Decadal Predictability of the N. Atlantic MOC in GFDL's CM2.1 Coupled Climate Model

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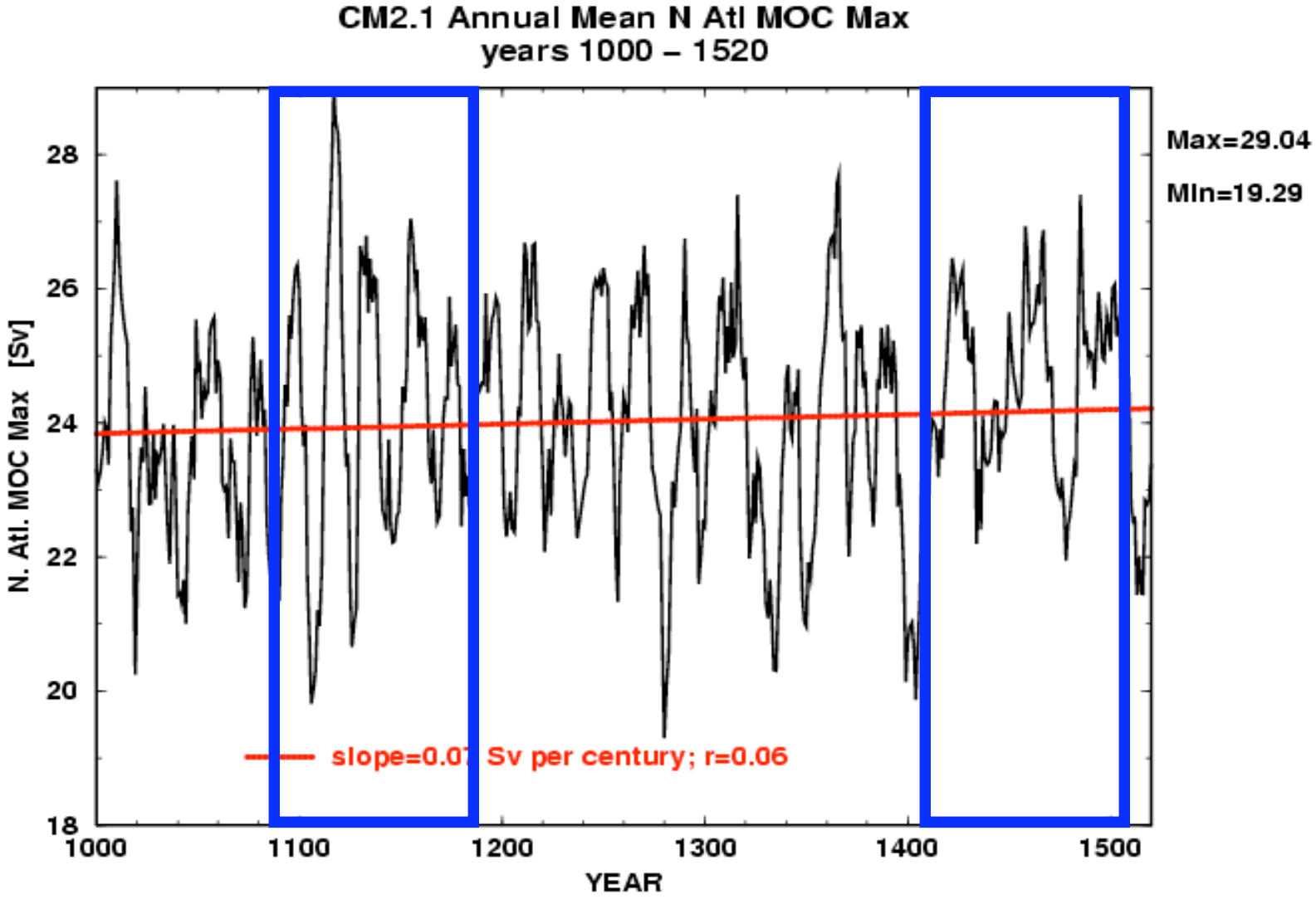
- The GFDL CM2.1 model came online in the fall of 2004.

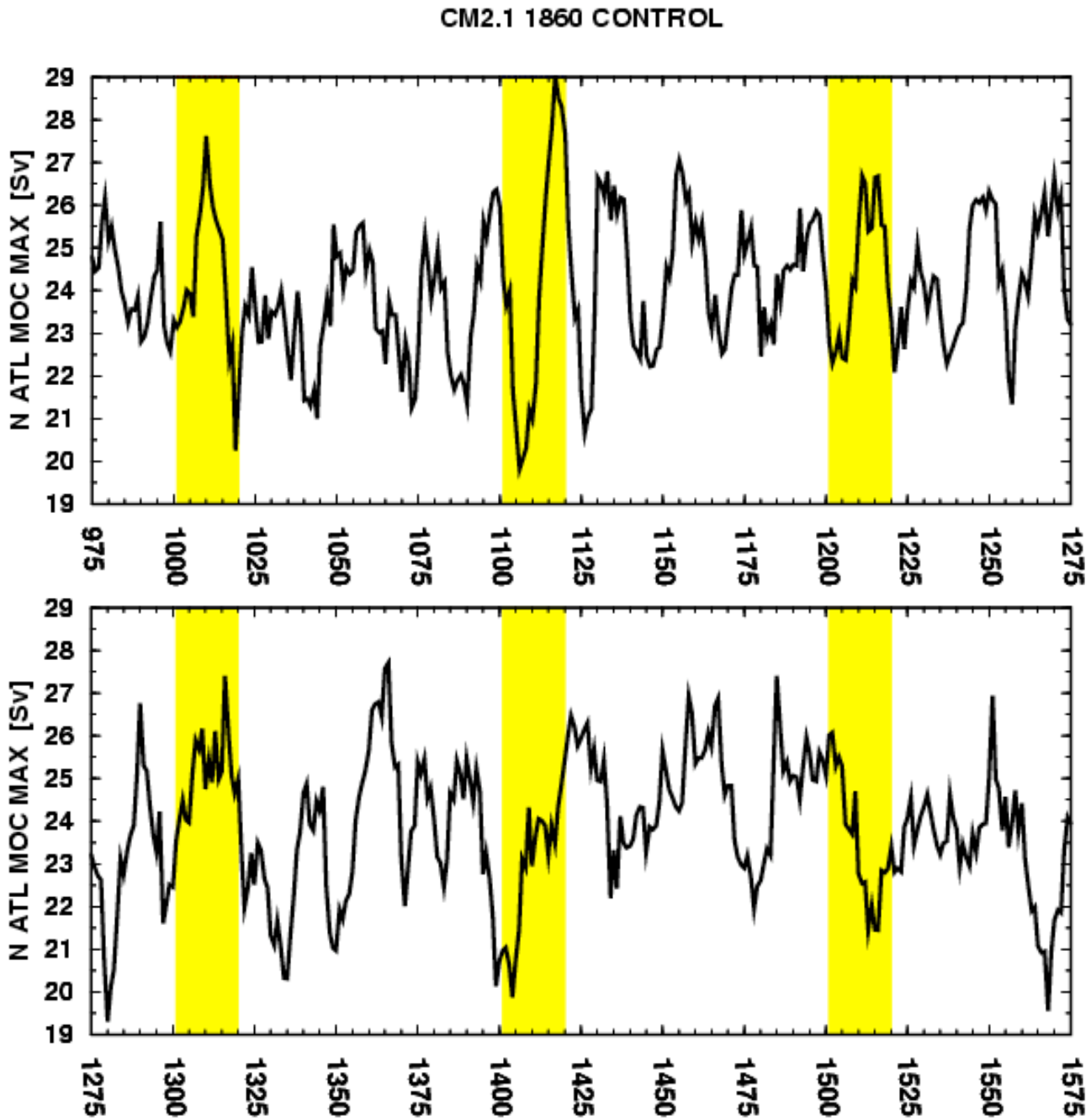
- **Here we discuss an ongoing line of inquiry into the predictability of the North Atlantic meridional overturning strength based upon sets of simulations built around a long running pre-industrial control simulation & some climate of the 21st Century runs.**

N. Atlantic MOC in GFDL CM2.1 Control

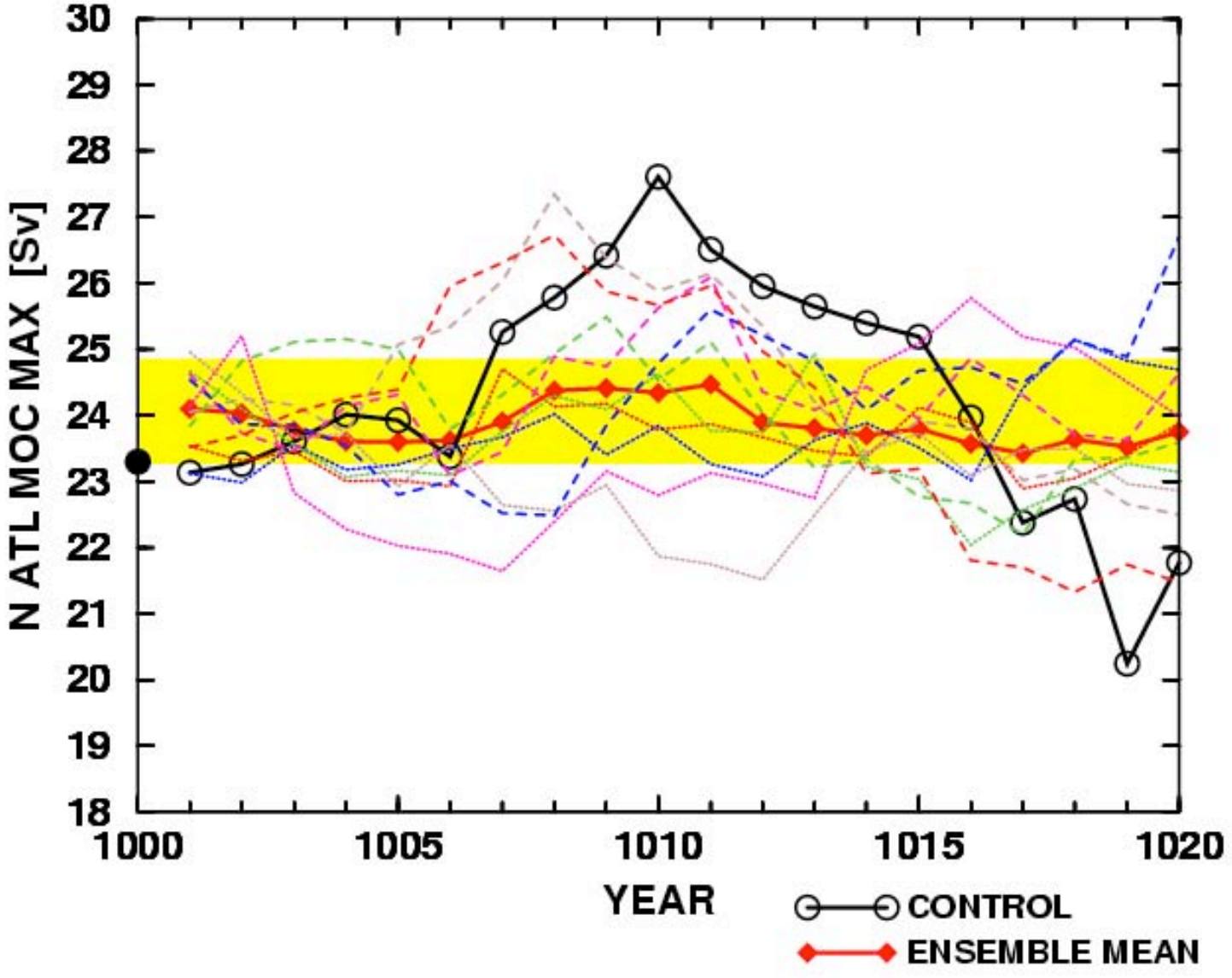


* Negligible climate drift. * Character of internal variability varies

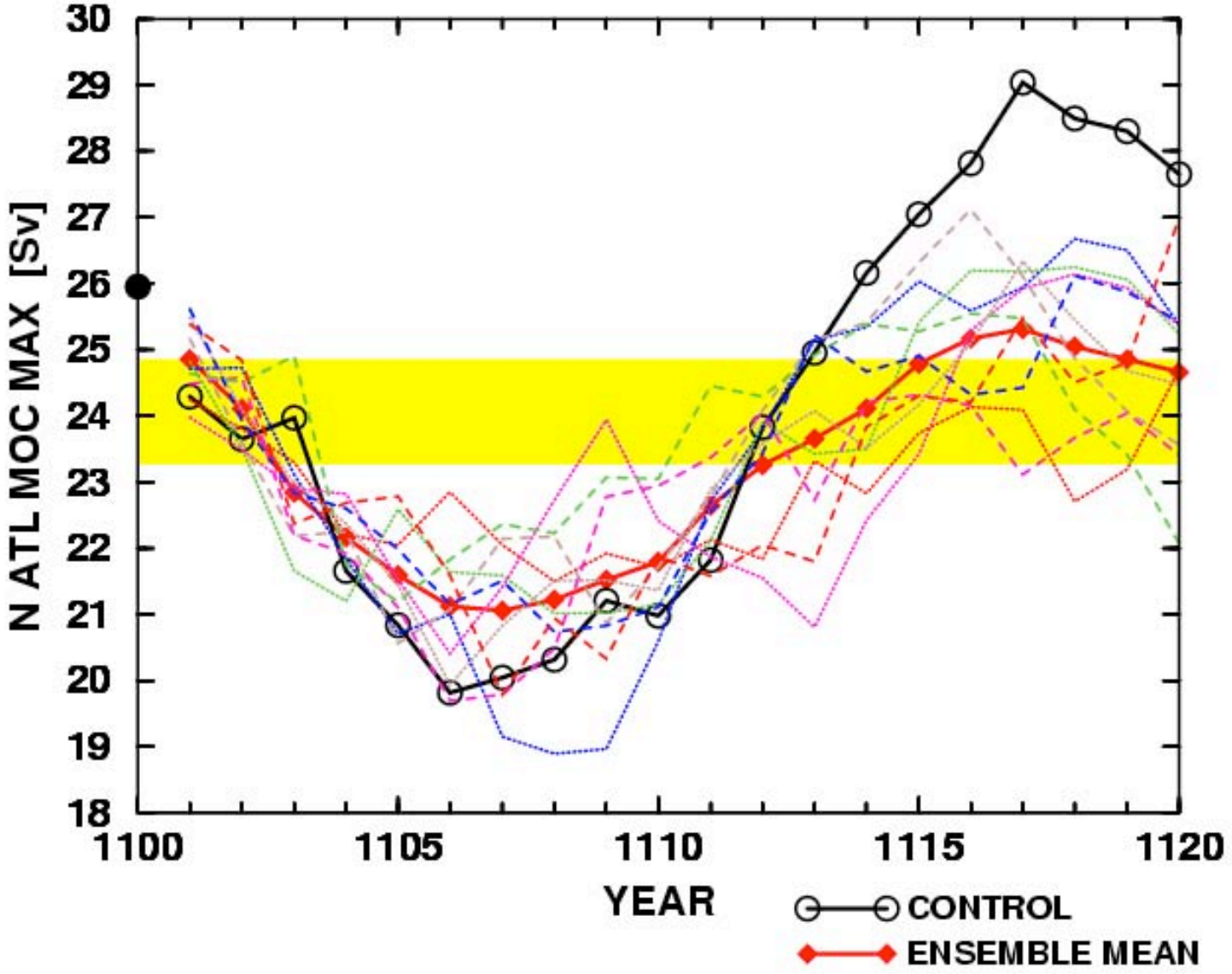
The N. Atl. MOC in the 1860 Control



The set starting at Jan 1001

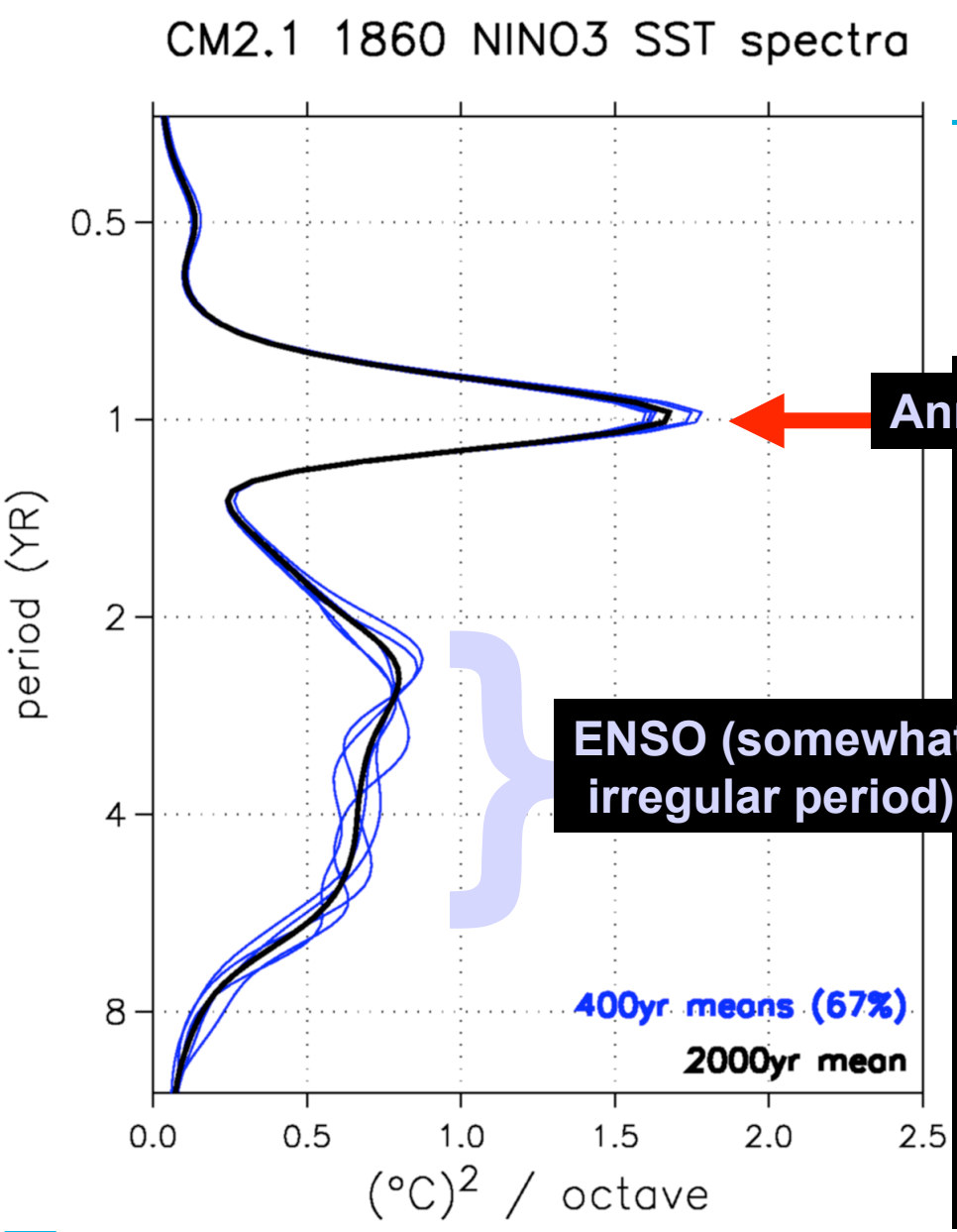


The set starting at Jan 1101



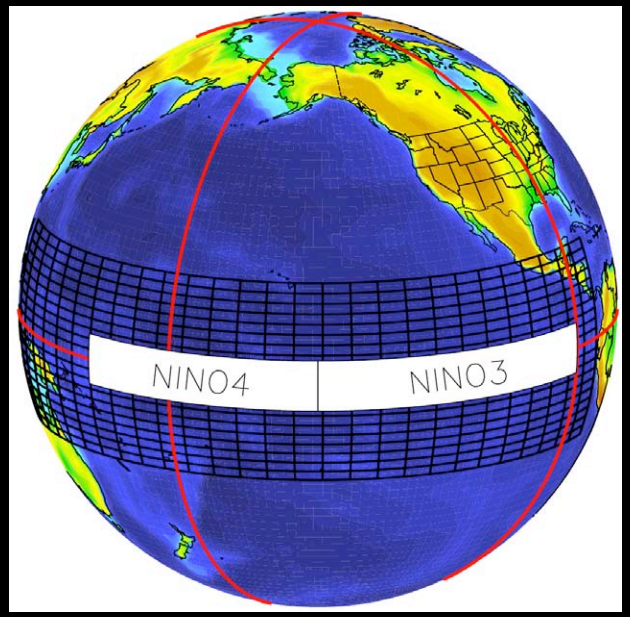
- Some times there appears to be more multi-year to decadal predictability than at other times.
- Can one predict when there's likely to be more predictability?
- What is the difference between statistical skill vs. practical skill?
- Skill relative to what? Climatology, persistence, a statistical model based upon previous years?

Natural modulation of ENSO in a 2000yr coupled GCM run



Annual Cycle

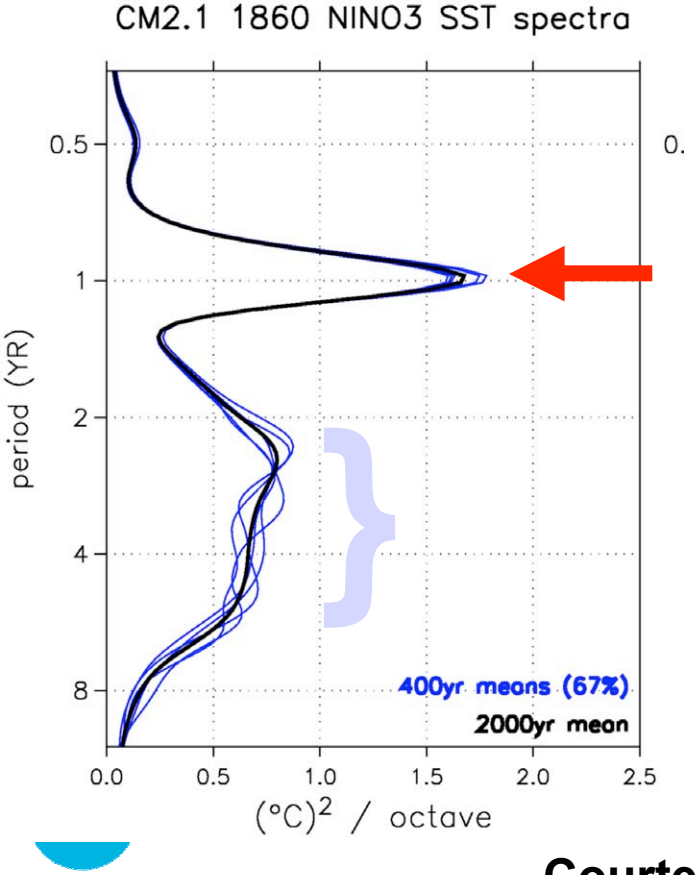
ENSO (somewhat irregular period)



Courtesy Andrew Wittenberg, NOAA/GFDL

Natural modulation of ENSO in a 2000yr coupled GCM run

2000 yr & 400 yr means



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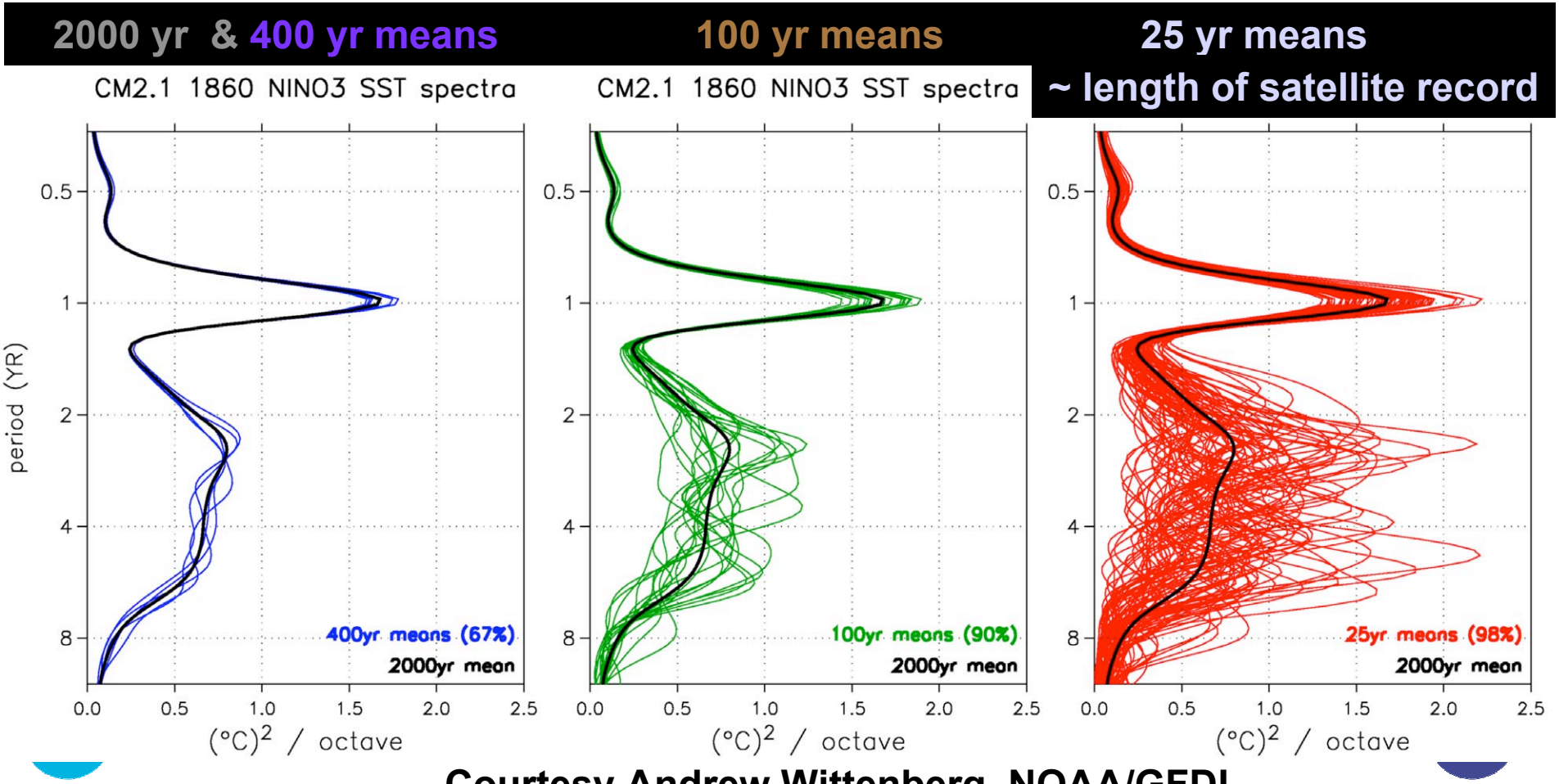
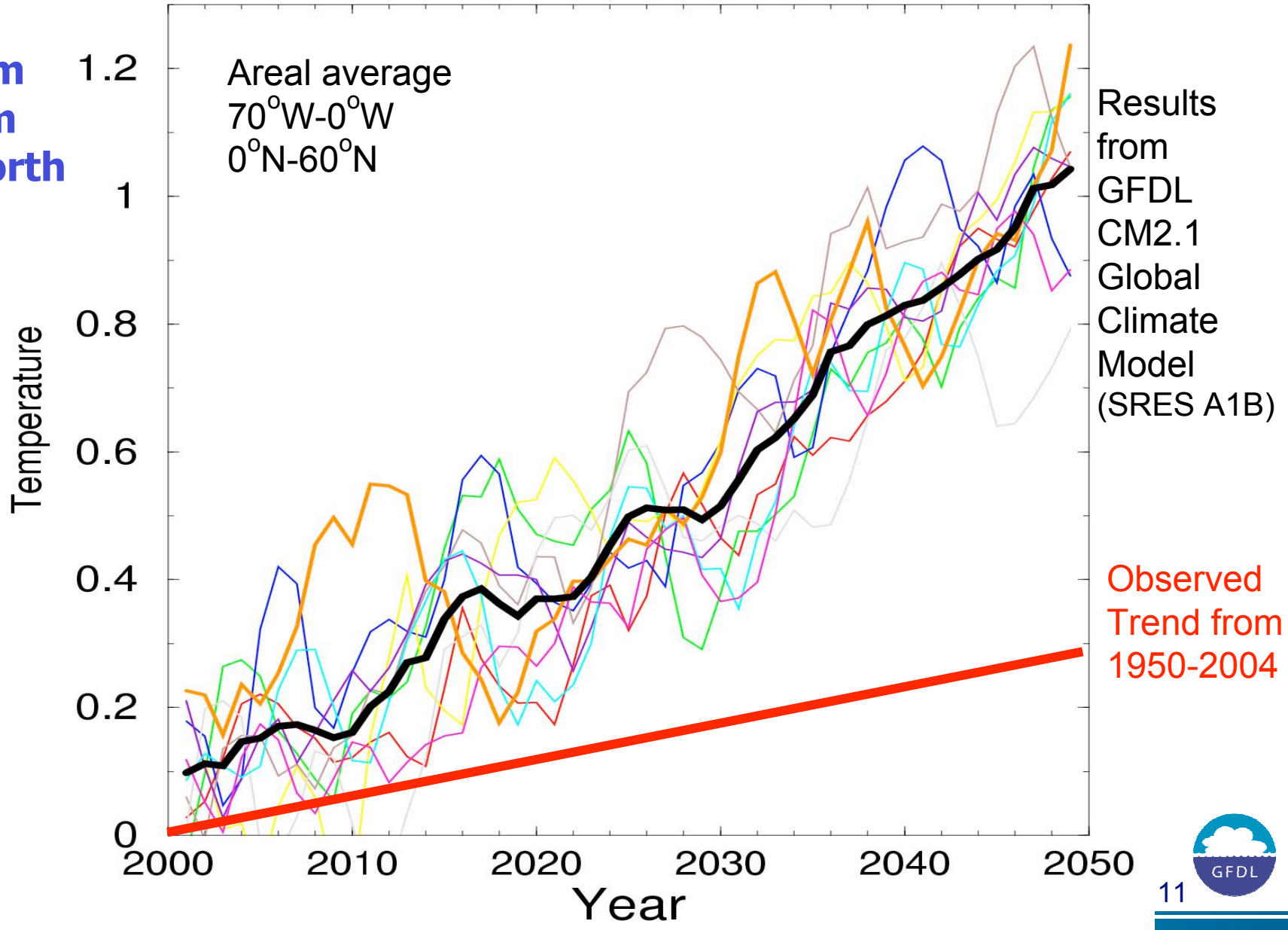


Courtesy Andrew Wittenberg, NOAA/GFDL

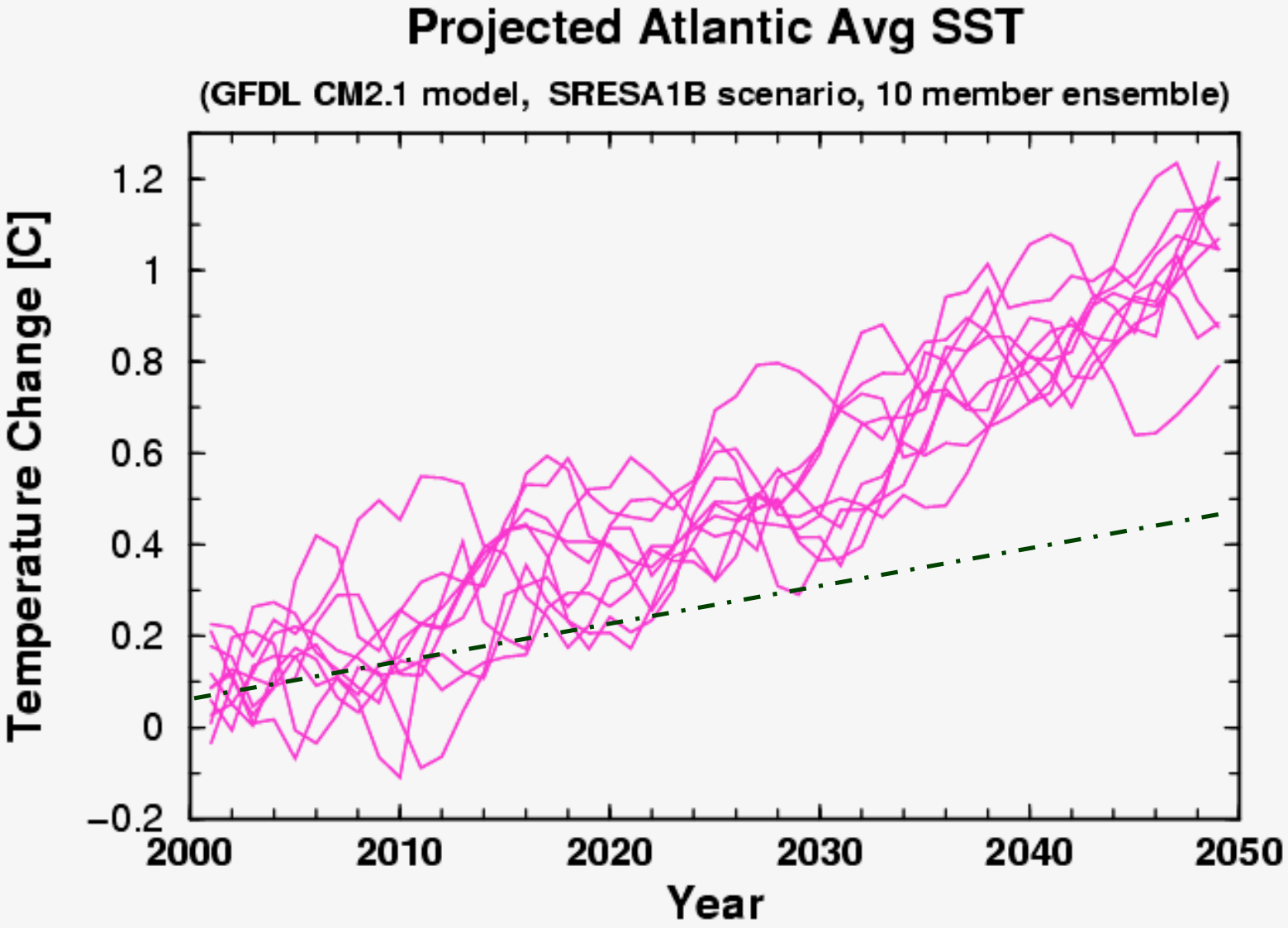
Looking at 21st Century Simulations

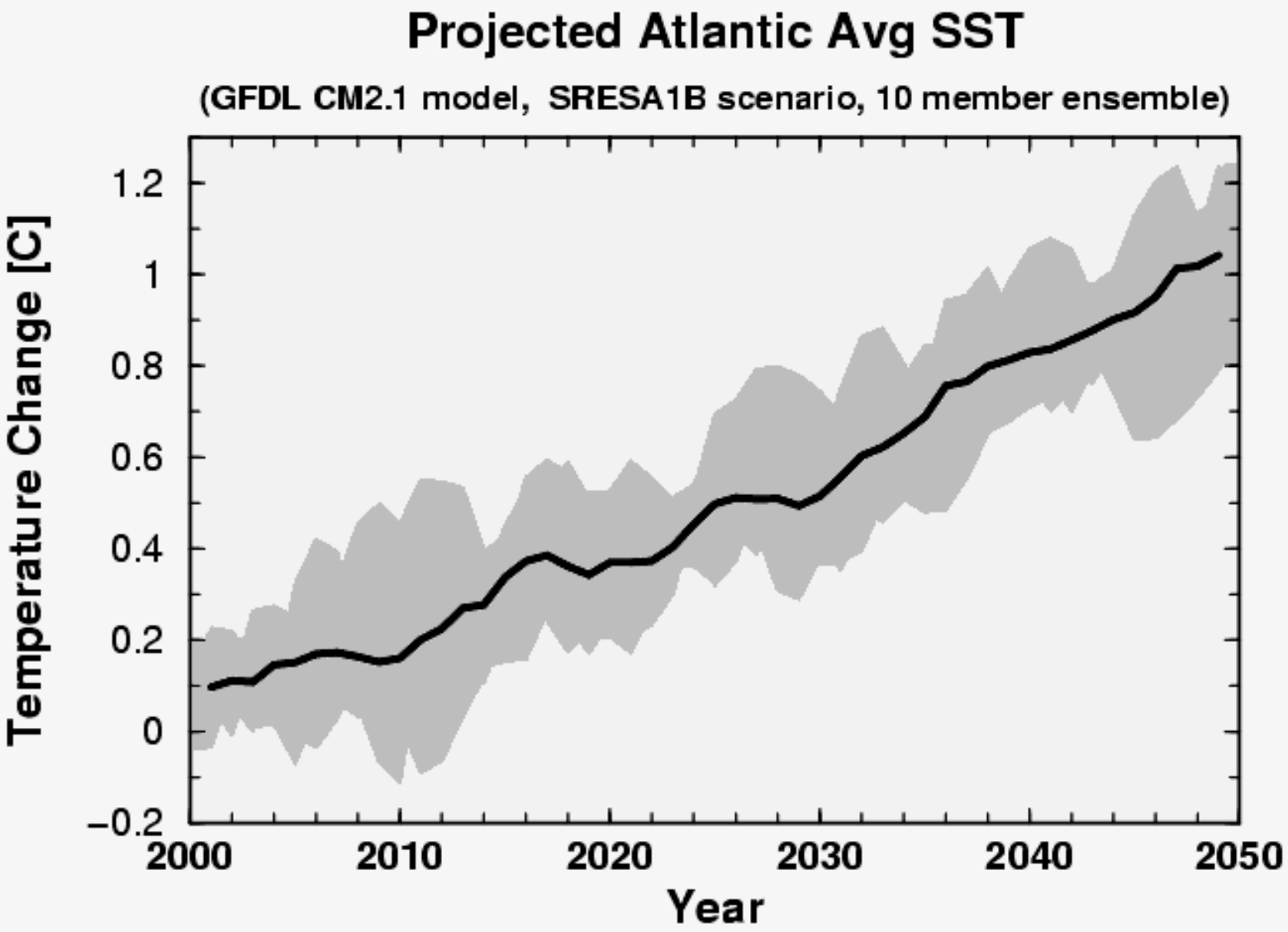
Projected Atlantic SST Change (relative to 1991-2004 mean)

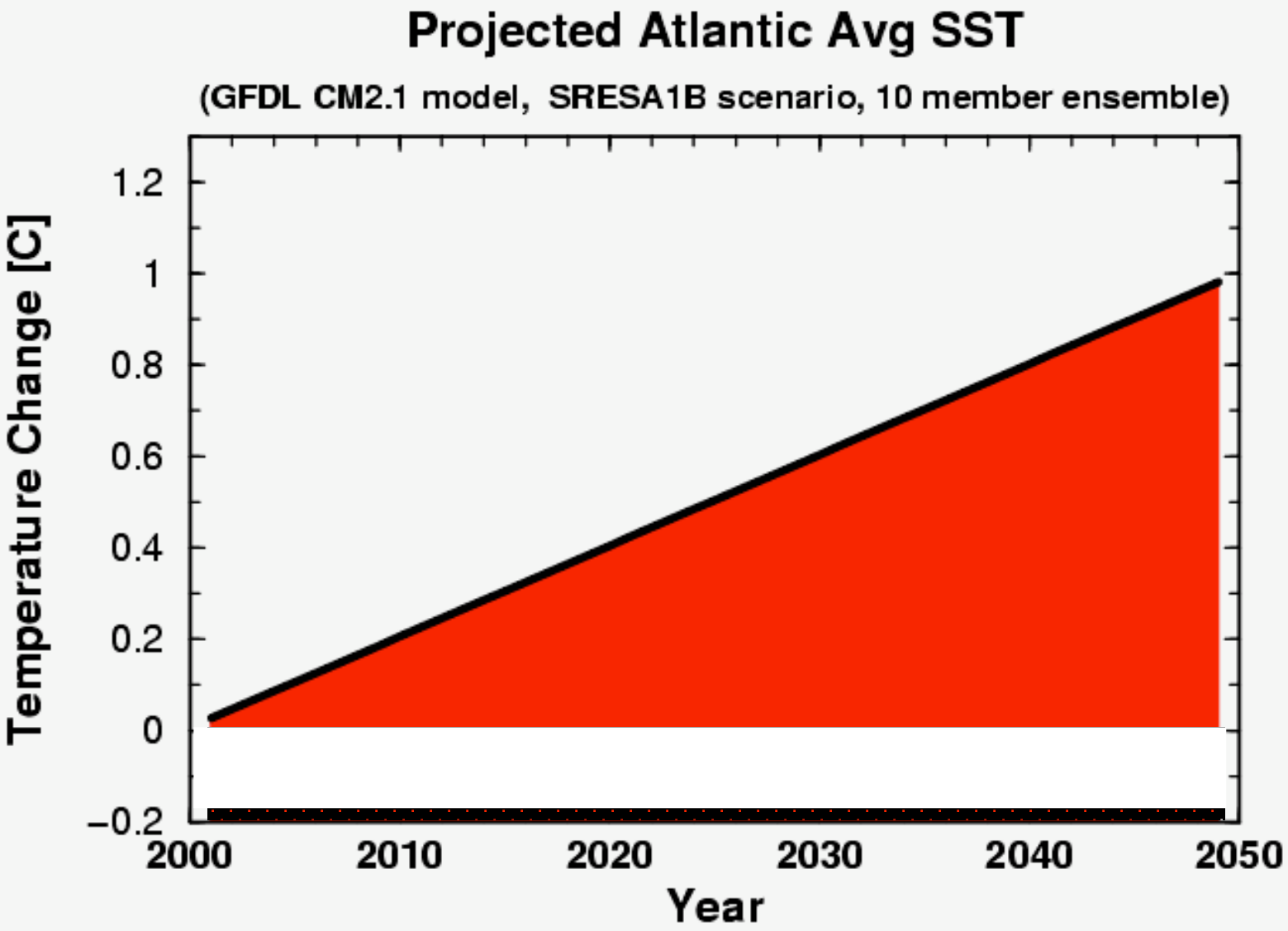
From Tom Delworth



Regarding the communication of info to interested non-specialists…




Projected Atlantic Avg SST
(GFDL CM2.1 model, SRESA1B scenario, 10 member ensemble)
Temperature Change [C]
1.2
1
0.8
0.6
0.4
0.2
0
−0.2
2000
2010
2020
2030
2040
2050
Year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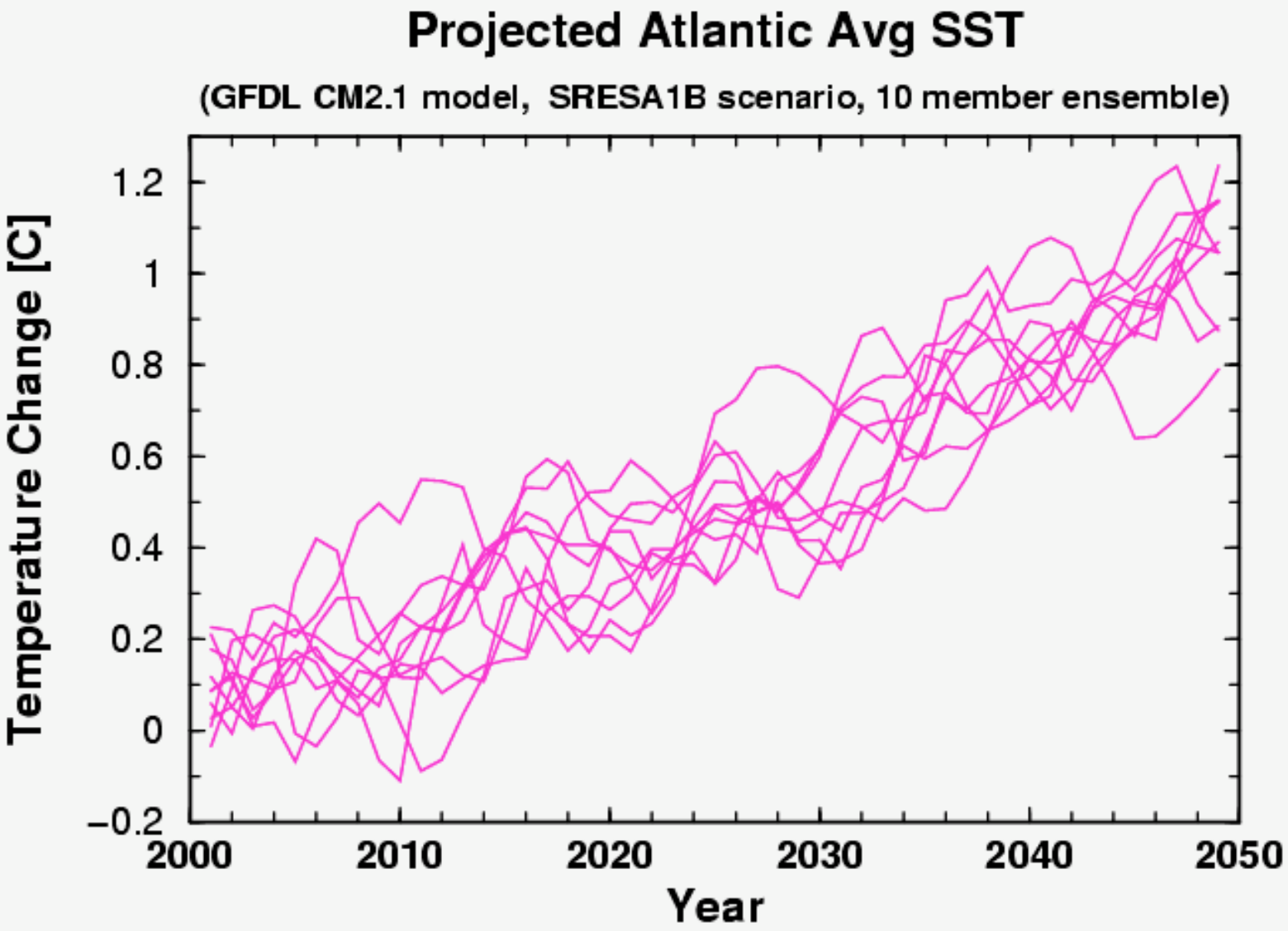
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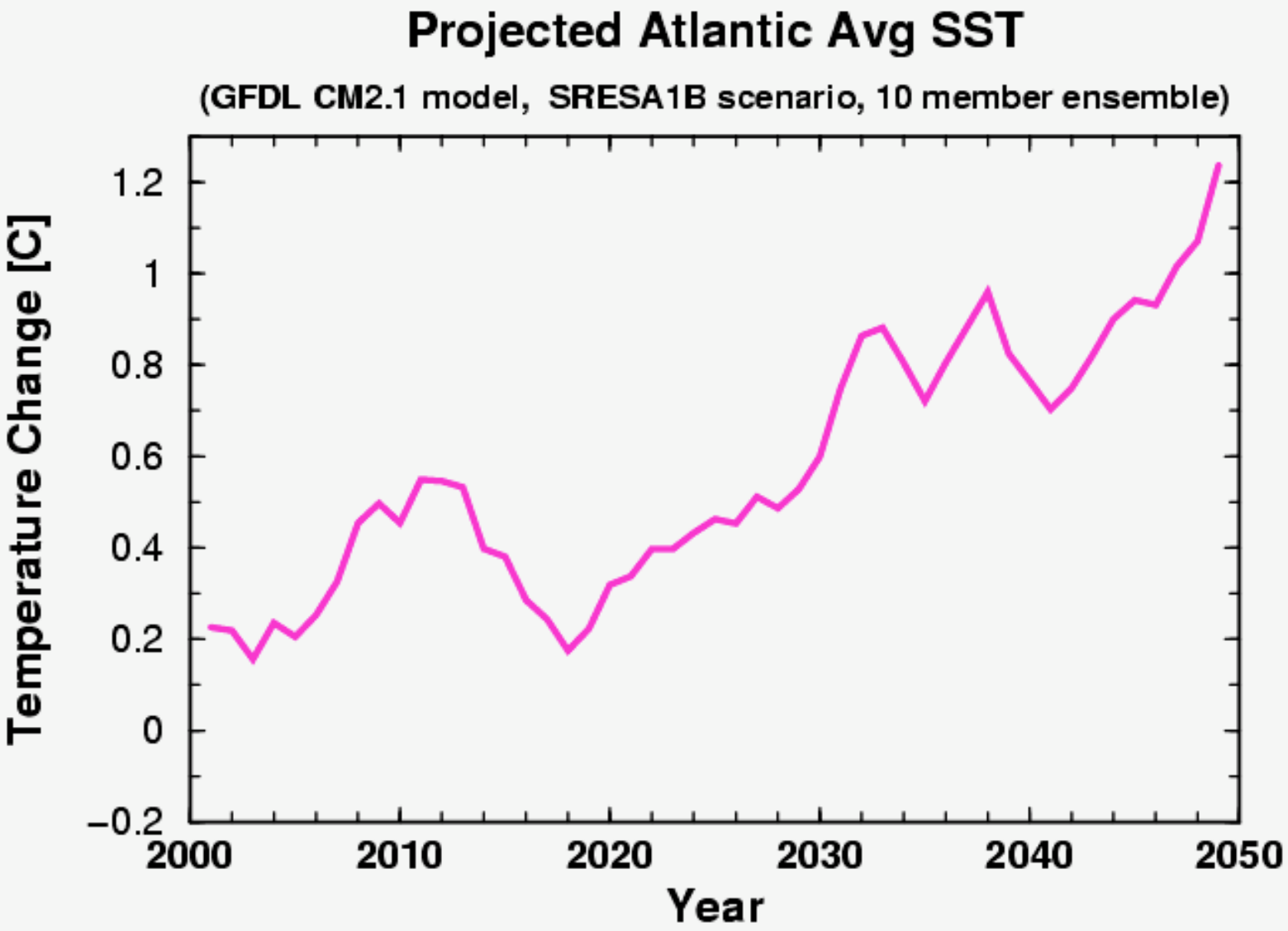
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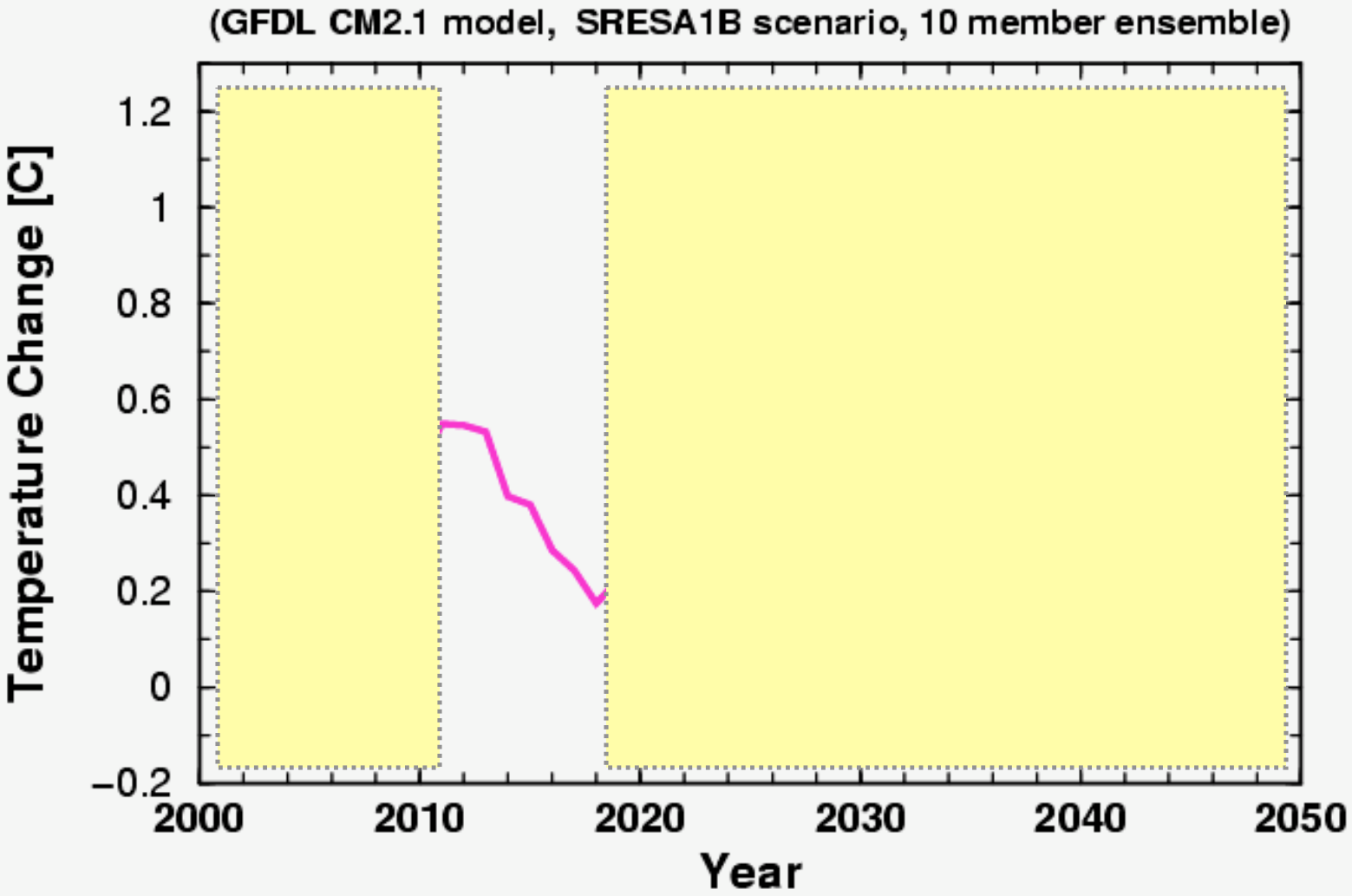
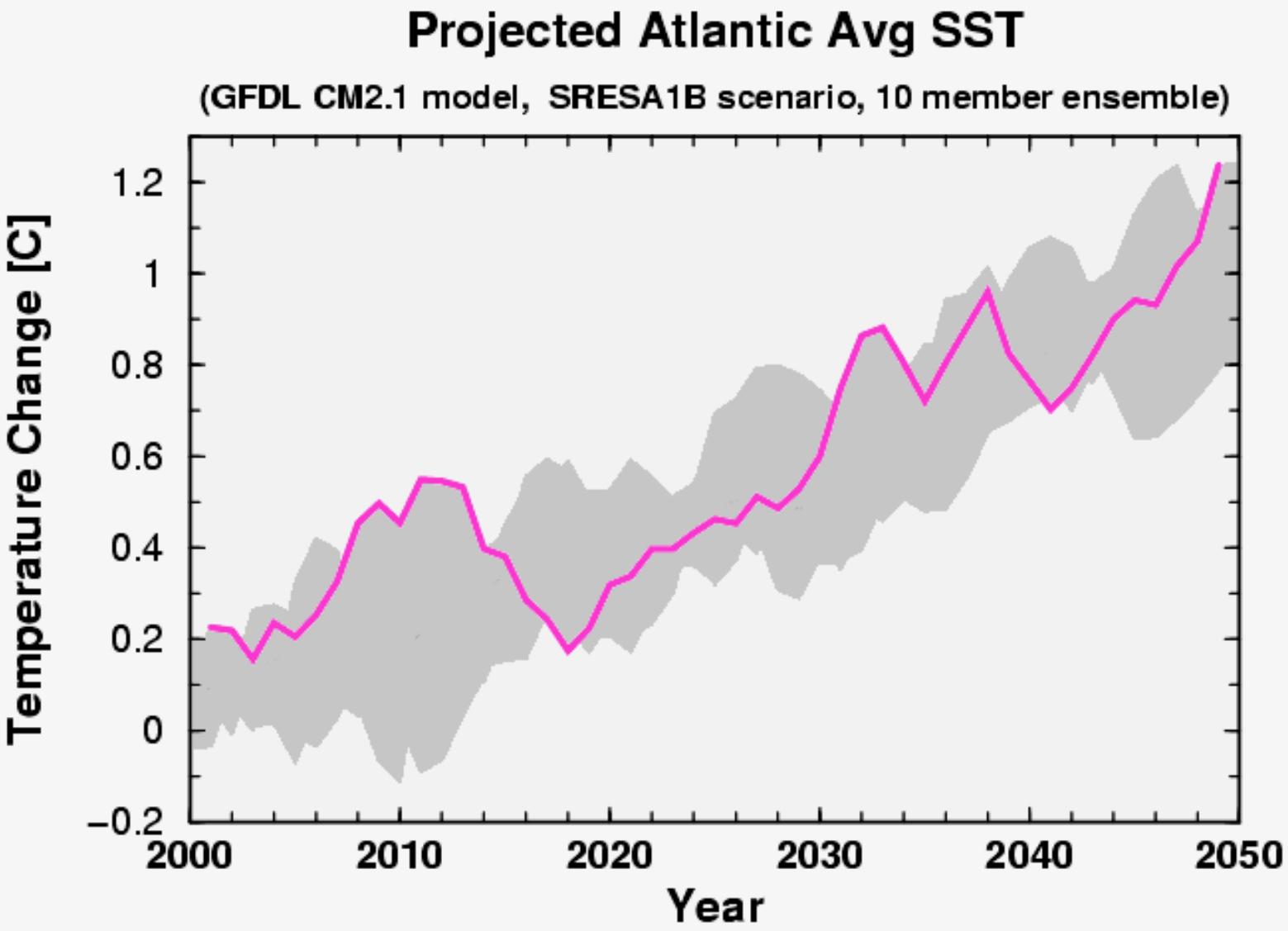
If this is "news" to environmental reporters, science & technology museum conference attendees, and nation weather service forecasters then what does it say about our communities communication effectiveness?

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NOAA


GFDL

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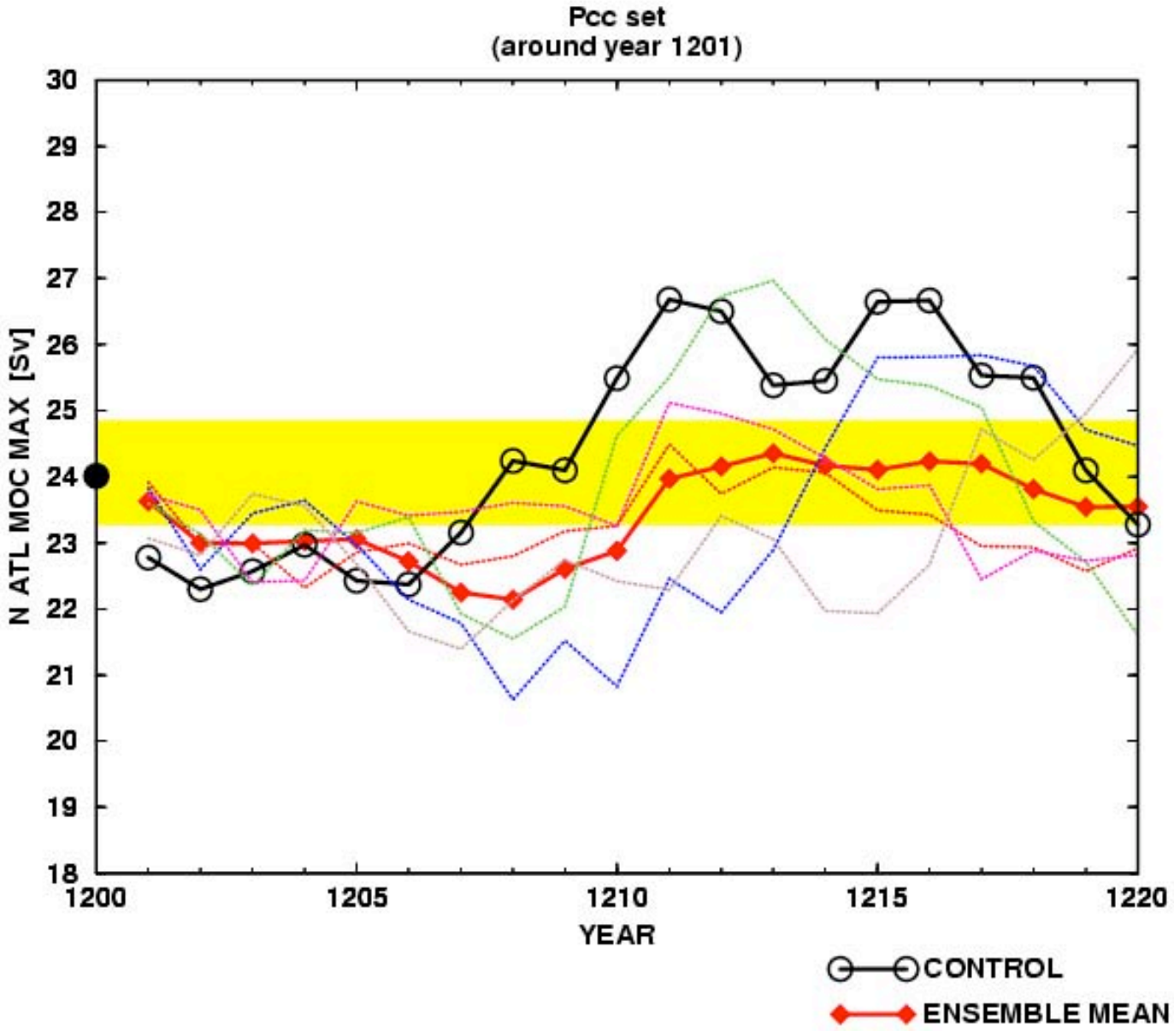
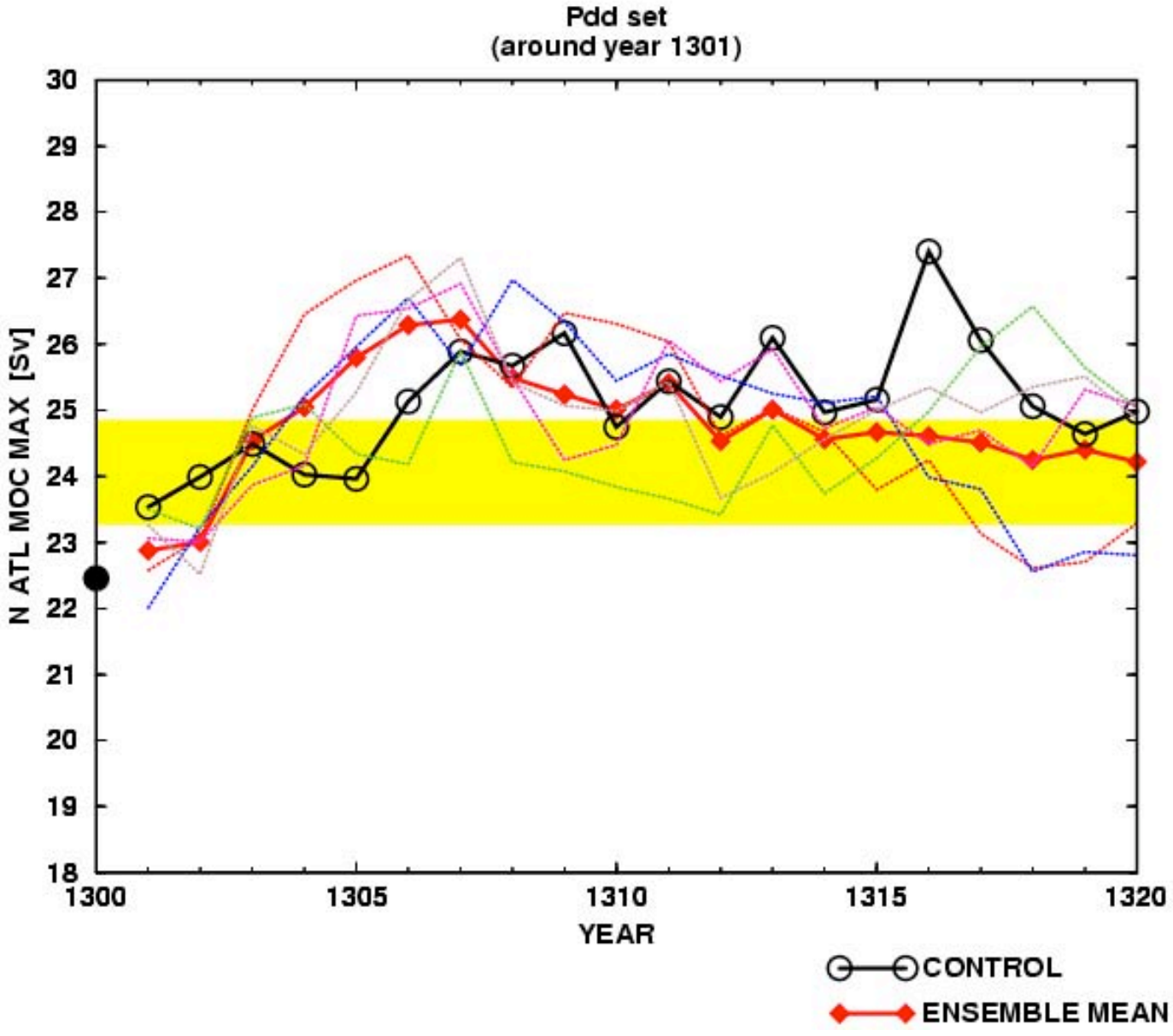
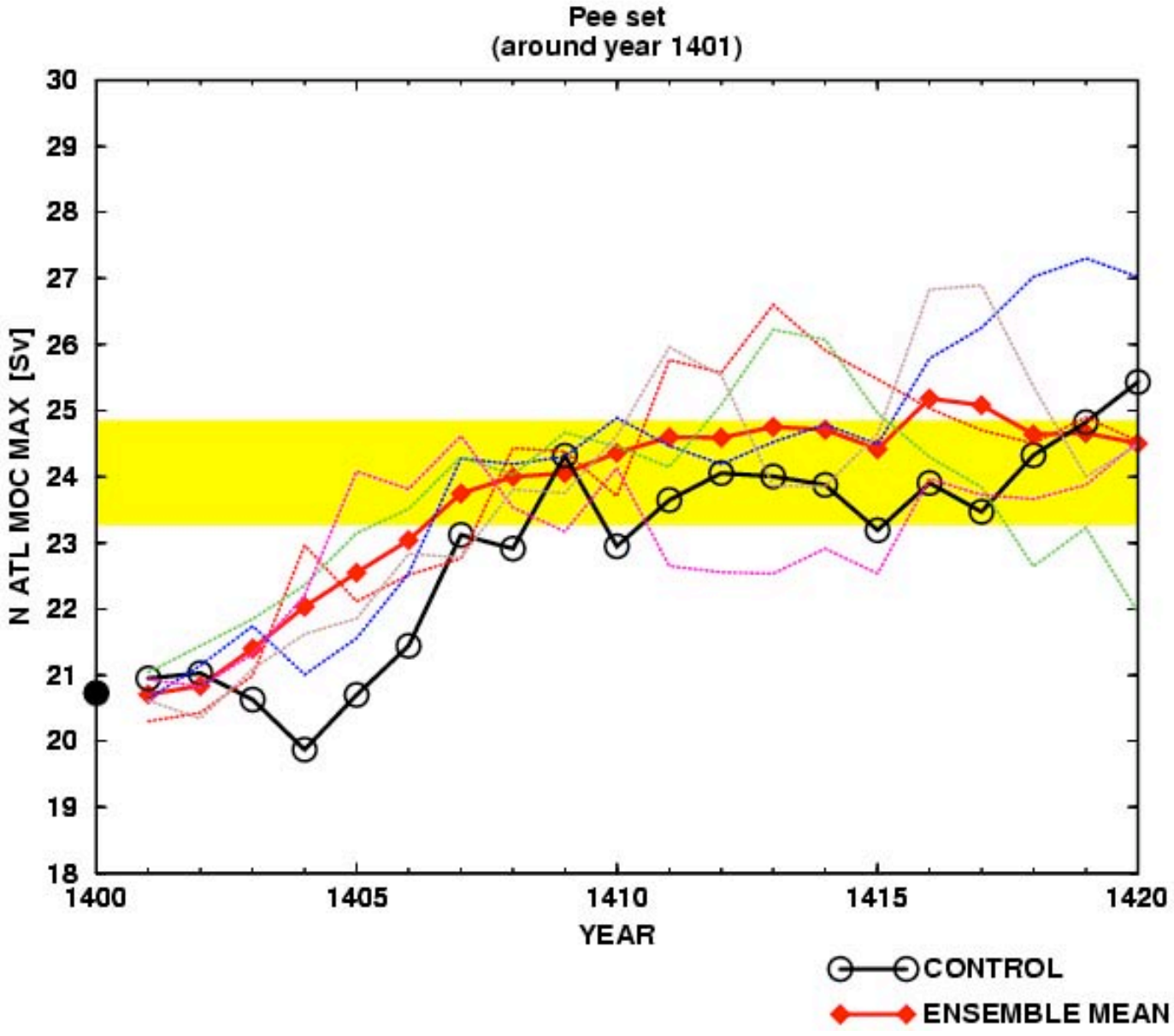


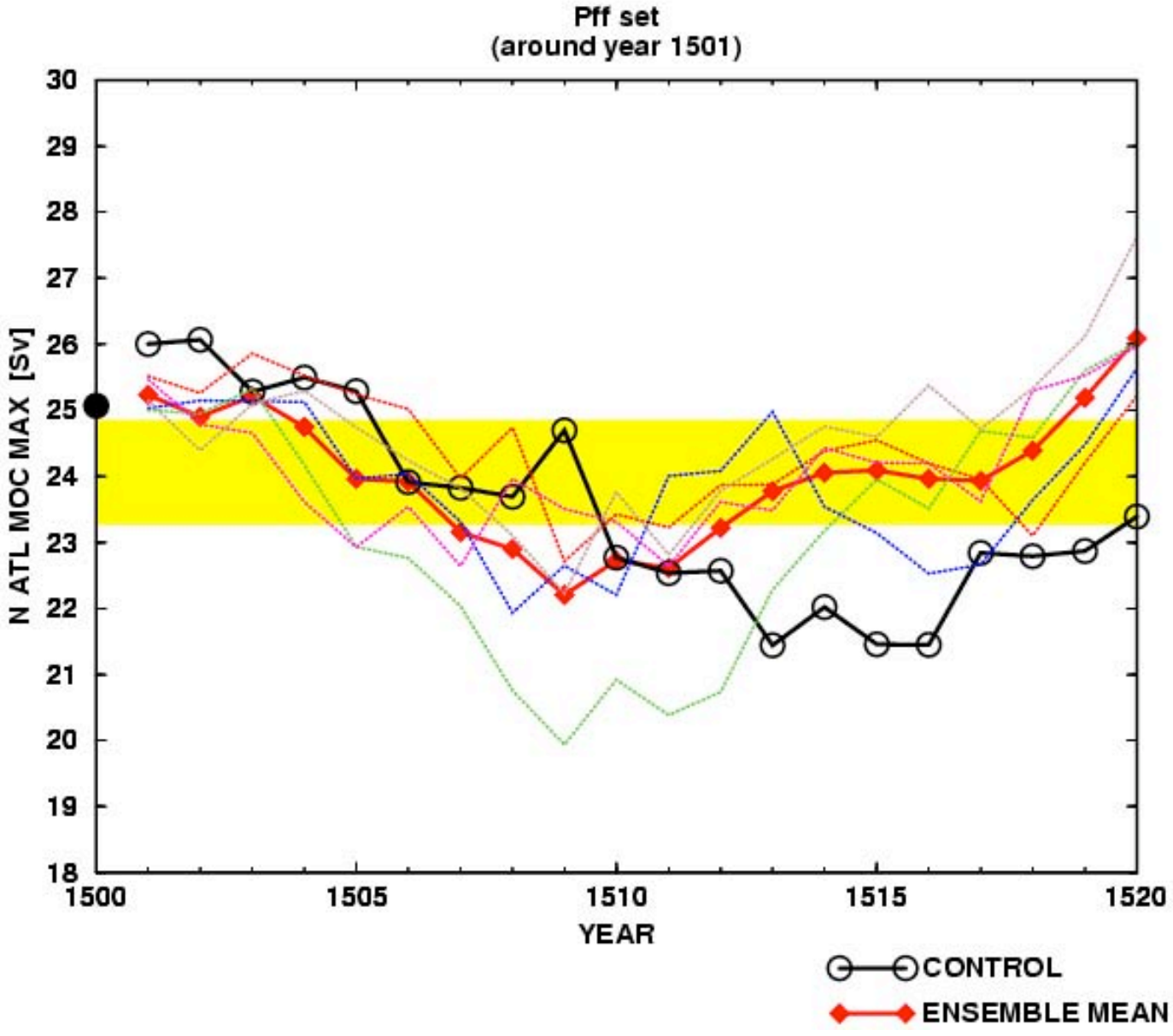
The set starting at Jan 1301



The set starting at Jan 1401



The set starting at Jan 1501



Variability and Change…