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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Climatic controls on water vapor deuterium excess in the marine boundary layer of the North Atlantic based on 500 days of in situ, continuous measurements" *by* H. C. Steen-Larsen et al.

Anonymous Referee #3

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General Comments

In the manuscript entitled "Climatic controls on water vapor deuterium excess in the marine boundary layer of the North Atlantic based on 500 days of in situ, continuous measurements", Steen-Larsen et al. present the findings of their observations at Bermuda, based on a CRDS water isotopic instrument. The authors used a credible protocol of calibration system to make sure the data in good precision. Then they analyzed the data ranging 500 days with 6 hourly averaged. The two most important

factors, relative humidity and wind, are analyzed in detail. This work makes important progress for the theory of Merlivat and Jouzel (1979), especially the finding of no wind speed effect on d-excess (which perhaps needs more evidences). This manuscript is well wrote and organized, except a lengthy part of "Materials and Method". This part should be concise for Steen-Larsen et al. (2013, ACP, doi:10.5194/acp-13-4815-2013) already introduced it carefully. Overall speaking, I think this manuscript is in good quality and should be published in ACP.

Specific comments,

P2367, 20-25, missing date during "Gat et al., Pfahl and Wernli, and Uemura et al.".

p2368, 5, "with the availability of .....provided..... Tremoy et al., 2012).", there is no subject for "provided"

P2369, 15-20, "Monthly mean sea surface temperatures" should be "Monsthly mean SST".

P2369, 20-25, I think the part of "Other measurements carried out at the tower consist of sampling for the Global Atmosphere Passive Sampler Network, continuous lower atmosphere ozone measurements and discrete greenhouse gas sampling for NOAA's Earth System Research Laboratory, continuous measurements of aerosol optical depth for NOAA's Aerosol Robotic Network, and continuous solar radiation measurements for NOAA's Baseline Surface Radiation Network." has no connection with this paper, so it should be deleted.

P2377, 20-25, the definition of summer and winter is cited from any paper or is defined by the authors? Why use this definition?

Fig.11. It's easy to understand the figure if the fit lines use the same color with the dots.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 2363, 2014.