

Jack Eddy

. . . Crossing Boundaries

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EDDY: I was born in a real small town in southeastern Nebraska of 1600 people. My dad managed a cooperative farm store. It was a grocery store and a farm produce store. Farmers would come in and sell their cream and eggs, and other produce from the farm, and then take their cash and go next door, in the other half of the store, and there were groceries for sale. That was the store my dad operated for quite a while, and I worked there as a young boy until I got into high school.

Q: Farmers with horses and so on.

EDDY: At the time—I can't believe it now, because it was in the 1930s—there were still horse-drawn wagons on the street. They would park near the courthouse in town. And there was a guy who was employed to walk around town with his little cart and clean up after the horses.

EDDY: My mother was a wonderful person. Neither my dad nor my mother is alive now, but she had gone to college a year, and was a country school-teacher before she and dad were married. I had a brother who is two years older than I, and a sister who is two years younger than I, Bob and Lucille. We were a family of three children in a modest but happy home



I was the first and only one to go to college in my family. I wasn't sure we could afford university schooling, but the little town that I lived in, Pawnee City, was also the home of one of the two U.S. senators from Nebraska, Kenneth Wherry: an ardent Republican, who appointed me to the Naval Academy at Annapolis [1949]. That offered me a chance to go to school.

And that's where I got my undergraduate schooling.



Q: So, so how did you get started in science then?

EDDY: There was not a real strong program in science at the Naval Academy, at least at that time [1949-1953]. There was a lot of engineering and particularly marine engineering, but not much science. But we did have a course in celestial navigation, which is no longer taught anymore in the days of. . .

Q: In the GPS days, yeah, no more sextants.

EDDY: That course gave me a love of the sky, and so I got real keen about that.

I actually got in some trouble at the Naval Academy, because I crawled out on the roof one night. At the time I lived on the fourth [top] floor of Bancroft Hall. I remember I was looking for Draco, of all things, this weird constellation that didn't have much shape anyway.

And so I was out there looking for it after Taps, which was a very bad sin, and in came the officer of the day and noticed that one of the midshipmen in the room was not in his bed. He found me on the roof.



He gave me, I don't know, four or five hours of extra duty, which means getting up before dawn and out running on the track. So with a punishment like that, it made me want to go into astronomy all the more, I guess.



But I was graduated, went to sea, served four years as a naval officer in the Korean War, and elsewhere around the world. And then I decided to resign [from the Navy] and was accepted at the University of Colorado in mathematics.

Q: In mathematics.

EDDY: I'm not sure why they let me do that.



Q: You applied for astronomy, and they let you in, in mathematics?

EDDY: No, I wasn't even thinking astronomy. I knew I liked astronomy, but I kind of thought maybe mathematics is what I might be good at. It was an adjoining state to the one I'd grown up in [Nebraska] and that's why I went out there. When I got to Boulder, like you, I was looking around the university and there was this little observatory that had just been started and a small program in astro-geophysics. I wanted it to be more astronomy, it was really for astronomy—I decided that was where I really belonged. So before school started that fall, I was accepted there and became one of their first graduate students in astro-geophysics. That was in the fall of 1957.



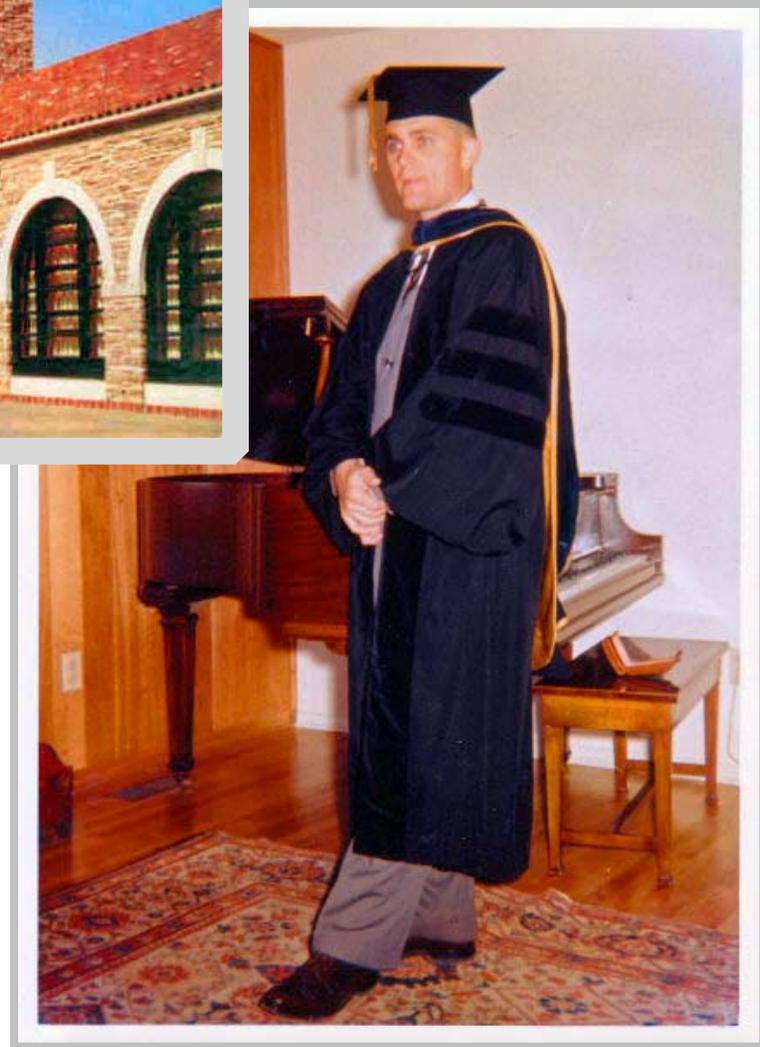
Gordon Newkirk



High Altitude Observatory

Walter Orr Roberts







EDDY: I think my principal interest then was teaching, because I was teaching courses in solar physics. And I think maybe, Spencer, that's the thing that I do best. I really did enjoy that, I must say. A lot of the solar astronomers of today came through my class. They weren't great because they took my class, but I knew them. As far as research, I think I was an opportunist and somewhat of a dilettante.

Q: The research was something to do to keep your professional credentials.

EDDY: I think that's what I was doing, and I did a bunch of things My choice of field to study in, the things I've done, absolutely every choice I've made since professionally has been to be as broad as possible. My critics would rightly also say, "Yes, and as shallow as possible."

But my reasons for it were twofold. One is I think you always have the thrill of discovery when you're wandering into other areas. More important, you also lose the [danger] of being all too comfortable in that little narrow niche. I truly believe the saying that there is no hope for the satisfied man. . . . A third point is, you're always scared. [Entering a new field with a degree in another is not unlike Lewis and Clark walking into the camp of the Mandans. You are not one of them. They distrust you. Your degree means nothing.] Your name is not recognized. You have to learn it all from scratch, talk to the right people, learn that stuff.



But I also think that many of the greatest discoveries generally come at the boundaries of the disciplines: the terra incognita where things are not looked at. It's not a place that's hidebound by practice and ritual. I have always tried to [keep moving between fields of study] and it shows up, I think, in my vitae.



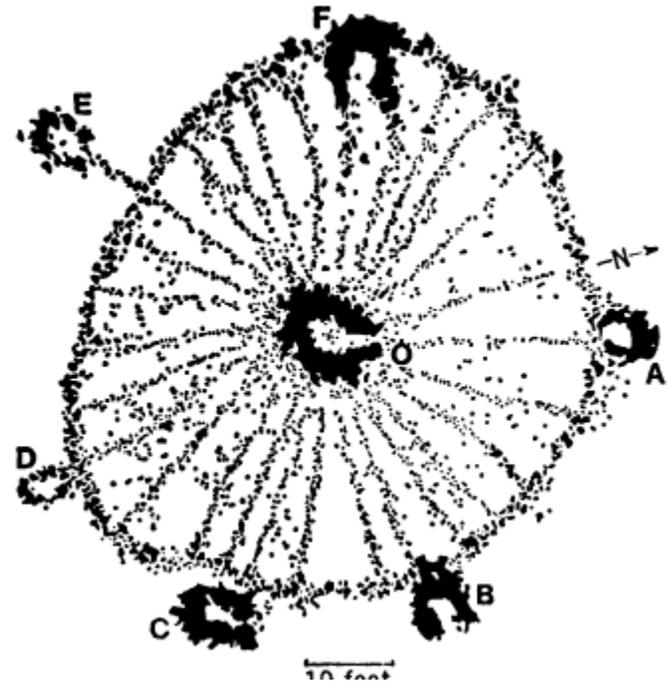
EDDY: I got started on [the Bighorn Medicine Wheel] by reading something in the Denver Post Sunday Magazine, a tiny thing about an inch long on it, and it looked kind of fascinating.

That sounded like a real adventure [to go up there], and it looked very astronomical. I got into it that way.



I think the lesson I learned there, again, was never to be dissuaded when you step into another field. Because as soon as I asked the archaeologists about it, and the anthropologists, they would tell me right away that there's absolutely no point in looking at that. It had been there too long, and too many people had looked at it and all that stuff. And this notion of astronomy wasn't going to work out anyway.

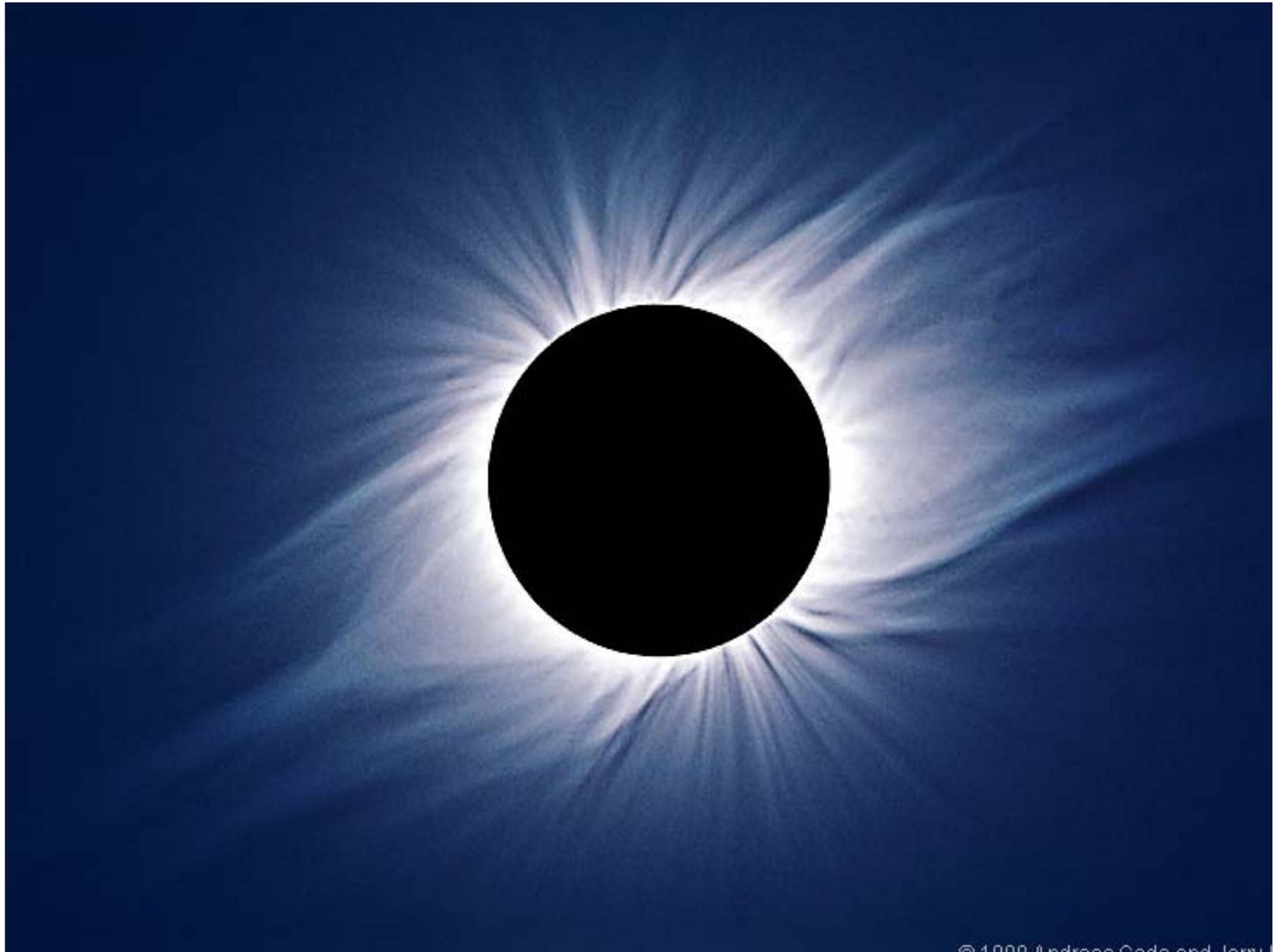
I suddenly realized that it really is true, that when you venture into something new you're always going to be told that it's not the way to go. And you never should be dissuaded by people saying that altogether too many people have already looked at that particular thing, whatever it is. So that was a really good learning experience for me.



Taking a course that's interdisciplinary and colorful like that might make you feel good—the person who's doing it—but it doesn't help your annual reviews and stuff. I think that was kind of frowned upon, and quite definitely showed up in my performance reports.

The next direction I went was into history. And that came out mostly from teaching that course in solar physics. I found out, Spencer, as you must have too, that one way to put students at ease, is to keep reminding them that it wasn't too long ago that nobody knew more than you guys sitting out there in the classroom about the chromosphere or about whatever it is. So by using historical examples, I think it helps put students at ease and tuned in to what you're doing .

And in the course of digging up historical examples, I came across these curious things that led me down the trail of the Maunder Minimum.





“The fact that there are so many disciplines involved, as for instance meteorology, oceanography, geography, hydrology, geology and glaciology, plant ecology and vegetation history—to mention only some—has made it impossible to work . . . with common and well established definitions and methods.”

— C.C Wallén (1961)

There is a hypnotism about [sunspot] cycles that seems to attract people. It attracts all kinds of things out of the woodwork. The claims that were made for associations between weather events and the Sun I thought were pretty preposterous.

One of those that turned up was this notion that Gene[Parker] told me about. About the work of Walter Maunder 100 years before, when he had thought that there was a [prolonged] time when the Sun wasn't so active.

That really piqued my curiosity, and I began looking into that. The trail was, initially, historical, somewhat guided by two forces: Gene Parker telling me about it (probably in the early 1970s), and then by trying to find things that would disprove the notion of strong sun-weather relations.

That was the gospel at the High Altitude Observatory anyway, that that was all nonsense, and I really believed that. [I was trying to examine the early origins of Sun-weather claims, like unrolling and deciphering the Dead Sea scrolls of solar physics.] But it was mostly a love of history that took me down the trail.



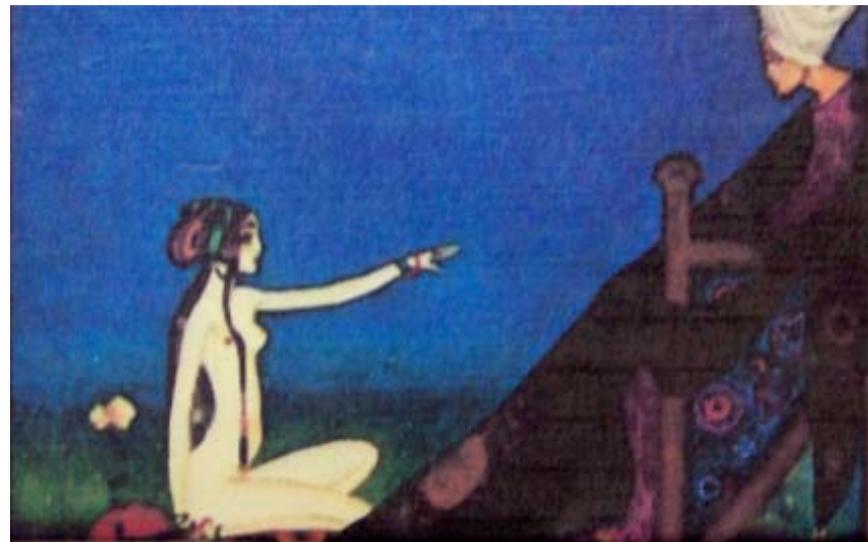
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What came along to really help it was probably the worst and maybe the best thing that ever happened to me. That was in 1973. I had been at the High Altitude Observatory for almost ten years at that time. Mostly teaching courses, and doing these eclectic forays into this and that. Nothing profitably. There came along a major cutback in the funding for the National Center for Atmospheric Research, NCAR. They had to lay off a bunch of people. I was one of those selected to be let go

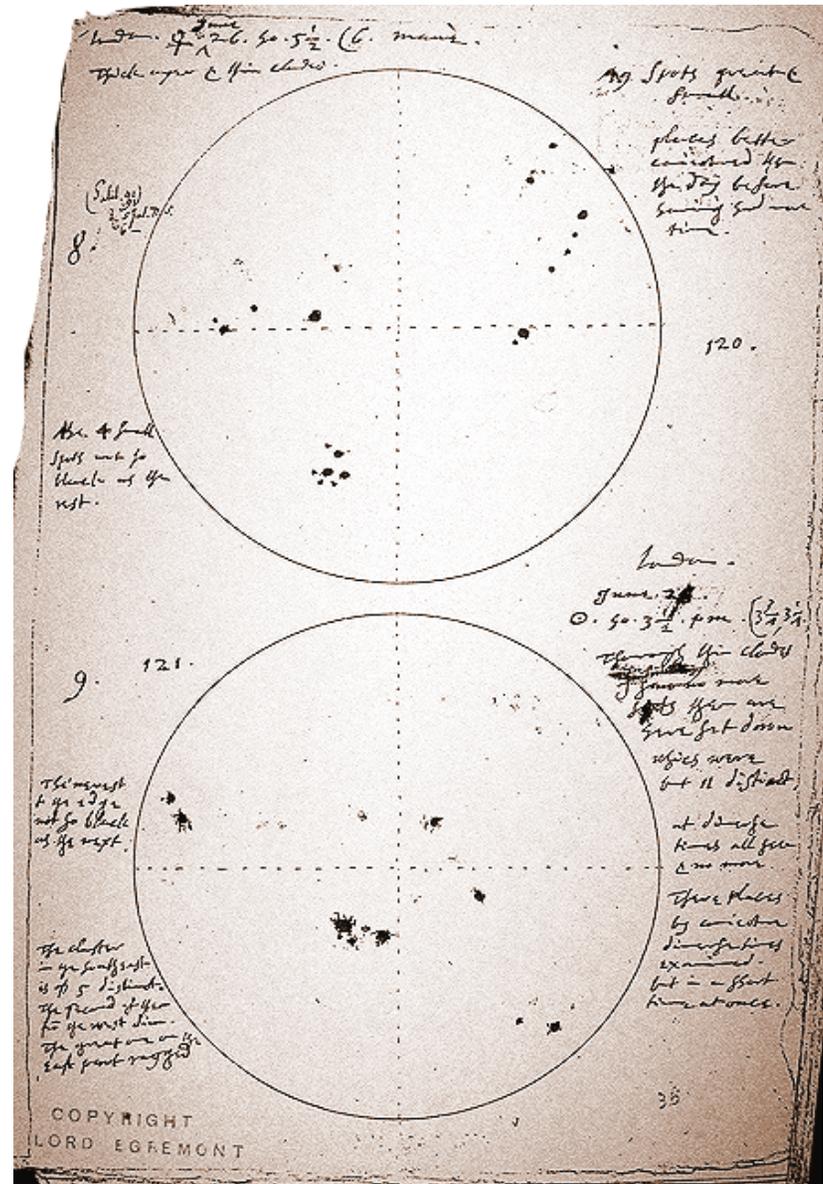


Then some of my friends in NASA thought that I had some promise [as a writer]. They offered me a [temporary] job—because I had worked on the coronagraph satellite before that—writing a book for NASA as part of a series on the Skylab spacecraft. So I got a job to write this book that kept income coming in. It really involved the Maunder Minimum, believe it or not. It was a job that I had to stretch out as long as I could, until I could get a job. So it was a sort of Scheherazade thing, where you tell a different story every evening to stretch it as much as you can. Which I did.



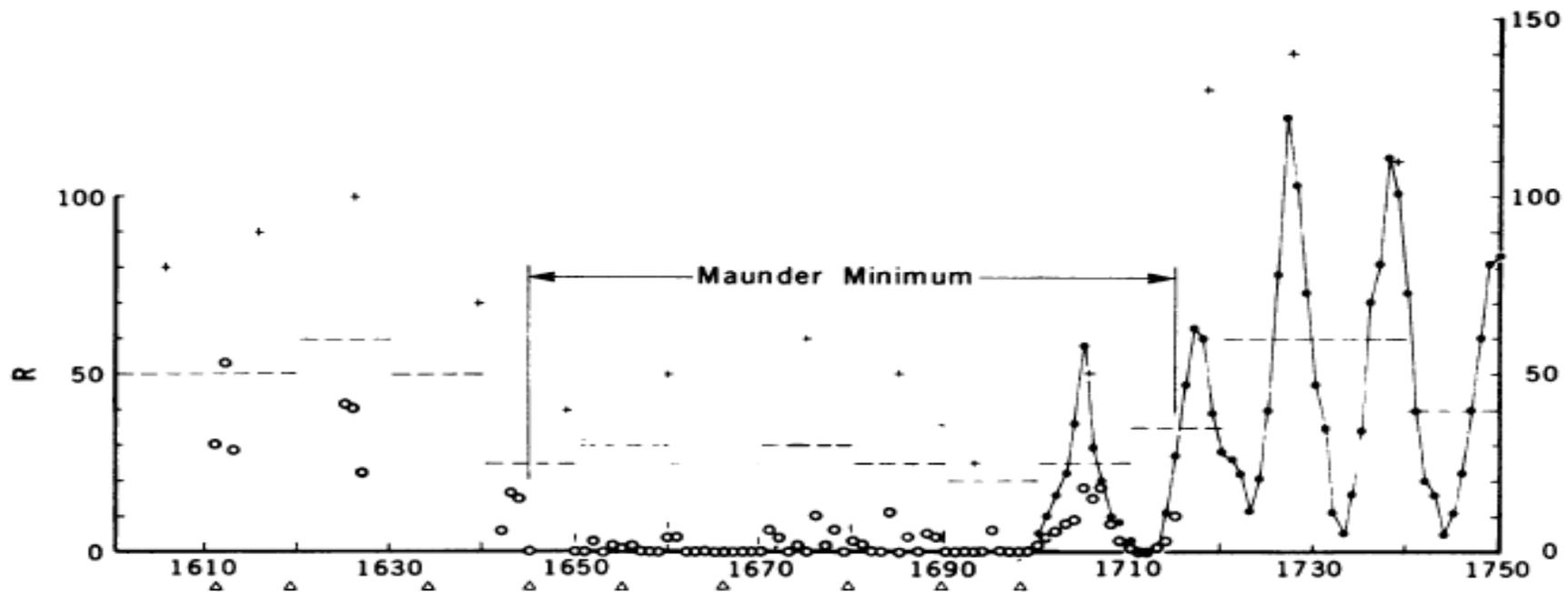
But it enabled me to do a bunch of traveling, mostly to Harvard, where two of the experiments on the Skylab were, and to the Naval Observatory in Washington. That got me out of Boulder into libraries.

So I could go—At that time I was interested in the Maunder Minimum. Under the guise of going there to talk to investigators on these satellite instruments I would go and spend time in the library. And that's where I got to reading the Latin stuff.



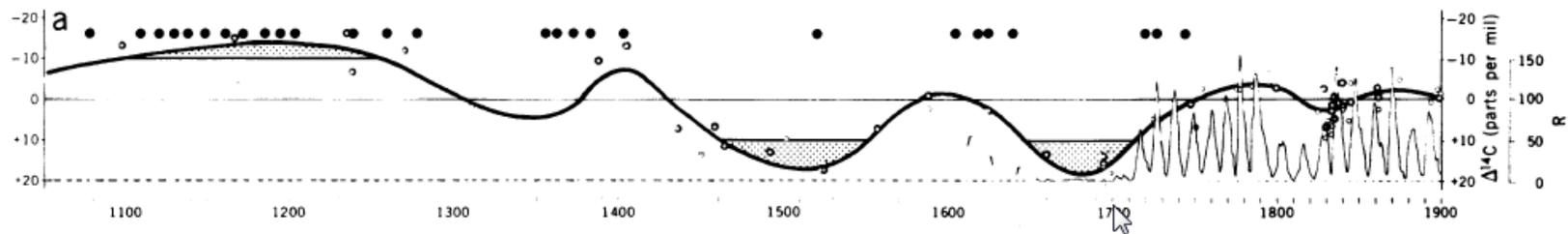
Q: At this point, you were beginning to believe that the Maunder Minimum was real.

EDDY: I was beginning to believe it was real just because of the things I read, which was kind of a shock to me



Because I had been trained in astro-geophysics and knew about the influences and the ways that the Sun affects the Earth, I looked hard at aurorae. Because of my interest in historical things I looked very hard at Oriental naked eye sunspot [observations] in the hundreds of years before the Maunder Minimum, and after, because they were continued after the advent of the telescope. I pushed it as hard as I could. Talking to Gordon Newkirk one time, he said, “You know, you really ought to look at carbon-14.”

So I started into that, I tried looking into tree rings, I got acquainted with all that.





Hessel de Vries

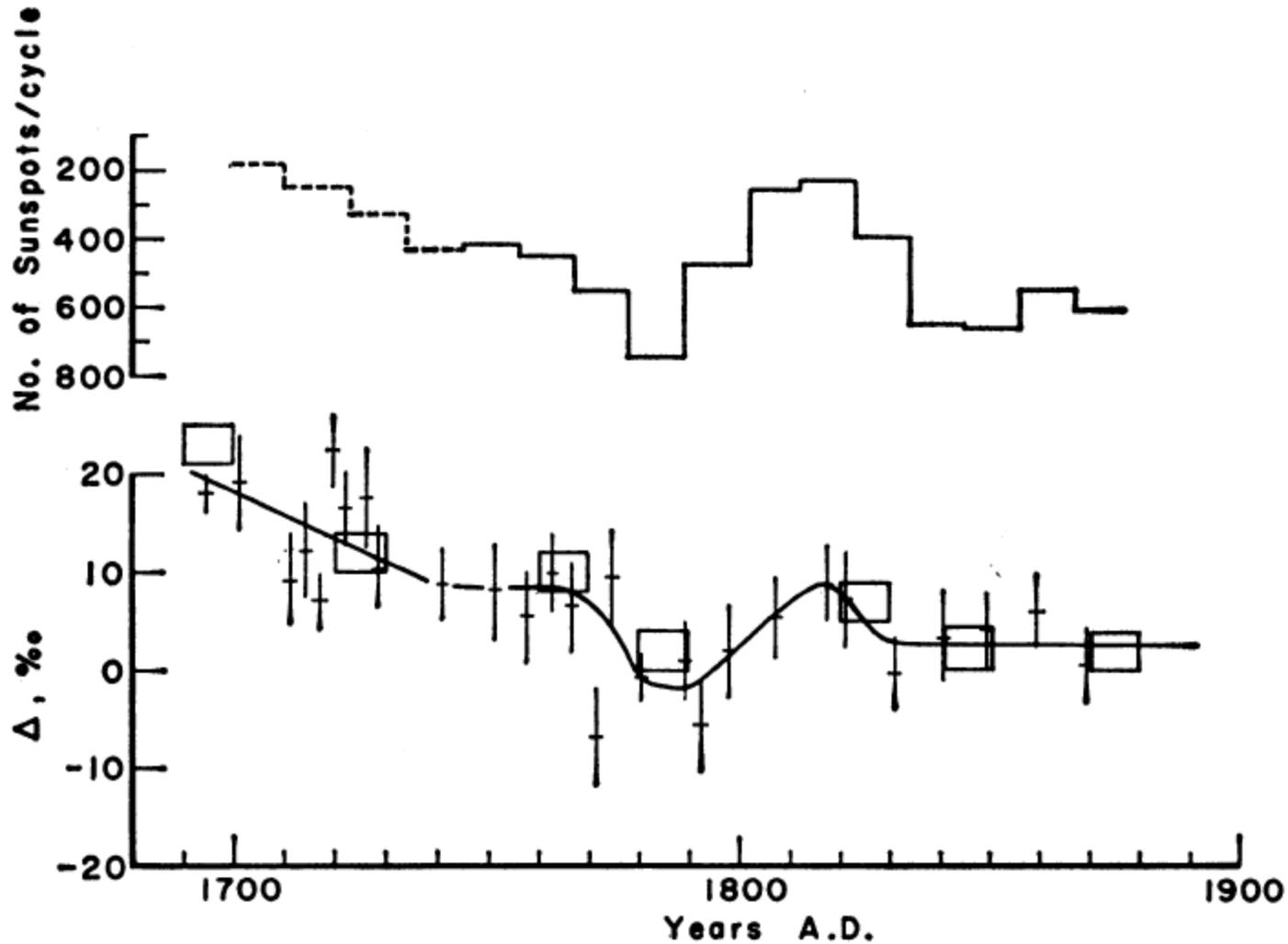


Fig. 1. Carbon-14 activity of tree rings given as per mill deviation of the activity of the samples from the age-corrected oxalic acid standard. The horizontal parts correspond with the number of tree rings used for analyses and the vertical lines correspond with the standard error. The lower curve is a visual aid only. The blocks represent older results reported by De Vries. The upper curve gives solar activity.

Minze Stuiver (1965)



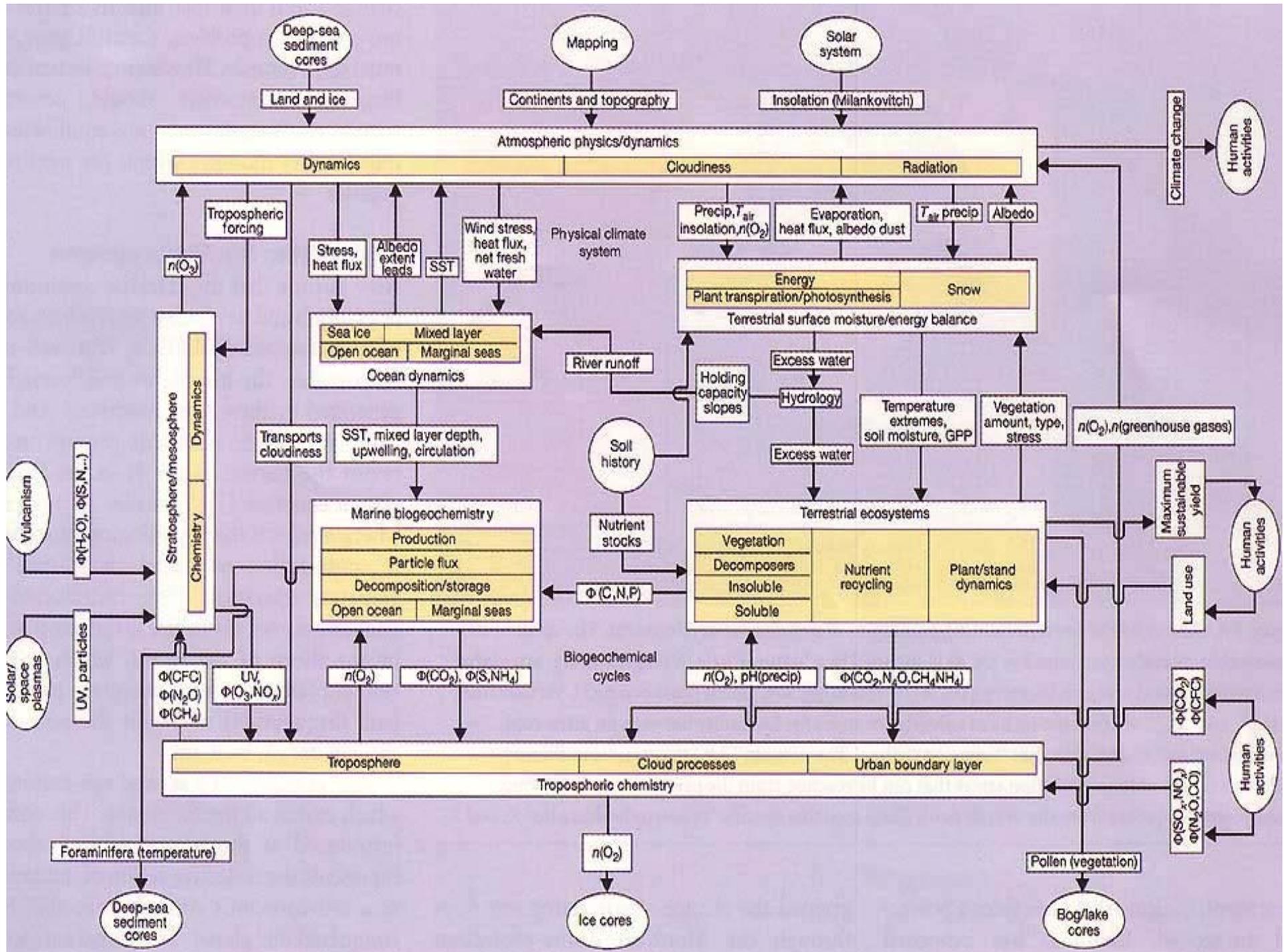
Hans Suess





[The connection with carbon-14 I think was the clinching thing. I had become certain enough on the basis of historical records of sunspots, and aurorae, and the Chinese sunspot records. Even though none of the separate lines of evidence might have been strong enough to make the case, the combination of them all pointing the same way was to me more than convincing. It was like the strength that can be found in string when enough strands are woven together.]









Steve Schneider



Intergovernmental Panel on Climate Change

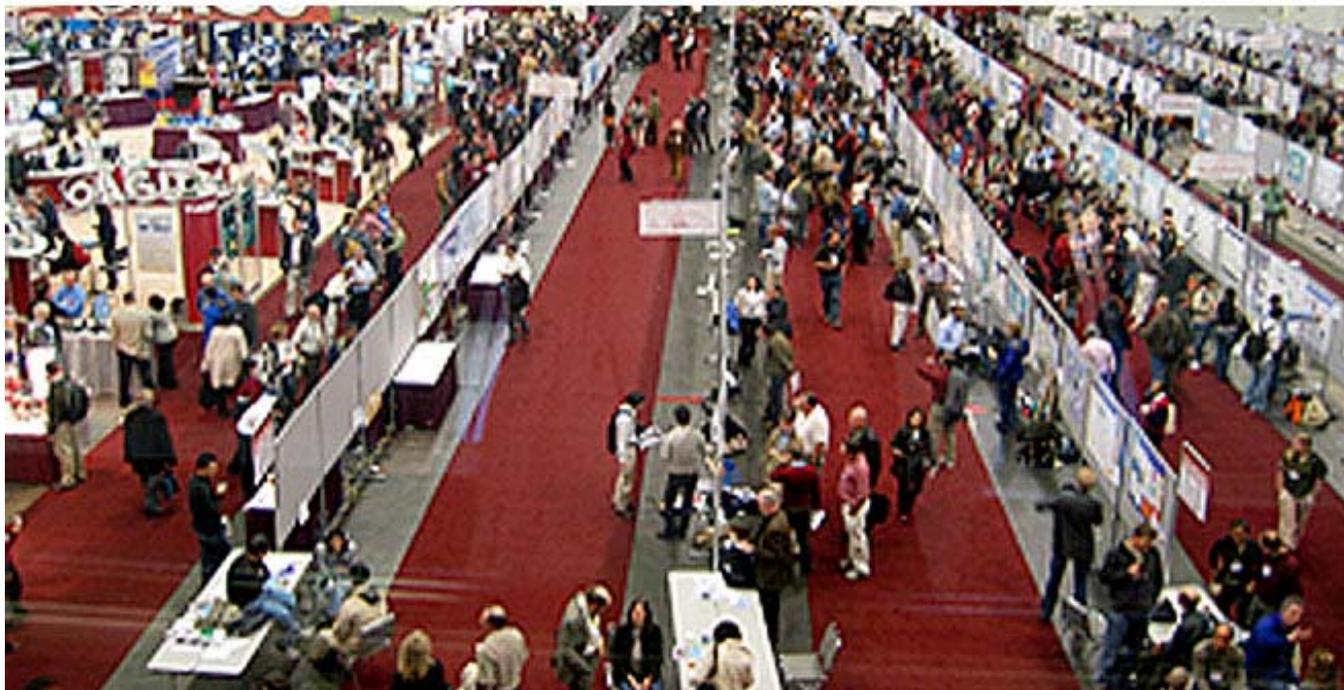


ICE ...
m. if sustained ...
~~Greenland~~ future temperature
those inferred for the last
when paleoclimatic inform
land ice ... and 4 to 6





Geophysical Union meeting - Registration / Poster session



[I knew I had a lot of selling to do if people were to accept the notion of such irregularity in the Sun, and I sought a name that people would remember, “Maunder Minimum” with all those M’s had a kind of onomatopoeia.] It sounded so good. I also very intentionally chose the title of the paper in *Science*, calling it the “The Maunder Minimum.” I knew nobody knew what that was. It might have been better to say something about “sunspots” or “the Sun” or whatever, but I really wanted to plant this name in people’s minds and I thought it would kind of stick.

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SCIENCE

The Maunder Minimum

zero. In contrast, in the years around a sunspot maximum there is seldom a day when a number of spots cannot be seen, and often hundreds are present.

Past counts of sunspot number are readily available from the year 1700 (3), and workers in solar and terrestrial studies often use the record as though it were

[I also came to realize that in science the proper credit for something goes not necessarily to the first person who thinks of it, or writes about it but to the one who can convince his colleagues and the doubting world that it's true. That for almost anything you do, someone will probably stand up and say, "You know, 20 years ago, I looked at that and found this same thing." But the truth is, it's the person who can make it stick in the textbooks who counts.]

