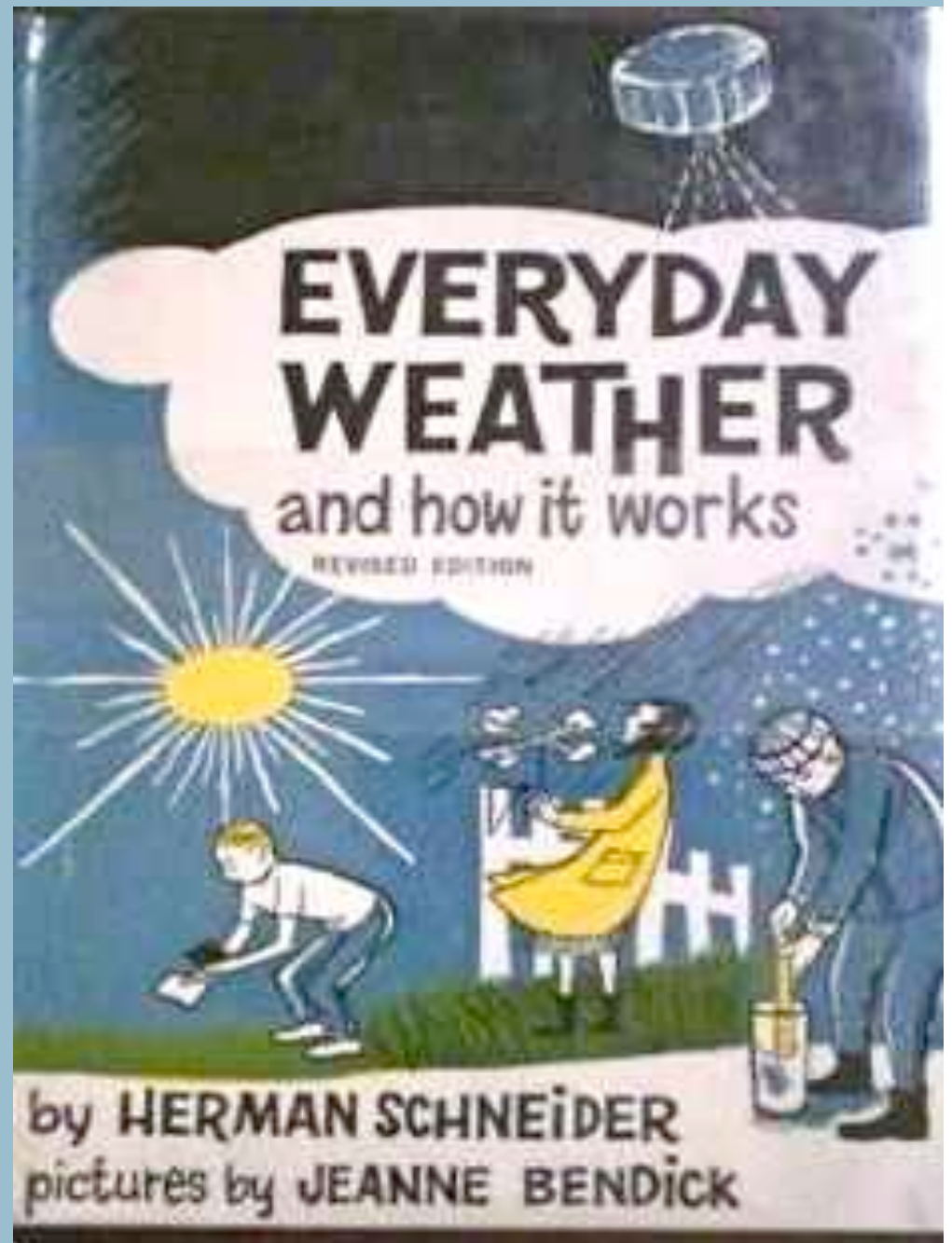


***My career, AGCI,
and some thoughts
on the future***

Richard Somerville

Scripps Institution of
Oceanography, UCSD

Aspen, 19 August 2014



COMPENDIUM
OF
METEOROLOGY

AMERICAN
METEOROLOGICAL
SOCIETY

COMPENDIUM OF METEOROLOGY

Prepared under the Direction of the
Committee on the Compendium of Meteorology
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Edited by
THOMAS F. MALONE



AMERICAN METEOROLOGICAL SOCIETY
BOSTON, MASSACHUSETTS
1951

Some history:

In the 1950s, climate science was not well developed. Many prominent scientists did not think human activities could affect climate.

In 1958, there were:

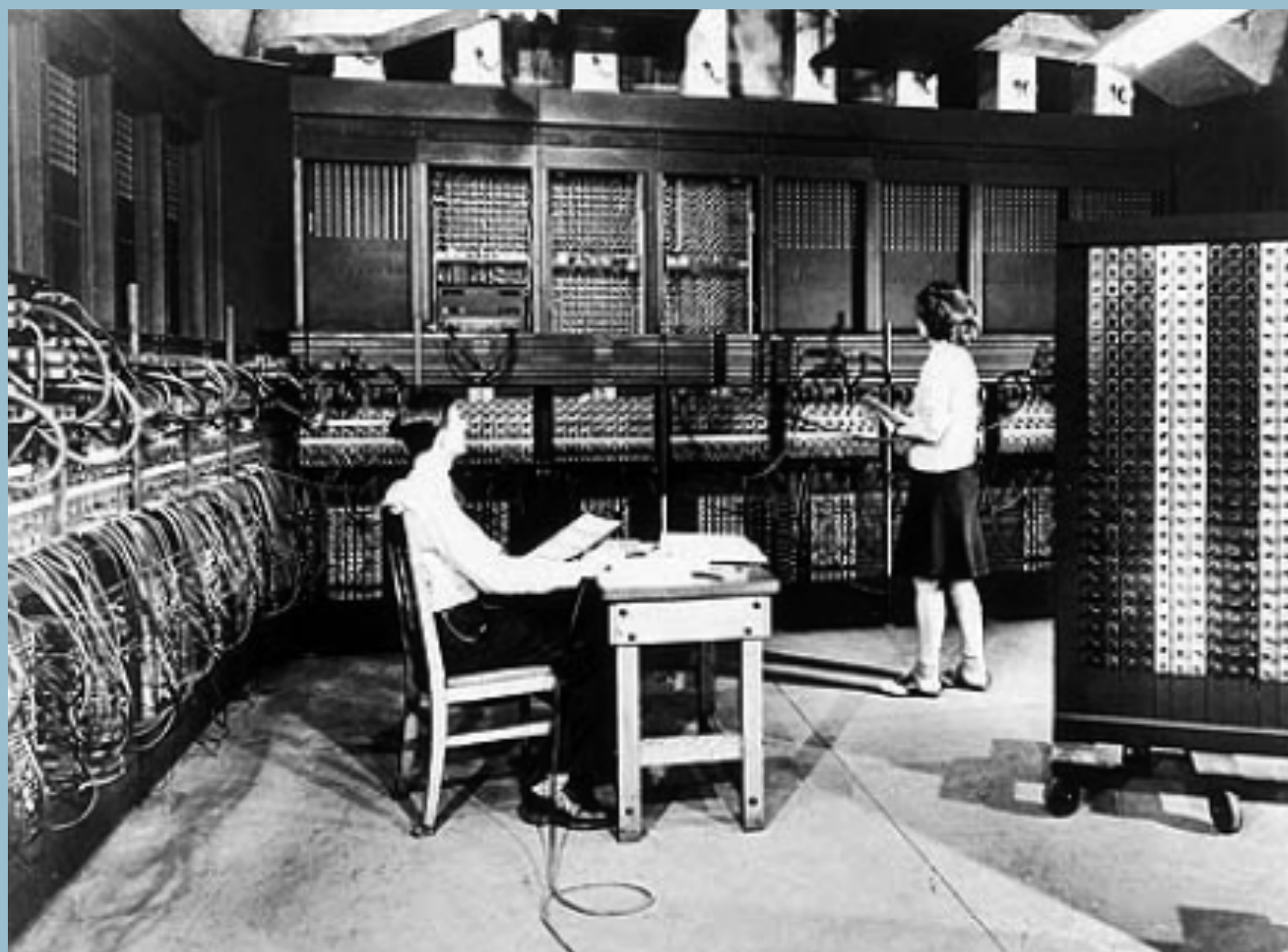
No CO₂ monitoring data (Keeling, 1960)

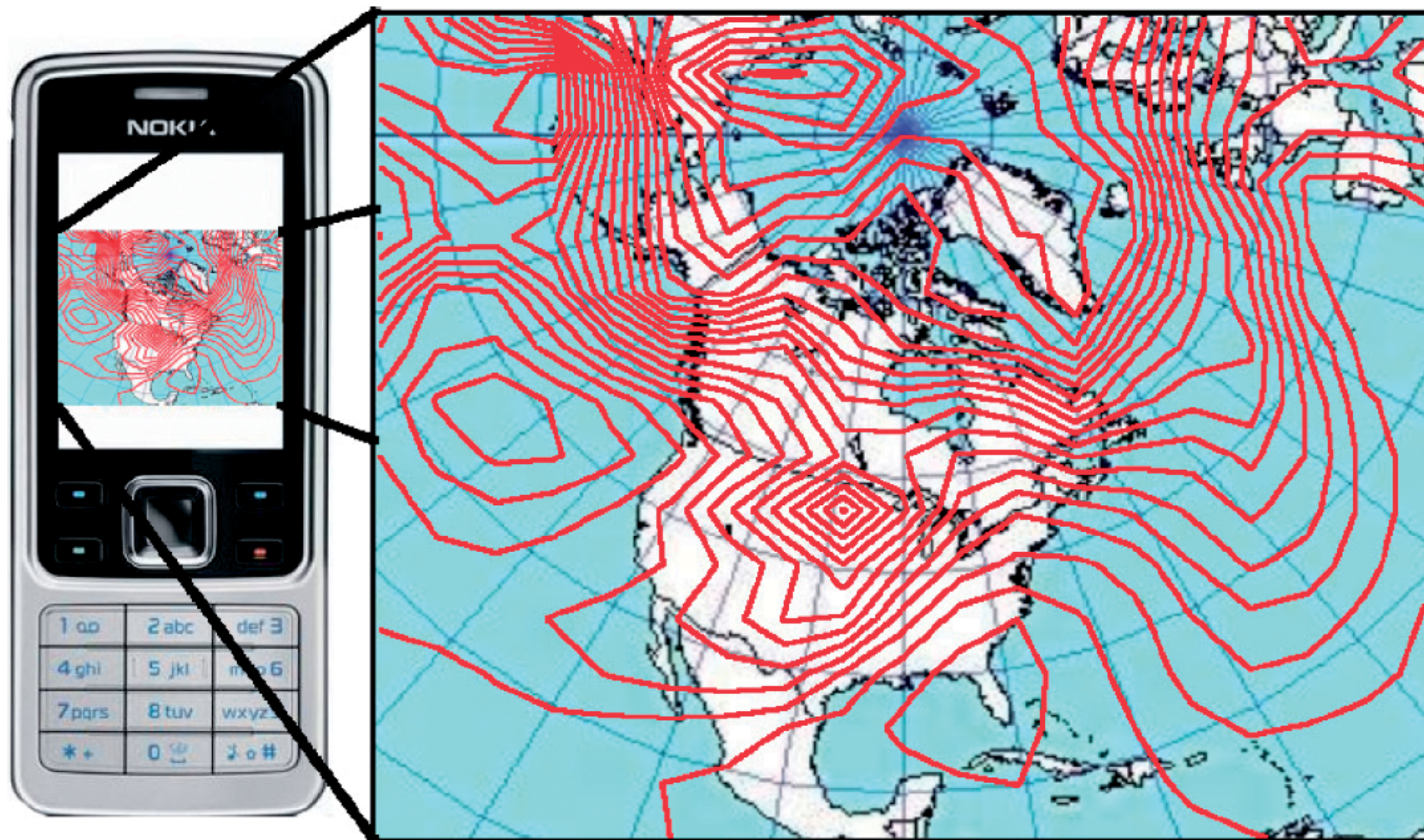
No solid state computers (CDC 1604, 1960)

No Earth observing satellites (Tiros, 1961)

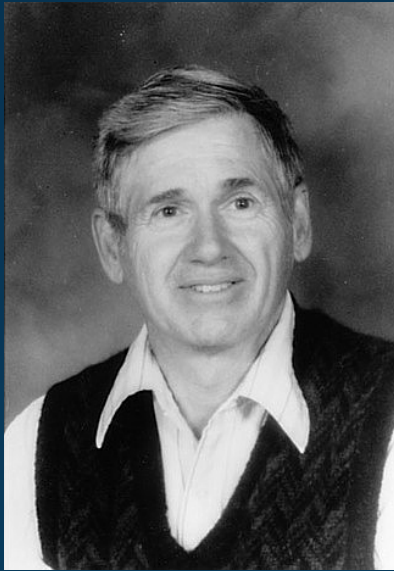
No supercomputers (CDC 6600, 1964)

No GCMs (first global climate models, ~1964)

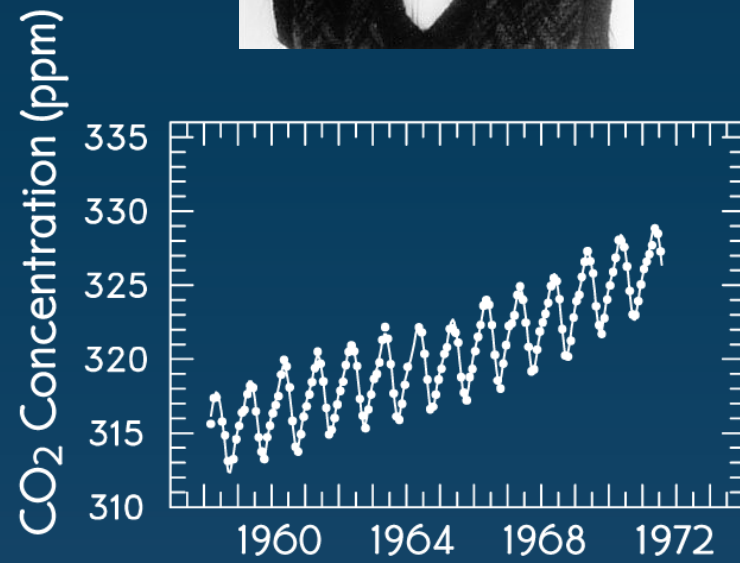




Measuring the amount of CO₂ in the atmosphere



Charles D. Keeling
(1928-2005)



Mauna Loa Observatory,
Hawaii



My CV:

B. S., meteorology, Penn State U., 1958-1961

Ph. D., meteorology, New York U., 1961-1966

Postdoctoral fellowships, 1966-1971

NASA Goddard Institute for Space Studies, 1971-74

National Center for Atmospheric Research, 1974-79

University of California, San Diego, 1979-2014

In 1958, 14 US universities offered Ph. D.s in my field.

Today, more than 70 universities offer such a Ph. D.

This expansion created careers for my generation.

My climate research began in 1979 at Scripps/UCSD.

Planet A
and
Planet B

Climate is now changing on “Planet A”, the actual Earth, and we have scientific tools to observe, understand, and predict the change.



Now imagine an alternative history, Planet B, in which people also developed an energy system based on fossil fuels, just as we did on Planet A, but they did not invent satellites and supercomputers and climate models until long after 2014. This might easily have happened.

On Planet B, people would not understand climate change. It would be controversial, and debated for ideological and political reasons.

People who refuse to accept modern climate science are effectively living on Planet B.

Typically, people on Planet B:

1. Do not realize climate is changing now, or
2. Cannot accept that it is human-caused, or
3. Do not understand how serious it is, or
4. Are opposed to certain policy responses.

In the US, many people, including the leaders of the Republican Party, live on Planet B.



CLIMATE RADIATION FEEDBACKS: THE CURRENT STATE OF SCIENCE

In the 1990s,
I spent many
summers at
AGCI.

Catherine
Gautier and I
co-organized
this 1994
AGCI session.

"This very readable book, written for the educated public, informs the reader about the many ways humankind is affecting the global environment in the new geological era, the 'Anthropocene.' I highly recommend it." —Paul Crutzen, 1995 Nobel Laureate in Chemistry



The Forgiving Air

UNDERSTANDING ENVIRONMENTAL CHANGE

RICHARD C. J. SOMERVILLE

second edition, revised and updated



COMMUNICATING CLIMATE SCIENCE WORKSHOP

Tuesday, 1400h-1600h
San Francisco Marriott Marquis
Salons 14-15

Panelists:

Susan Joy Hassol, Climate change communicator

Richard Somerville, Climate scientist

Chris Mooney, Author

Climate science has become so politicized that it can be hard to have productive conversations about it. Gain insights about effectively discussing the research and issues with various audiences, including non-scientists, reporters, and legislators. Panelists will delve into prevailing viewpoints of various audiences, which information is most helpful to provide, and what messages are most effective.

AGU

Acknowledging AGCI and 4 women with whom I work.

At AGCI, I have worked with:

Catherine Gautier (radiative transfer, remote sensing)

Cherilynn Morrow (education, teacher development)

At AGCI, I first met:

Susan Joy Hassol (climate communication)

Lynn Russell (clouds, aerosols, climate modeling)

As a university student in meteorology (1958-1961),
I had NO female classmates.



Future topics for AGCI (examples):

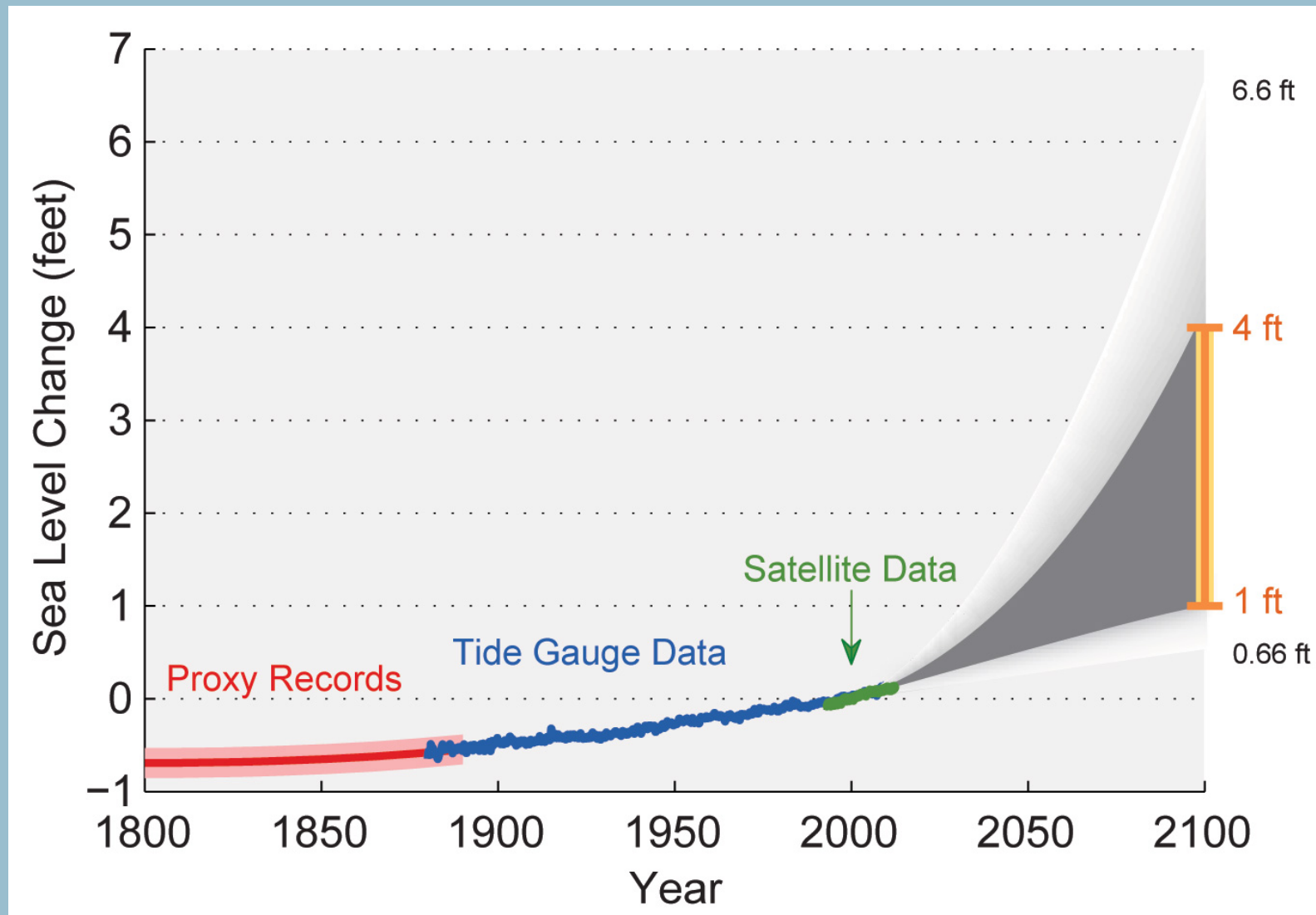
Science: Why are IPCC sea level projections too low?

1. Should IPCC use several projection methods?
2. Should IPCC de-emphasize projections for 2100?
3. Do scientists “err on the side of least drama”?

Solutions:

1. A Manhattan Project or a Marshall Plan?
2. Who should be the trusted messengers?
3. Can scientists and journalists usefully co-exist?

Past and Projected Changes in Global Sea Level





The Marshall Plan (1948-1952) was a bipartisan US effort to help Europe rebuild after World War II.

It cost \$13B, plus another \$13B spent pre-1948.

In 1948, this \$26B was 10% of US annual GDP.

It would be equivalent to about \$300 B today.

Trusted Messengers



