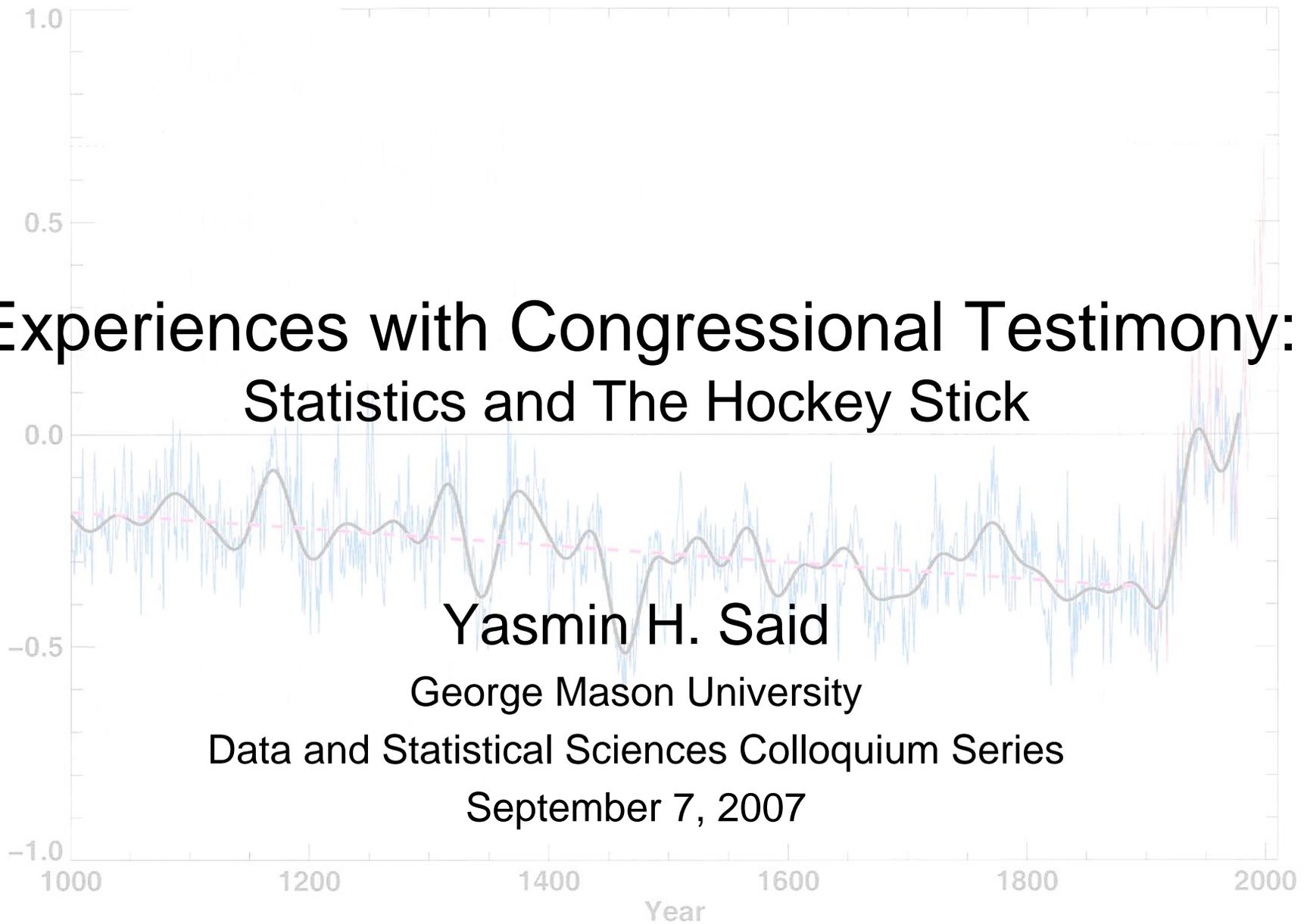


Experiences with Congressional Testimony: Statistics and The Hockey Stick



Yasmin H. Said

George Mason University

Data and Statistical Sciences Colloquium Series

September 7, 2007

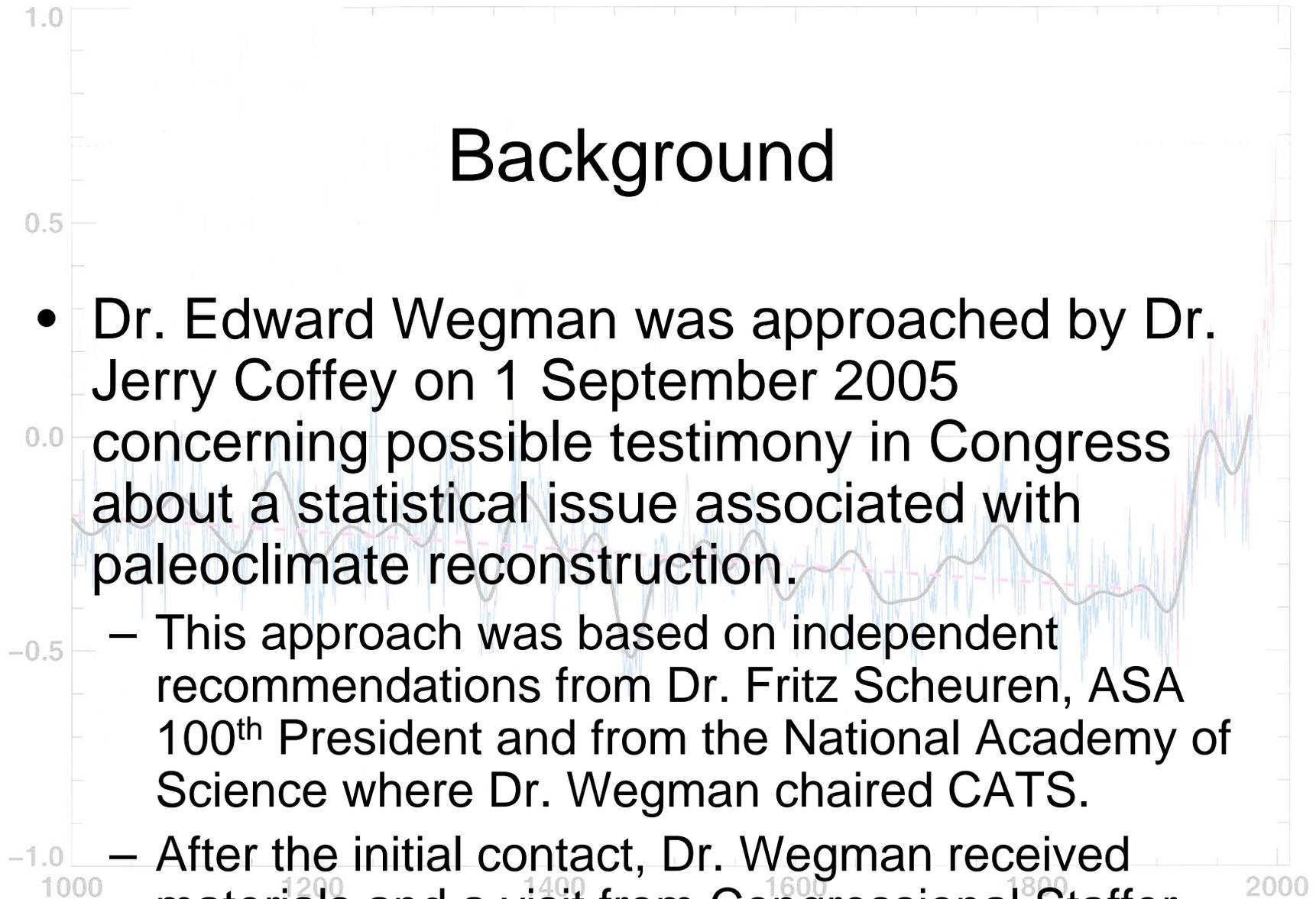
Agenda

- How we got into this ...
 - Background
 - Preliminaries
- What we actually did.
 - Hockey sticks and coauthor networks
- What happened afterwards.
 - Congressional reaction
 - Media comments
 - Invitations
 - Books and articles



Background

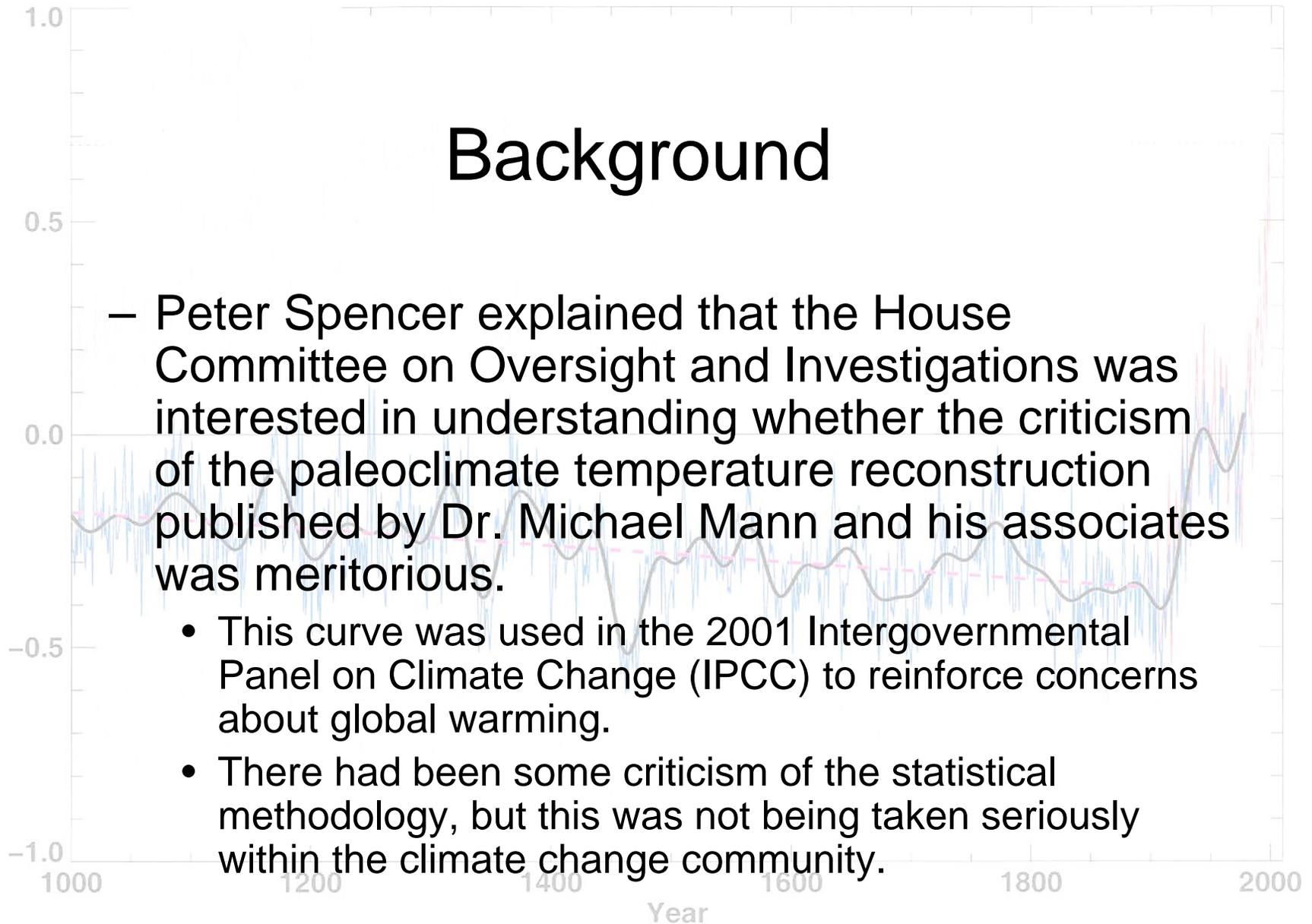
- Dr. Edward Wegman was approached by Dr. Jerry Coffey on 1 September 2005 concerning possible testimony in Congress about a statistical issue associated with paleoclimate reconstruction.
 - This approach was based on independent recommendations from Dr. Fritz Scheuren, ASA 100th President and from the National Academy of Science where Dr. Wegman chaired CATS.
 - After the initial contact, Dr. Wegman received materials and a visit from Congressional Staffer Peter Spencer.



Background

– Peter Spencer explained that the House Committee on Oversight and Investigations was interested in understanding whether the criticism of the paleoclimate temperature reconstruction published by Dr. Michael Mann and his associates was meritorious.

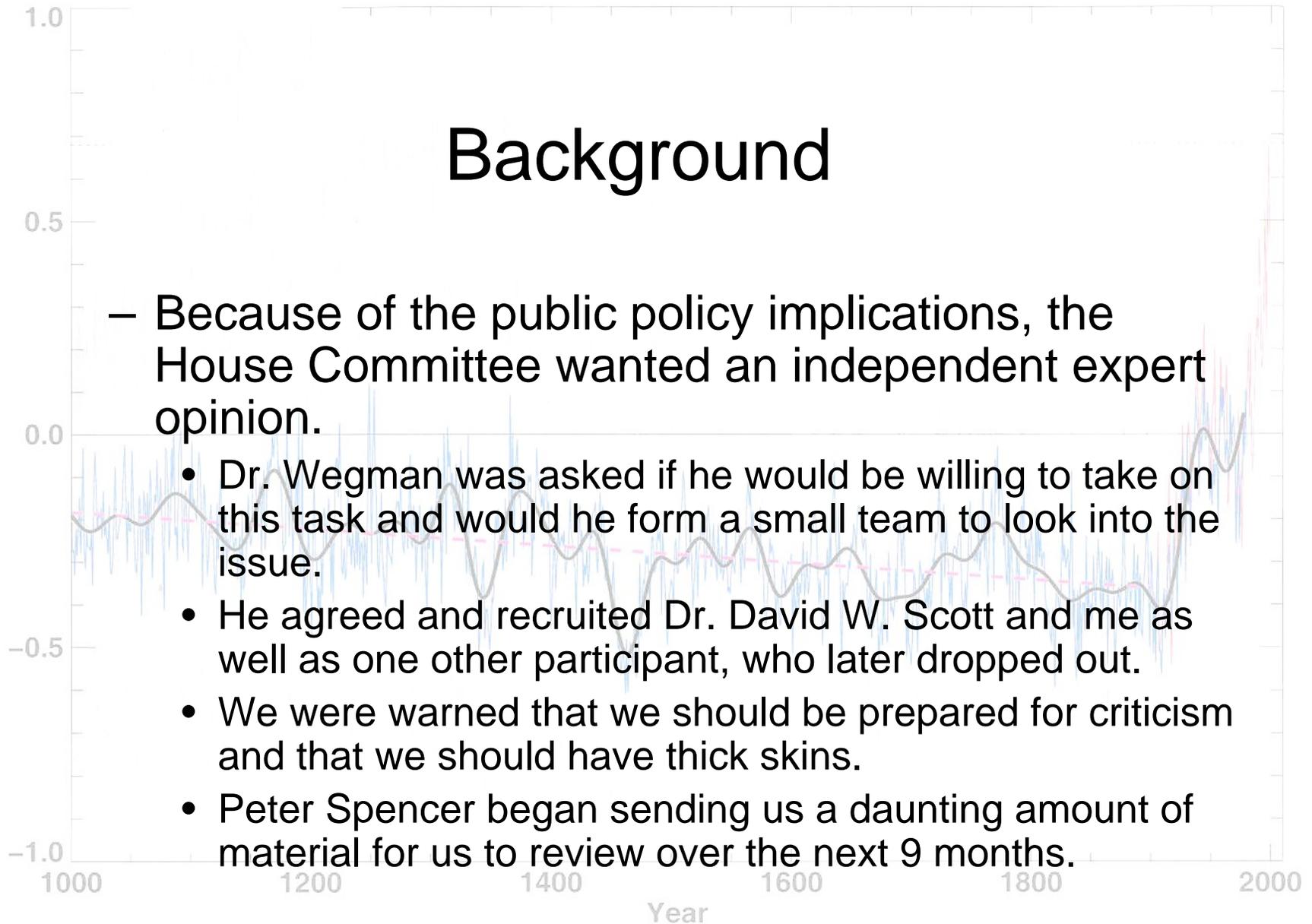
- This curve was used in the 2001 Intergovernmental Panel on Climate Change (IPCC) to reinforce concerns about global warming.
- There had been some criticism of the statistical methodology, but this was not being taken seriously within the climate change community.



Background

– Because of the public policy implications, the House Committee wanted an independent expert opinion.

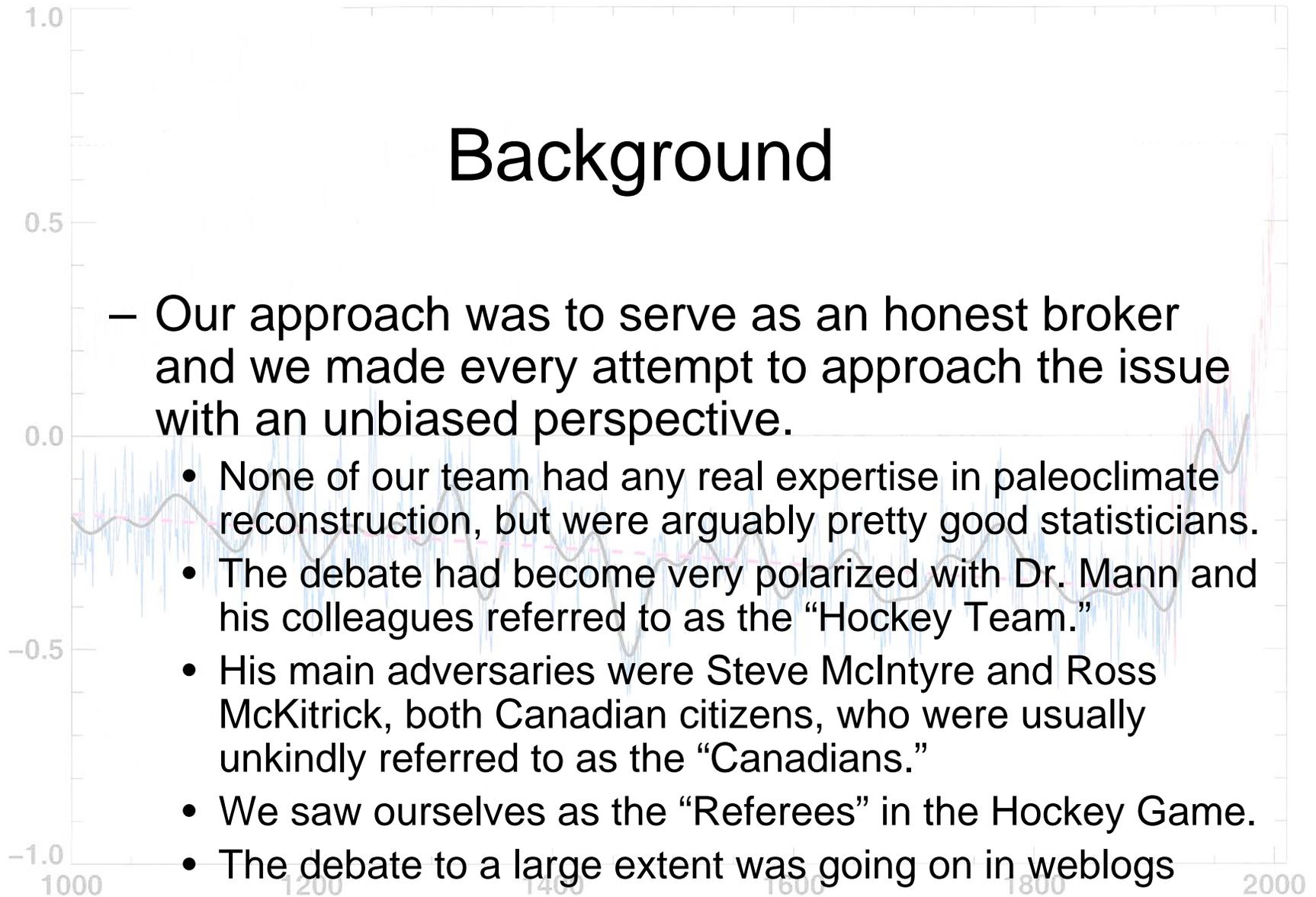
- Dr. Wegman was asked if he would be willing to take on this task and would he form a small team to look into the issue.
- He agreed and recruited Dr. David W. Scott and me as well as one other participant, who later dropped out.
- We were warned that we should be prepared for criticism and that we should have thick skins.
- Peter Spencer began sending us a daunting amount of material for us to review over the next 9 months.



Background

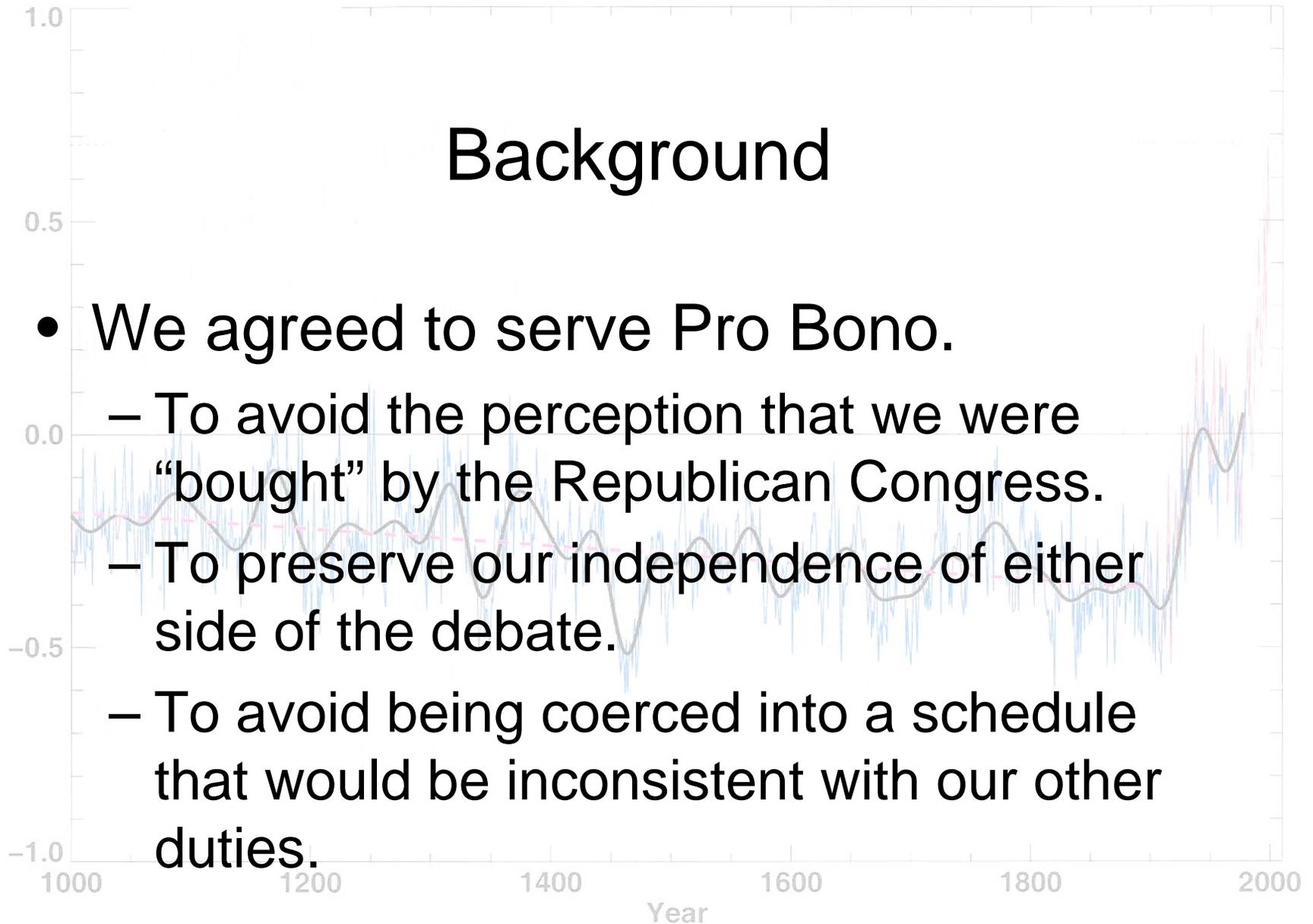
– Our approach was to serve as an honest broker and we made every attempt to approach the issue with an unbiased perspective.

- None of our team had any real expertise in paleoclimate reconstruction, but were arguably pretty good statisticians.
- The debate had become very polarized with Dr. Mann and his colleagues referred to as the “Hockey Team.”
- His main adversaries were Steve McIntyre and Ross McKittrick, both Canadian citizens, who were usually unkindly referred to as the “Canadians.”
- We saw ourselves as the “Referees” in the Hockey Game.
- The debate to a large extent was going on in weblogs
 - www.realclimate.org vs www.climateaudit.org.



Background

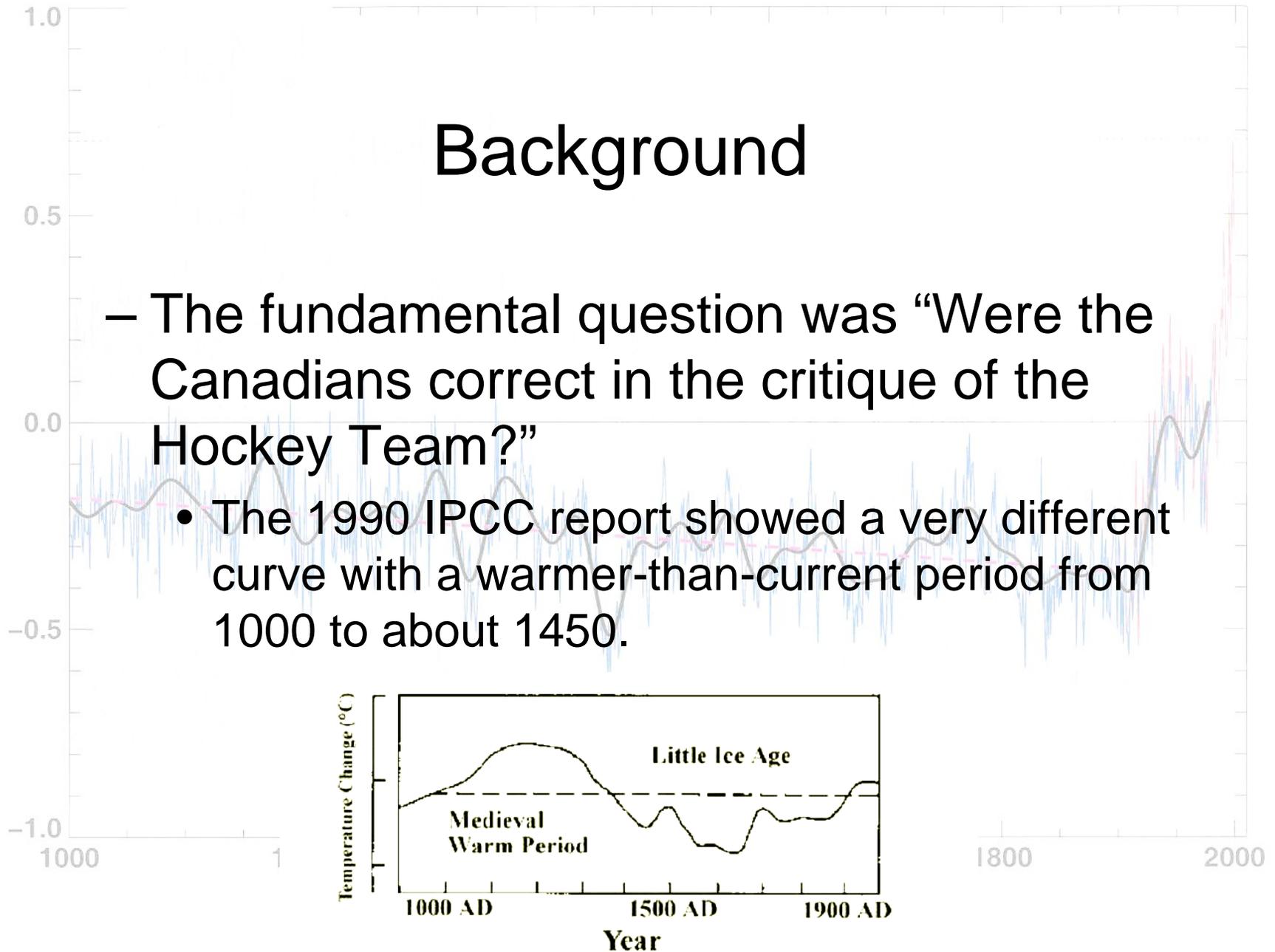
- We agreed to serve Pro Bono.
 - To avoid the perception that we were “bought” by the Republican Congress.
 - To preserve our independence of either side of the debate.
 - To avoid being coerced into a schedule that would be inconsistent with our other duties.

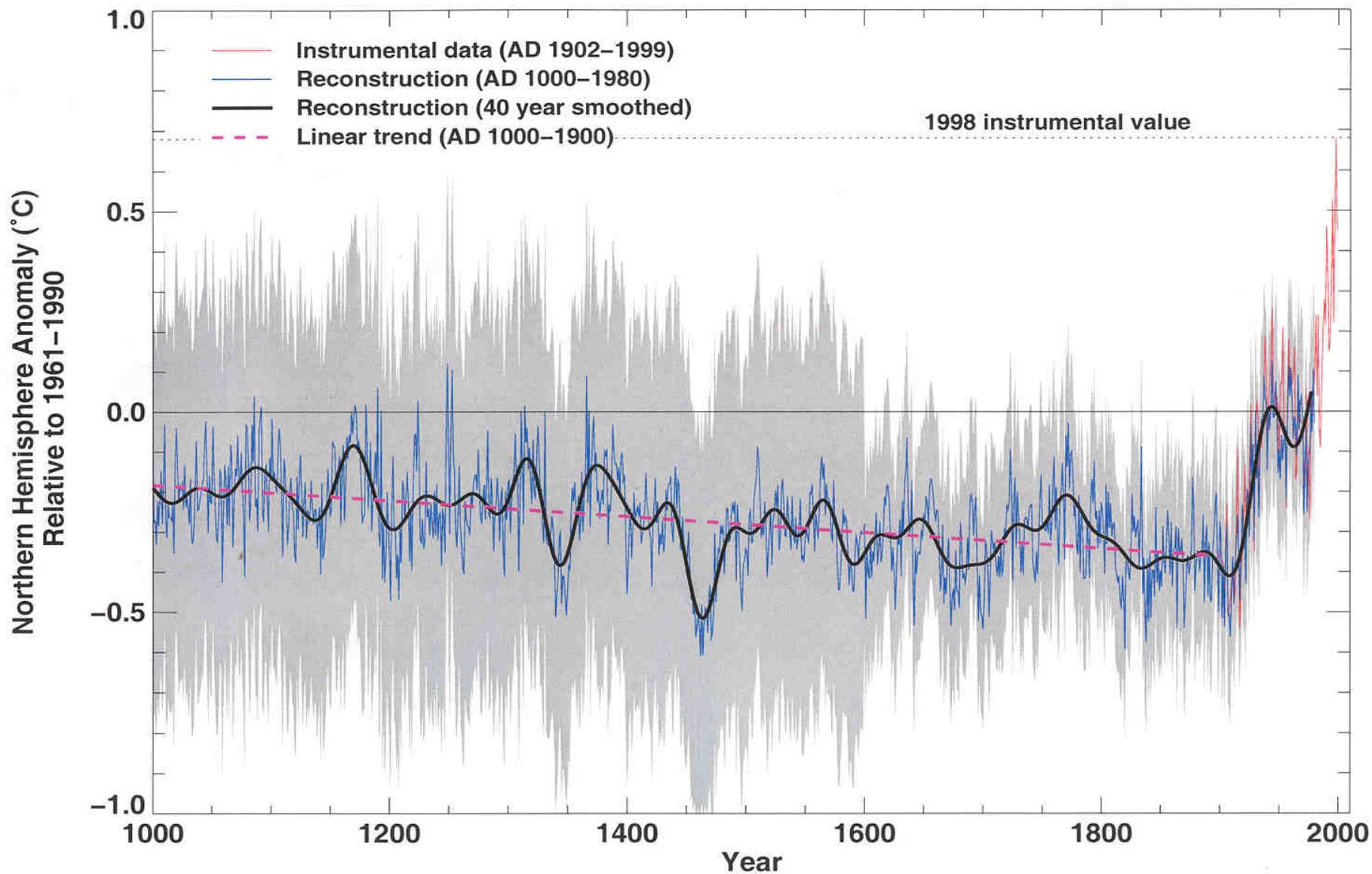


Background

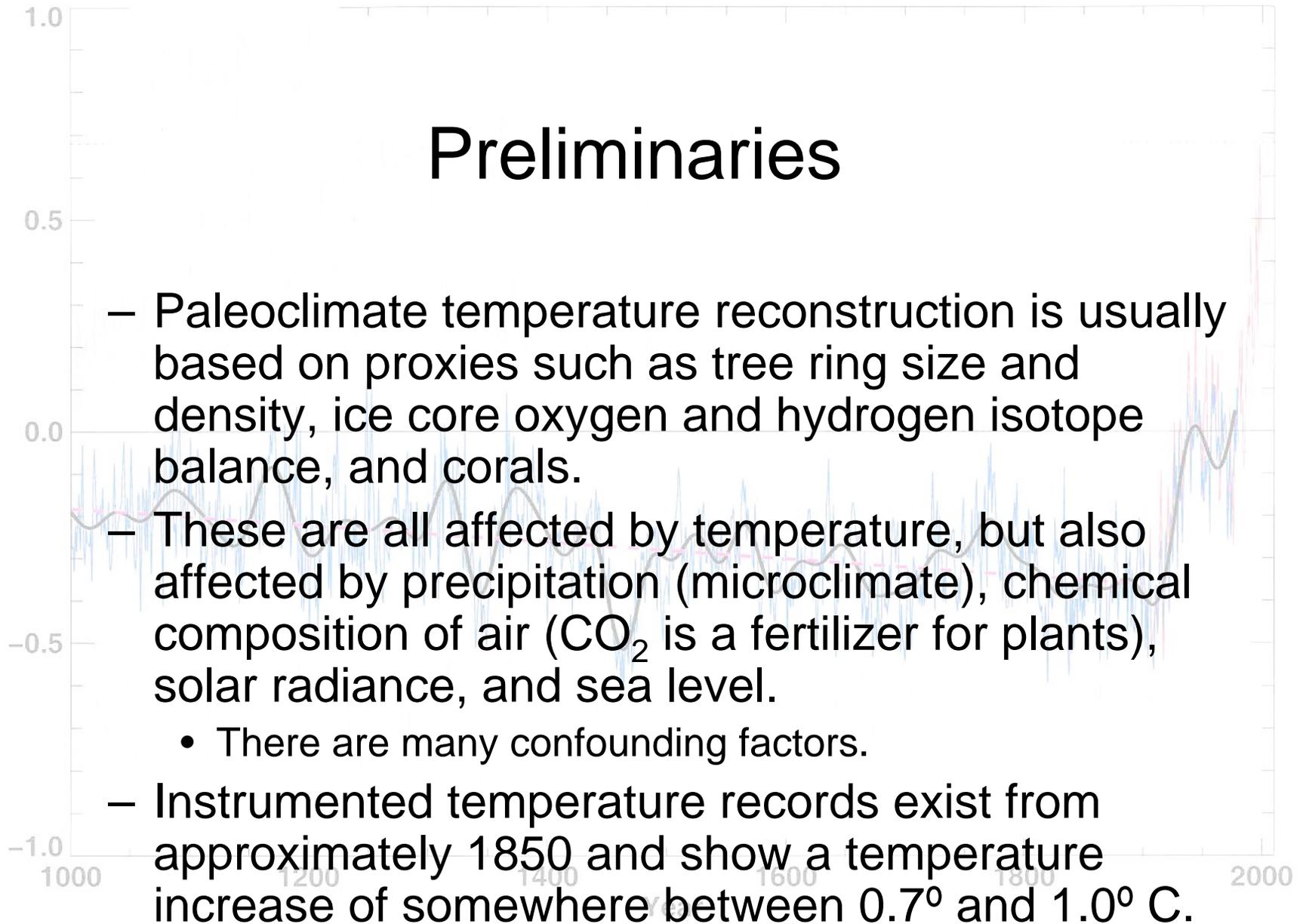
– The fundamental question was “Were the Canadians correct in the critique of the Hockey Team?”

- The 1990 IPCC report showed a very different curve with a warmer-than-current period from 1000 to about 1450.

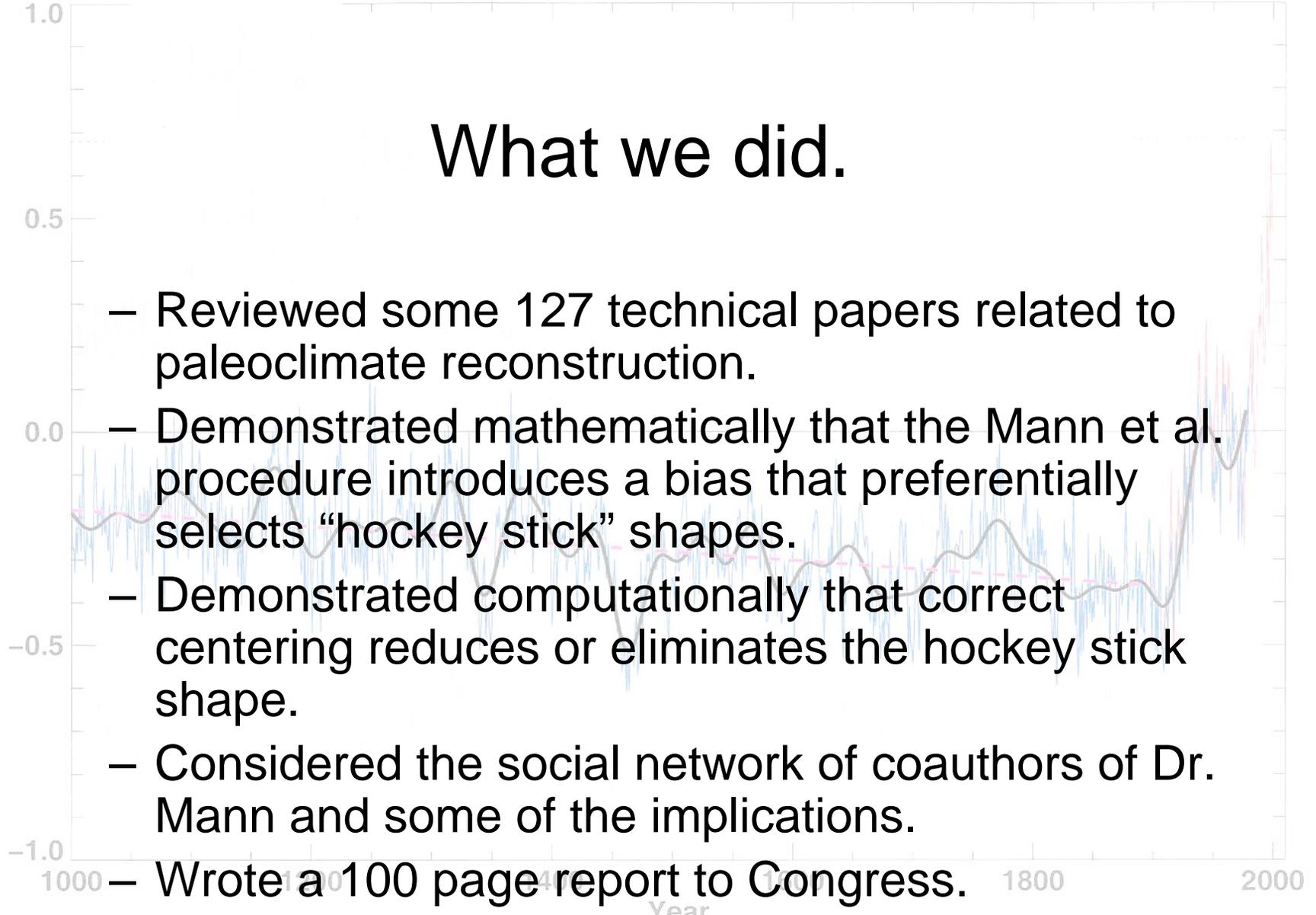




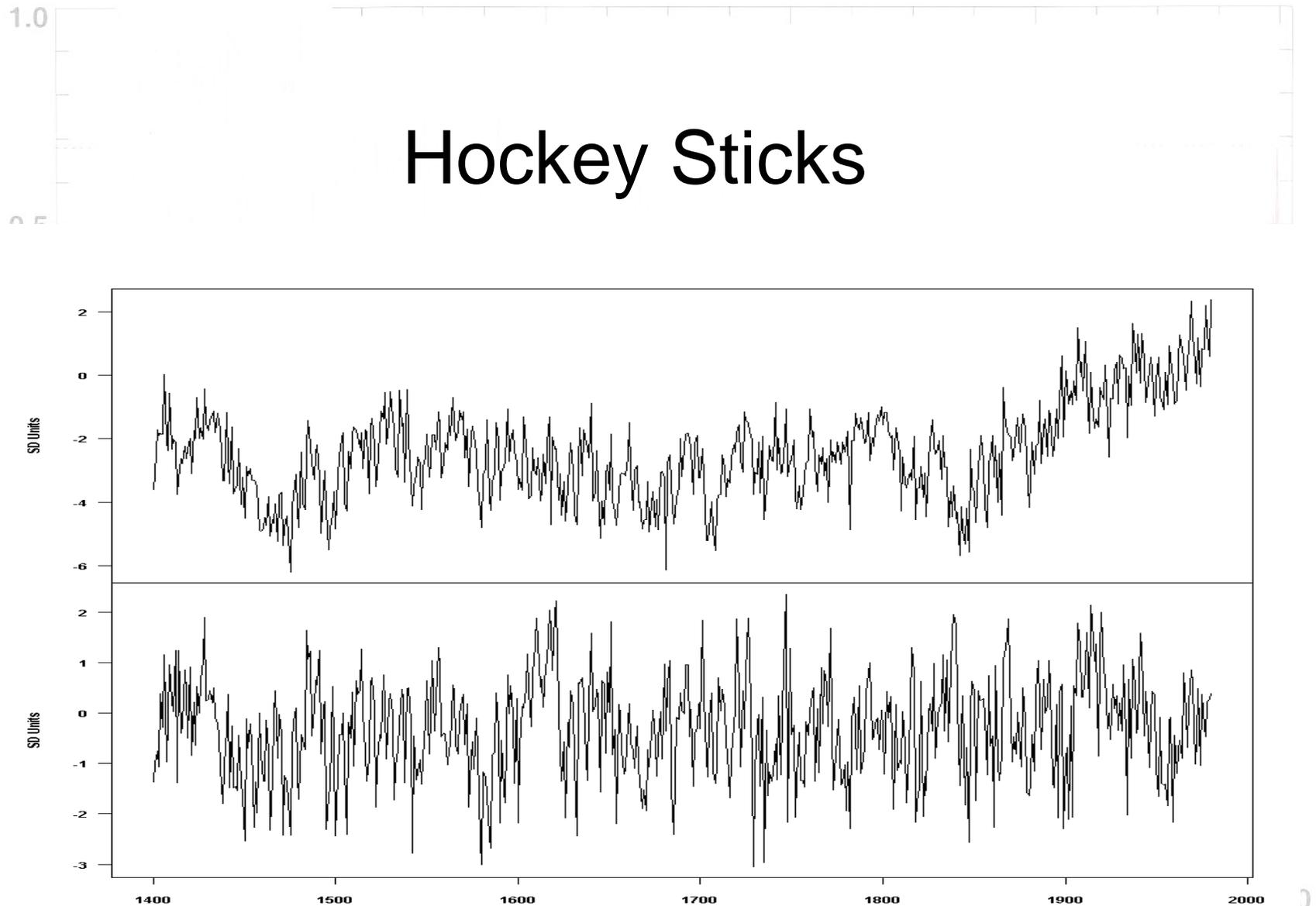
Preliminaries



What we did.

- 
- Reviewed some 127 technical papers related to paleoclimate reconstruction.
 - Demonstrated mathematically that the Mann et al. procedure introduces a bias that preferentially selects “hockey stick” shapes.
 - Demonstrated computationally that correct centering reduces or eliminates the hockey stick shape.
 - Considered the social network of coauthors of Dr. Mann and some of the implications.
 - Wrote a 100 page report to Congress.
 - Testified twice on July 19 and July 27, 2006.

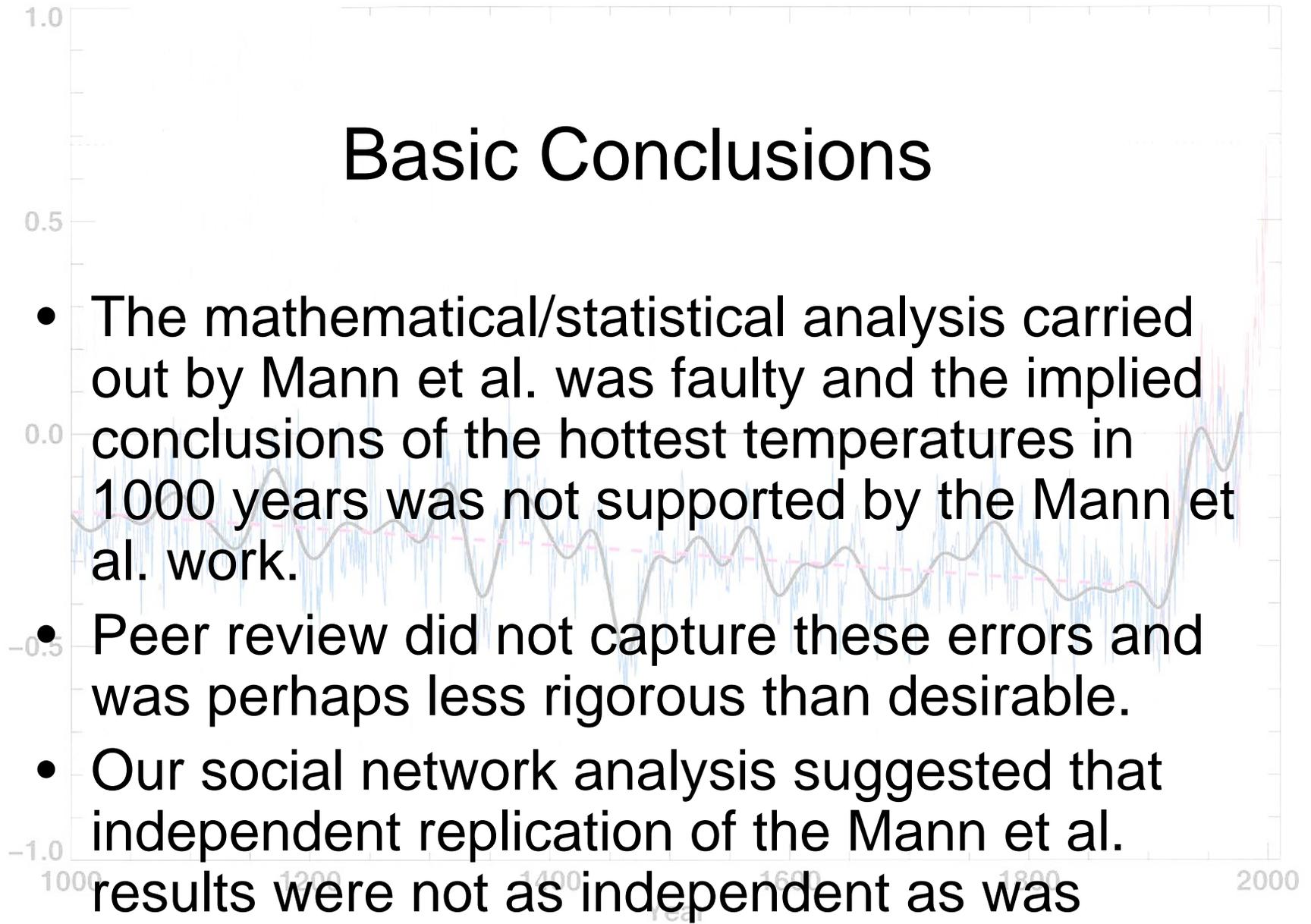
Hockey Sticks



Top Panel is Mann et al. method applied to North American Tree Proxy,
Bottom Panel is the result of the correctly centered PCA.

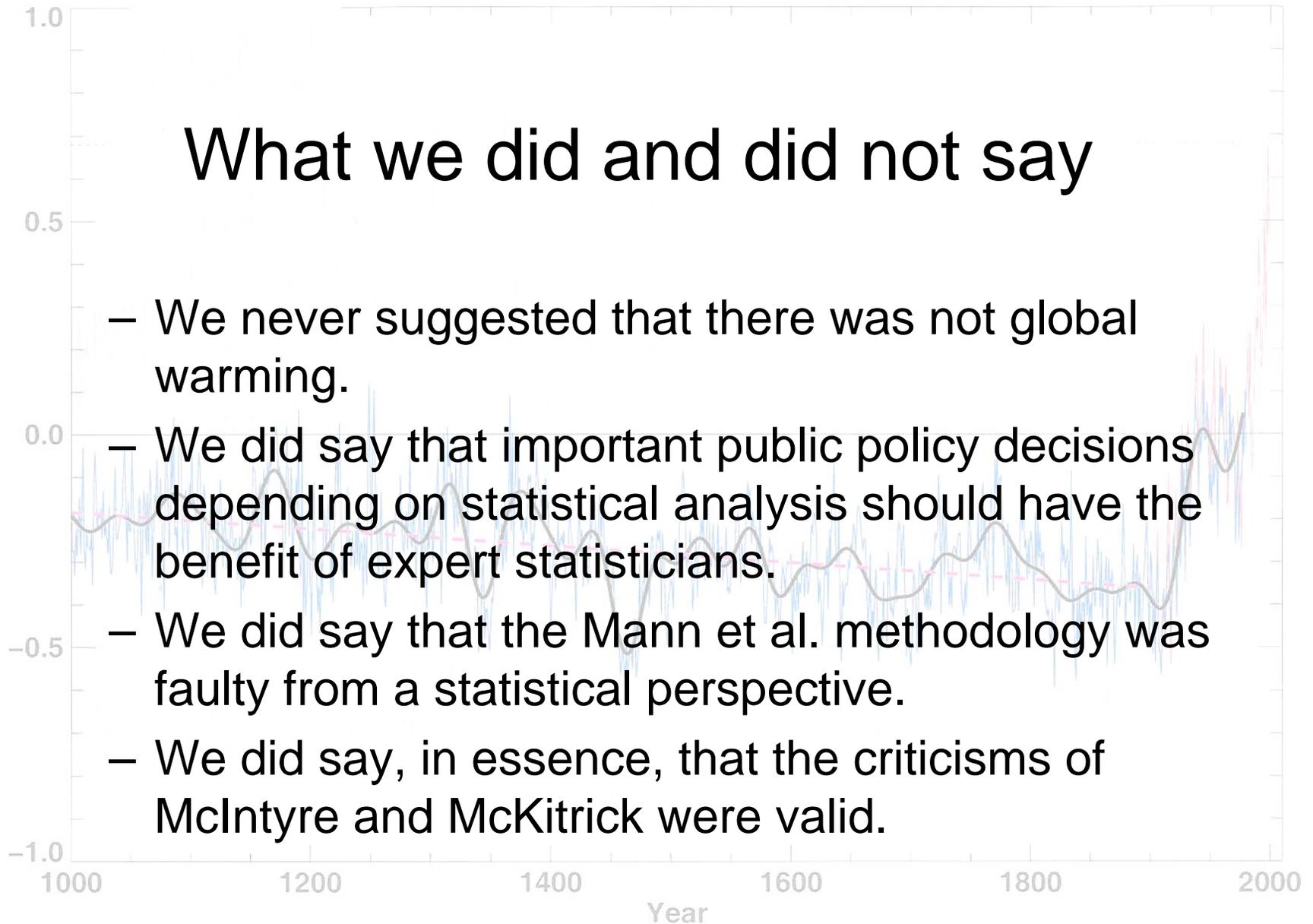
Basic Conclusions

- The mathematical/statistical analysis carried out by Mann et al. was faulty and the implied conclusions of the hottest temperatures in 1000 years was not supported by the Mann et al. work.
- Peer review did not capture these errors and was perhaps less rigorous than desirable.
- Our social network analysis suggested that independent replication of the Mann et al. results were not as independent as was suggested.



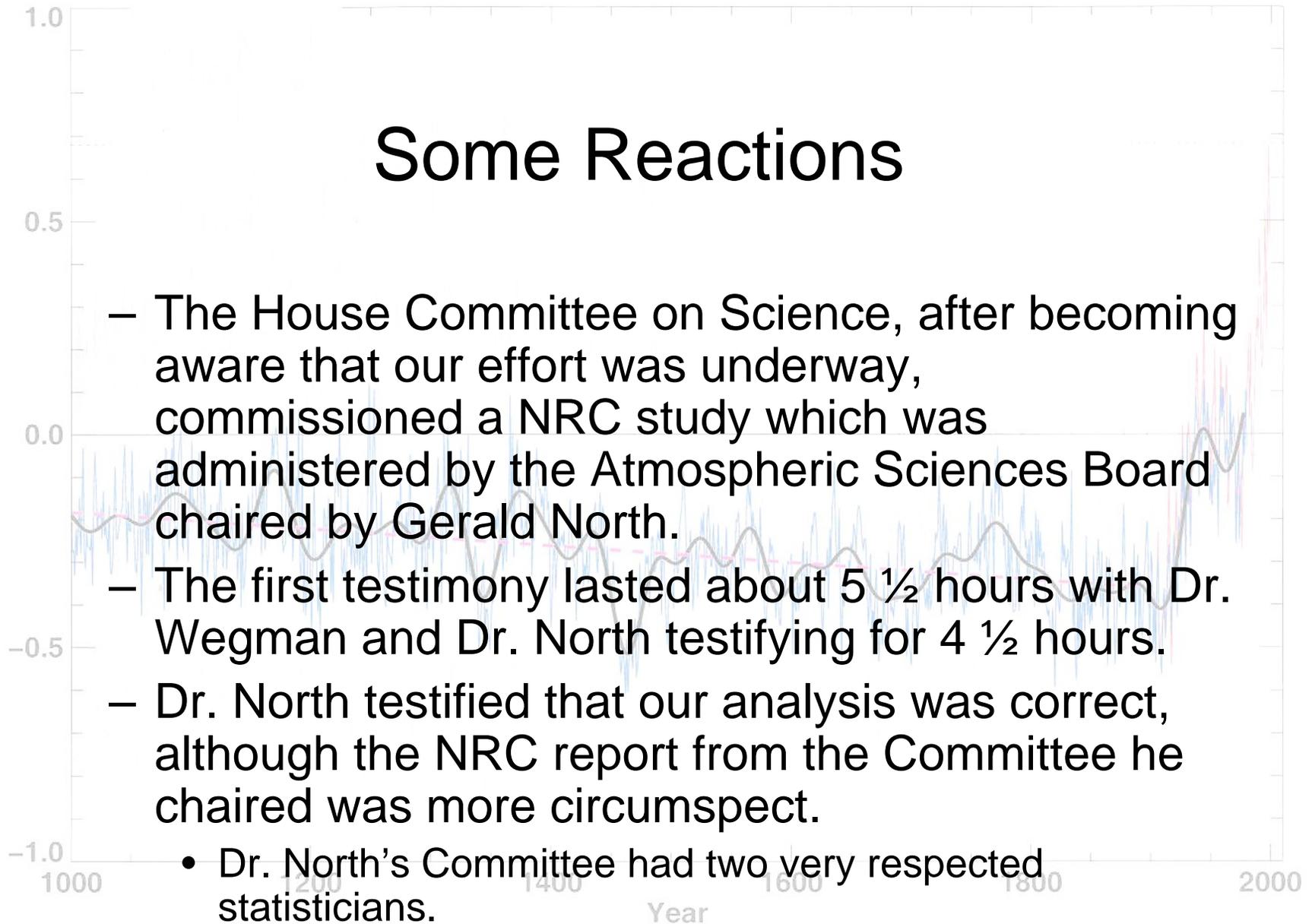
What we did and did not say

- We never suggested that there was not global warming.
- We did say that important public policy decisions depending on statistical analysis should have the benefit of expert statisticians.
- We did say that the Mann et al. methodology was faulty from a statistical perspective.
- We did say, in essence, that the criticisms of McIntyre and McKittrick were valid.



Some Reactions

- The House Committee on Science, after becoming aware that our effort was underway, commissioned a NRC study which was administered by the Atmospheric Sciences Board chaired by Gerald North.
- The first testimony lasted about 5 ½ hours with Dr. Wegman and Dr. North testifying for 4 ½ hours.
- Dr. North testified that our analysis was correct, although the NRC report from the Committee he chaired was more circumspect.
- Dr. North's Committee had two very respected statisticians.



Some Reactions

- From Congress

- The Republicans liked our findings.

- It was interpreted as vindicating their skepticism on climate change although we never took a position on climate change.

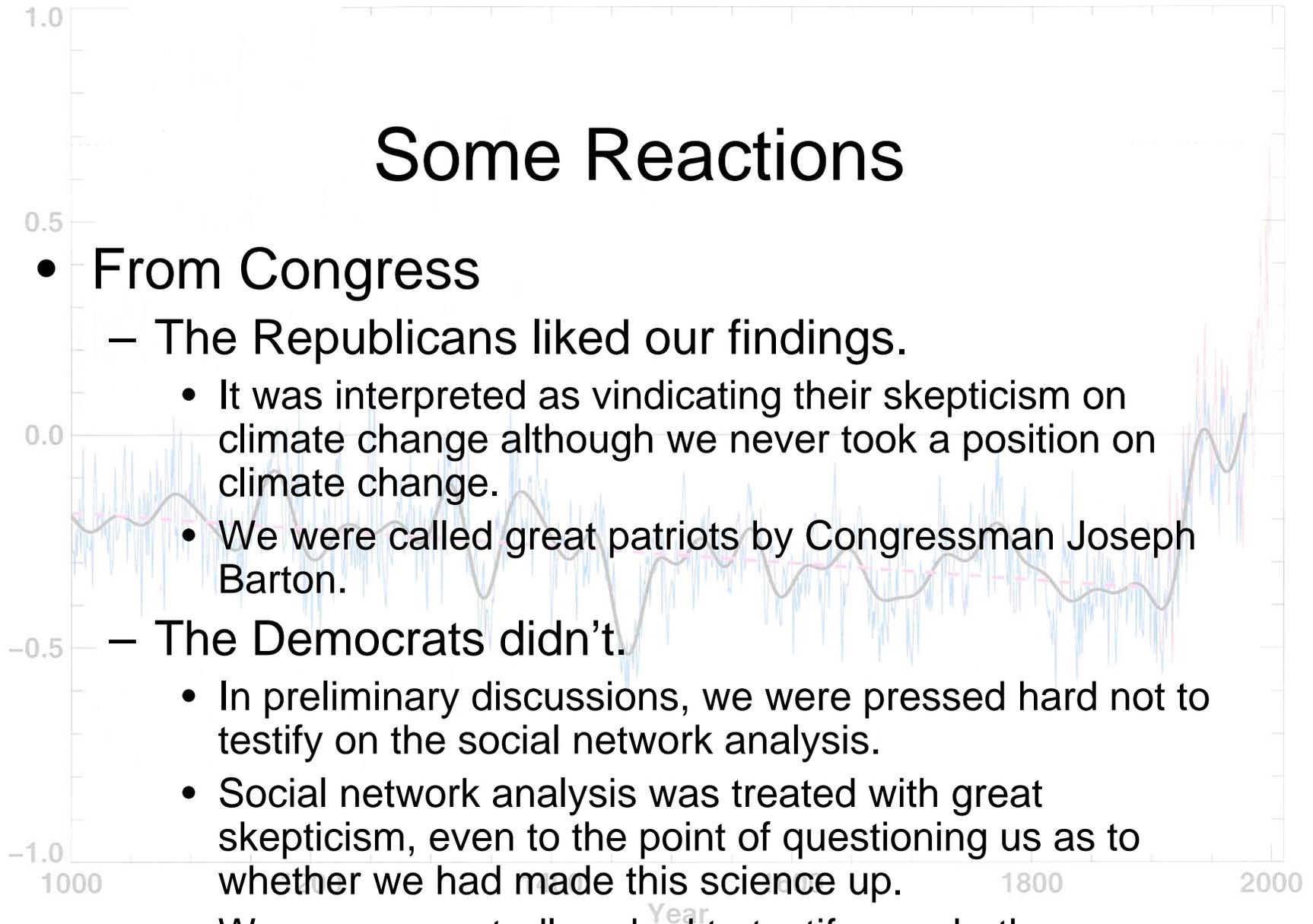
- We were called great patriots by Congressman Joseph Barton.

- The Democrats didn't.

- In preliminary discussions, we were pressed hard not to testify on the social network analysis.

- Social network analysis was treated with great skepticism, even to the point of questioning us as to whether we had made this science up.

- We were repeatedly asked to testify on whether anthropogenic global warming was real or not.

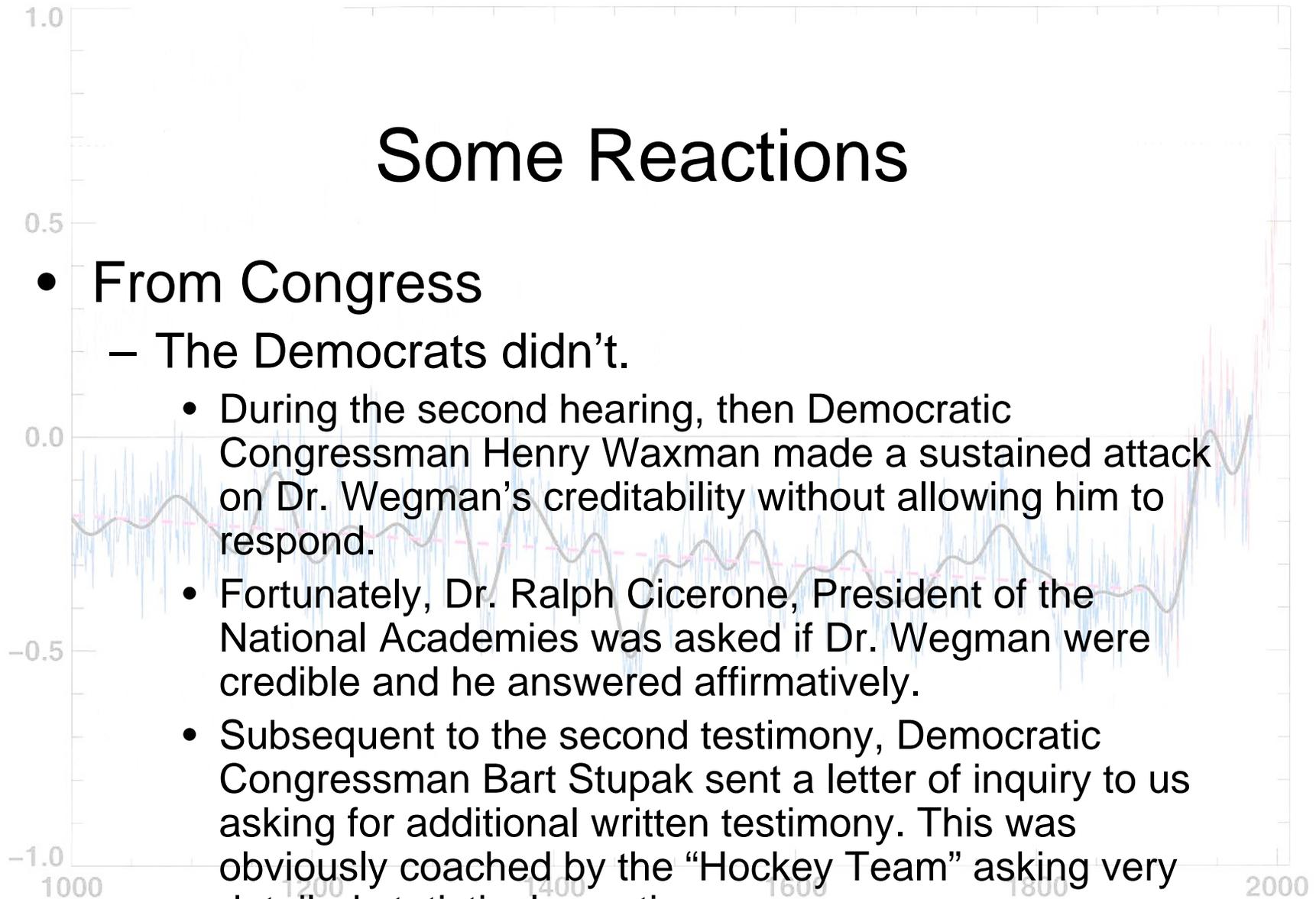


Some Reactions

- From Congress

- The Democrats didn't.

- During the second hearing, then Democratic Congressman Henry Waxman made a sustained attack on Dr. Wegman's credibility without allowing him to respond.
- Fortunately, Dr. Ralph Cicerone, President of the National Academies was asked if Dr. Wegman were credible and he answered affirmatively.
- Subsequent to the second testimony, Democratic Congressman Bart Stupak sent a letter of inquiry to us asking for additional written testimony. This was obviously coached by the "Hockey Team" asking very detailed statistical questions.
- Our response was an additional 35 pages long.



Some Reactions

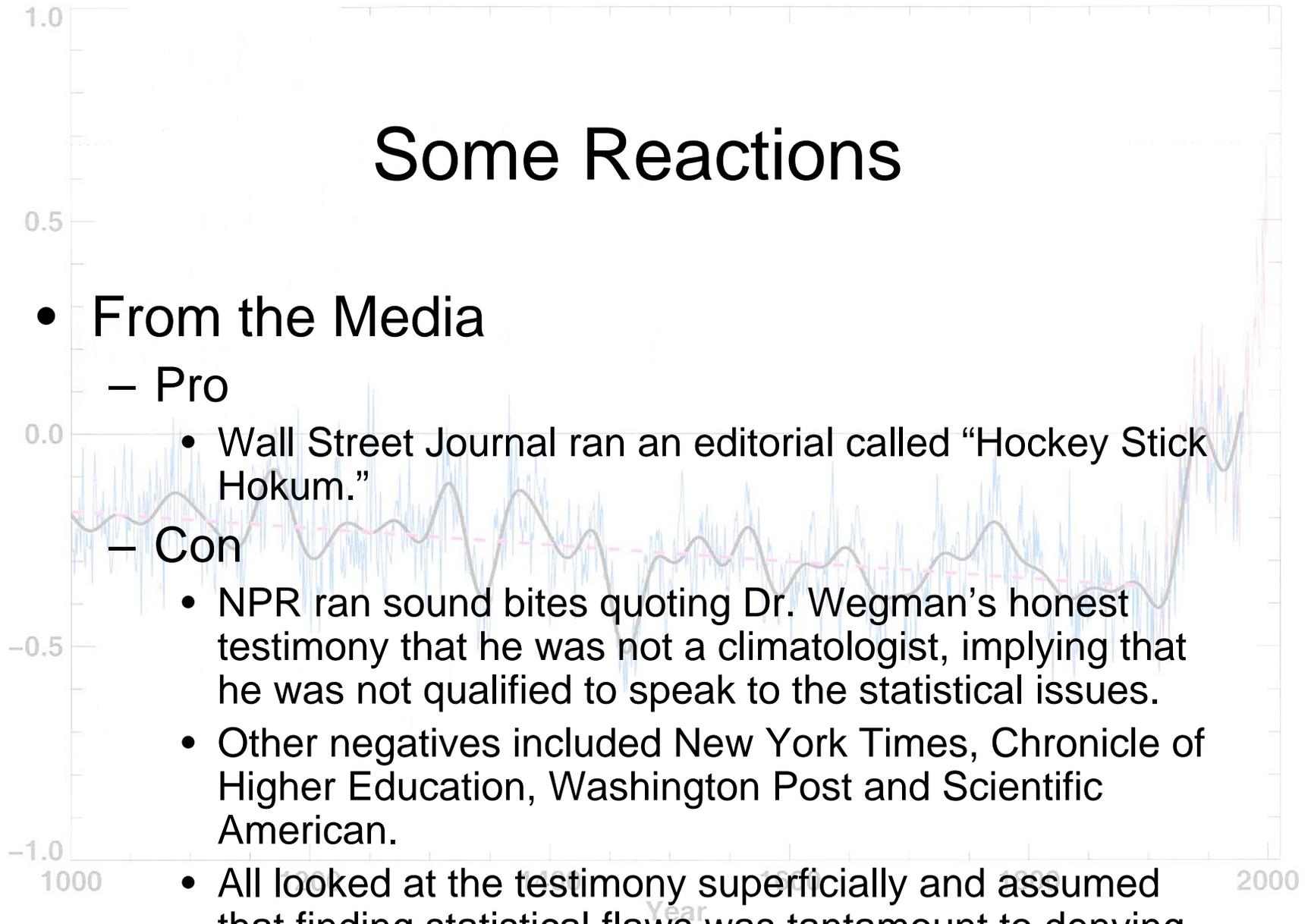
- From the Media

- Pro

- Wall Street Journal ran an editorial called “Hockey Stick Hokum.”

- Con

- NPR ran sound bites quoting Dr. Wegman’s honest testimony that he was not a climatologist, implying that he was not qualified to speak to the statistical issues.
 - Other negatives included New York Times, Chronicle of Higher Education, Washington Post and Scientific American.
 - All looked at the testimony superficially and assumed that finding statistical flaws was tantamount to denying global warming.

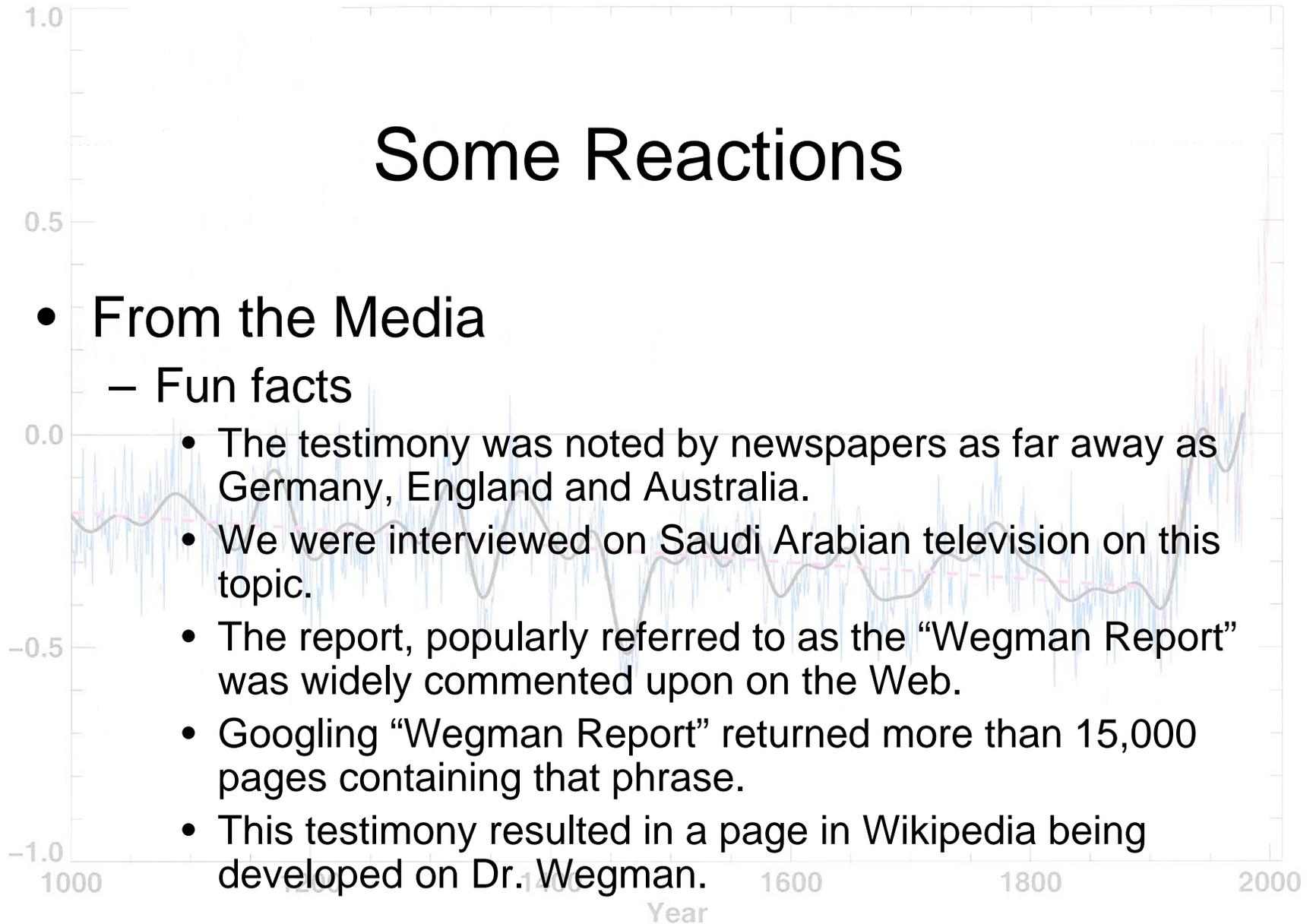


Some Reactions

- From the Media

- Fun facts

- The testimony was noted by newspapers as far away as Germany, England and Australia.
 - We were interviewed on Saudi Arabian television on this topic.
 - The report, popularly referred to as the “Wegman Report” was widely commented upon on the Web.
 - Googling “Wegman Report” returned more than 15,000 pages containing that phrase.
 - This testimony resulted in a page in Wikipedia being developed on Dr. Wegman.



Some Reactions

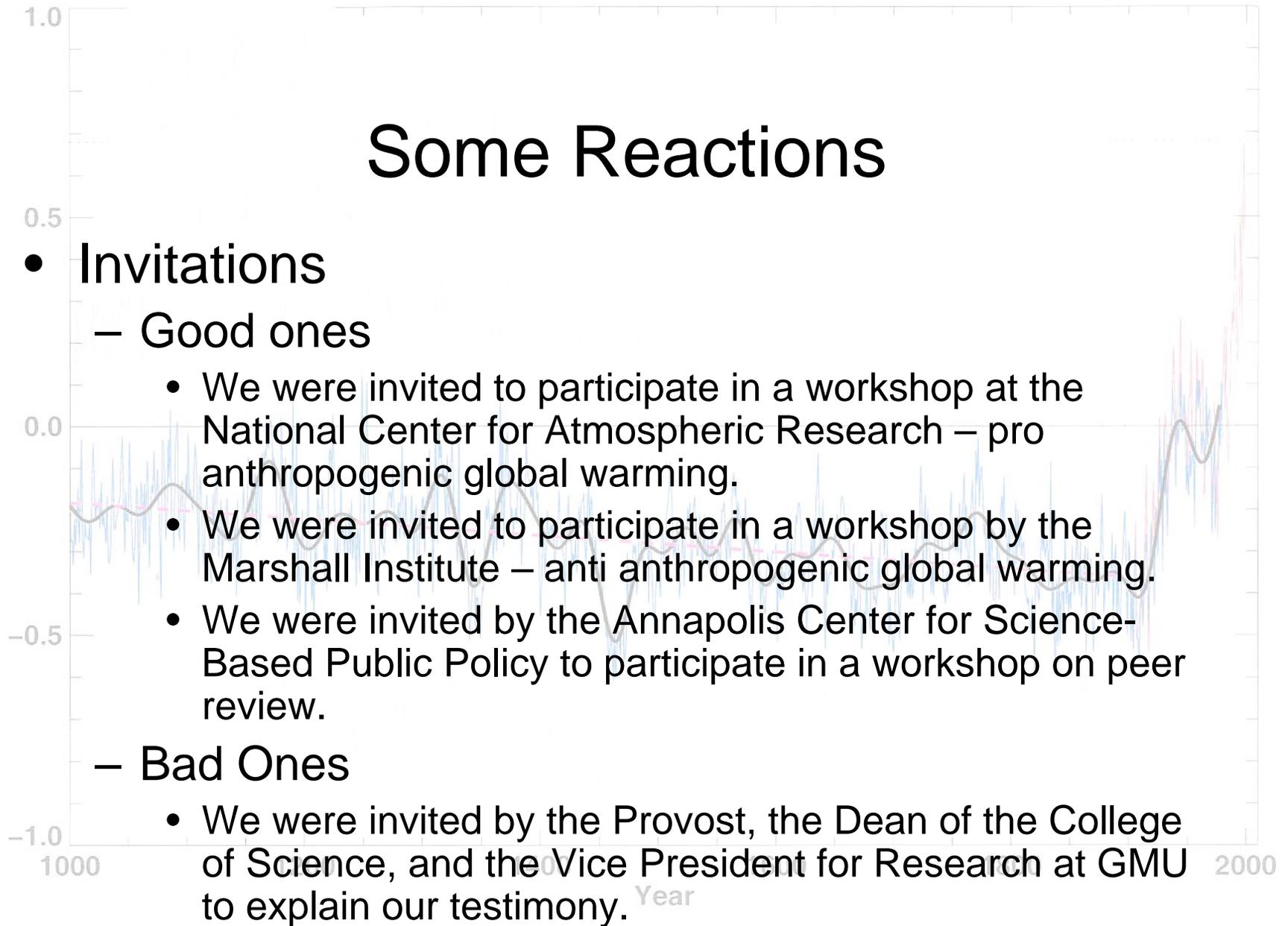
- **Invitations**

- Good ones

- We were invited to participate in a workshop at the National Center for Atmospheric Research – pro anthropogenic global warming.
 - We were invited to participate in a workshop by the Marshall Institute – anti anthropogenic global warming.
 - We were invited by the Annapolis Center for Science-Based Public Policy to participate in a workshop on peer review.

- Bad Ones

- We were invited by the Provost, the Dean of the College of Science, and the Vice President for Research at GMU to explain our testimony.



Some Reactions

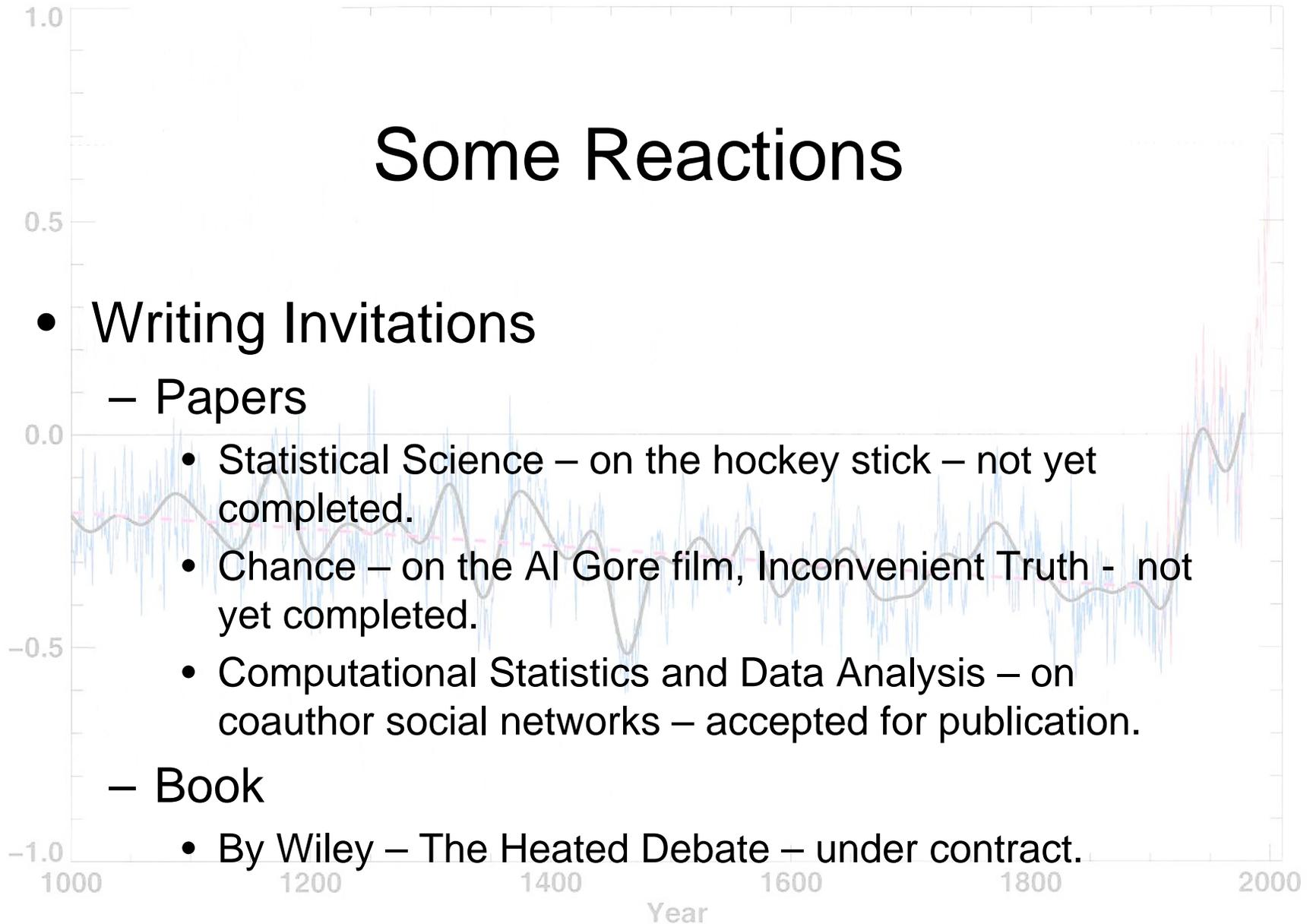
- **Writing Invitations**

- **Papers**

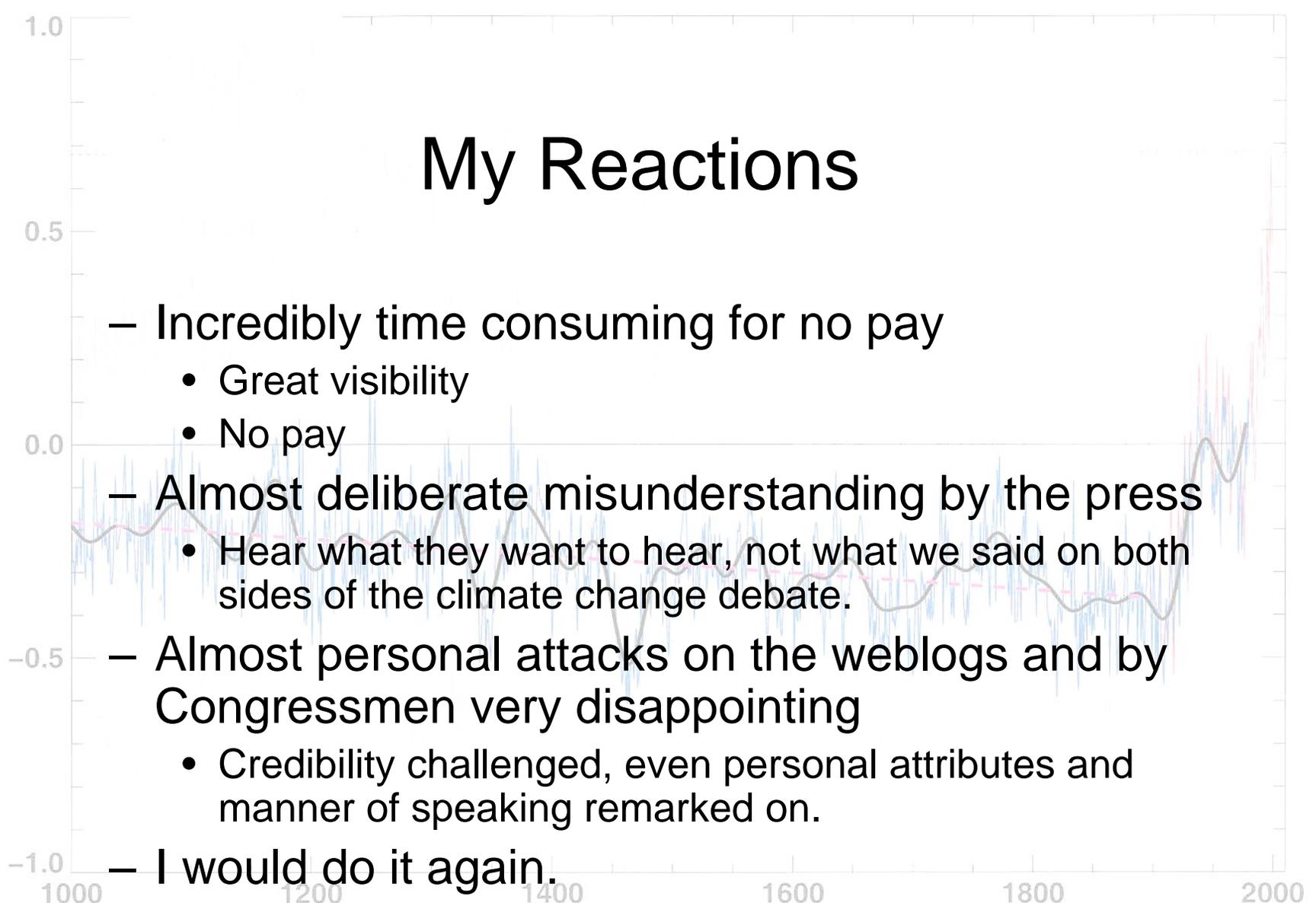
- Statistical Science – on the hockey stick – not yet completed.
 - Chance – on the Al Gore film, Inconvenient Truth - not yet completed.
 - Computational Statistics and Data Analysis – on coauthor social networks – accepted for publication.

- **Book**

- By Wiley – The Heated Debate – under contract.



My Reactions

- 
- Incredibly time consuming for no pay
 - Great visibility
 - No pay
 - Almost deliberate misunderstanding by the press
 - Hear what they want to hear, not what we said on both sides of the climate change debate.
 - Almost personal attacks on the weblogs and by Congressmen very disappointing
 - Credibility challenged, even personal attributes and manner of speaking remarked on.
 - I would do it again.
 - It was most interesting experience, but can't afford to do it too often.

Some Contacts



Congressman Barton



Congressman Whitfield



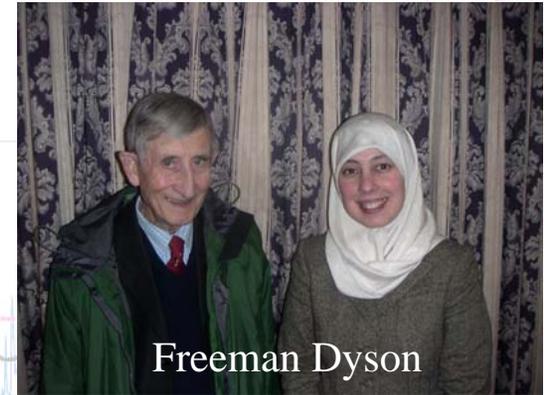
President Bush



U.S. Congress



Peter Spencer Mark Paoletta in
Hearing Chamber



Freeman Dyson



Peter Spencer

Contact Information

Yasmin H. Said, Ph.D.

Department of Computational and Data Sciences
George Mason University, MS 6A2
Fairfax, VA 22030-4444

Email: ysaid99@hotmail.com

Cell: (301) 538-7478

