

## **Global Cooling and the Cold War – And a Chilly Beginning for the United States’ Climate Analysis Center?**

Robert W. Reeves, Daphne Gemmill, Robert E. Livezey, and James Laver

U.S. National Oceanic and Atmospheric Administration, National Weather Service

[robert.reeves@noaa.gov](mailto:robert.reeves@noaa.gov)

Twenty-five years’ ago the U.S.’ Climate Analysis Center (CAC) commenced operations. The Center was assembled from individuals and units representing climate interests in several parts of the National Oceanic and Atmospheric Administration (NOAA). In October we will celebrate this anniversary at the workshop that the Center sponsors at various locations around the country each year. The University of Wisconsin in Madison, WI will be this year’s co-host. A special session at the workshop will feature short presentations by the former directors of the center and other key figures from its early days. A publication with an historical flavor will be distributed at the event, and will include the results of the investigation reported at this conference.

Our study has been focused specifically on tracking down the origins of the Center. Where did the idea originate, and who were the key individual(s)? To what extent did the concept of global change play a role in CAC’s birth, if any?

(The Climate Analysis Center changed its name in 1995 to the Climate Prediction Center, reflecting the bold shift in emphasis that had been taking place gradually over several years.)

One of the advantages of examining contemporary or recent history is that many of the actors on that stage are still active, and most are willing to offer their views. The search for CAC origins took us well back before the administrative actions that created the center - to the early 1970s. It is worth recalling the political and environmental climates during that period. Interest in environmental climate, particularly its possible long-term change, was spurred in the ‘60s and early ‘70s. On the one hand there was a growing concern over possible inadvertent anthropogenic climate change, particularly global warming. An international Study of Man’s Impact on Climate (SMIC) was held in the summer of 1971 near Stockholm. William Kellogg, organizer, offered the following speculation: “Though we may have influenced the climate already, it has so far probably been in a small way.” “. . . one can, and probably should, conclude that man can influence the climate of his planet Earth. The direction that this influence will take in the decades to come, if man continues to demand more energy to satisfy his craving for an ever improving standard of living, coupled with his increasing population, must be that of a warming, especially in the Northern Hemisphere.” There were already attempts to determine the effects of a doubling of carbon dioxide emissions on global temperatures. In 1967 Manabe and Weatherald reported on their one-dimensional modeling study, showing that a doubling of CO<sub>2</sub> would lead to tropospheric warming and stratospheric cooling.

On the other hand, the global surface temperature record from the 1940s through the 1960s, revealing a gradual cooling, led others to believe this might be the early indications of a longer-

term effect. This attracted the interests of other scientists, including glaciologists. In January 1972 a working conference of top European and American investigators was convened at Brown University to discuss “The Present Interglacial, How and When Will it End?”

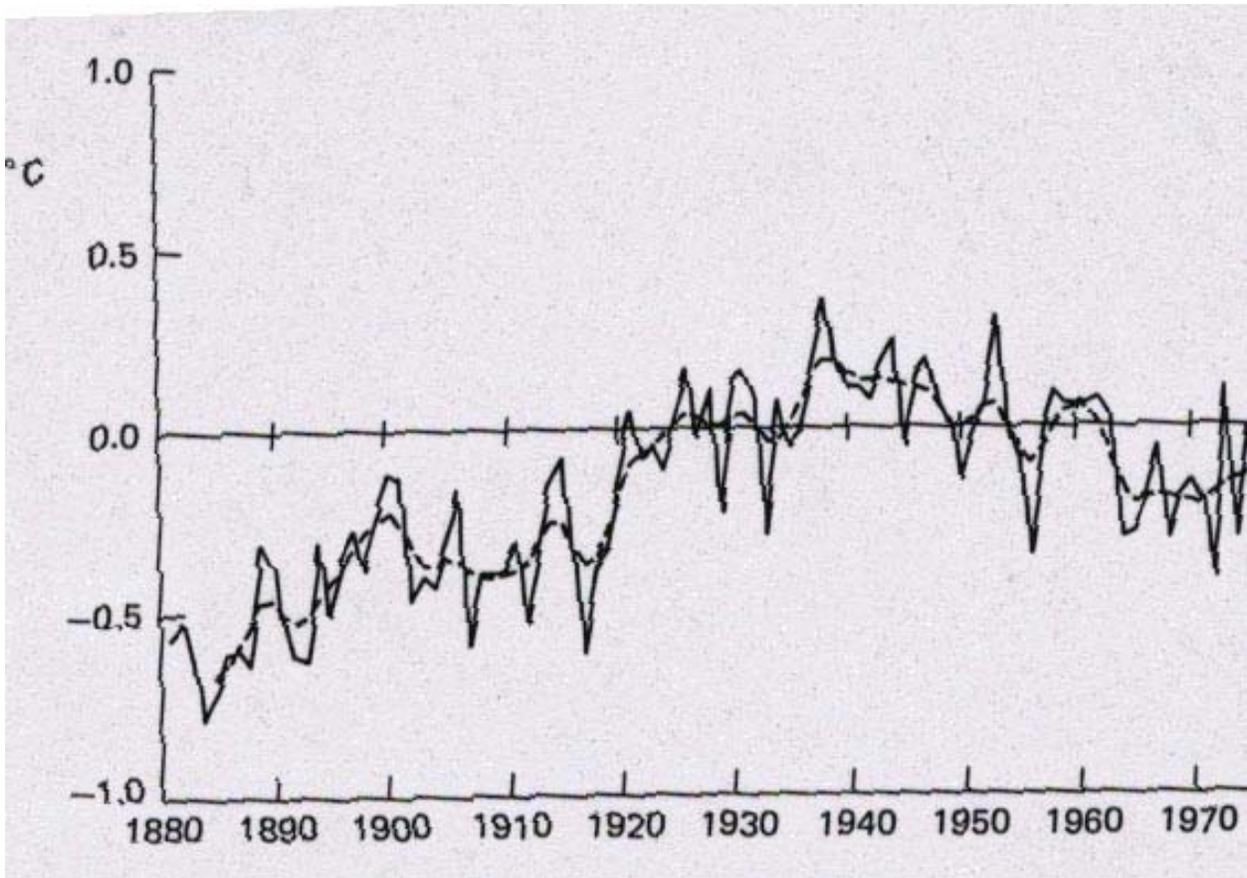


Fig. 1. Northern Hemisphere Mean Annual Surface Temperatures (adapted from Jones and Wigley, 1980).

Its organizers were geologists George Kukla of the Czechoslovakian Academy of Sciences and Robert Matthews of Brown. They summarized their results in a Science report in October 1972. By that time Kukla had moved to the Lamont-Doherty Geological Observatory as a visiting scientist. In a rather bold move, Kukla and Matthews wrote to President Nixon in December 1972 with the main conclusion of the study and a call for action at the national level.

*“ . . . a global deterioration of climate, by order of magnitude larger than any hitherto experienced by civilized mankind, is a very real possibility and indeed may be due very soon. The cooling has natural cause and falls within the rank of processes which produced the last ice age. This is a surprising result based largely on recent studies of deep sea sediments.”* They concluded their letter with the following concern: *“It might also be useful for Administration to take into account that the Soviet Union, with large scientific teams monitoring the climate change in Arctic and Siberia, may already be considering these aspects in its international moves.”*

[This was an interesting time in international politics. In early 1972, President Nixon made his famous visit to China. Later, in the spring, Nixon met with Soviet leader Leonid Brezhnev to sign the first SALT agreement.]

There were also a number of short-term climate events of national and international consequence in the early 1970s that commanded a certain level of attention in Washington. Many of them were linked to the El Niño of 1972-1973.

A killing winter freeze followed by a severe summer heat wave and drought produced a 12 percent shortfall in Russian grain production in 1972. The Soviet decision to offset the losses by purchase abroad reduced world grain reserves and helped drive up food prices.

Collapse of the Peruvian anchovy harvest in late 1972 and early 1973, related to fluctuations in the Pacific ocean currents and atmospheric circulation, impacted world supplies of fertilizer, the soybean market, and prices of all other protein feedstocks.

The anomalously low precipitation in the U.S. Pacific north-west during the winter of 1972-73 depleted reservoir storage by an amount equivalent to more than 7 percent of the electric energy requirements for the region.

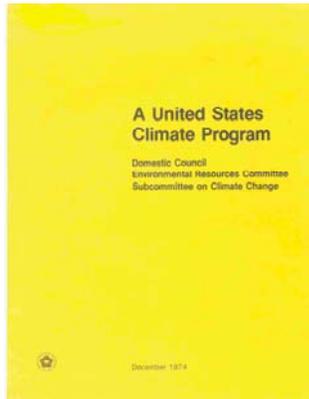
The White House assigned the Kukla-Mathews letter to the Bureau of International Scientific and Technological Affairs of the State Department who circulated it to the Interdepartmental Committee for Atmospheric Sciences (ICAS) for “review and appropriate action”, the highest level interagency body within the U.S. Government concerned with the atmospheric sciences. The ICAS then established an ad hoc Panel on the Present Interglacial to respond to the Kukla/Mathews letter, with an anticipated target submission date of September 30, 1973. (The formal publication date of their report was August 1974)

The period following the establishment of the ad hoc Panel in early '73 to the official publication of the report saw a flurry of activity by the various agencies. The National Science Foundation (NSF) and NOAA were particularly active. The NSF had formed a Climate Dynamics Group in the spring of 1974 with Joseph O. Fletcher in the lead, and ably assisted by Uwe Radok. There was also a considerable amount of Washington “hardball” during that period as individuals and agencies competed for the lead. The ad hoc Panel decided that the topic was of such paramount importance that they should go beyond simply reporting their findings, and include a recommendation. This they did with a companion document that was a call for a national climate program to begin addressing the climate issues. Fletcher was instrumental in the companion report’s preparation and had envisioned NSF in the lead. NOAA had other ideas.

On August 1, 1974 the White House wrote to Secretary of Commerce Frederick Dent: “Changes in climate in recent years have resulted in unanticipated impacts on key national programs and policies. Concern has been expressed that recent changes may presage others. In order to assess the problem and to determine what concerted action ought to be undertaken, I have decided to establish a subcommittee on Climate Change.” The memorandum further requested the Department of Commerce to take the lead and chair the subcommittee. Secretary Dent responded on August 16, naming Robert M. White, Administrator of NOAA, as chair of the subcommittee. John Townshend, White’s Deputy, asked William Sprigg to convene a series of interagency meetings to assemble the “United States Climate Program”. In a related effort, Sprigg, in an undated, unpublished (probably 1974) document entitled “A Climate Diagnostics

Center”, began assembling some of NOAA’s concepts for such an organization, including estimated computer costs. In late 1974 Don Gilman prepared a draft Diagnostic Center Budget and Personnel for 1976 and 1977 at the request of Fred Shuman. Gilman sketched out a plan that included 24 positions in 1976 with a budget of \$1.4M, increasing by 8 positions and \$700K in 1977. A subsequent draft (12/30/74) by Gilman outlined 3 Diagnostic Center Functions:

- a. Data Acquisition;
- b. Data Analysis and Synthesis;
- and c. Prediction.



In December 1974, the subcommittee produced their report “A United States Climate Program” in which it spelled out the needs for a climate program with 10 points. One of the *Actions and Milestones* in that report was ***Establish a Climate Diagnostics Center in 1976.***

From an NSF perspective Uwe Radok recounted events of the time in a recent Web offering, mentioning the committee on the present interglacial and its proposed national climate initiative which a new NSF Office of Climate Dynamics (OCD) started with a “Climate Clinic” that brought together representatives of the major climate research groups at NCAR in October 1974, and became the forerunner of annual Climate Diagnostic Workshops.”

The OCD was established in May 1974, and Radok’s invitation was actually issued in November for a December meeting in Boulder, CO. By that time, Joe Fletcher had joined NOAA at the Environmental Research Laboratories in Boulder. The Climate Clinic’s proposed Terms of Reference stated, “The Climate Clinic represents a pilot experiment for a Diagnostic Climate Center.”

An internal paper at the Central Intelligence Agency warned of the need for better climate intelligence. One of us (Livezey) received a grant to examine the long-range weather prediction efforts in the Soviet Union.

After it became clear that any center for climate diagnostics would be housed in NOAA, the various line components were interested in the management lead. The satellite, data, and weather service components as well as the Environmental Research Laboratories were the main competitors. Discussions with individuals active at the time indicated that NWS management was cool to the idea of leading the center. However, Epstein’s memo of July 1977 assigned responsibility of turning the project into a center to the NWS. The Weather Service established the center administratively with a June 1978 memorandum, but operations did not begin until the director was named and units and individuals were officially transferred to the CAC in the spring of 1979.

About the principal author: Robert Reeves obtained his Ph.D. in Atmospheric Sciences from the University of Washington. He is employed as a Climate Specialist at the Climate Services Division at NWS Headquarters, and is a member of the organizing committee for the CPC anniversary celebration in October. His recent activity has been focused on discovering the origins of the Center.