

Rossby Waves

Group 1

MPE CDT

September 18, 2018

Quasi stationary synoptic Rossby waves high amplitude during weather events

by Petoukhov, Rahmstorf, Pterri and Schellnhuber 2013

- ▶ Investigated physical model of quasi resonance effect.
- ▶ Forced wave trapping a free wave.
- ▶ Amplification of pressure system.
- ▶ Extreme weather results.



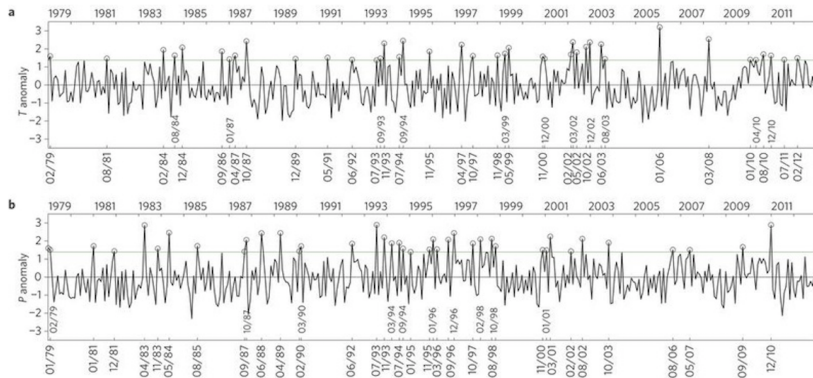
Amplified mid-latitude planetary waves favour particular regional weather extremes

by Screen and Simmonds

- ▶ Looked at distribution of quasi resonance events.
- ▶ Examined links between temperature and precipitation anomalies and abnormal quasi stationary wave amplitude from 1979 to 2012.



40 most extreme temperature and precipitation events in the mid latitudes between 1979 and 2012.



Anomalies: Prolonged periods over a large area

Temperature

Positive: abnormally high

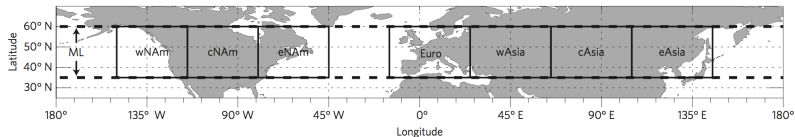
Negative: abnormally low

Precipitation

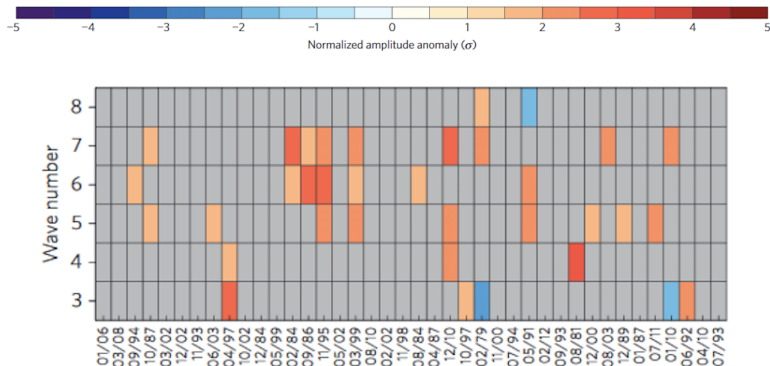
Positive: abnormally wet

Negative: abnormally dry

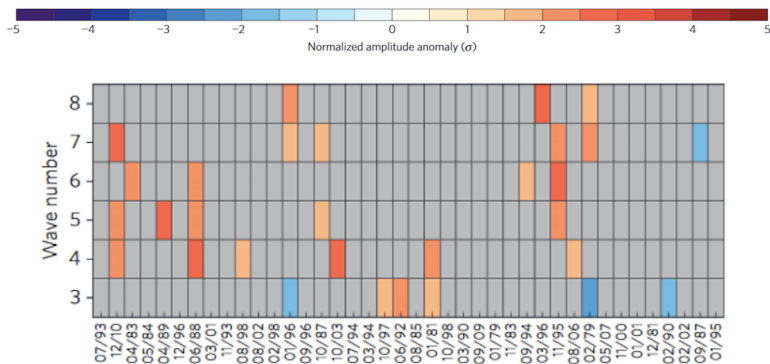
Mid latitude regions of the Northern hemisphere examined



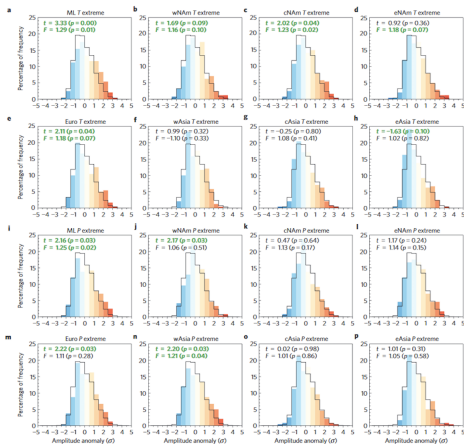
Charts to show the normalized amplitude anomalies for each extreme temperature event, in order of severity of weather, taking the most extreme events on the left.



Charts to show the normalized amplitude anomalies for each extreme precipitation event, in order of severity of weather, taking the most extreme events on the left.



Distributions comparing observed frequency of anomalous amplitudes of baroclinic Rossby waves during periods of extreme weather and the distributions expected from climatology across each examined region.



Future Forecast

