Assessing climate model skill in recent past climates

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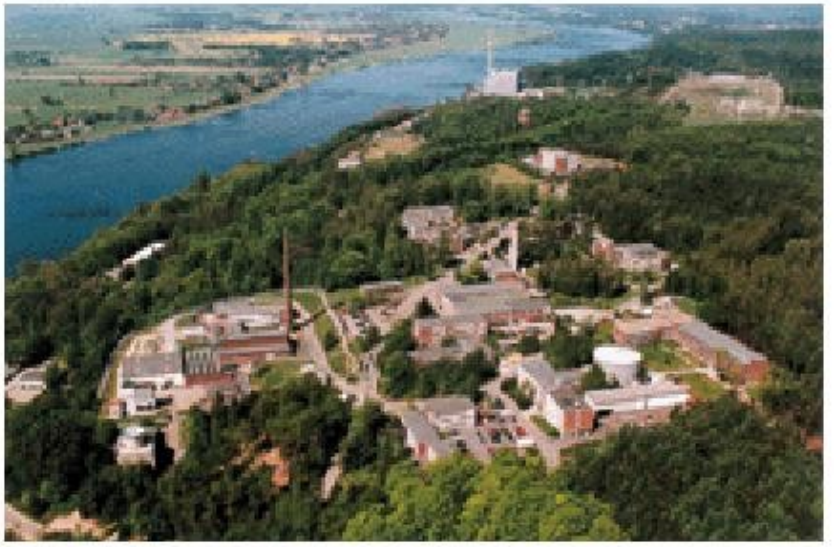
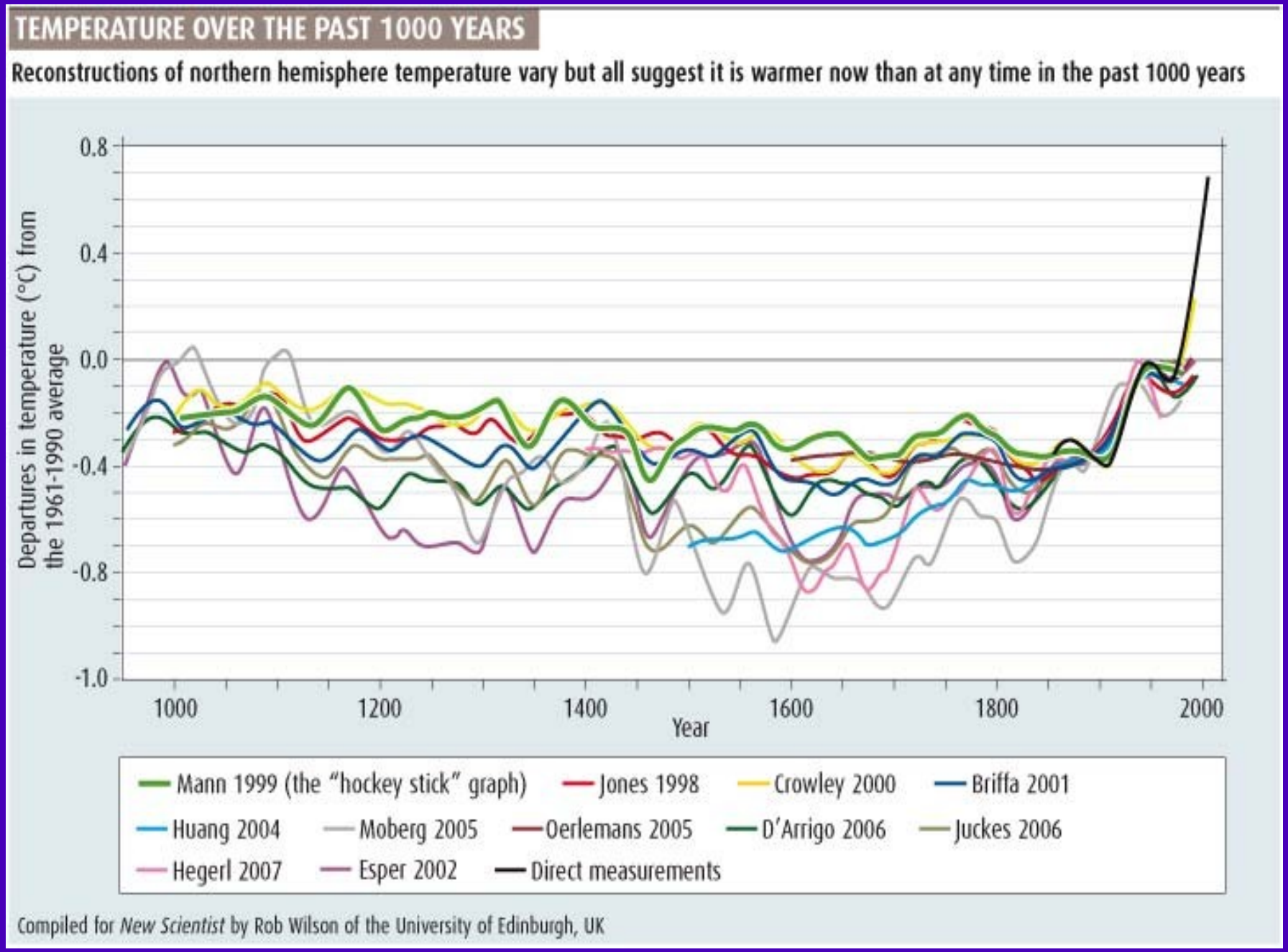


Temperature reconstructions agree... and yet disagree



courtesy of Robert Wilson

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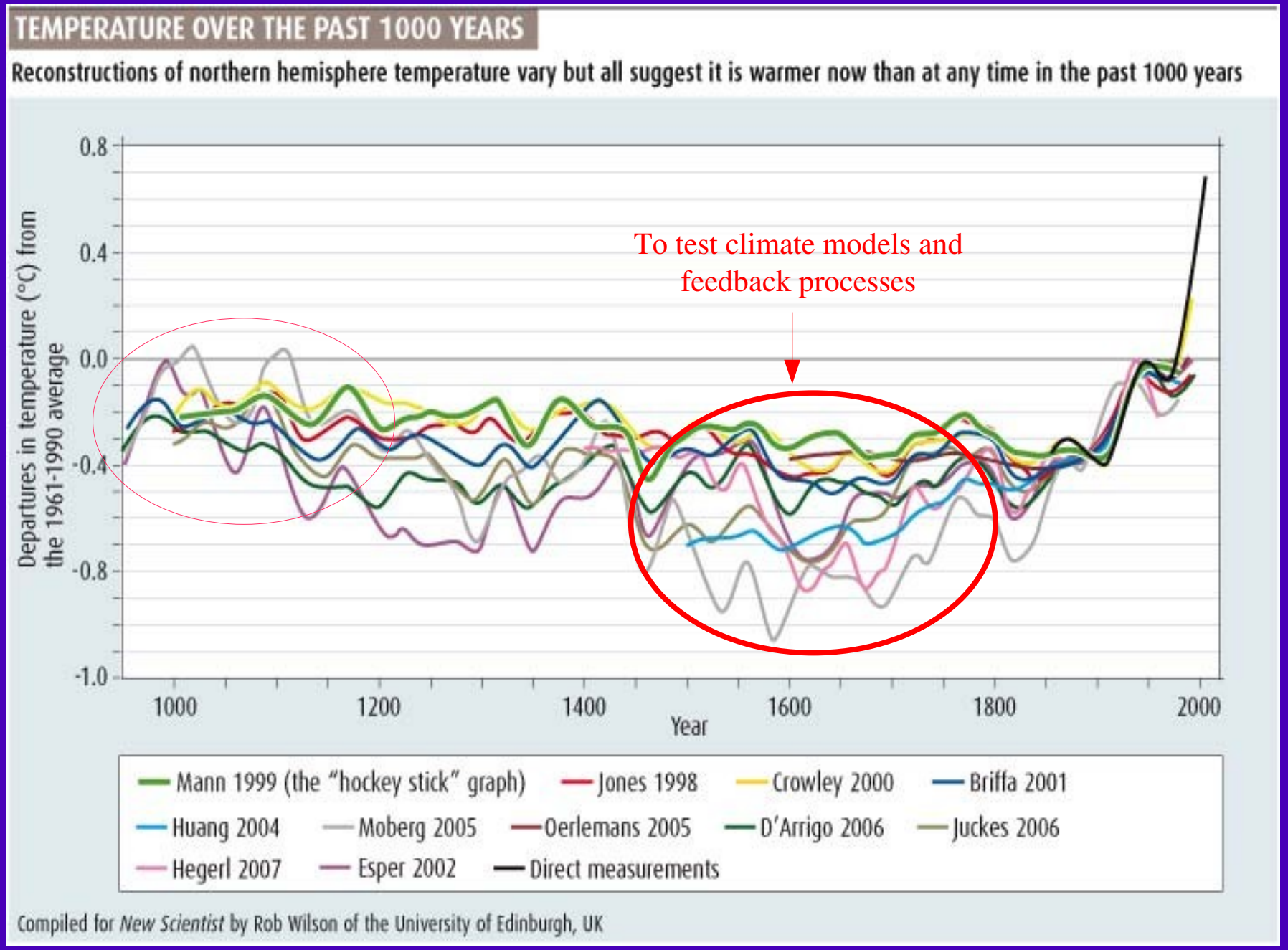


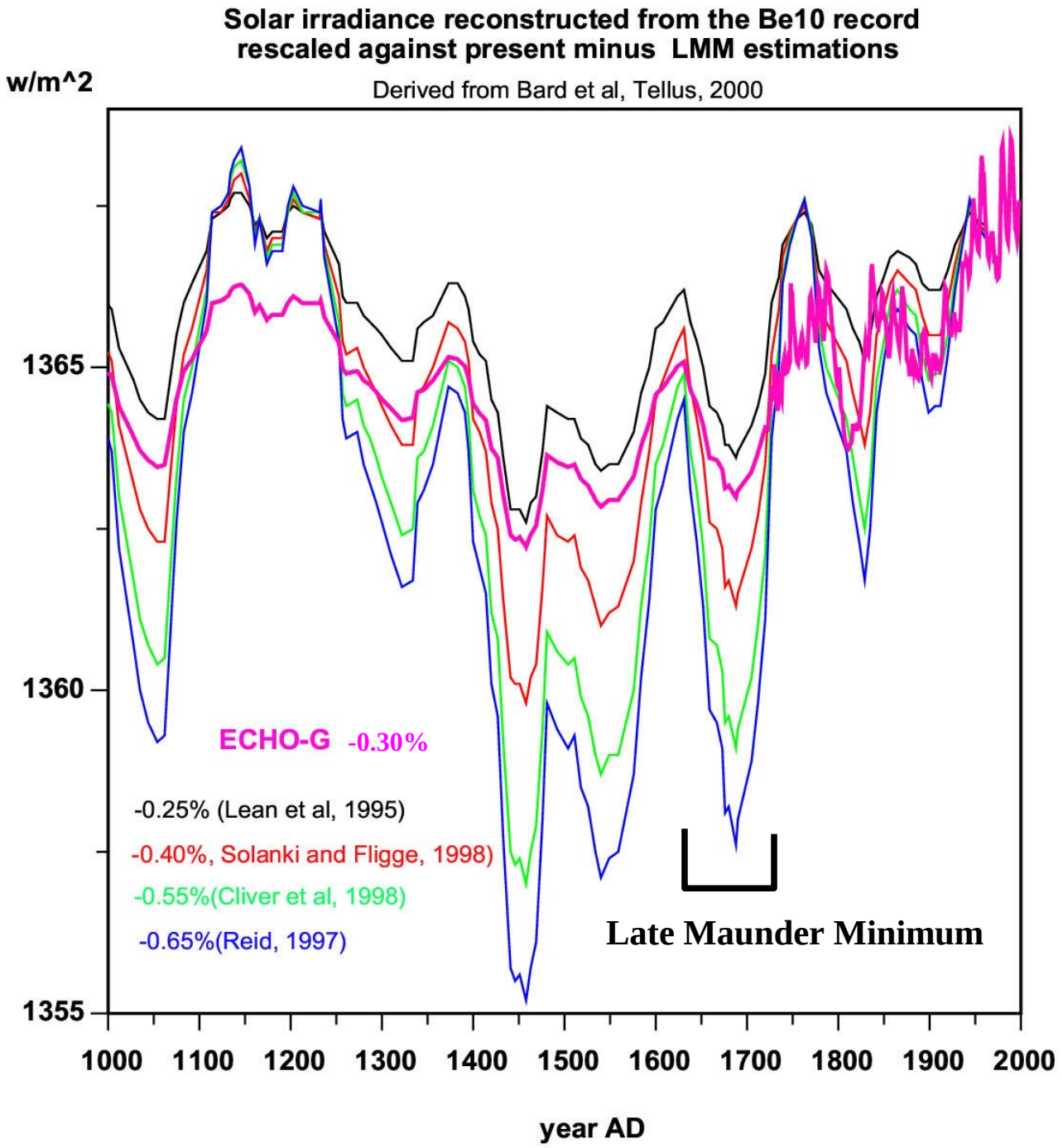
courtesy of Robert Wilson

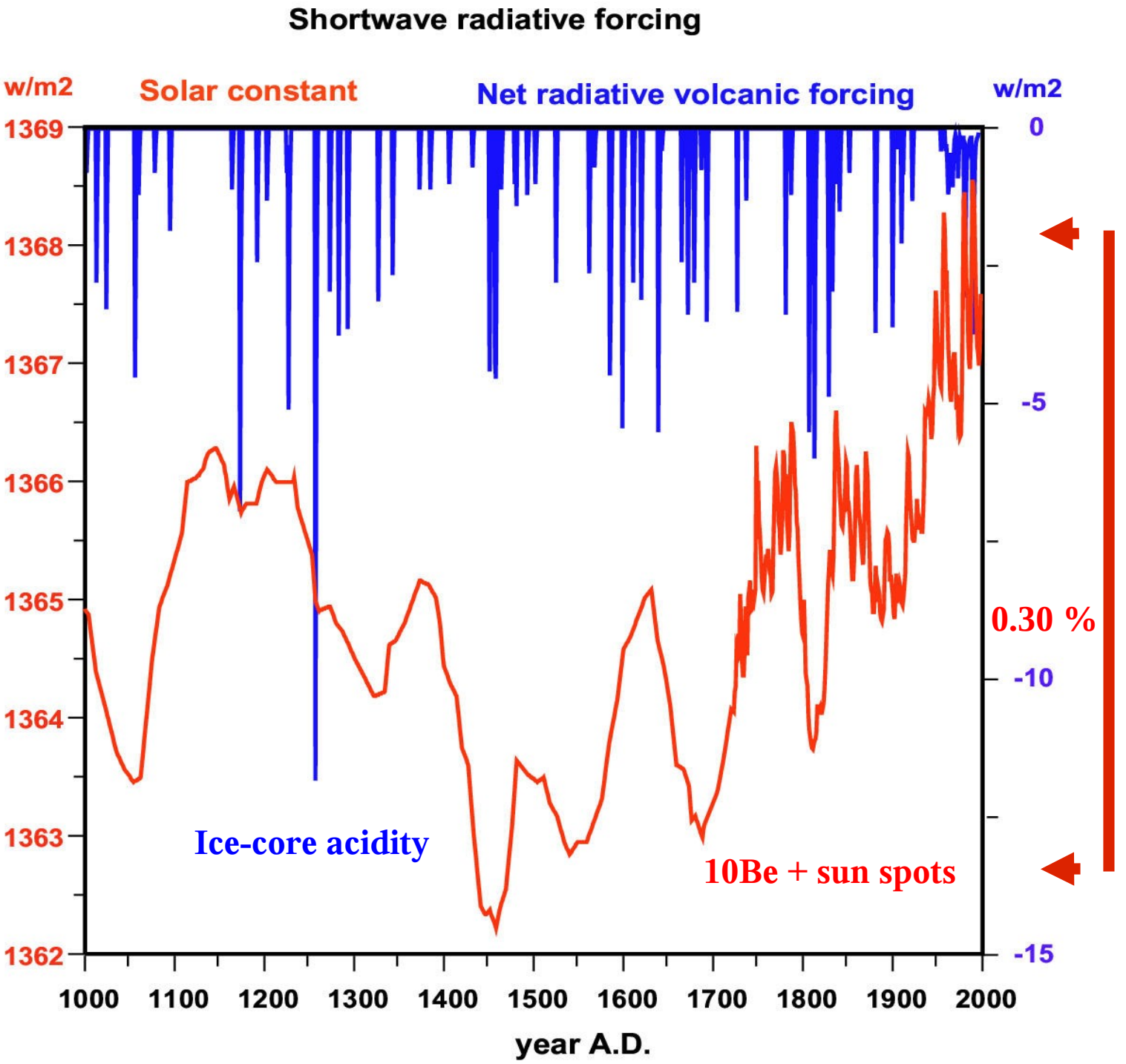
Different reconstructions of past solar irradiance

Labelled by implied changes between LMM and present

Bauer et al, 2003	-0.24; -0.32%
Crowley, 2000	-0.22%
Tett et al, 2005 :	-0.24%

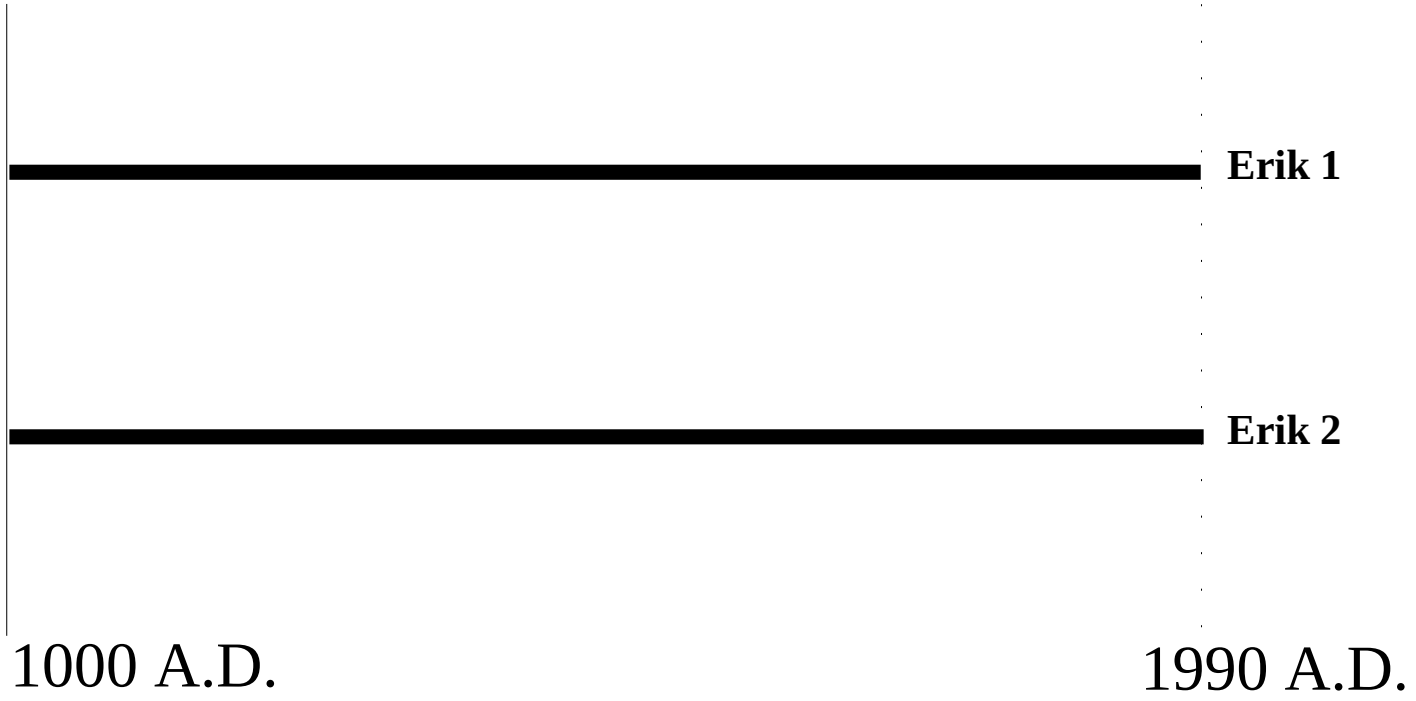
Latest estimation by Solanki: -0.1%




Shortwave radiative forcing
w/m2
Solar constant
Net radiative volcanic forcing
w/m2
1369
1368
1367
1366
1365
1364
1363
1362
0
-5
-10
-15
0.30 %
Ice-core acidity
10Be + sun spots
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
year A.D.

Several Simulations with ECHO-G

Historical forcing

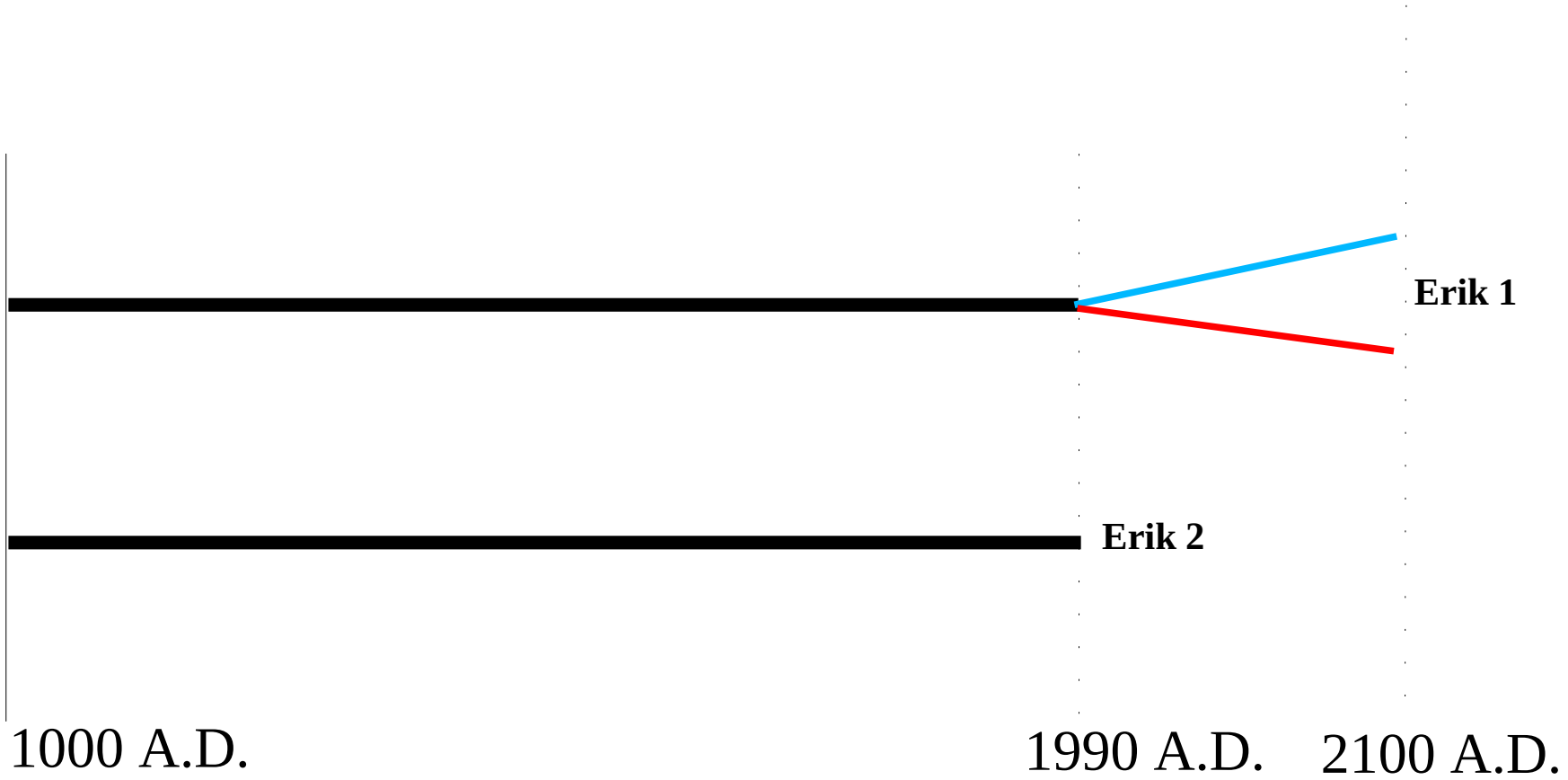


Simulations with ECHO-G

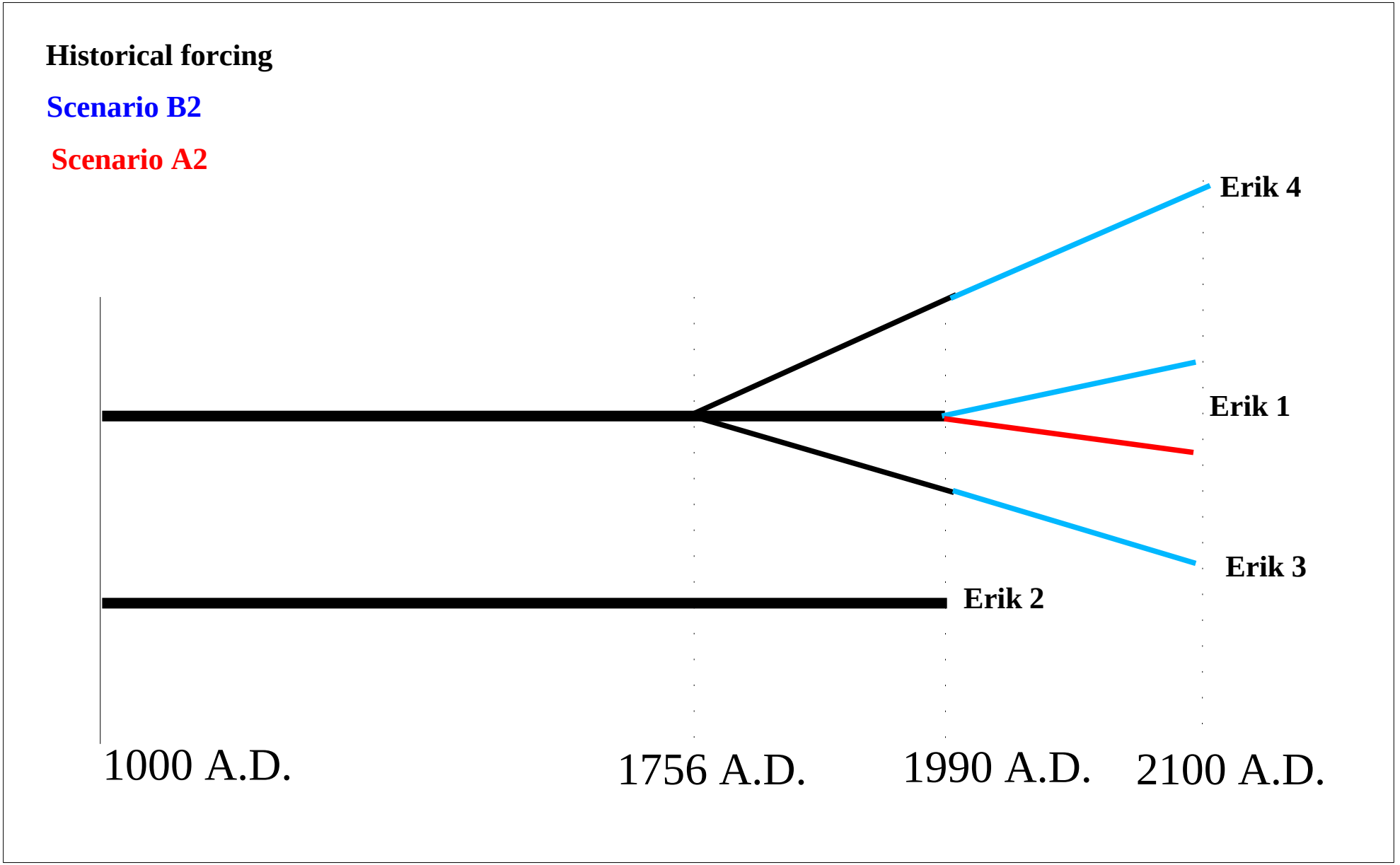
Historical forcing

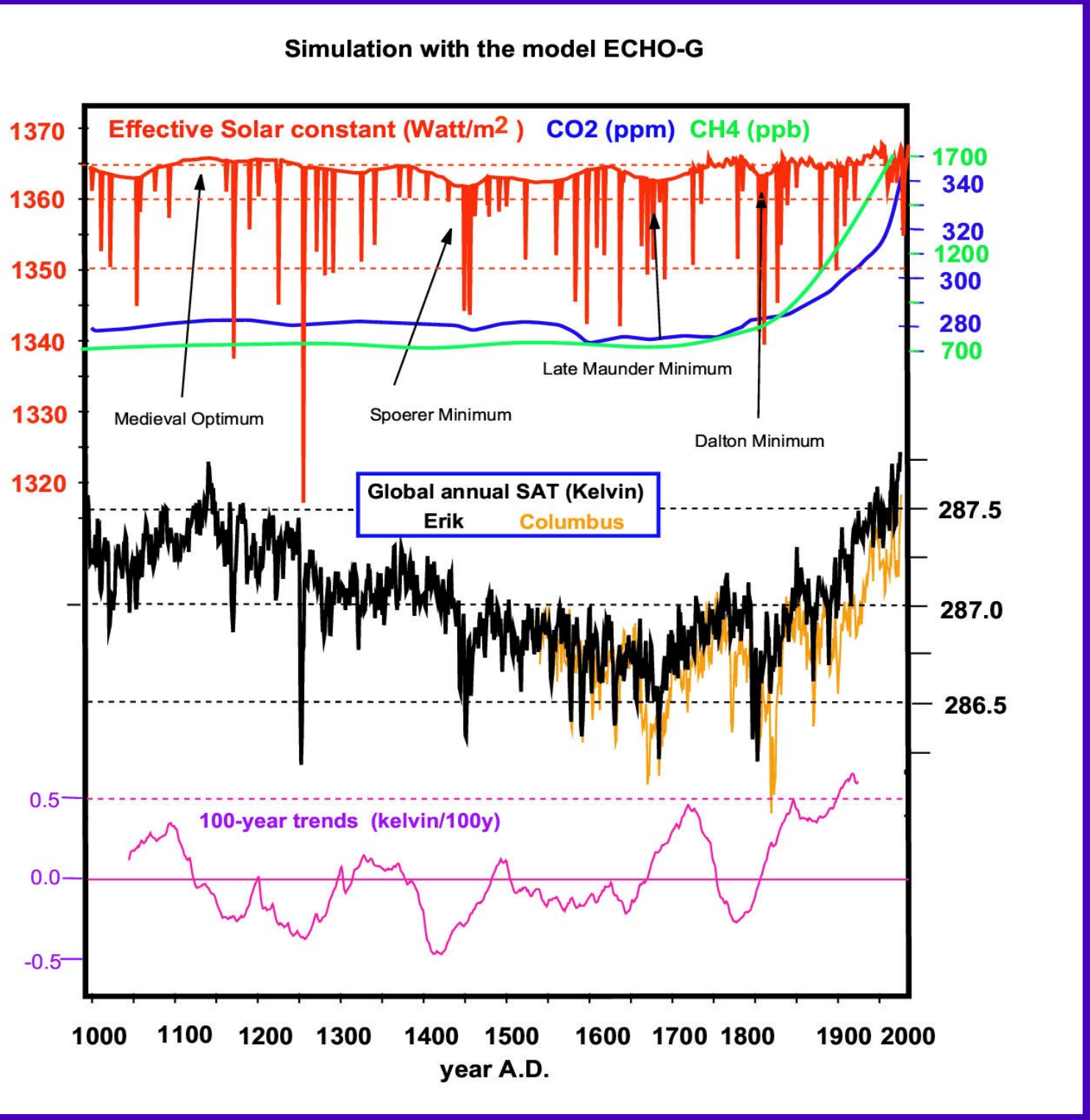
Scenario B2

Scenario A2



Simulations with ECHO-G





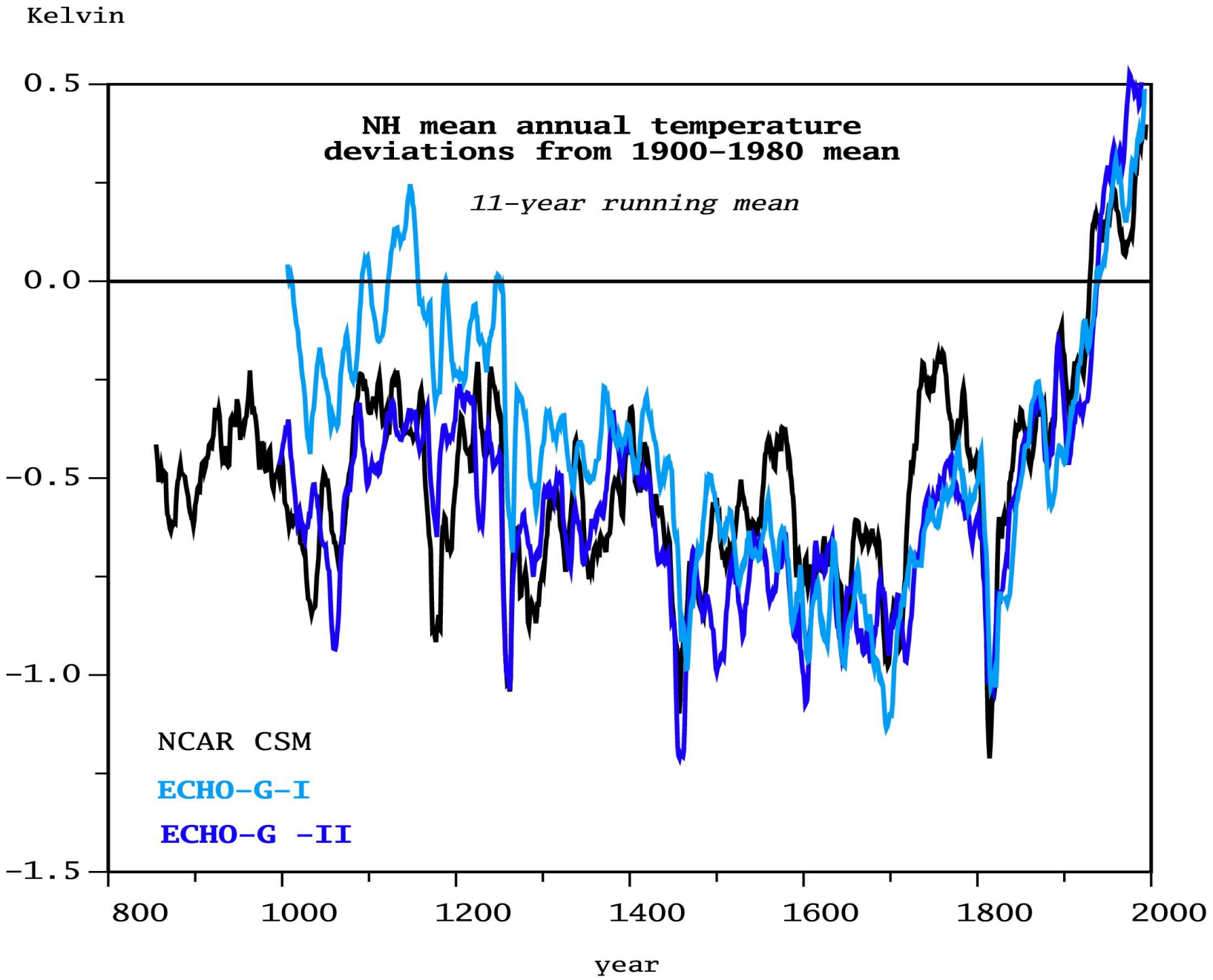
Erik: f90, NEC
Columbus: f77, Cray

No tropospheric aerosols

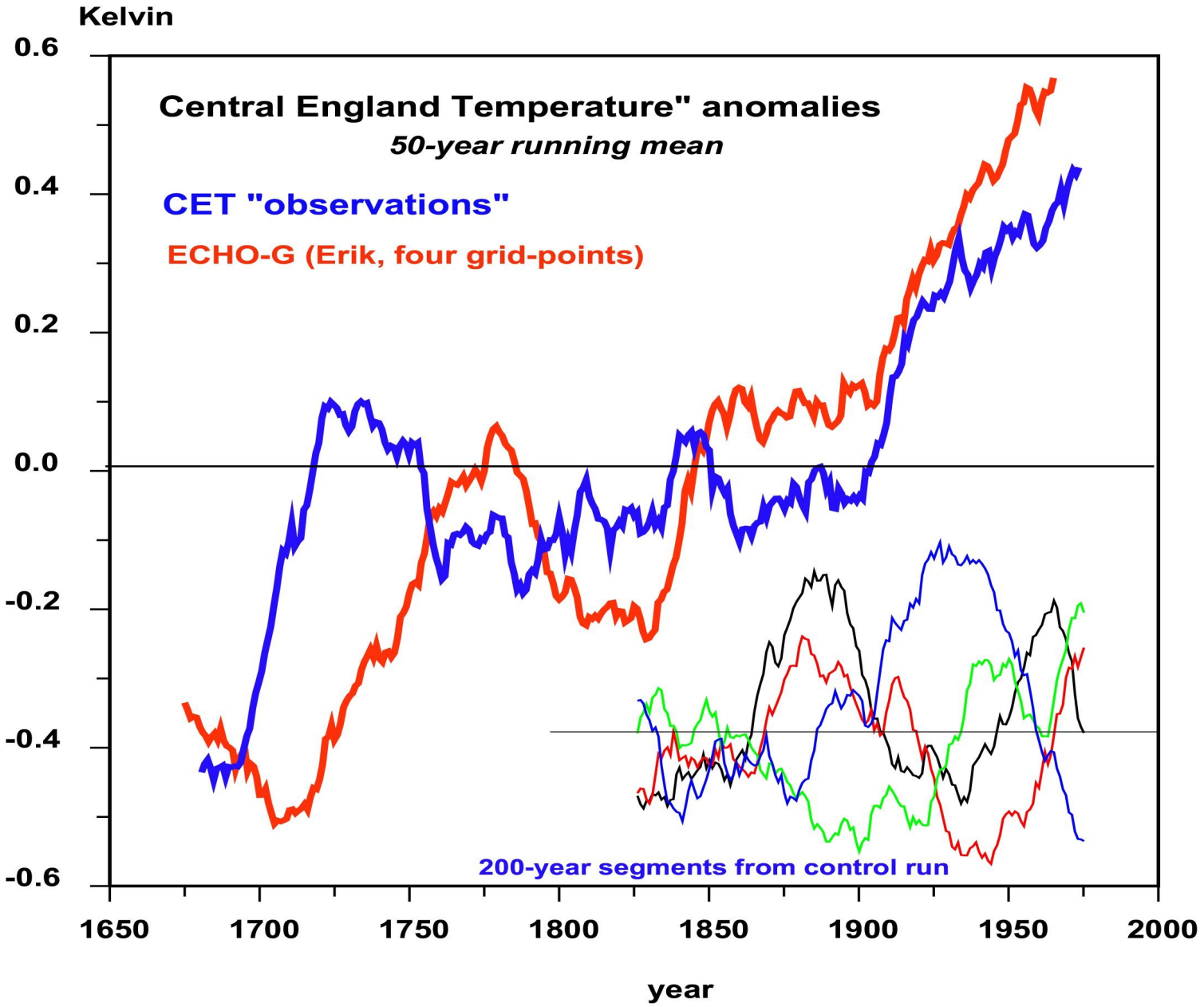
No ozone photochemistry

No vegetation changes

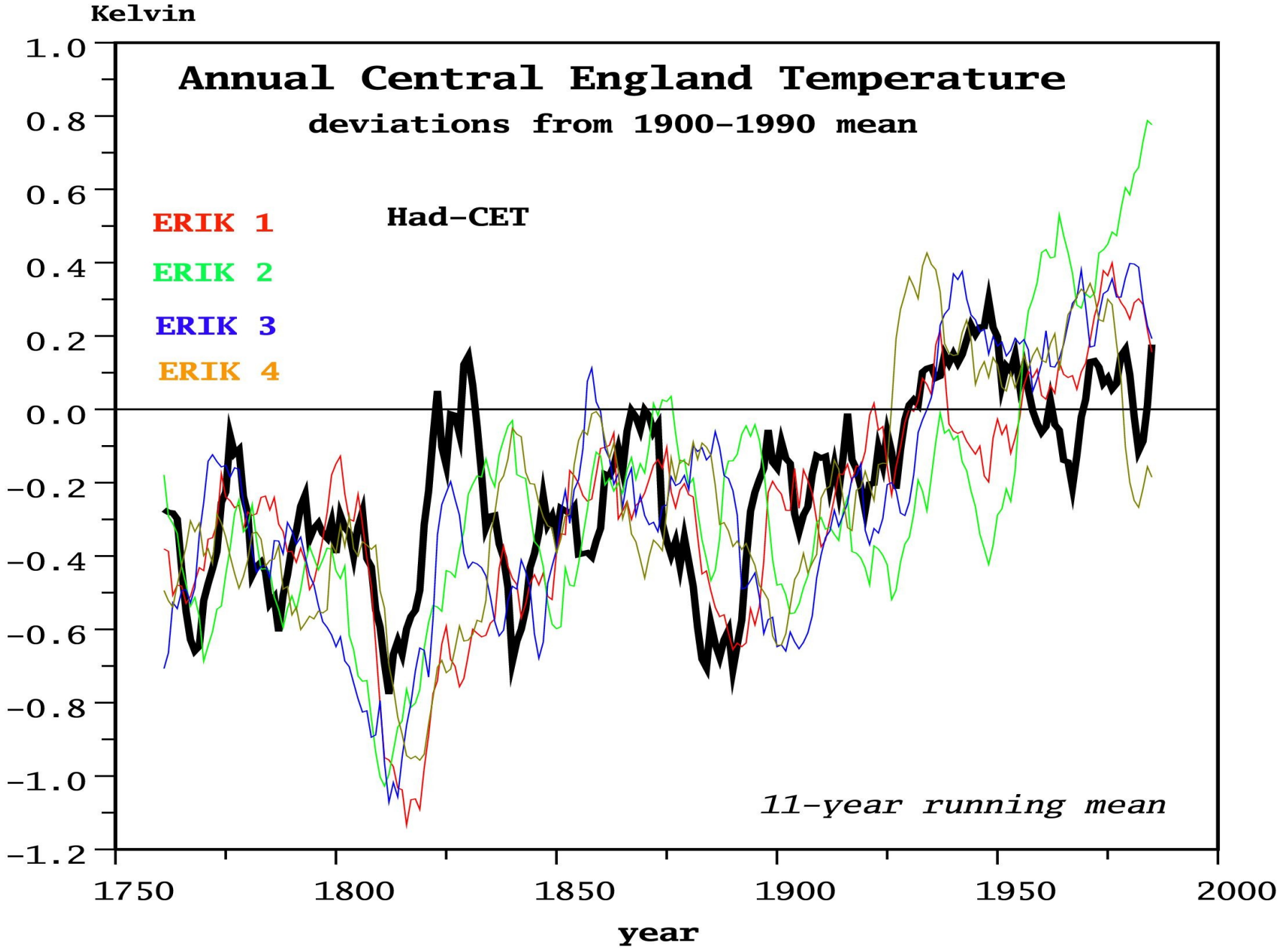
Semi-quantitative agreement between CSM and ECHO-G simulations



Agreement with Central England T, difficult to obtain with low solar variation



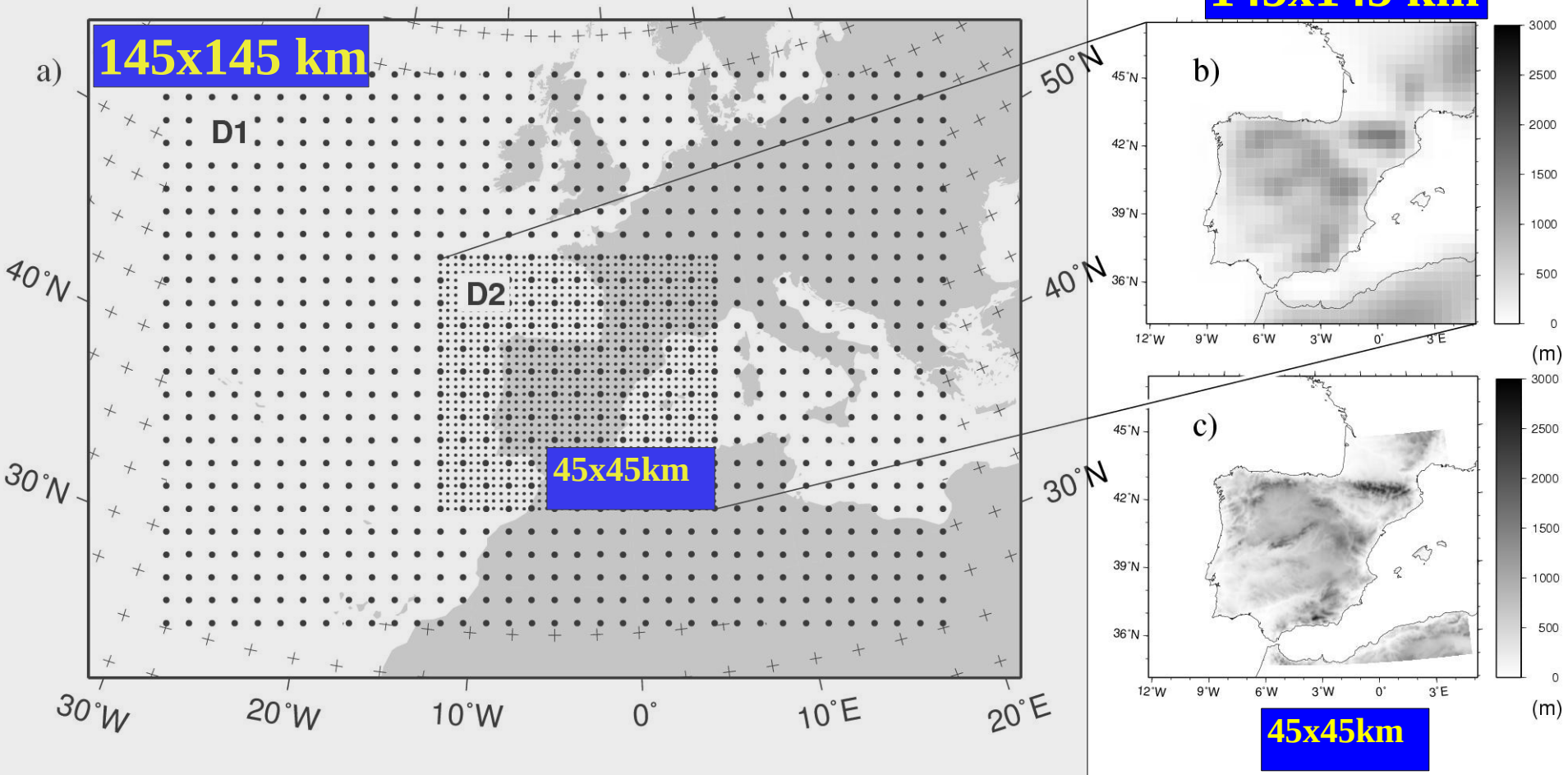
Regional centennial temperature trends are mostly due toexternal forcing



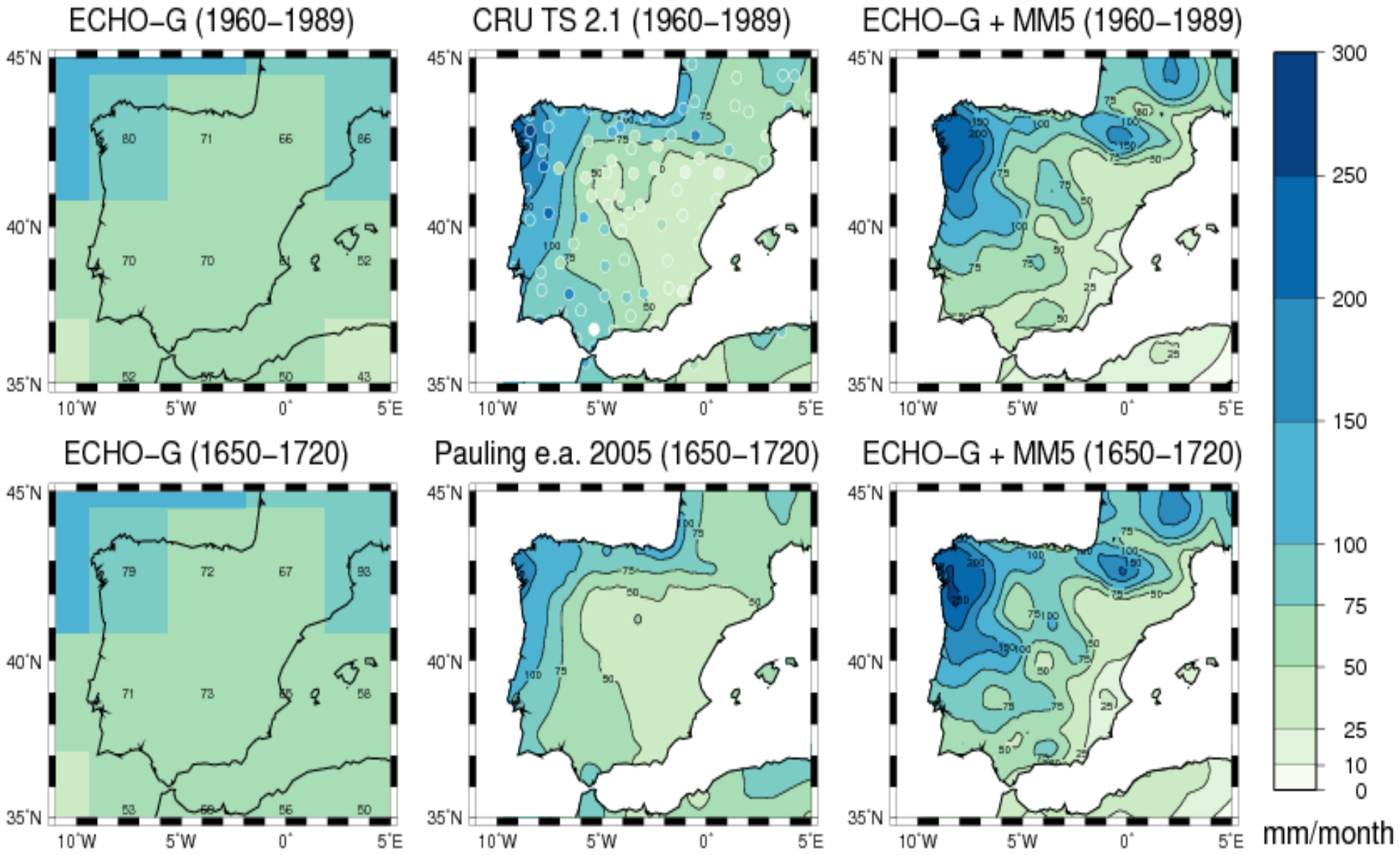
Simulation of the Iberian climate in the past 500 years with ECHO-G >> MM5
Project Ramshes , Spain

One-way double nesting embedding : ECHO-G >> Domain 1 >> Domain 2

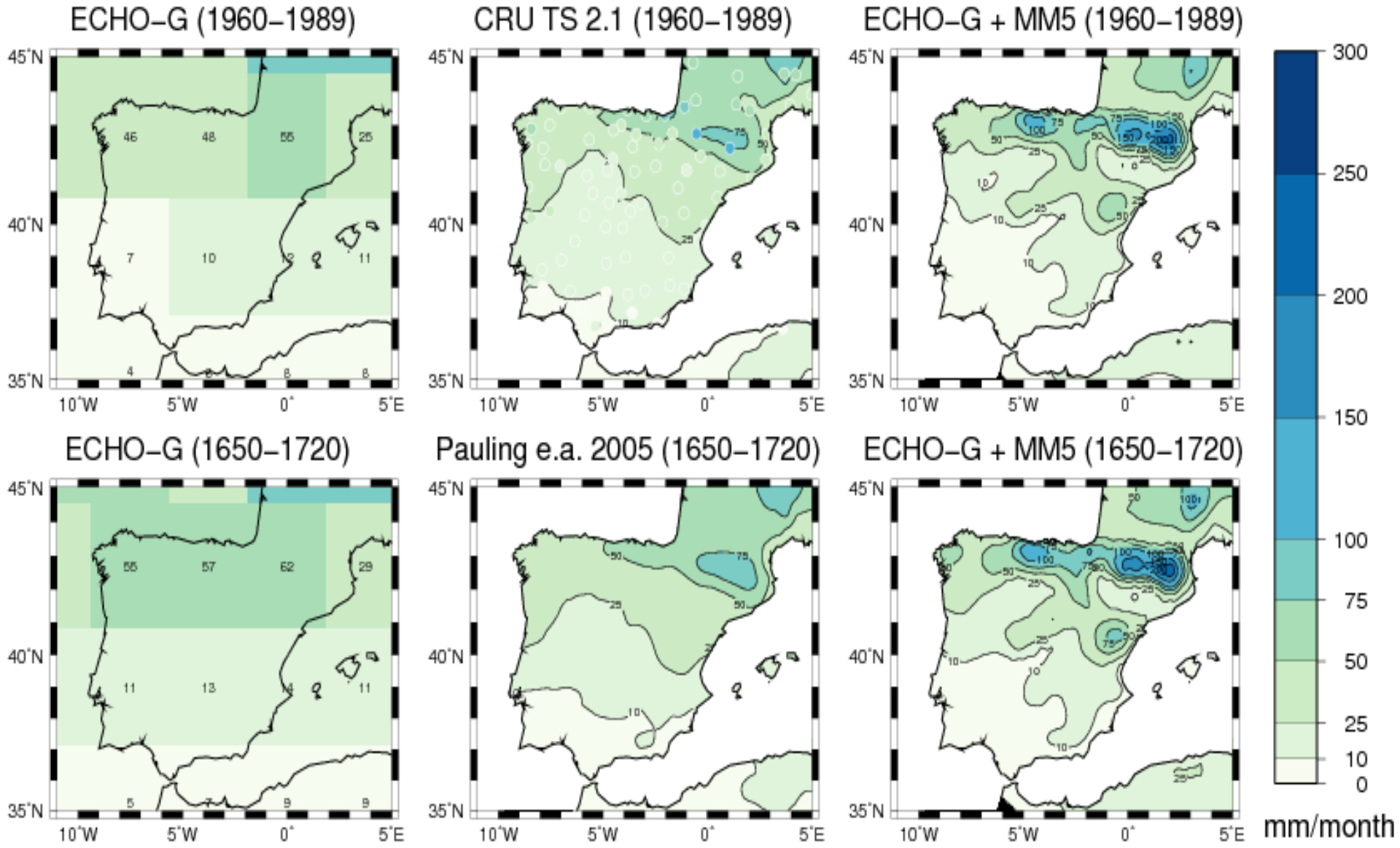
ECHO-G (~ 3.75x3.75 degrees)



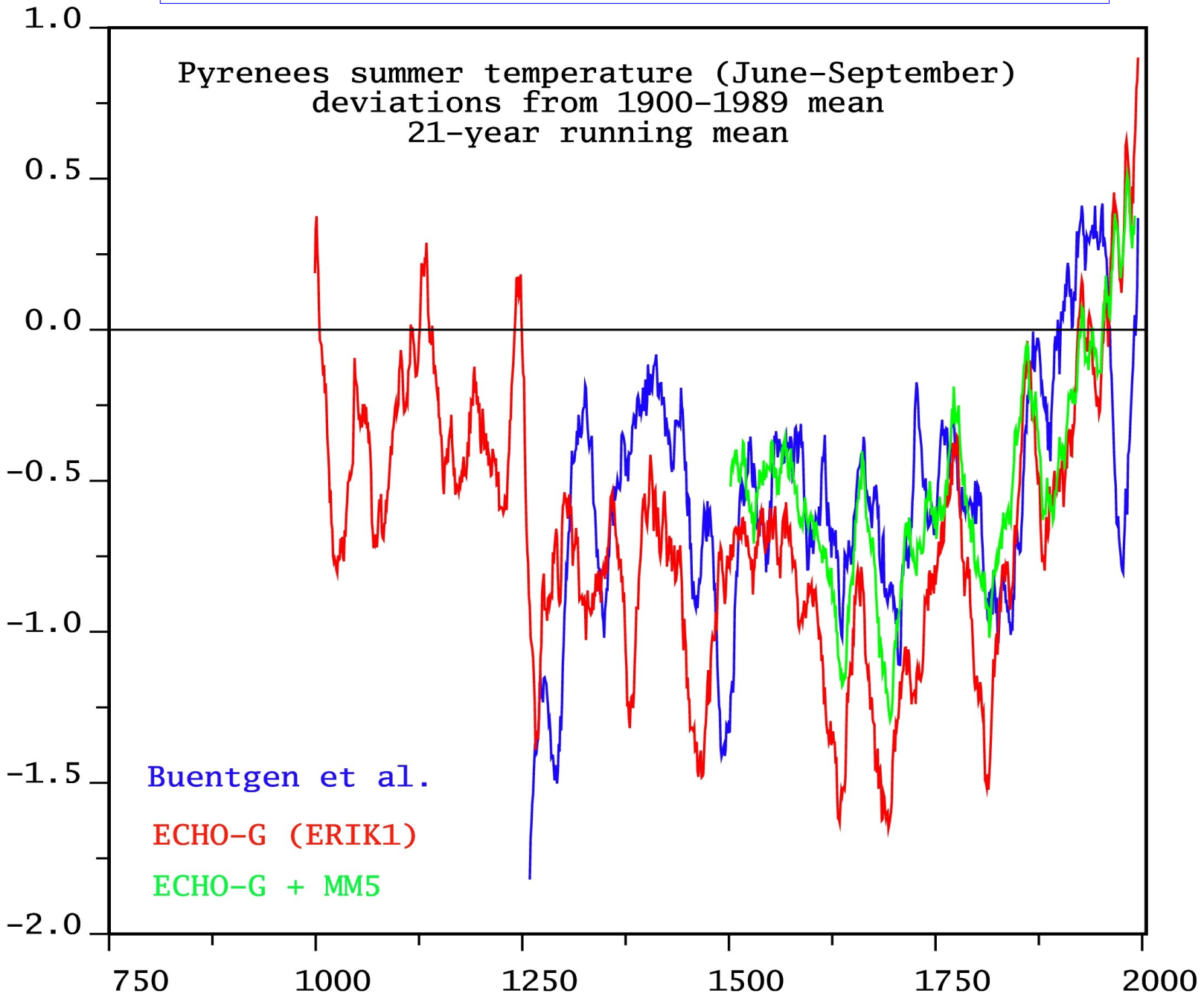
Iberian winter precipitation, simulated, observed and reconstructed



Iberian summer precipitation, simulated, observed and reconstructed

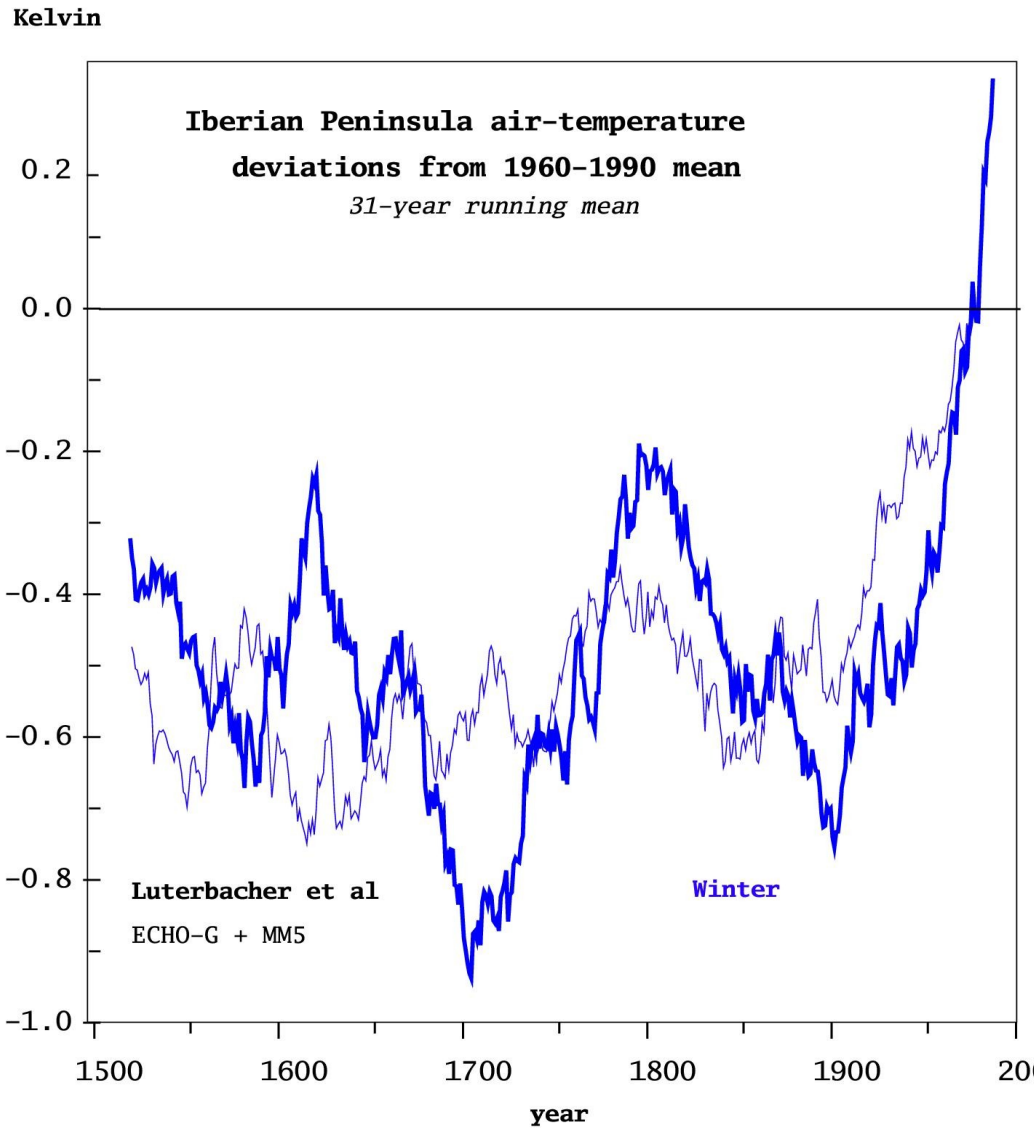


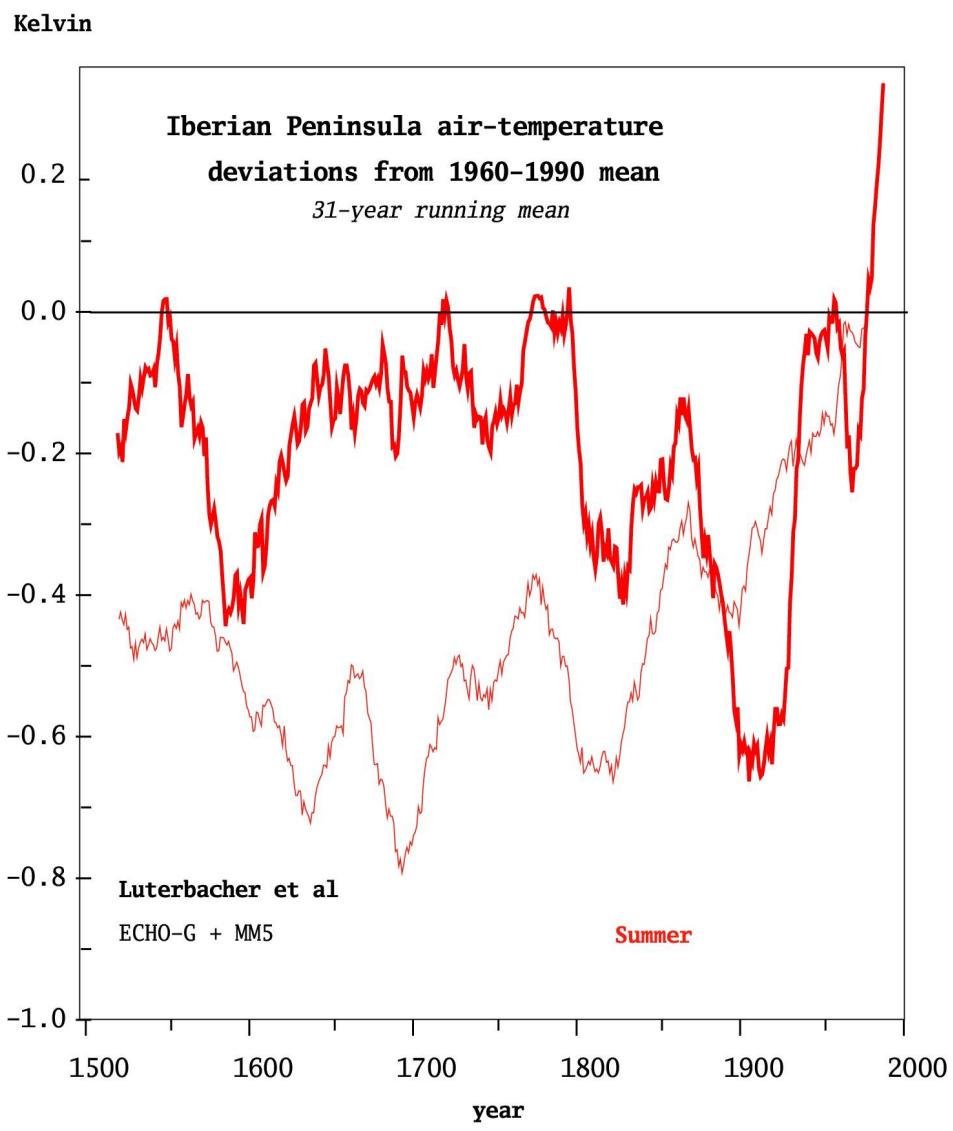
Regional simulation agrees at local scale with dendroclimatological T reconstructions



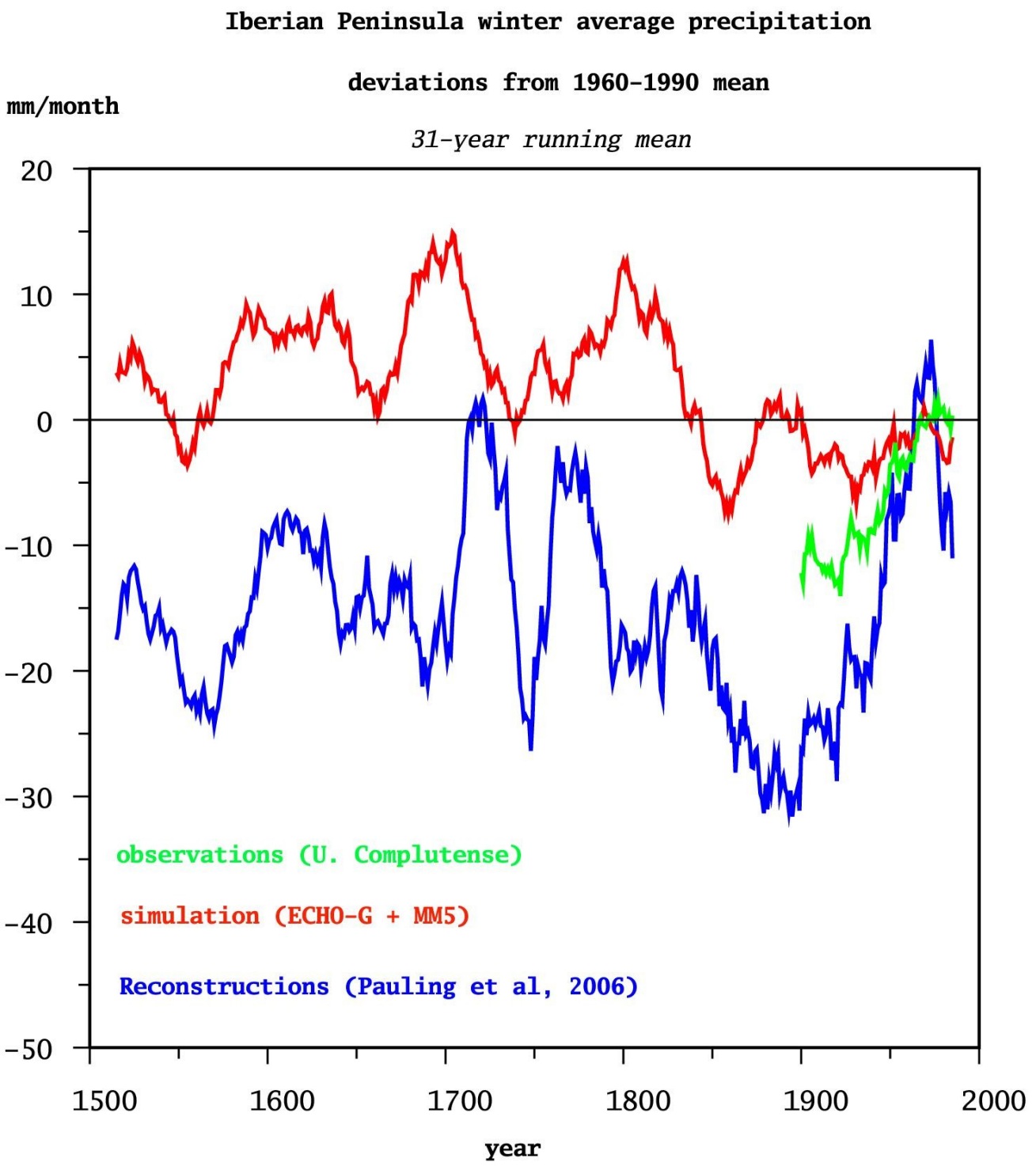
Iberian near-surface air temperature 1500-1990 reconstructions and simulation with regional climate model

Project Ramshes





Winter Precipitation



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Alpine summer temperature reconstructions