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Assessing frontal and extreme precipitation over the Euro-Atlantic domain

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In the context of high impact weather events, extreme precipitation events are responsible for notably economic damages and human casualties. The spatial pattern of accumulated precipitation typically shows local fine-scale maxima that can be detected only by means of high-resolution gridded products. A ground-based measuring network hardly maps the rainfall variability, especially over complex topography and over the oceans where the coverage provided by rain-gauges is inhomogeneous. However, accurate estimates of rainfall are essential for the risk assessment of any water-related natural hazard.
The TRMM (Tropical Rainfall Measuring Mission) Multi-satellite Precipitation Analysis (TMPA) combines precipitation estimates from different data sources. The TRMM near real-time product (3B42V7) and the ERA-Interim reanalysis product have been compared for the common period 2000-2016 at 0.75° spatial resolution, in order to evaluate their performances in representing accumulated precipitation over the Euro-Atlantic domain.
An objective method to associate amounts of precipitation to mid-latitude fronts at sub-daily basis is also used (Hénin et al., 2018). The fronts dataset is produced according to the detection method (Thermal Method) proposed by Schemm et al. (2015). Then, a squared search box of 6°x6° is settled to look for fronts in the neighborhood of every grid point affected by precipitation.
Annual and seasonal long-term means are produced for total, frontal and extreme precipitation. Preliminary results show that TRMM dataset overestimates (underestimates) the precipitation fields over the ocean (land) compared to ERA-Interim.

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