Moisture source classification of heavy precipitation events in Switzerland in the last 130 years (1871-2011)

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A new weather-system oriented classification framework of extreme precipitation events leading to large-scale floods in Switzerland is presented on this poster. Thirty-six high impact floods in the last 130 years are assigned to three representative categories of atmospheric moisture origin and transport patterns. The methodology underlying this moisture source classification combines information of the airmass history in the twenty days preceding the precipitation event with humidity variations along the large-scale atmospheric transport systems in a Lagrangian approach. The classification scheme is defined using the 33-year ERA-Interim reanalysis dataset (1979-2011) and is then applied to the Twentieth Century Reanalysis (1871-2011) extreme precipitation events as well as the 36 selected floods. The three defined categories are characterised by different dominant moisture uptake regions including the North Atlantic, the Mediterranean and continental Europe. Furthermore, distinct anomalies in the large-scale atmospheric flow are associated with the different categories. The temporal variations in the relative importance of the three categories over the last 130 years provides new insights into the impact of changing climate conditions on the dynamical mechanisms leading to heavy precipitation in Switzerland.