

## Paleodata inversion – from a statistical challenge to a political weapon

1. Reconstructions of past temperature variability is interesting by itself but also of practical importance for assessing ongoing recent temperature change.
2. In the First Assessment Report of IPCC, crude estimates of past variability were shown, indicating a Medieval Warm Period, which was warmer than the state at the end of the 20<sup>th</sup> century.
3. A similar conclusion was drawn by Soon and Baliunas in their literature review in 2003.
4. At about the same time, advanced methods were developed to “invert” proxy data; some of these methods used “indirect” data (e.g., tree rings characteristics), other “direct” data (borehole temperatures). These went along with a loss of variance (not all variability can be regained). The proxy reconstructions contradicted the Soon and Baliunas result.
5. Another estimate of past variations was obtained by simulations with climate models, which were forced by estimated past drivers (volcanism, solar output, greenhouse gas emissions). Also such estimates contradicted the Soon and Baliunas claim.
6. The most prominent example of a proxy reconstructions was the “hockeystick” by Mann et al. (1999), which indicated a lengthy decrease of temperatures since about 1000 until 1850, or so, and a steep increase since then. This results featured prominently in the Third assessment Report (AR3) of the IPCC, published in 2001.
7. The Hockeystick was presented on the front page of New York Times, when the AR3 report was presented.
8. Results inconsistent with the hockeystick (but consistent with the concept of a general and clear warming) had difficulties to pass the review process (e.g., borehole temperature studies) because of gatekeeping.
9. The top of the hype came with Al Gore’s “Inconvenient truth”. The hockeystick became the ultimate argument for the reality of severity of man-made climate change – a “political weapon”.
10. Our paper studying the methodological credentials of the method behind the hockeystick, published in 2004 (in science) and Moberg’s alternative reconstruction from 2005 (in nature), changed the game somewhat. After the 2006-report of US-National Research Council it became clear that the issue of the temperature history in the past 1000-2000 years would not yet be settled.
11. The view that a range of propositions for the millennial temperature variability would be valid given the evidence, was adopted by the IPCC in the Fourth and Fifth Assessment reports (AR4, AR5). Since then the intellectual interest in the issue has not ceased, whereas in the public domain the Hockeystick no longer plays a prominent role.