



Land Surface Hydrology in the European High-resolution Regional Reanalysis UERRA

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The UERRA project (2014-2017), financed by the European Union under its 7th Framework Programme SPACE, aimed at building a high resolution (5.5km) reanalysis of surface essential climate variables (ECV) over Europe, covering the period 1961-2015, and at estimating associated uncertainties.

The atmospheric UERRA reanalysis relies on the HARMONIE system and the ALADIN model at 11km horizontal resolution. A downscaling at 5.5km is performed to derive wind and the downwards radiative fluxes, and to provide background fields for the MESCAN surface analysis of 2m temperature and relative humidity and 24h accumulated precipitation. These mesoscale fields are then used to drive hydro-meteorological off-line simulations based on the coupled SURFEX-CTRIP system, where SURFEX is the land surface model developed and used at Meteo-France for NWP and climate applications, and CTRIP is the river routing model used for climate applications at Meteo-France. Such a system provides not only ECVs, such as soil moisture, snow depth, etc., but also computes the various components of the water cycle: precipitation, surface runoff, soil infiltration and water storage, as well as the time evolution of rivers discharge and aquifers height.

A description of the MESCAN-SURFEX-CTRIP system will be done first. A detailed analysis of the water cycle components climatology over the 1961-2015 period over Europe will be done and comparisons with independent observations of river discharges will be discussed.

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

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