

Nudging Artefacts

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Nudging

relax model's dynamics towards observed meteorology

Nudged parameters & relaxation time

Surface pressure 24 H

Temperature 24 H

Vorticity 6 H

Divergence 48 H

Observed meteorology

ERA40 or ECMWF analyses,

SST and sea-ice cover prescribed



Drawbacks

- too strong relaxation reduces precipitation and vertical exchange
- too weak relaxation worsens agreement with observed meteorology
- generally agreement worse in the tropics
- problems close to mountainous terrain

Two simulations

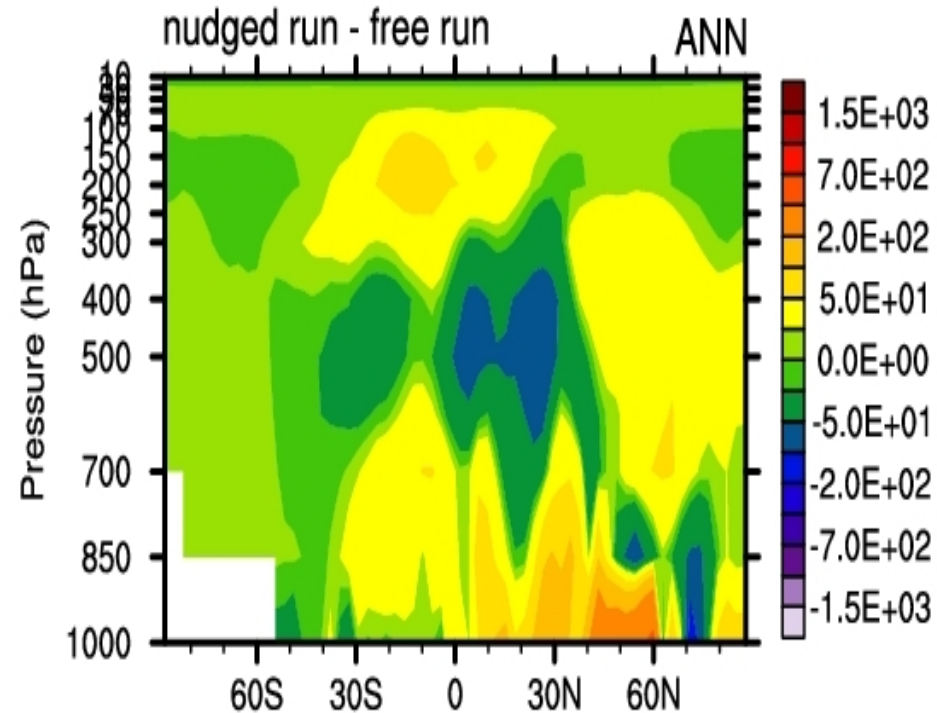
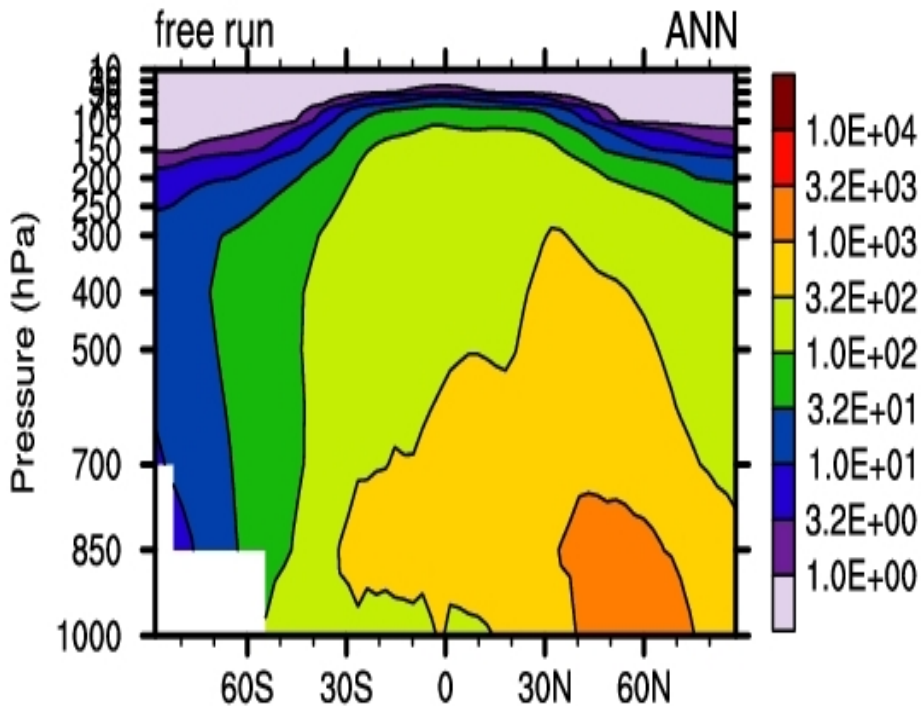
(1) Nudging year 2000

(2) Free run with prescribed year 2000 SST and sea-ice



Annual and Zonal Mean Radon-222 Distribution

mBq/m³

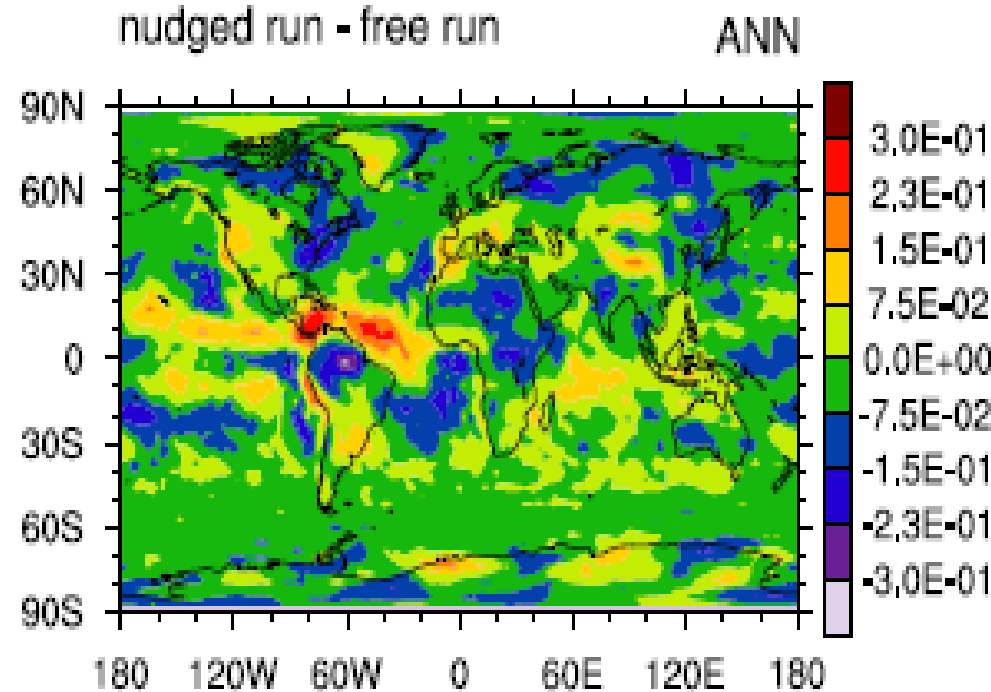
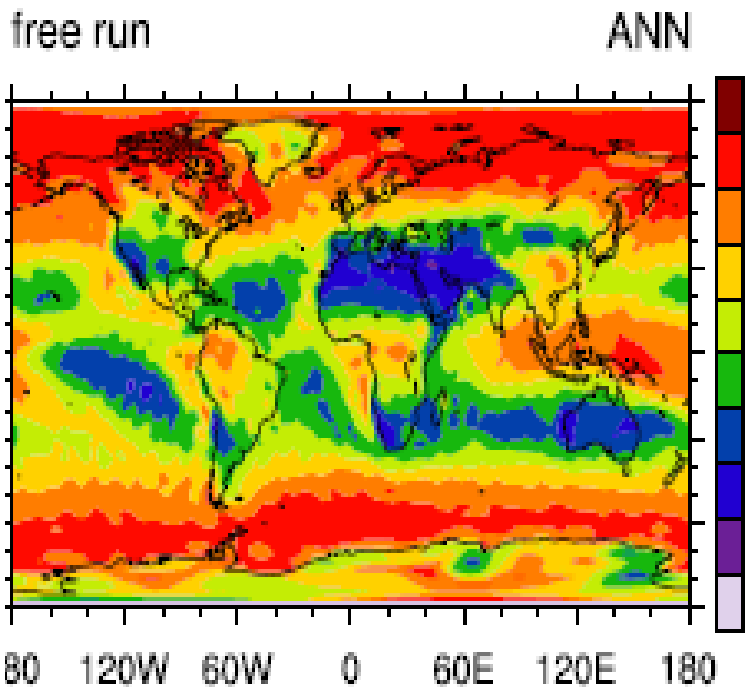


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Annual Mean Cloud Cover

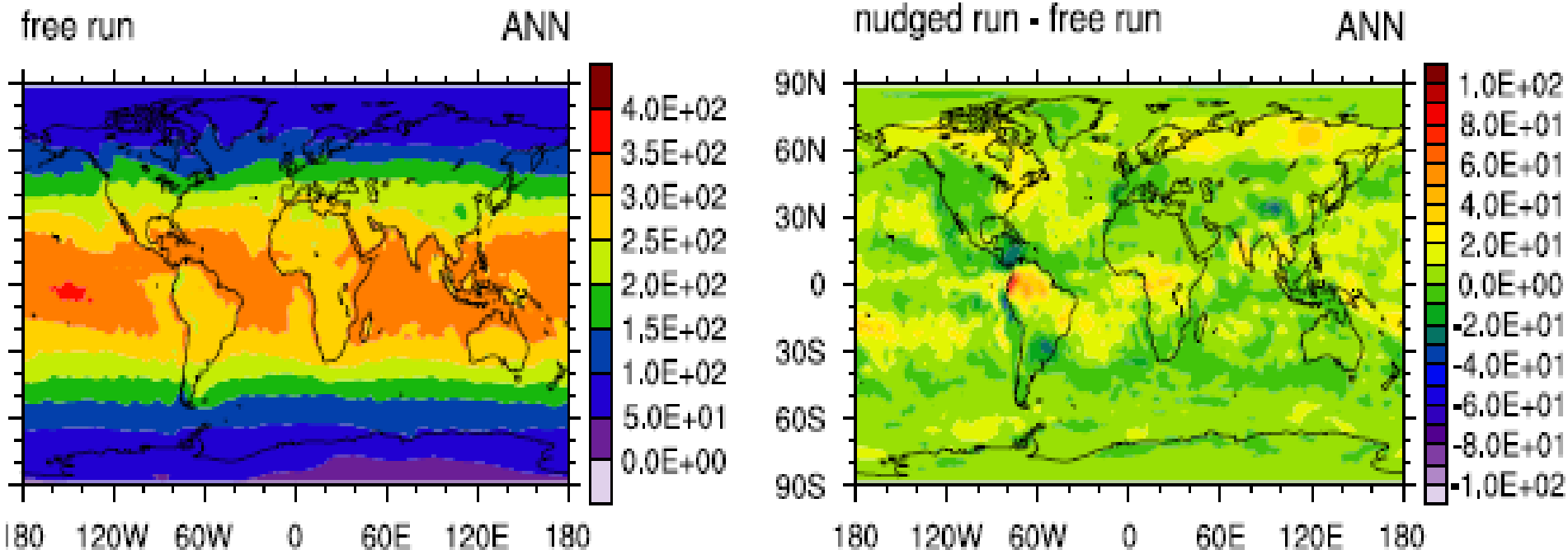
Global mean CC(nudged) < CC(free) ~ 2%



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Net top solar radiation

Nudged – free $\sim 6 \text{ W/m}^2$!!



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Summary

- Check differences between free and nudged simulations
- Play around with the relaxation time
- Strength of temperature nudging affects hydrological cycle in the tropics
- in AEROCOM: free simulations with prescribed SST

