Atmos. Chem. Phys. Discuss.,
https://doi.org/10.5194/acp-2020-861-RC1, 2020

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Spatial variability of northern Iberian rainfall stable isotope values: Investigating climatic controls on daily and monthly timescales" *by* Ana Moreno et al.

Anonymous Referee #1

Received and published: 2 November 2020

General comments

This manuscript seeks to determine key factors responsible for daily and monthly rainfall d18O in northern Iberia. Using new multi-year record of the water isotopes in daily based precipitation at 7 stations in northern Iberia, they identify the key factors controlling the spatiotemporal d18O variability through a comparison with geographical and meteorological items and an analysis of air mass sources and precipitation types. Then they concluded that the relative contribution of each air mass (Atlantic, Mediterranean and continental) is a dominant factor of d18O variability in Conclusion, but in Abstract, they highlighted the role of precipitation type as a key factor (I repeatedly read this draft,

but I can't understand which factor they want to emphasize). Also, they noted that the other factors such as distance from the coast, altitude, temperature and precipitation amount also significantly contribute on d18O variability.

This paper presents a valuable data set of daily basis precipitation isotopes observed over northern Iberia. The new observation to cover the sparse region is valuable for isotope community. However, the purpose of this study does not seem to fit the scope of the ACP; The journal scope is focused on studies with general implications for atmospheric science rather than investigations that are primarily of local or technical interest. According to Introduction, the application of this study is to improve our interpretation of d18O proxy record. In addition, the research target (northern Iberia) is very specific. So, I'm wondering if ACP is the appropriate journal for this study. Frankly speaking, this manuscript is not the scientific manuscript, but the data report. The main task of this draft is just comparison with various factors such as temperature, precipitation amount, air mass trajectories, precipitation types etc. And most of the discussion is speculation without solid facts. For example, in section 5.3 the authors discussed the influence of moisture source effect, but their conclusion is based only on a single event (see Fig 6) and no explanation to show that their selected each event is typical (L427-L445). For these reasons, I unfortunately cannot recommend this manuscript for publication.

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