

## ***Interactive comment on “Shifts in early spring wind regime in North-East Europe (1955–2007)” by S. Keevallik and T. Soomere***

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First we would like to thank the referees for their professional and friendly comments. These comments highlighted some gaps in the presentation and helped much to improve the manuscript.

As suggested by Referee #1, we have extended the discussion of the connection of the existing indicators of climate change with the known circulation and sea level pressure patterns in Europe such as Northern Hemisphere teleconnection indices (including the North Atlantic and Arctic oscillations), the Scandinavia pattern, the East Atlantic – West Russia pattern, large-scale weather patterns, and circulation forms according to the Vangenheim-Girs classification. Two relevant references (Barnston and Livezey, 1985; Gerstengarbe and Werner, 2005) have been added. Doing so allowed us more exactly identify and position the new aspect of our studies – the potential multiple regime shifts

– with respect to relatively well known multitude of various trends.

Also, several minor changes have been made to meet minor comments of Referee #1. All these changes are indicated with the use of dark blue font in the revised manuscript.

As suggested by Referee #2 (Comment 1), we have included short discussion of the high variability of weather phenomena and climatic variables into Introduction. We are particularly thankful for this suggestion. The amendments make it easier for people from remote regions to understand the specific features of climate and its research in European boreal areas.

The weather station Harku (Comment 2) is the only station in Estonia where upper air flow is measured. As the distance between the two sites of the station is quite small, the potential inhomogeneity of the time series apparently is small (as confirmed by a comparison with another station located at a distance of about 100 km). We extended discussion of these aspects in Section 2.

However, the shift of the Harku station to another location and previous analysis of the quality of the local wind data (Keevallik, Proc. Estonian Acad. Sci., 2003) made clear that surface-level winds from Harku poorly represent sea/surface-level air flow. As we used surface-level wind data from Vilsandi, known as the most reliable data of the surface-level flow in Estonia (Soomere and Keevallik, 2001), we added the basic description of Vilsandi site.

We agree that an additional comparison of our data with analogous measurements at other sites is important for better understanding of the detected phenomenon (Comment 3). Unfortunately, the data from the former Soviet Union are not easily available and generally have not been digitised. We look forward to establishing contacts with relevant services, archives, and scientists in Latvia and Lithuania.

A discussion of the nature of identified shifts (Comment 4) has been included into Conclusions and Discussion section.

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All changes following suggestions of Referee #2 are indicated with the use of dark green font in the revised manuscript.

## References

Keevallik S.: Possibilities of reconstruction of the wind regime on Tallinn Bay. Proc. Estonian Acad. Sci. Eng., 9, 209–219, 2003.

Soomere, T., and Keevallik, S.: Anisotropy of moderate and strong winds in the Baltic Proper, Proc. Estonian Acad. Sci. Eng., 7, 35–49, 2001.

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Interactive comment on Clim. Past Discuss., 4, 271, 2008.

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