13.20 THE EUROPEAN CLIMATOLOGICAL HIGH-RESOLUTION GAUGE-ADJUSTED RADAR RAINFALL DATASET:

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The pan-European trend toward more frequent extreme precipitation is unequivocal. Nevertheless, an accurate (sub-) daily rainfall product covering Europe at the km scale is currently lacking. This internally funded project, in the framework of KNMI′s Multiannual Strategic Research Program, addresses this gap by deriving a climatological dataset of 1-h and daily rainfall depths at a 2-km grid covering a large part of Europe for 2012 to present. The archive of EUMETNET-OPERA radar composites will be employed as a starting point. First, remaining ground clutter is removed employing satellite products. Next, it is merged with a pan-European rain gauge dataset in order to substantially improve its quality.

Collaboration is established with the Center of Applied Research in Hydrometeorology of the Universitat Politcnica de Catalunya (CRAHI-UPC). In the context of the European Projects ERICHA (www.ericha.eu) and ANYWHERE (www.anywhere-h2020.eu), CRAHI-UPC has been producing in real time gauge-adjusted rainfall accumulations from the EUMETNET-OPERA composites using the rain gauge records of the SYNOP network at European scale. This product will be used as a basis for an evaluation of the KNMI outputs. The proposed dataset opens the possibility to derive reliable rainfall climatologies. We focus on the seasonal & diurnal cycle and the occurrence of extreme rainfall across Europe. The high spatial resolution allows to investigate the clustering and spatial extent of rain showers over Europe, which is a hot topic in climate research and of utmost importance from a climate impact perspective. The areal extent of extreme rainfall events is related to dew point temperature observations and atmospheric circulation.

Subsequently, the climatological rainfall dataset is utilised to validate satellite precipitation products (like the gridded IMERG product from the Global Precipitation Measurement (GPM) mission, and Meteosat Second Generation precipitation products). Hence, the quality of satellite-based quantitative precipitation estimates is assessed for a variety of European climates.

The gridded rainfall dataset will become available to the scientific community, which would boost the research on short-duration, small-scale extreme precipitation events to which the European society is vulnerable. We expect improved satellite rainfall retrieval algorithms, (validation of) weather forecasts, as well as attribution of extremes. It may also contribute to a better (near) real-time rainfall product, i.e. connect to the operational OPERA composite. In the end, this dataset will help to reduce the vulnerability to extreme weather events.

We will present an overview of the project, which is expected to start January 2019.