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Precipitation products over the Mediterranean Sea. Certainties and Uncertainties.

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To characterize the precipitation over the Mediterranean Sea is not an easy task. Although several reanalyses, models and satellite products are available all of them suffer from large uncertainties. The lack of a dense network of in situ measurements prevents the calibration of all those products. Here we will present a comprehensive intercomparison of precipitation gridded products for the Mediterranean Sea and an assessment of their skills when compared to observations (coastal gauges, radars and buoys).
Our results show that there are large discrepancies among satellite products, reanalysis and models. Differences among products are not only due to the magnitude of the variations but there are also different spatial patterns of variability. Regarding to the observational products, ocean buoys suffer from different problems that hamper their usefulness. Radar observations also suffer from technical issues but is the most reliable reference available so far (although limited in space). The comparisons with different radars in the NW Mediterranean suggest that ERA-interim, TRMM and CMORPH are the best products, although the first underestimates and the others overestimate the rain rates. The buoy data, even with their limitations also confirm this. Concerning the numerical models, the process of regional downscalling introduces significant differences with respect to the "parent" reanalysis. The ocean-coupling seems to have little effect on the quality of the precipitation fields, while an increase in model resolution in general leads to higher precipitation rates. However, the most determining factor in the modelled precipitation seems to be the model physics.