PIANETA TREMILA

The monumental challenge of climate change after the Paris Agreement

Invited Seminar by **Michael Mann** (Penn State University, USA)

9:30-12:30, June 18th, 2018
Aula Rogers, Campus Leonardo,
Politecnico di Milano (PoliMI), Via Ampère, 10.

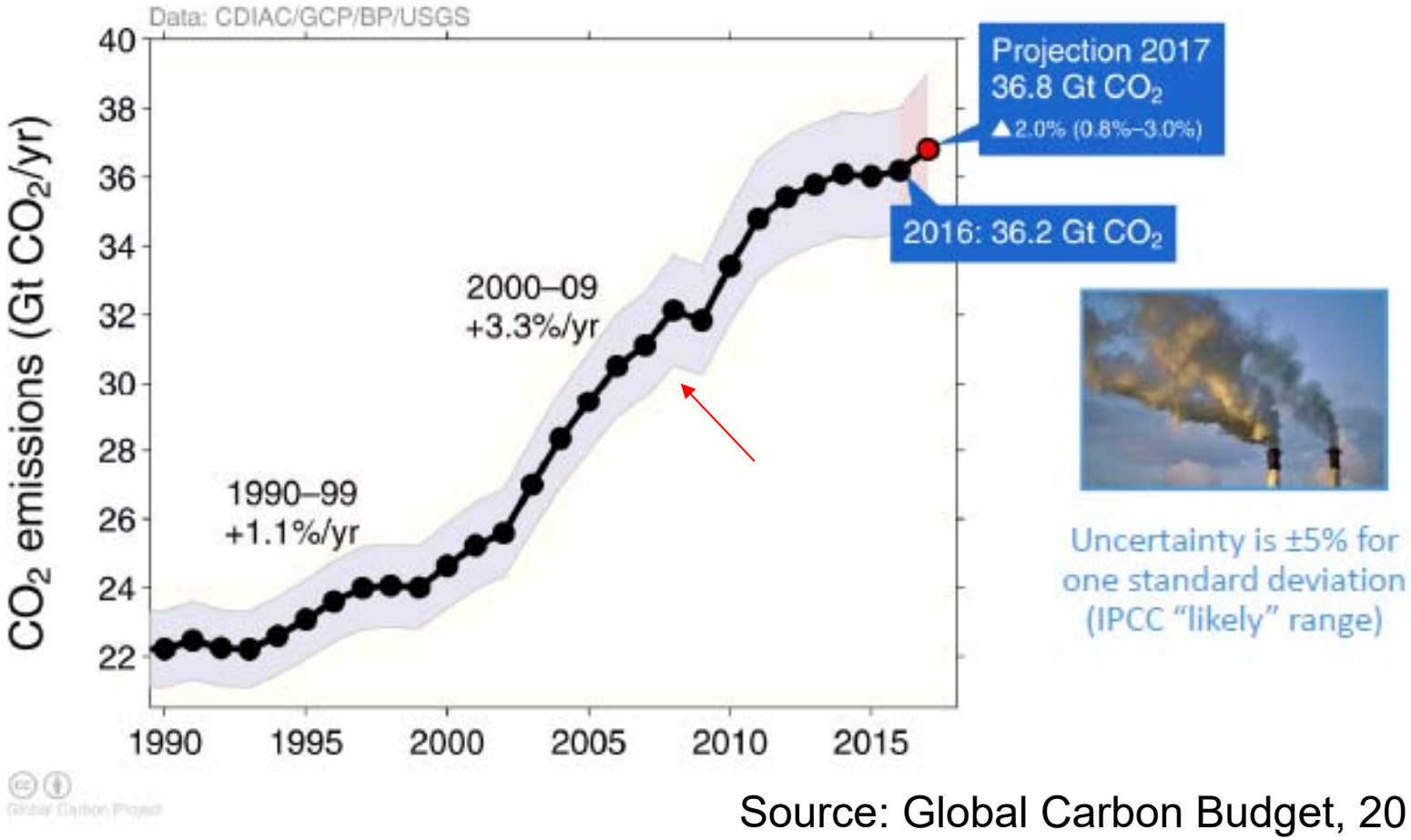
Agenda:

- Welcome and intro (*Stefano Caserini, DICA, PoliMI*)
- Impacts of climate change in Italy (*Paola Faggian, RSE*)
- Activities of Politecnico di Milano on Climate Change (*Marino Gatto, DEIB, PoliMI*)
- Talk by Michael Mann (*Penn State University*)
- Q&A and discussion

Emissions from fossil fuel use and industry

Global emissions from fossil fuel and industry: 36.2 ± 2 $GtCO_2$ in 2016, 62% over 1990

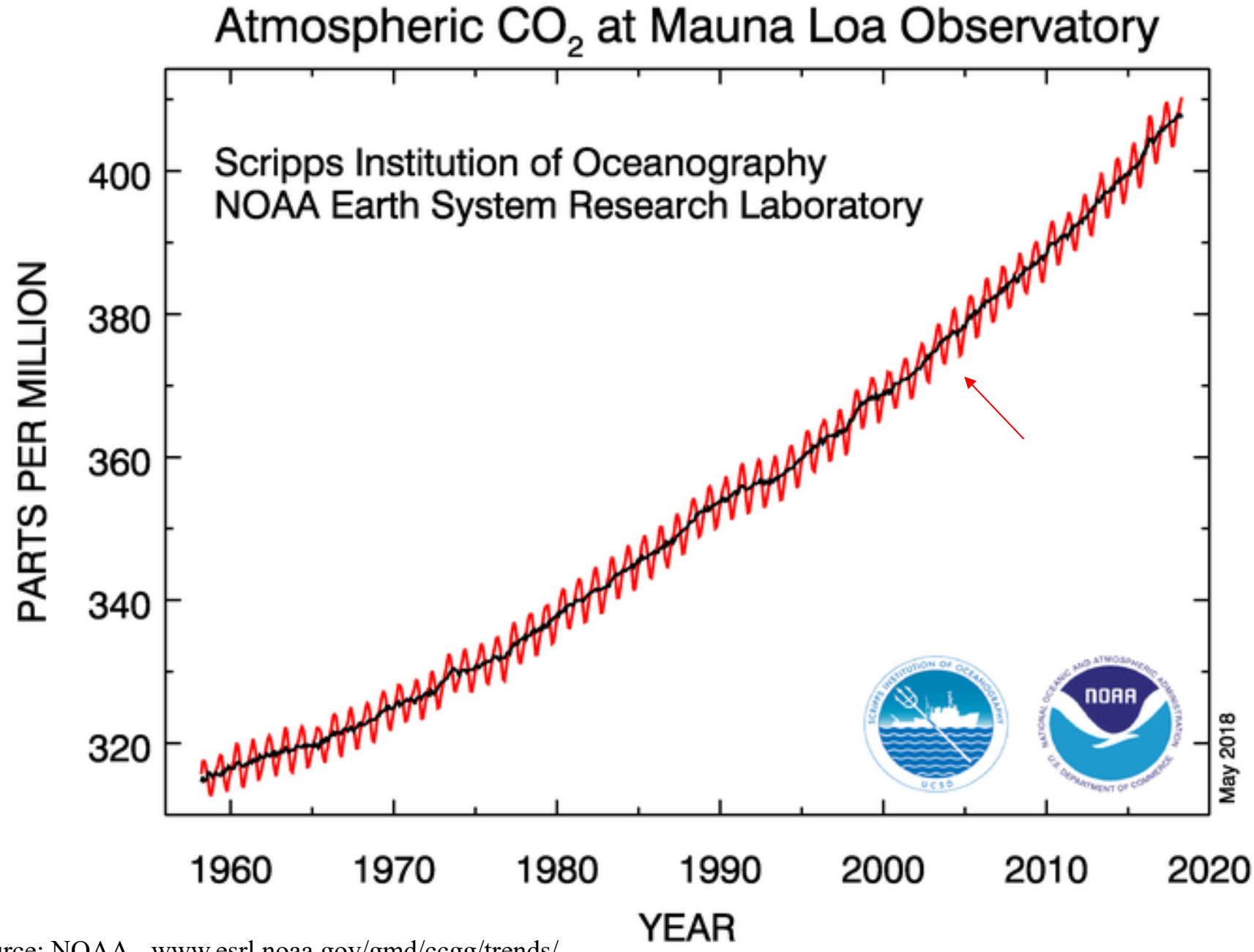
● Projection for 2017: 36.8 ± 2 $GtCO_2$, 2.0% higher than 2016



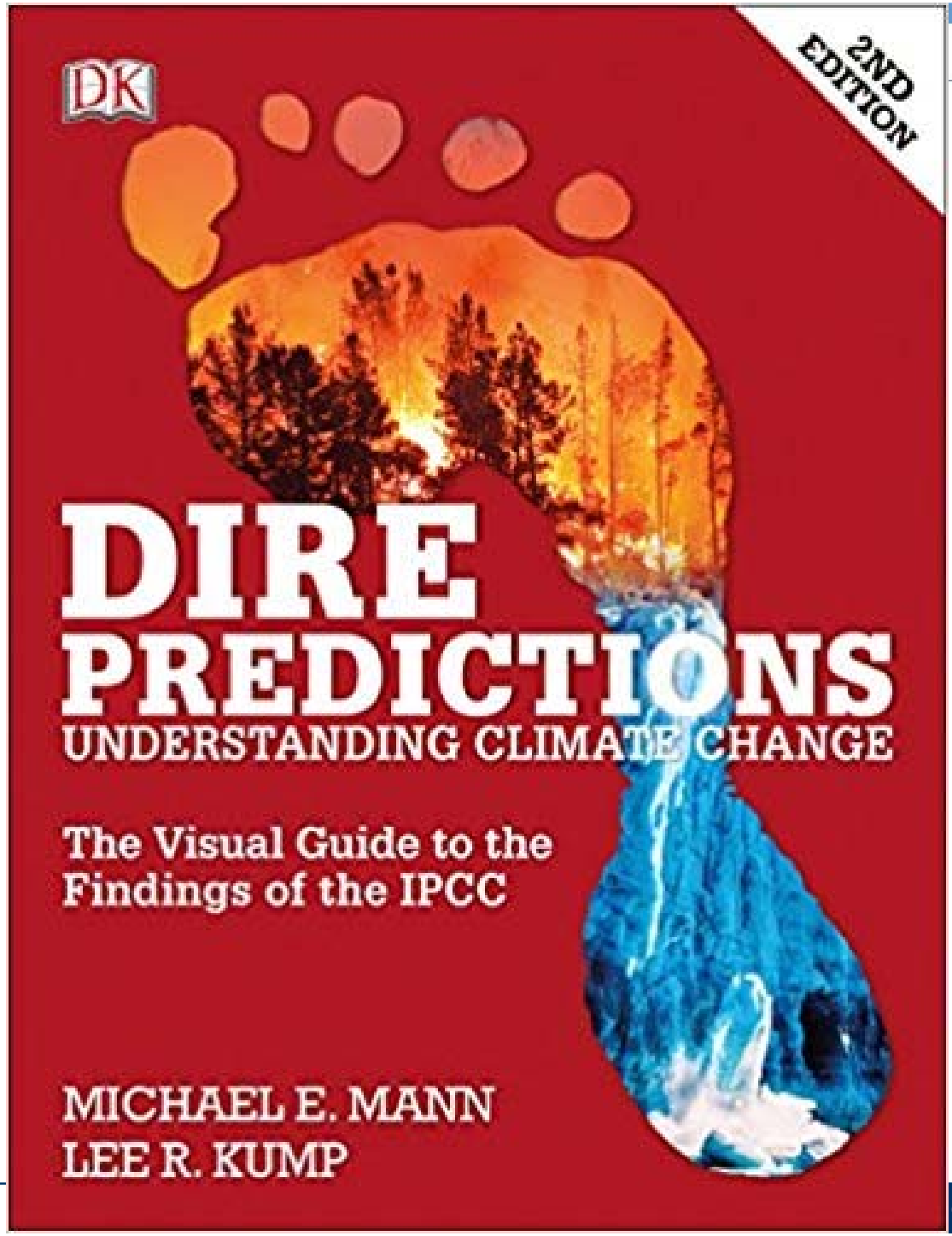
Source: Global Carbon Budget, 2017

Estimates for 2015 and 2016 are preliminary. Growth rate is adjusted for the leap year in 2016.

Source: CDIAC; Le Quéré et al 2017; Global Carbon Budget 2017



Source: NOAA - www.esrl.noaa.gov/gmd/ccgg/trends/


DK
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DIRE PREDICTIONS
UNDERSTANDING CLIMATE CHANGE
The Visual Guide to the Findings of the IPCC
MICHAEL E. MANN
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Global-scale temperature patterns and climate forcing over the past six centuries

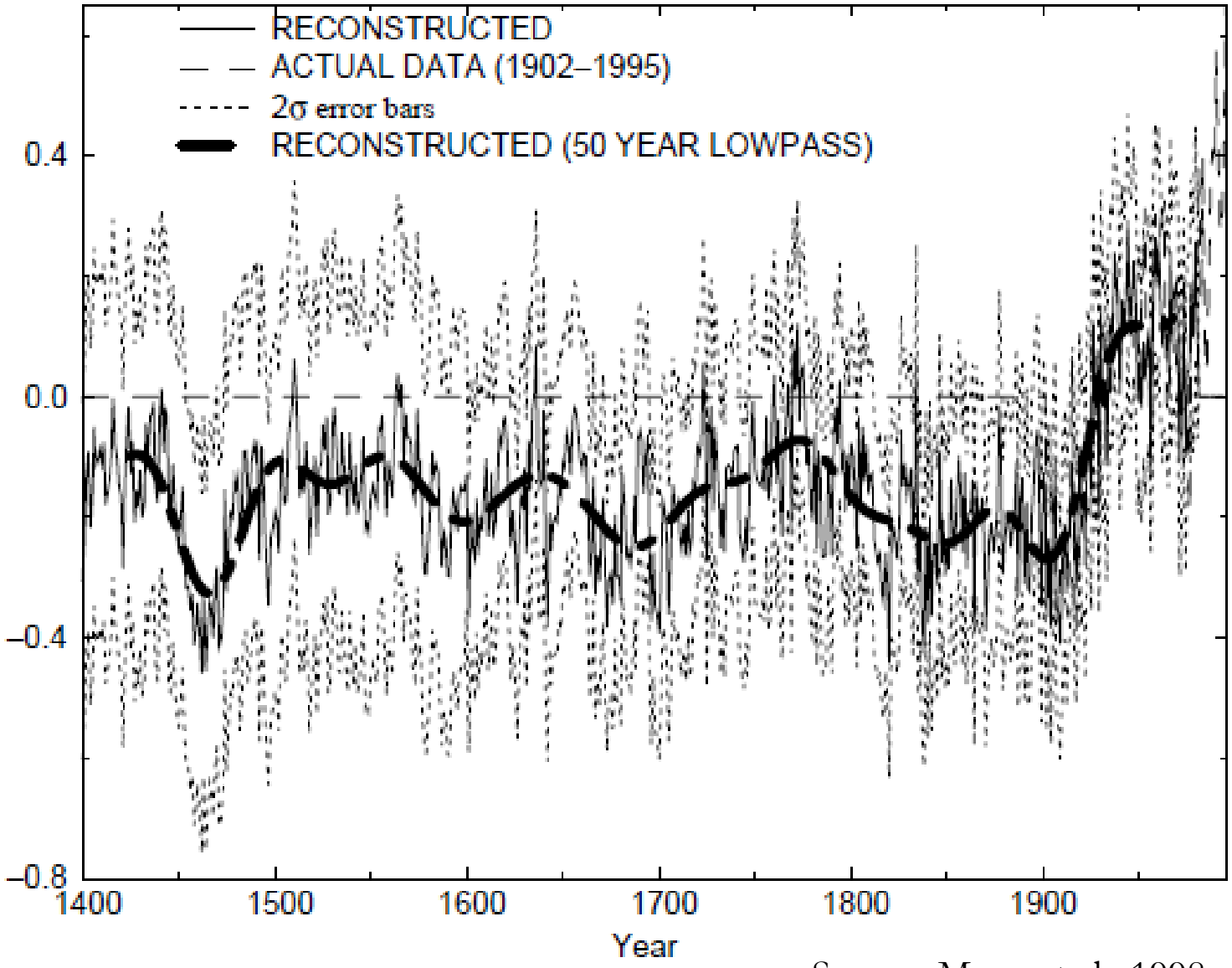
Michael E. Mann*, Raymond S. Bradley* & Malcolm K. Hughes†

* *Department of Geosciences, University of Massachusetts, Amherst, Massachusetts 01003-5820, USA*
† *Laboratory of Tree Ring Research, University of Arizona, Tucson, Arizona 85721, USA*

Spatially resolved global reconstructions of annual surface temperature patterns over the past six centuries are based on the multivariate calibration of widely distributed high-resolution proxy climate indicators. Time-dependent correlations of the reconstructions with time-series records representing changes in greenhouse-gas concentrations, solar irradiance, and volcanic aerosols suggest that each of these factors has contributed to the climate variability of the past 400 years, with greenhouse gases emerging as the dominant forcing during the twentieth century. Northern Hemisphere mean annual temperatures for three of the past eight years are warmer than any other year since (at least) AD 1400.

(1174 citations)

Northern Hemisphere mean temperature in °C.



Source: Mann et al., 1998

GEOPHYSICAL RESEARCH LETTERS, VOL. 26, NO.6, PAGES 759-762, MARCH 15, 1999

Northern Hemisphere Temperatures During the Past Millennium: Inferences, Uncertainties, and Limitations

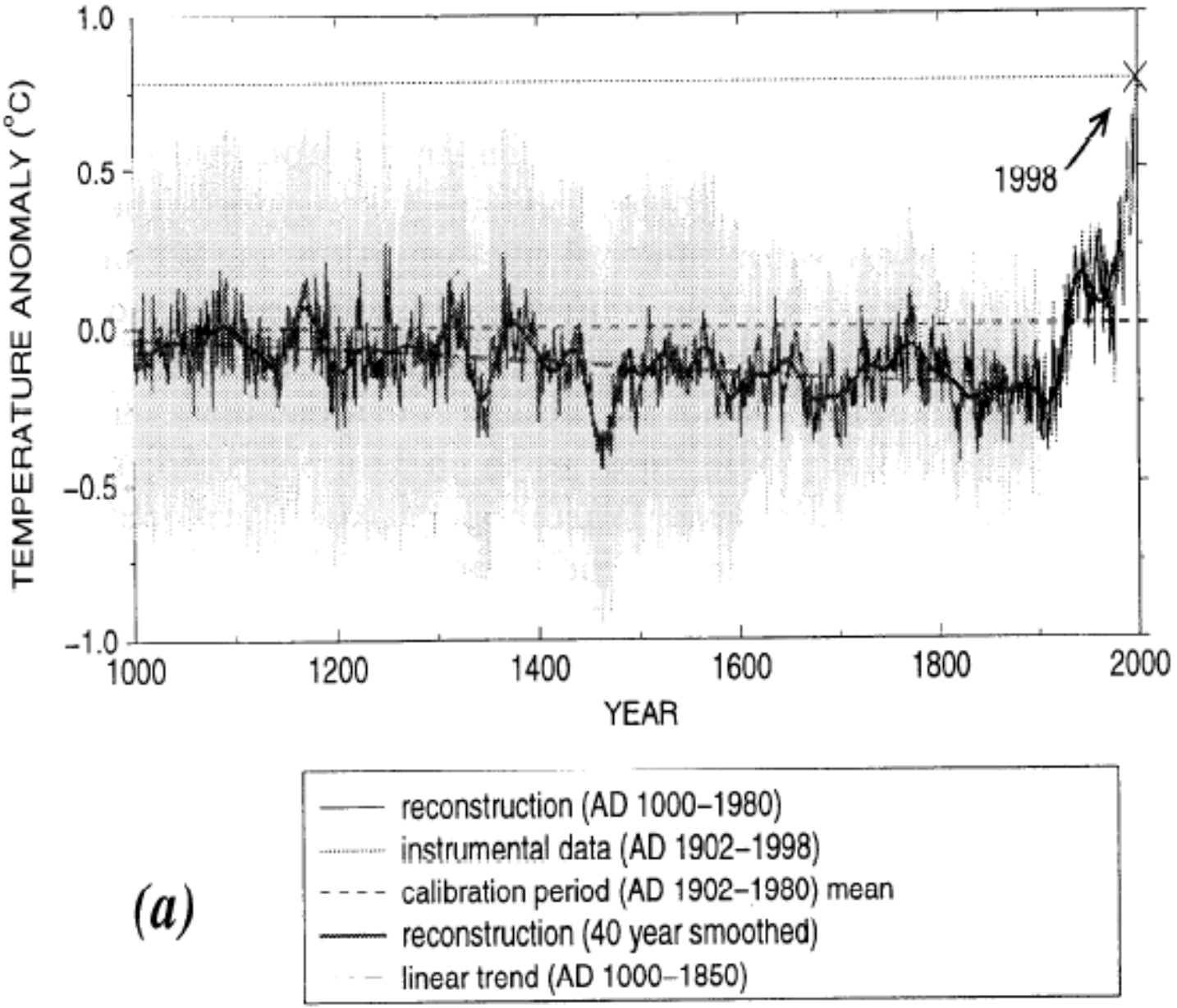
Michael E. Mann and Raymond S. Bradley

Department of Geosciences, University of Massachusetts, Amherst Massachusetts

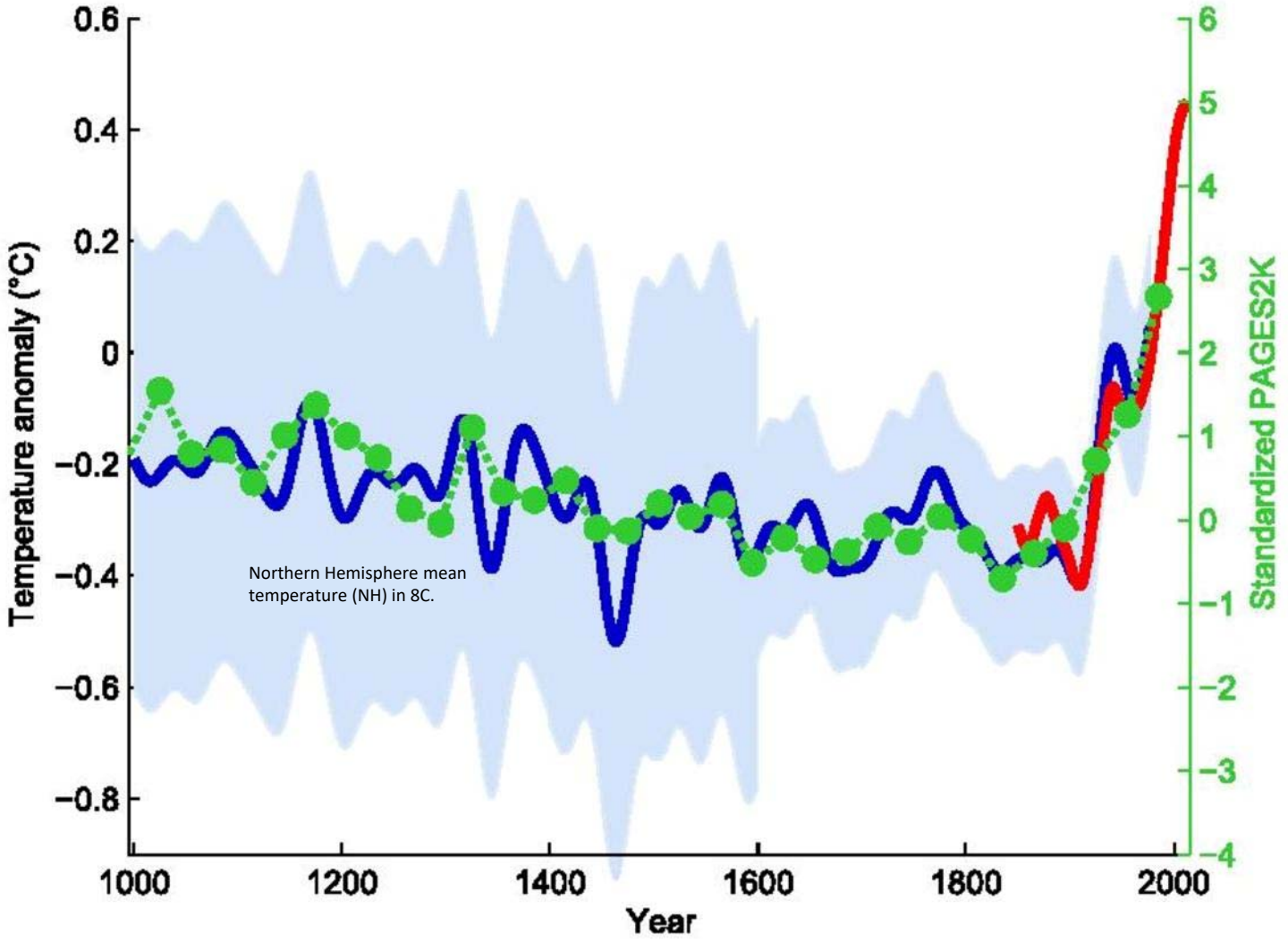
Malcolm K. Hughes

Laboratory of Tree-Ring Research, University of Arizona, Tucson, Arizona

(1154 citations)



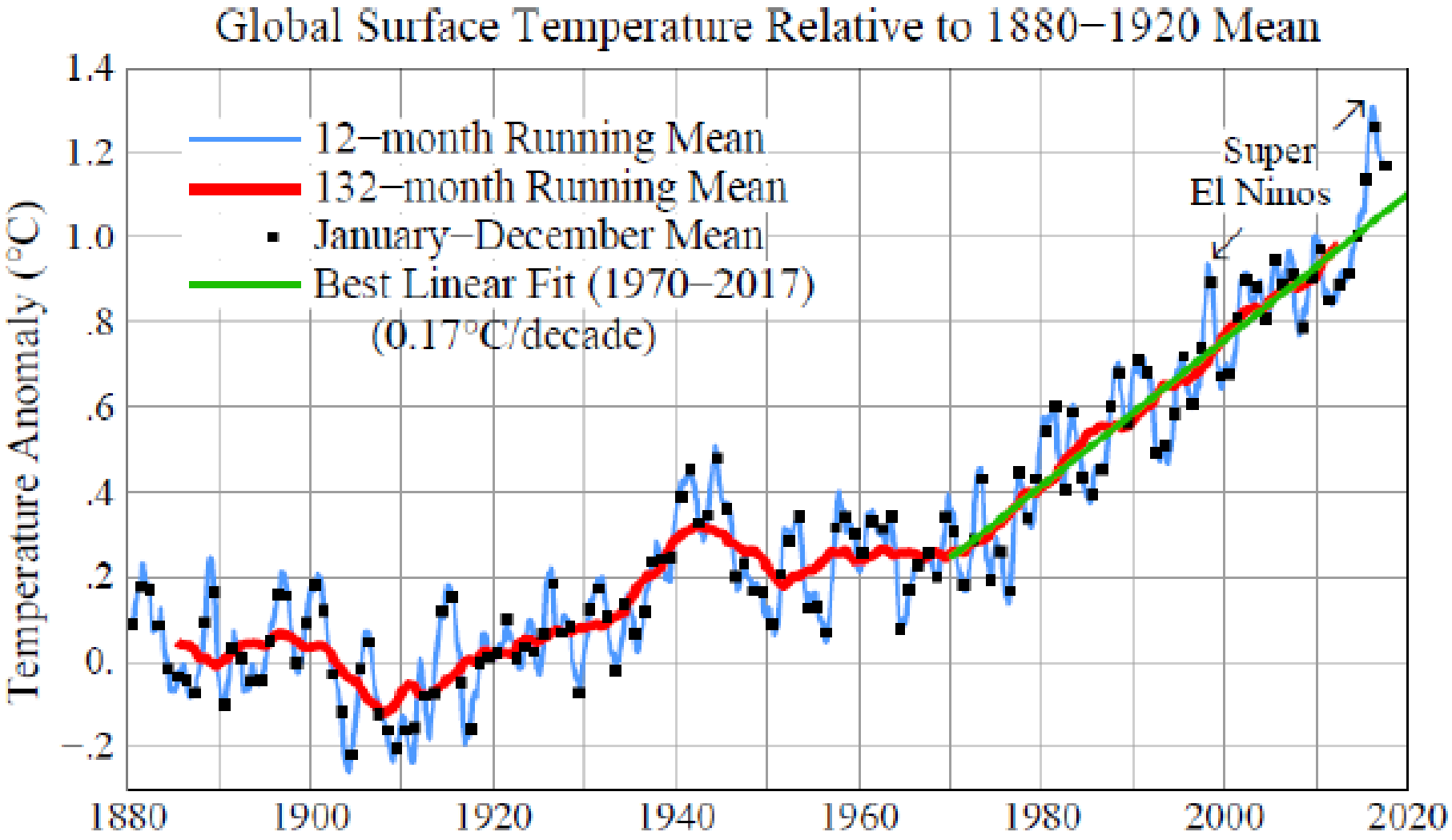
Source: Mann et al., 1999



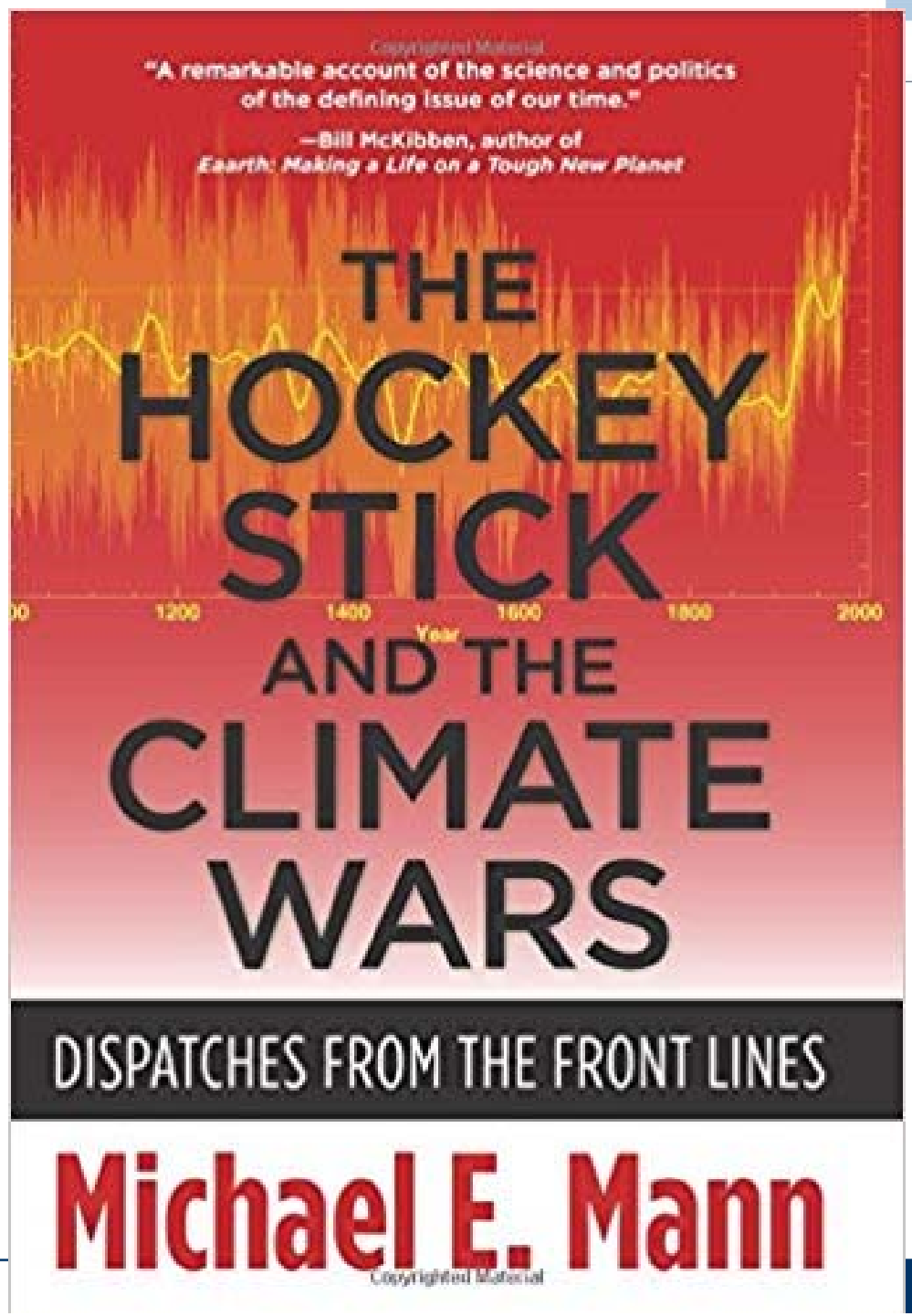
Green dots: 30-year global average temperature of the PAGES 2k Consortium 2013 reconstruction

Red curve: measured global mean temperature from 1850 to 2013 (HadCRUT4).

https://en.wikipedia.org/wiki/Hockey_stick_graph



Source: Hansen et al., 2018, Global Temperature in 2017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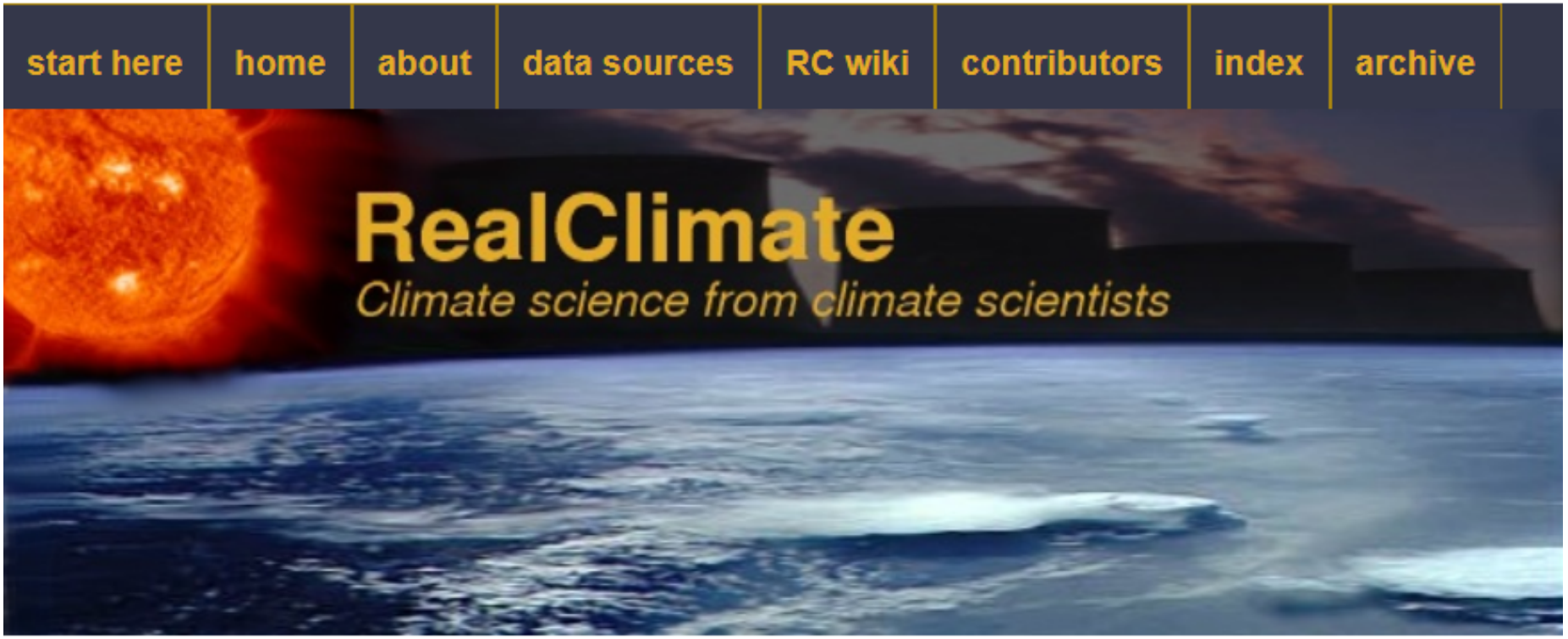
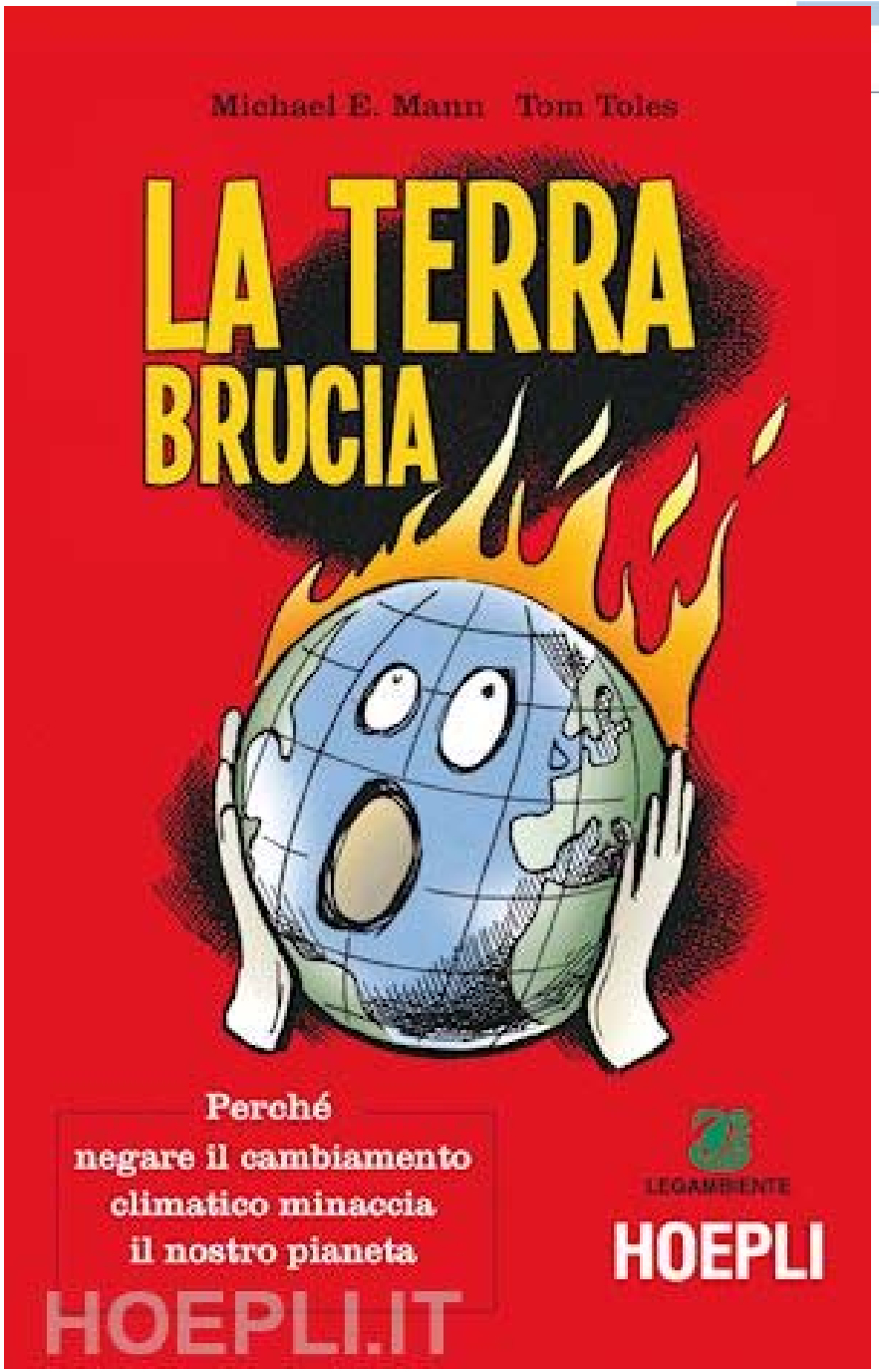


www.realclimate.org


Michael E. Mann Tom Toles
LA TERRA BRUCIA
Perché negare il cambiamento climatico minaccia il nostro pianeta
LEGAMBIENTE
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The proceedings of this conference will be available on:

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