

Predictability of Extra-tropical Cyclones and Windstorms on Seasonal Timescales

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Aim of the Study

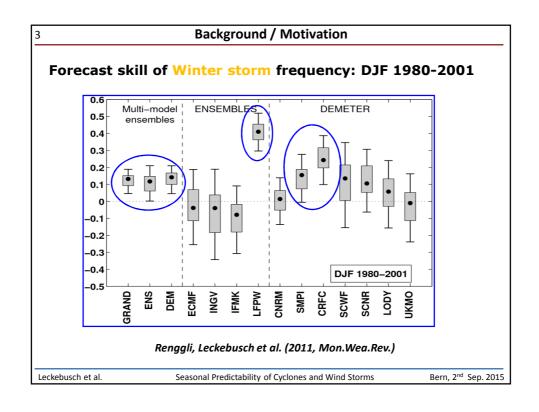
Assessment of skill of current seasonal forecast suites to represent spatial and temporal variability of extratropical cyclones and wind storms over the Northern Hemisphere

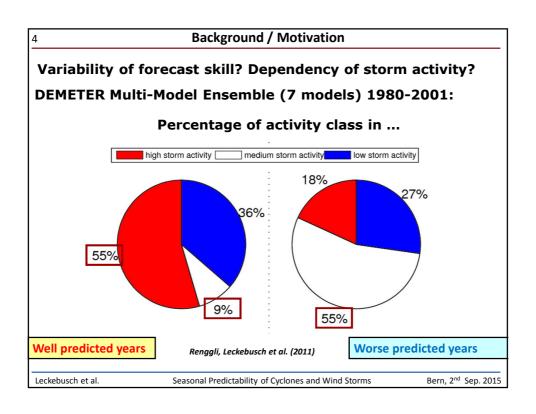
Potential Skill of e.g. *November* initialised winter (DJF) forecasts would lead to enormous benefit for multiple sectors of society, e.g. risk transfer, disaster reduction management, planning for disruption of transport, etc.

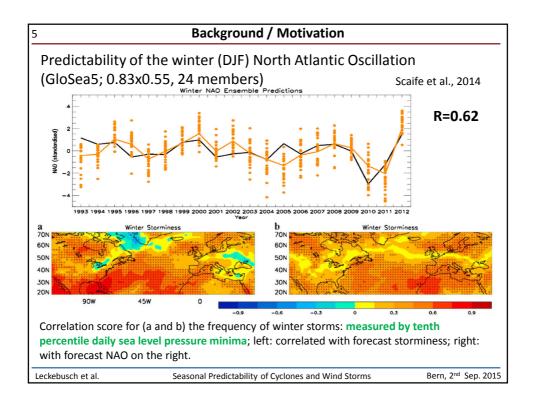
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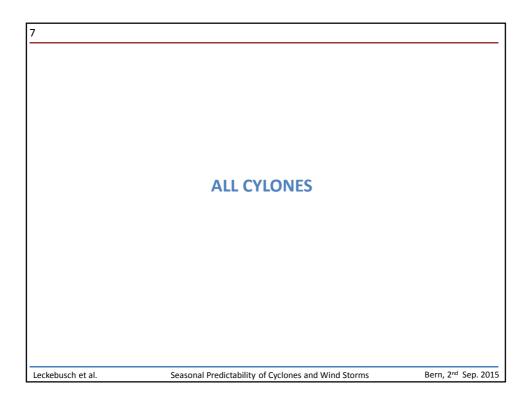
Methods Extra-tropical Cyclones (Murray and Simmonds, 1991) Cyclone centres detected by looking for a maximum Laplacian of MSLP Wind storm events (Leckebusch et al., 2008) Identification of areas with a minimum size of 150.000km² exceeding the 98th percentile of local wind speed Temporal combination of wind clusters based on nearest-neighbour approach with a maximum permitted moving velocity Tracks lasting less than 24 hours are neglected **Datasets ERA-Interim** ECMWF System 3 (ECMWF-S3) and System 4 (ECMWF-S4) GloSea5 (HadGEM-GA3) Extra-tropical cyclones 6 hourly MSLP data interpolated to a grid resolution of T159 (to account for dependency of tracking algorithm on resolution) Wind Storms 12 hourly wind speeds in 925hPa (available for all datasets) 98th percentile calculated for DJF from 1992 until 2011 (overlapping period for all datasets)

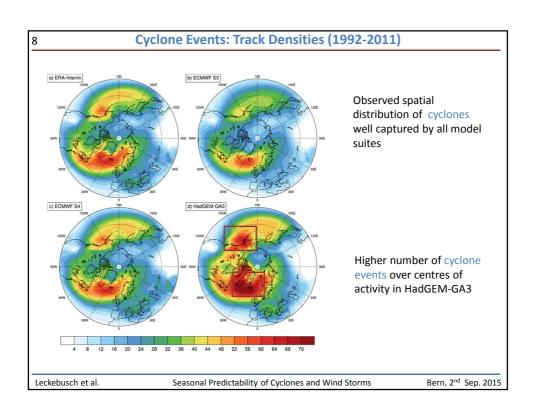
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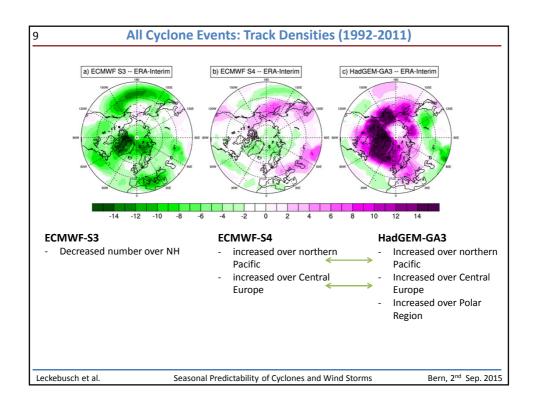
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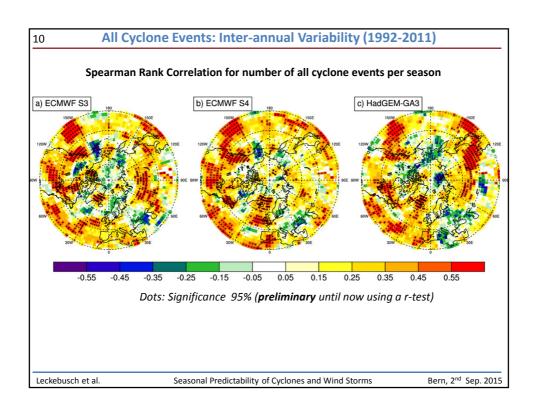
Data & Methods

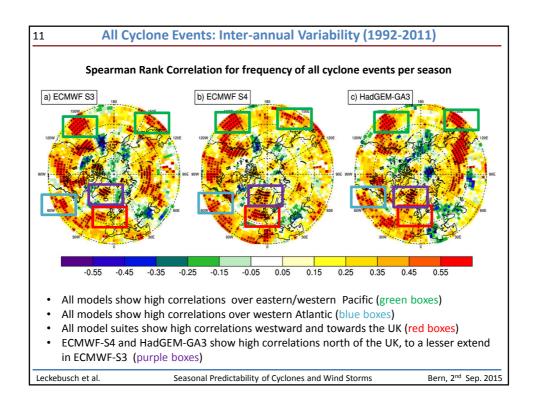
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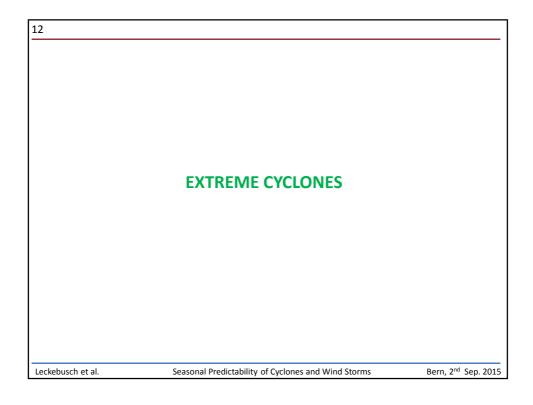


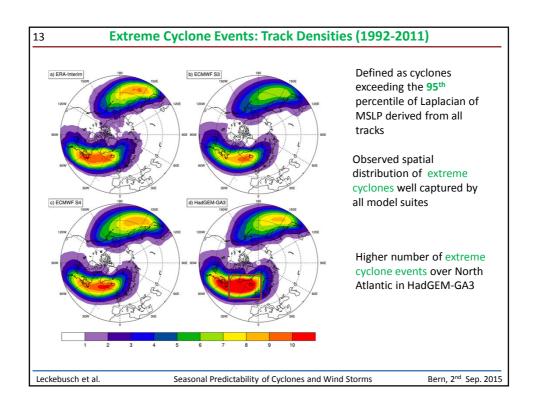


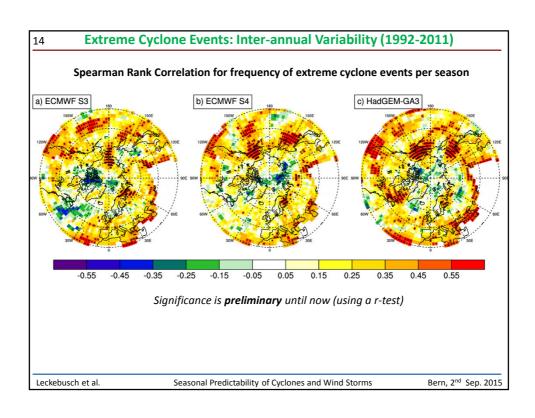


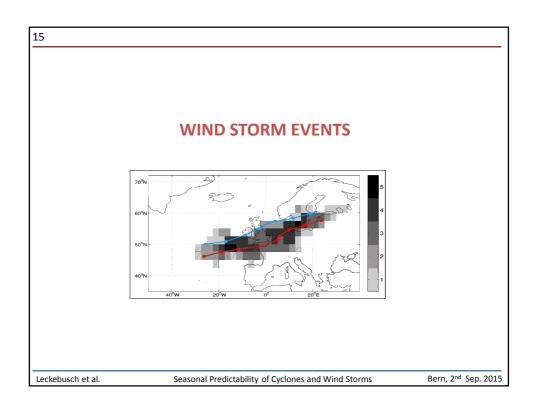


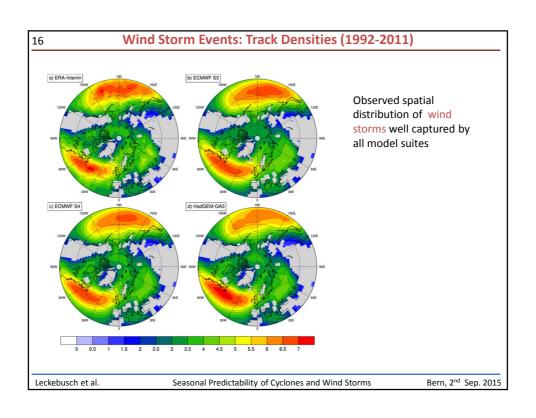


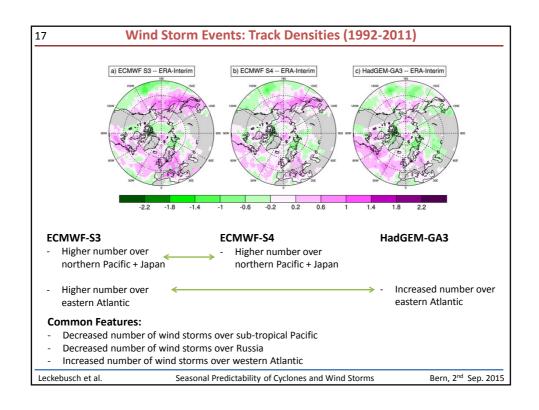


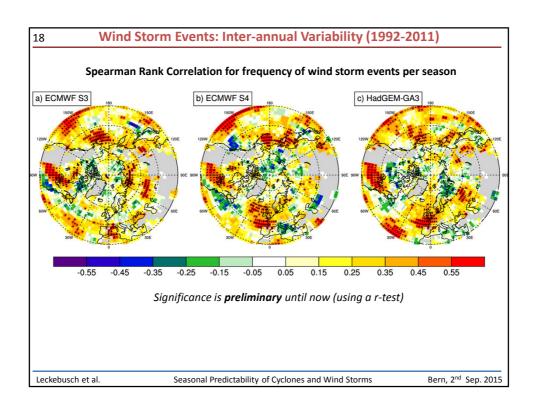


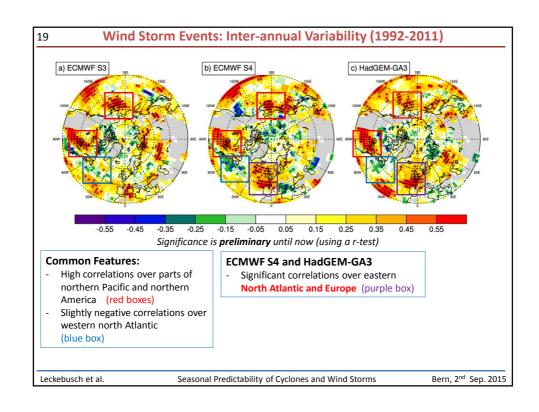


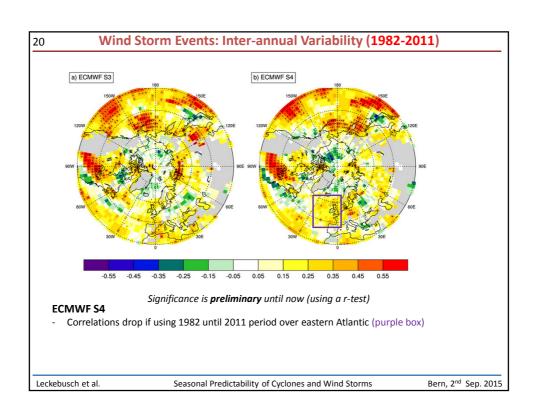


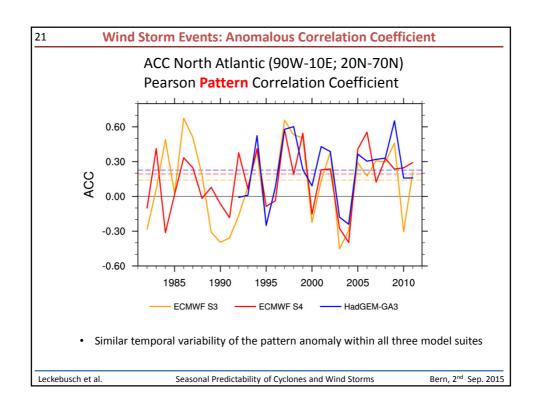


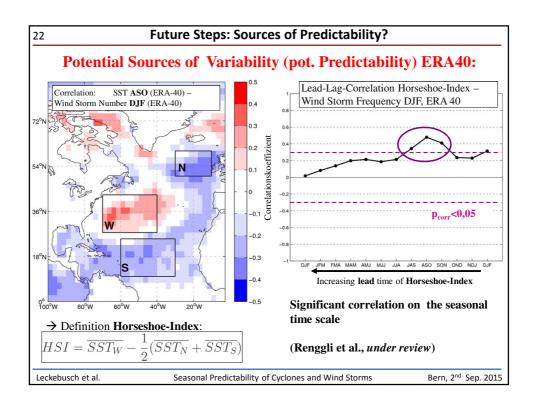


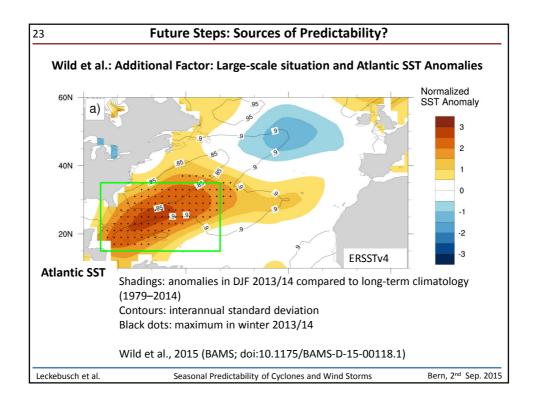












Take Home Message

- A) <u>Science Perspective</u>: For parts of the Northern Hemisphere and Europe significant skill exists for seasonal forecast of the frequency of cyclones and extreme wind storms
- B) <u>Insurance Perspective</u>: Vulnerable regions of Europe show significant positive seasonal forecast skill for a loss relevant variable, the frequency of severe wind storms
- C) Further studies needed to <u>understand</u> the source of skill

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