

EGU2020-5576

<https://doi.org/10.5194/egusphere-egu2020-5576>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



## Tropical sources of predictability for summer precipitation over Nordic European countries

Ramón Fuentes Franco<sup>1,2</sup> and Torben Koenigk<sup>1,2</sup>

<sup>1</sup>SMHI, Rossby Centre, Norrköping, Sweden ([ramon.fuentesfranco@smhi.se](mailto:ramon.fuentesfranco@smhi.se))

<sup>2</sup>Bolin Centre for Climate Research

We show evidence that tropical atmospheric variability over the central tropical Pacific modulates the circulation over the western Arctic and the North Atlantic-European sector, impacting the sea ice concentration over the Arctic and the summer precipitation especially over Nordic European countries (NEC). Our results, based on the ERA5 reanalysis, suggest the occurrence of a teleconnection mechanism (similar to the Pacific North American pattern) between the tropical Pacific in early spring and summer precipitation over NEC, and we propose two indices as predictors for NEC summer precipitation based on geopotential height anomalies at 500hPa over the western tropical Pacific during March. After successfully cross-validate an empirical model with both indices as predictors, we show that these indices allow predicting the observed tercile of summer precipitation over big portions of NEC in most of the summers within the 1979-2018 period, with a Heidke skill score greater than 90%.

Furthermore, we analysed CMIP6 simulations, and we found that models that show strong ENSO variability, reproduce the observed link of tropical variability in early spring with precipitation over NEC and ice concentration over the Arctic. In turn, CMIP6 simulations with weak ENSO variability fail to reproduce this observed connection.

**How to cite:** Fuentes Franco, R. and Koenigk, T.: Tropical sources of predictability for summer precipitation over Nordic European countries, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-5576, <https://doi.org/10.5194/egusphere-egu2020-5576>, 2020