Decadal variability of the Atlantic Niño

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Outline

• Background and motivation

• Observations: interannual versus decadal variability

• Modelling results

• Discussions
Differences between pre- and post-1970s
Losada and Rodríguez-Fonseca, 2015.
Does Atlantic Niño have decadal variability?
Part 1: Observational results

Data sets

-SST data sets: ERSST, HadISST, KAPLAN; over 140 years.
-20C reanalysis: 1871-2012.

Data analysis

Spectral analysis, Lanczos filter, S-EOF
8-15 year variability, March to August
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8-15 Lanczos filtered S-EOF, SST 5°N-5°S
Decadal coherence with precipitation

Guinea Coast
[4-10°N, 20°W-10°E]

N-S America
[10°S-10°N, 35-180°W]

Sahel
[11-20°N, 20°W-10°E]
Modelling

Part 2:

307+ years control integration; last 150 years analyzed here.

From F. Kucharski
Strong variability at decadal frequency: 12.5 yr\(^{-1}\)
Strong variability at decadal frequency: 12.5 yr$^{-1}$
Model partly captures the seasonality: April to July
8-15 yr

<7 yr
Discussions

1. Bjerknes
2. Qnet?
Jun-Jul-Aug

Qnet maps lead Atl3 index by lags
Similar maps for MAM

Jun-Jul-Aug

Similar maps for MAM

Mar-Apr-May
Some Preliminary Concluding Remarks

- Robust decadal variability of the Atlantic Niño index, spatial pattern.

- Coherence with decadal precipitation anomalies over Guinea Coast and northern parts of South America.

- Bjerknes feedbacks; maybe some roles for Qnet.

Thank you.