

## ***Interactive comment on “Increased aeolian activity during climatic regime shifts as recorded in a raised bog in south-west Sweden during the past 1700 years” by R. de Jong et al.***

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This is an interesting paper exploring the relationship between low-frequency hydrological balance represented by a bog surface wetness records, and aeolian sediment influx (ASI) as a proxy for storminess. It follows several previous papers that have produced records of ASI from the region, but I think this is the first time that there has been a comparison with another proxy from the same sequence. This is a neat approach because it avoids the inevitable problems of correlation from independent chronologies.

The key finding is that there is increased ASI during transitions between relatively wet periods and relatively dry periods. Simplistically one would expect ASI peaks to occur

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during transitions from dry to wet conditions but in fact ASI peaks occur during dry-wet AND wet-dry transitions. This is difficult to explain in any simplistic way, but the main explanation given for this in the paper is that the shift in climate regimes itself caused increased temporary cyclonic activity in the region. If I understood correctly, this might also have been associated with a southward extension of the polar front and a stronger N-S temperature gradient during dry to wet shifts in the hydrological balance. The association with dry-wet shifts is highly plausible but I find it harder to believe the explanation for increased storminess during changes from wet-dry conditions, although the relationships in recent instrumental and ice core records referred to do support this on very short time-scales. However, it's an interesting hypothesis to put out and I suspect we need to wait for further data to see if these associations are found more generally in NW Europe.

Some more specific comments:

I agree with Ingmar Unkel that the paper needs some more of information from de Jong et al (2006). At present it's really necessary to have the 2006 paper to refer to in order to understand some of the context. The core description and the chronology would especially be useful additions. If it was possible to add a curve expressing the level of agricultural disturbance based on the pollen data it would also be extremely informative in connection with section 4.3.

In the context of the chronology, it would be interesting to know how variable the inferred peat accumulation rates are because the ASI data is influx data and therefore highly dependent on the age-depth relationship applied.

The testate amoebae data (Fig 2 and 3) show some very clear hydrological changes. It would have been better to use a transfer function for the hydrological inference. I would be happy to do this using the Charman et al (2007) data referred to in the reference list. I don't think this will alter the overall patterns shown but it may provide more accuracy in terms of relative hydrological change as the wet /dry indicators do not all

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have the same indicator value in most transfer function datasets. The very large peak in *Corythion/Trimema* at c. 1550 BP suggests a brief phase of much drier conditions coincident with unusually high ASI peak.

Show the data points in Fig 3 - it is hard to tell what the resolution of the different records is and in particular whether the sharp hydrological transitions indicated from testate amoebae are replicated in the 18O record.

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