Speaking Truth to Power: Science and the UN Climate Negotiations (Copenhagen, 2009)

Richard C. J. Somerville
Scripps Institution of Oceanography
University of California, San Diego

www.copenhagendiagnosis.org
Fossil Fuel CO\textsubscript{2} Emissions

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fossil_fuel_co2_emissions.png}
\caption{Fossil Fuel CO\textsubscript{2} Emissions over Time (Years)}
\end{figure}

Data: CDIAC; Global Carbon Project
Global Temperature Change Since 1960

- 30-year linear trend
- Range of natural variability
- 2009 (preliminary)
Linear Trend between 1986 & 2010: 0.1814°C per dec

- Range (± 2 × Standard deviation)
- GISS data (Base period: 1880-1920)
Temperature 1850 - 2010
Minimum Arctic sea-ice extent from 1979 to 2007
Observed and Modeled Arctic Sea-ice Extent

The graph shows the observed and modeled Arctic sea-ice extent from 1900 to 2100. The red line represents observations, while the black line with the shaded area represents the mean and range of IPCC models. The sea-ice extent is measured in millions of km², and the x-axis represents the years from 1900 to 2100.

Observations indicate a declining trend in sea-ice extent, with significant variability, particularly in recent years. The models show a consistent decline, with the observed data falling within the range of the models.

“There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities.” - IPCC (2001).

IPCC = Intergovernmental Panel on Climate Change
“Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.”

Global and Continental Temperature Change

- North America
- Europe
- Asia
- Africa
- Australia

Global
- Global Land
- Global Ocean

Temperature anomaly (°C) vs. Year (1900-2000)
“Most of the observed increase in globally averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.”


(‘very likely’ means at least 90% probable)

IPCC reports are at: www.ipcc.ch
Emissions pathways to give 67% chance of limiting global warming to 2° Celsius or 3.6° Fahrenheit above 19th century pre-industrial temperatures.
The decision that climate change should be limited to 2 degrees Celsius warming above pre-industrial (19th century) levels is a subjective judgment by governments.

Once that decision is made, however, science shows that global emissions of greenhouse gases must be greatly and quickly reduced: the world must act within the next decade.

The urgency is thus scientific, not political.
"For a prescribed maximum increase of 50 percent above the preindustrial carbon dioxide level, the production could grow by about 50 percent until the beginning of the next century, but should then decrease rapidly."


*We have known for over 30 years that major emissions reductions would be required NOW.*
Communication problems

- Scientists rarely communicate well.
- Society has a science illiteracy problem.
- A disinformation campaign is effective.
- In some countries, this topic is politicized.
- Policy positions infect views on science.
- Media coverage of science is often poor.
- The IPCC report is “ore” to be processed.
Should scientists be policy advocates?
I think some should, some of the time.

"What's the use of having developed a science well enough to make predictions, if in the end, all we're willing to do is stand around and wait for them to come true!"

- F. Sherwood Rowland, concerning ozone, 1984

(quoted by Paul Brodeur, *The New Yorker*, June 9, 1986, p. 81)