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The paradox of the Mediterranean water cycle: a review from a climate perspective

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The Mediterranean climate is defined as one in which winter rainfall is more than 3 times the summer rainfall, with winter precipitation accounting for 50–60% (western and northern regions) and 70–90% (southern and eastern regions) of the annual total amounts. Summer aridity contrasts with extreme precipitation in autumn and winter. The Mediterranean basin is also considered to be a major "hot spot" of climate change with paradoxal behaviour. On the one hand, the Mediterranean climate is subject to strong warming and drying. On the other hand, interannual rainfall variability is expected to increase. The vulnerability of the Mediterranean population may thus increase with higher probability of occurrence of events conducive to droughts and floods.

There is thus strong motivation to understand and model the Mediterranean climate system and specifically the processes at various time and spatial scales leading to heavy precipitation and droughts. This presentation reviews the recent findings on the on-going and future variability and trend of the water cycle based on recent observation and simulation datasets collected in the frame of HyMeX and CORDEX programs.