 1980-2010, were estimated by LARS-WG from the European Crop Growth Monitoring System (CGMS) daily weather which were interpolated from observed sites over 25-km grid in Europe. Using change-factors derived from GCMs, LARS-WG perturbed site distributions for the baseline climate to generate local-scale daily weather for the future under RCP4.5 and RCP8.5 concentration pathways. The ability of LARS-WG to reproduce daily weather time series for 1980–2010 was assessed using statistical tests. Baseline site parameters, derived from CGMS, were validated against independent dataset obtained from the ECA&D archive. ELPIS represents a unique resource for impact assessments of climate change in Europe.