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# A 50 year surface analysis over Europe at 5.5km within the UERRA project

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UERRA project is a 4-year project (2014-2017) financed by the European Union under its 7th Framework Programme SPACE. One of its main objectives is to provide a 50-year reanalysis dataset of surface essential climate variables (ECV) at 5.5km grid at European scale, together with, as much as possible, uncertainty estimates.

The system used, to provide the ECVs and consistent other surface variables at 5.5km such as soil moisture at several levels, surface evaporation, snow depth, has two distinct components: (i) MESCAN, a surface analysis system providing 24h accumulated precipitation (RR), 2m temperature (T2m) and relative humidity (rh2m), and (ii) SURFEX (Masson et al, 2013), a land surface platform. The atmospheric re-analysis done by SMHI with the 3DVAR HARMONIE system and the ALADIN model at 11Km is used to provide the background fields at 5.5km for the surface analysis (T2m, Rh2m, RR) and to downscale the downward radiative fluxes and the wind at 5.5km required to drive SURFEX with the T2m, Rh2m and precipitation analysis.

We will briefly describe the system used for the surface analysis (MESCAN) with a focus on the precipitation analysis (Soci et al. 2016) which is one of the most essential variable for several applications: hydrological model for water management or snow pack evolution over mountains. We will show preliminary results for the 50 year period and some comparisons with independent observations. The estimation of the uncertainties will be also discussed associated with the problem of the evolution of the observation density network and its impact on the long term series.

Additional information about the UERRA project can be found at http://www.uerra.eu
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