

EGU21-7540

<https://doi.org/10.5194/egusphere-egu21-7540>

EGU General Assembly 2021

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## Lagrangian review of the origin of the humidity for the case of two extreme precipitation events in the Mediterranean region

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Extreme precipitation events are atmospheric phenomena causing floods that generate great economic and social losses. The Mediterranean region is characterized by a strong variability in time and space that favors the appearance of this type of phenomena. Therefore, determining the origin of humidity must be done.

The UTrack-atmospheric-moisture model [1] is a Lagrangian tool to track atmospheric moisture flows forward in time using ERA-5 reanalysis weather data. The labeled moisture is released into the atmosphere in the form of evaporation. After determine the allocated moisture precipitated at each time, this model allows us to know the percentage of relative humidity that has precipitated for each of the labeled sources. Here we present a comparison of these results with previous results obtained by other Lagrangian methods.

[1] Tuinenburg, Obbe A., and Arie Staal. Tracking the global flows of atmospheric moisture and associated uncertainties." *Hydrology and Earth System Sciences* 24.5 (2020): 2419-2435.