

## ***Interactive comment on “Short Communication: Atmospheric moisture transport, the bridge between ocean evaporation and Arctic ice melting” by L. Gimeno et al.***

### **Anonymous Referee #4**

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Atmospheric moisture transport, the bridge between ocean evaporation and Arctic ice melting; by Gimeno et al.

In this paper it is shown that variations in water evaporation over three main source regions and its (atmospheric) transport towards the Arctic are in the origin of recent changes detected over this area: increase in atmospheric moisture over the Arctic, Arctic Sea ice melting, changes in some characteristics of three Eurasian rivers basins...

I find this paper interesting and suitable for publication in ESD but I would recommend a few minor changes:

I would suggest to rewrite the abstract to make it more clear and concise. For ex-  
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ample, authors should include some more information about the relationship between evaporation over source regions and river discharges. In addition, I do not understand very well what do the first sentence in the abstract mean: ‘... and at the same time one where the changes could affect the global climate in similarly asymmetric way with respect to other regions...’ (same problem applies later in page 1036, line 26).

Some comments related to Figure 1. This figure contains a lot of information but some of it is not clearly explained or, in some cases, I think it is wrongly described.

First, What are blue and red lines in ‘temporal series’ in lateral panels? I guess blue lines are linear trends (it is no stated anywhere nor any confidence level is provided). Red lines in the same ‘temporal series’ show the period used in the composites of moisture sources, is this right? Anyway, why do authors use 2000-2010 and not the last available decade (2002-2012) in this comparison?

Second, in the caption it is written that ‘the main moisture sources for the Arctic river basins (those circled with a blue line in the central figure)’ are circled in blue. This is not true for the Mediterranean. In the main text, p104114, the same cite to areas circled with a blue line has the same error.

Third, if one looks at the color scale in figure 1 central map, the Mediterranean (and Caspian and Black seas) seem to be more important as a source of water for the rivers basin than the North Pacific. This is not very clear in the main text (p1040, 116-19). In addition, a reference would be welcome in p1040121.

Fourth, no units have been included for the green shading in lateral panels.

Finally, I think that it would be easier for the reader to include an additional section with the summary and conclusions which included the last paragraph (from p1041122).

Some typos p1034119: ‘...disconnect ng results...’ p103713: ‘The main mechanisms...’, delete ‘The’ P103818: tHrough? p103919: What do authors mean with ‘...more unusual summer storms crossing the Arctic...’? Is it a lower number of summer storms or is it

that there are more 'unusual (very intense, very humid...) storms'? p1039112: mod-e  
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Interactive comment on Earth Syst. Dynam. Discuss., 6, 1033, 2015.