

ACCESSION SHEET

Maine Folklife Center

Accession Number: 4001

Accession Date: 2016.06.14	T#	C#	P	D	CD
Collection MF 192			M	A	#
Number:			#	T	
Collection Climate Change	P	S	V	D	D mfc_na4001_audio001
Name: Institute 40th	#	#	#	V	A
Anniversary Oral				#	#
Interviewer Adam Lee Cilli					
/Depositor:					
				Narrator: Paul Mayewski	

Address
& University of Maine
phone: Orono, ME 04469

Address
& **phone:** University of Maine
Orono, ME 04469

Description: 4001 Paul Mayewski, interviewed by Adam Lee Cilli, November 19, 2013, in his office in Sawyer Hall at the University of Maine, Orono. Mayewski talks about the beginnings of his career in climate science and Antarctic research; conducting research in Antarctica and its attendant dangers; the Climate Change Institute's contributions, particularly the discovery of abrupt climate change; his coming to UMaine and moving the CCI in new directions; changes in the practice of Antarctic research; and the reality of anthropogenic climate change.

Text: 16 pp. transcript

Related Collections
& **Accessions**
Restrictions

Formats Included Document: Original= .docx, Master= .odt, Access= .pdf; Sound: Original= .mp3, Master= .wav, Access= .mp3

Notes

Accessioned by MO'Brien

Date last updated 6.16.2016 by MO'Brien **Use Tracker** **To transcriber**

Previous name(s) **Completed**

Narrator: Paul Mayewski

Interviewer: Adam Cilli

Transcriber: Adam Cilli

Date of interview: November 19, 2013

ABSTRACT: This interview took place in Paul Mayewski's office in Sawyer Hall. In the beginning of the interview, Mayewski talked about how he became interested in Antarctic research and his entry into the field of climate science. Later in the interview, he discussed research in Antarctica and described some of the physical and technical challenges he encountered there, including one instance in which he and a colleague were caught in a snow storm and nearly froze to death. After, he shared his views on what he believed was the Institute's most important contribution to climate science, namely the discovery and examination of abrupt climate change. Mayewski also reflected on how and why he came to UMaine and on moving the Institute in new directions. Towards the end of the interview, the conversation returned to the subject of Antarctica, and Mayewski described daily life for researchers there and considered ways Antarctic research has changed since his early career. He concluded the interview by sharing his views on the so-called climate change debate.

Note: This is the transcriber's best effort to convert audio to text, the audio is the primary material.

Cilli: Today is November 19, 2013. This is Adam Cilli, and I'm here in Paul Mayewski's office to interview him about his experiences with the Climate Change Institute. So, just to get us started off, I'm wondering if you can tell me what attracted you to studying glaciers and ice and climate.

Mayewski: I grew up originally in Scotland, and then in New York. Scotland is a very barren place; my parents at a very young age took me for long walks in the highlands areas. And then when we moved to the United States I lived in New York City, spent tons of time in the American Museum of Natural History, got very interested in remote areas (particularly the Antarctic), started reading National Geographic, and decided that I really wanted to go to a place like that. So, in my second year in college I was fortunate enough to be taking a class from a professor who'd been to the Antarctic... I went up to him after class and asked him if he would take me to the Antarctic. He said no, because he wasn't working there anymore (he was working in Alaska), but I really wanted to go to Antarctica so I kept on asking and asking, and he eventually wrote a proposal and by the time I went to graduate school, at another institution, he had had a project funded and he and I and someone from the new institution went to Antarctica. That was in 1968 and I have not stopped going to Antarctica since then... and then I started picking up other places as well, for scientific and actually adventure reasons, too. So, I was originally attracted by a desire to go to places nobody else had been to before, and in the process, in the case of Antarctica I did at least a hundred "first ascents," I probably traversed overland more land (or more ice, I should say) than any other human has ever done, and got to see some amazing things that ended up taking me to the Himalayas, Tibetan Plateau, and throughout the

Arctic, and now largely in the Andes and a little bit of New Zealand and eventually a couple of other places. But it largely had to do with the desire to see these places, and the adventure.

And then, as time went on, I realized that there were some amazing things that we could find out from these places. If you're interested in adventure, you always want to go to a place that no one's been before. If you're a scientist and you want to make big discoveries, you go to places where people haven't ever studied before. Because no matter what you find it's going to be interesting.

Cilli: Before you went to Antarctica for the first time, how did you imagine it would be, and was it very different when you actually got there?

Mayewski: That's a good question. Believe it or not nobody's ever asked that before. I saw pictures of the ice sheet, which of course is the dominant feature in Antarctica. Interestingly enough many of the pictures have to do with a fella by the name of Charley Bentley, who had already been working there ten or fifteen years, and interestingly enough he and I ended up working on a program together many years later. I assumed it was a big, relatively high, flat place. By the time I got there I realized it had a lot more to it. It had floating ice and sea ice around it, high mountains, mountain ranges in some places, sometimes the ice had not been able to get into the mountains, so you had so-called ice-free areas. I had no idea how cold it was and how quiet it was, and how clean it was, and how far you could see because the atmosphere was so clean, how strong winds could be, and how far you really are from everything. Most of the places we work, we get dropped off by an aircraft and we may travel around for several months. You're probably as far away as you can get from anybody, because there's almost nobody in Antarctica and then you have the whole Southern Ocean before you get to anybody else. So my views were from National Geographic and then from reading books about Scott and Shackleton. It's amazing. You can never really imagine how cold a place can get until you actually experience the cold. And even after you've experienced it, and I go back quite regularly, it all starts right over again. You just don't think how cold it could be. And so of the places we work, we're outside, living in tents; we're outside constantly. I've spent at least a total of three years living in a tent in the Antarctic. In some places the temperatures are minus 40 to minus 55 degrees centigrade, without the wind, and you add the wind to that and it can be very, very cold.

Cilli: What was your longest stint in Antarctica?

Mayewski: I think probably about 125 days of traversing with a team (I have three other members in my team). I did that more than once.

Cilli: Did you ever have any close calls, where you or somebody on your team almost got hurt?

Mayewski: Oh, yeah. Of course. These are dangerous places. There are crevices, there's the potential danger of fire in tents, mountain climbing, all sorts of possibilities... hypothermia. Every single thing that I've mentioned I've experienced. Falling in crevices, having tent fires, and having hypothermia, being caught in hundred plus mile per hour winds. But they're all strange perhaps to our everyday life now, but they're not necessarily strange sorts of things for people who lived a hundred years ago. They experienced all sorts of outdoor problems, to put it mildly. And it's part of working in these areas. That's one of the reasons why it's important for people who do this sort of work to basically apprentice for a while. I apprenticed for a couple of

seasons, learning the ropes from more experienced people. That's why it's essential to take students in the field and keep them in the field for long enough periods so that they get through the classic two weeks of adjusting, so that you really begin to feel comfortable in your environment. We work at high elevations, too. I've worked up to 25,000 feet. A few months ago were at 20,000 feet. That requires a tremendous amount of acclimatization and is potentially very dangerous if you don't know what you're doing. It's also dangerous to walk across the street in L.A.; it's also dangerous to walk into bad neighborhoods. There are a lot of things that are dangerous. If you are careful, if you are well-equipped, if you think, you can minimize a lot of danger.

Cilli: I'm wondering if you can share a specific story where you encountered one of those major difficulties in the Antarctic.

Mayewski: There've been many of them. Probably the most interesting, I guess, is a storm. I had a team of people four people that, we had travelled together in a completely unexplored territory, getting pretty close to the end of the 120 or 125 day expedition. We were self-supporting completely. Had our own fuel for the snowmobiles; two snowmobiles and two sleds behind each. Two people per snowmobile, one on the snowmobile, one of the back sled. And we had done very well for the season; we had covered a large, large area, and we felt that we (I was the leader so it was my decision) we felt that we could break up and go in different directions to cover a little more ground before the end of the season. We had been hit by storms before, but this time we got hit by a very bad storm. We weren't that far from the coast, so it wasn't that it was so super cold. It was probably minus 15 or 20 C, which is not that bad, it's not as cold as it can be. But we were getting a lot of wet snow coming in, and the winds were strong enough so that no matter how much you sealed your clothing in the wind, you would still get what's called spin drift, blowing up under your cloths. And the snow just starts to pack under your clothing, and of course because you're warm it begins to melt; then you begin to freeze. So, the two of us got to a place where we were a little more sheltered from the wind. Set up a small emergency tent (because we had actually gotten away from a larger tent) and went in there and put the stove on. And we realized by putting the stove on we made the situation worse. The stove was only for cooking, not for heating. Because you're actually melting and you're body... it's fine, it feels good for a few minutes, but you can only keep the heat going for so long, because of everything from carbon monoxide to the fact that we just didn't have a lot of fuel. It was a short trip away from our base camp where we had a bigger, two man ten. So we couldn't melt a lot of water; we couldn't really warm ourselves. You basically lied there in your sleeping bag, getting colder and colder and colder. Typically when you're dry, it can be super cold outside, you get in the bag, huddle in, you close off all the air spaces, and stay very warm. So gradually we started to become more and more hypothermic. Snowmobiles were outside; we had them covered up but the wind was blowing. And as the days went on (this whole process took about three days) you could feel you're core temperature getting lower and lower and lower. And, if I remember correctly, the worst of it was Christmas Eve, 1974 (I think). And I kept thinking "this is really pathetic... I'm going to die on Christmas." But... it's amazing, people rally. You go through periods where you feel a little depressed about things and then you get your sense of humor back and you think of better ways to take care of yourself. But there wasn't much we could do about freezing, and so we were freezing. At the end of three days the storm abated. We had come through about 50 kilometers of heavily crevassed territory, which took a long time to pick our way through. And decided that we needed to get back to the bigger, dryer

tent and another set of clothing. So we went to start the snowmobile (we had one) and it wouldn't start. It was completely frozen. So we had to change the carburetor out, which is non-trivial outdoors in cold weather, except that the fellow who was with me was a good mechanic. And his hands were so frozen that he couldn't use his hands, and I am a moderate mechanic (not very good) and he helped instruct me because I couldn't actually bend my fingers, but I could sort of use my hands. So I replaced the carburetor and we got on the snowmobile and decided that we couldn't pick our way back through the 50 kilometers of crevasses because we were just too weak; it would take just too long. So we just (I sat on the snowmobile and he on the sled, or vice versa) and the other guy would be on the back, which is about 60 feet apart, and you're roped together. So we just went as fast as we could across these crevasses, and you could hear them dropping behind as we went over them. We made it over them; we made it back to the tent; obviously survived. Anyway, my first day of teaching at the University of New Hampshire was about ten days later, and I remember talking to the chair (I just started as an assistant professor) and he asked me how my trip was. Of course, having almost died ten days earlier, there's really not much you can say besides "it was a good trip." But I made a deal with myself during that trip (when we were freezing to death and fairly sure that we probably would freeze)... you start thinking, well I'd be willing to give up one finger to get out of this, or I'd be willing to give up a toe and two fingers. You go through all these calculations in your head, cause you're trying to make a deal to get yourself out of there. And this has nothing to do with whether you are spiritual or not; it's the only thing you've got. So, nothing happened. I didn't lose anything. (I actually did break my ribs in New Zealand after that, while climbing, before I got to New Hampshire.) So, about two years later I had borrowed a friend's truck and I was doing some moving from one house to another, and I slammed the door on my finger and I cut the end of my finger off. And the first thing that came to my mind was, "good." I felt as if I had partially repaid this deal I had made to myself that I would give up a part of my finger or something to get out of there. But it's amazing that was the very first thing that came to my head when I cut my finger off.

Cilli: Incredible. You survived that ordeal in the Antarctic, only to injure yourself in such a common way.

Mayewski: Exactly. Yeah.

Cilli: So, when you were traversing through the Antarctic, seeing places that perhaps no other human has ever seen, do you ever think of yourself as a kind of explorer?

Mayewski: Absolutely. Oh, yeah. I've been recognized by the Explorer's Club as a high-level explorer. I even write on my resumes, "Climate Scientist and Explorer." I do it for two reasons: one, because I have explored many many places. I'm not saying by any means that I am a Scott or a Shackleton. That was a different era. But for the era that I've had my career, which still goes on, yeah. I've done things that are true physical and mental exploration. And in addition I like that idea that as a scientist you call yourself a bit of an explorer, too. Because in our field we're always pushing into, not only new geographic areas, but we're pushing back in time, too, to try and understand how things have changed, pushing in space to see how things change. So if I had to characterize my profession, with one word I would call myself an explorer before I would call myself anything else. And I'm a pretty notable scientist. I have a very, very large number of highly-cited papers, a large number of papers in general. I've led many, many large

programs. I've gotten a lot of scientific awards. But I would probably feel better about being called an explorer than anything else.

Cilli: Before your earliest trips to Antarctica had you read any of the earliest accounts?

Mayewski: I had. I read Scott and Shackleton. I read the Call of the Wild by Jack London. These are all books about remote places and remote experiences. And I did a lot of reading. My father was a writer, so I was inspired by not only non-fiction but also by fiction. The Dune Trilogy goes on in remote place where there's not water. And if you don't have heat, you can't make water in Antarctica. So, it is in fact the largest desert in the world, Antarctica. It's just a cold desert. And all of these things, if you're predisposed to wanting to experience remote places, you look for it anywhere you can: in museums and fiction and non-fiction and your imagination. I had always imagined that I would have the opportunity to be fortunate enough (and it is fortunate) to see things that other people hadn't had a chance to see. I think it's really important to have been able to do that, and that's why I've taken more than 300 students in the field, too, for long periods of time. Because for the type of work we do, it's essential to know where the data comes from. Somebody feeds you these samples or the data, I'm not saying you can't interpret it, but you can do a better job if you understand how it was collected, whether you think a particular sample is as good as the others, and that gets lost over time and over experience. I also think, I'm a great advocate of ecotourism, too. That's why I lecture on tour ships, in the midst of these other things, because it's important. You can't just come back from these trips and tell people it's a spectacular place and it's the way the world used to be. You need to let them share it, too, so they become ambassadors also. And I see one of the things that I enjoy most about lecturing on cruise ships (which I'll be doing again with some alumni from the university) is opportunity to introduce people to these places, because they suddenly become ambassadors for it. Of course, everybody sees pictures of polar bears in the Arctic, and it looks beautiful. And it is. But the reality of what it's like to be there, to truly appreciate it... virtual is better than nothing, but it's not the real thing.

Cilli: Did you see much wildlife when you were there.

Mayewski: In the Antarctic I've seen a lot of wildlife on the coast, and I've spent a lot of time working on the coast. Most of my time has been inland, which you don't even have birds. But I've worked on the coast; I've spent a lot of time working on the Southern Ocean. Most recently, in this last October, three of my students, two of my Chilean colleagues, two friends, and three professional crew members (eleven of us), went in a 72 foot sail boat and went across 2,000 nautical miles of the Southern Ocean, to get to South Georgia, which is the island that Shackleton ended up on. And worked on the island and then came back, and our goal was to, and it was successful, was to go back into the future and recover a longer record. So I've spent a lot of time in places where there are a lot of animals, in the Southern Hemisphere. I spent a great deal of time in the Himalayas, and to get to many of the sites in the Himalayas I would have to go through the jungle. So I've seen a lot of animals in the jungle: snakes, baboons. I've worked with a lot of animals, 'cause we use pack animals in some places: yaks and mules and horses. I've seen polar bears in the Arctic, and fox and whales. I don't know much about wildlife; I'm certainly not a biologist, but I love seeing the wildlife.

Cilli: Incredible... landscapes you've seen traversing through jungles and...

Mayewski: Oh, yeah, and across deserts. Not a lot of deserts, but I've been across my fair share of deserts. I haven't spent much time walking in deserts, but I've driven across them. Seen giant salt flats and tons of super high mountains, 24/25 thousand feet, I've crossed two ice sheets and spent a lot of time on smaller high-altitude alpine glaciers. So, you get to see a lot.

Cilli: Indeed. So, you mentioned that you started at UNH in the mid-1970s.

Mayewski: I did. I was a postdoc here, in 73 to 75, with George Denton. He was my postdoc adviser. And then shortly after I got here on the postdoc I was offered a position at University of New Hampshire. I stayed here a year and a half, because I wanted to do the work I said I would. I stayed a year and a half out of the two year postdoc and got funded to do a project in Antarctica when I was here at that time, then went to UNH. Started my own research center there, which I left in 2000, as a healthy program with a big endowment, before coming to the University of Maine.

Cilli: Before coming here for my postdoc, how much had you heard about the Quaternary Institute?

Mayewski: Before coming here as a postdoc? I don't actually think it was a Quaternary Institute before I came here, so I probably walked in the door about the time they were talking about having it. It was not an obvious entity to me. I knew there were a group of people who worked together. I knew it was different, that it was multi-disciplinary. And I knew that the people in were prominent in their fields, but I was just a graduate student.

Cilli: You were familiar with George Denton's work, though.

Mayewski: I actually had not done much with George Denton. I knew a little bit about him. I was originally scheduled to work with someone else here, but the money didn't come through, so I switched to George. And I worked with him on CLIMAP project, which he may have talked to you about. And that was a great experience, because CLIMAP was a joint program between... it was run primarily through Brown, and it included the University of Maine, Columbia, a bunch of other schools. And it was an important involvement for me, and I'm sure for George, because it was one of the earliest interdisciplinary science projects. It had climate modelers, glacial geologists, glaciologists, people who study ecosystems, all sorts of things. So it was a great experience, and going to those meetings was very, very valuable. And that experience without a doubt opened up to me the idea of interdisciplinary research, which is really one of the hallmarks of our Institute.

Cilli: During your years at UNH, during the early 80s, mid 80s, and after, could you, as an outsider, sort of see the Quaternary Institute's reputation growing in the scientific community, or was that something that wasn't readily obvious?

Mayewski: It wasn't readily obvious to me. There's more to that question, in a way, because the things that were being done at the Institute at that time were not, although I came and worked on some things that are related to what George Denton did at that time, by the time I left I was doing something very different. And my research went off in a completely different direction, and not in a direction that really overlapped with what the Institute did here. And because I'd gone to a new place and developed new affinities, and because I'd only been here a year and a half, my view of what was going on in the scientific community probably didn't include much about what

was going on here. That in no way means that I didn't think... I just didn't think about it; it was not on my radar screen. I had come here for a short period of time, I enjoyed the experience, I was very excited about my new job, and that's where I was making my new career.

Cilli: So, you were at UNH a number of years.

Mayewski: 25 years.

Cilli: You must have liked it.

Mayewski: Oh, yeah.

Cilli: But then you left, after 25 years. And I'm wondering if you can tell me a little about that process. I know that Steven Norton spoke with you, George Denton spoke with you...

Mayewski: [and] George Jacobson... Yup. I came here for the 25th Anniversary of the Institute, which I guess was in 98. And it was the first time I had come back. I like a lot of the people here. I did tons a travelling. I did two, three trips a year, I was away from home six months of the year, and the opportunity, or even the impetus for coming up here... I was going opposite directions all the time. But I was invited to come for the 25th anniversary, and it seemed like a great idea. They invited a few people to speak, and I got to see the new building, which was Bryand. I got to see what they had done over the previous years, I obviously knew a lot about what George had done, I had actually worked for Hal Borns as an undergraduate in 67 (I spent a couple of months in Kingfield, Maine, so I knew what he did). I was very much aware of what Steve Norton had done; [he's] a very fine geochemist. So there were some great people here that I knew a lot about, plus a glaciologist named Terry Hughes. He was actually on my PhD committee at my graduate school at Ohio State. So, I realized in 98 that... I hadn't had much to do with them and they didn't have much to do with me, so it was very nice sort of meeting old family again and talking to them. It was great to see how much had happened in the 25 years that I've been gone, and of course I had done a lot of things... I had started out by myself and ended up with about 25 people at my research center. And so, within a short period after that, obviously the visit went well and I was very impressed. I was approached by Steve Norton, who was the Chair of Geology at the time, which was to be my academic home, and George Jacobson, who was the Director of the Institute at the time, and George Denton, my old postdoc adviser who had been the previous director, and they asked me if I wanted to come to Maine. And I had had other job offers before that, but there was not particular impetus for me to leave New Hampshire. But I did like Maine. Had spent almost no time in Maine since I left in 75, but quite truthfully my wife and I started kayaking on the coast of Maine, so I was really beginning to fall in love with Maine and the whole idea of being in Maine. New Hampshire is not that far away, but it seemed like an enticing move, because you don't have to travel too far and yet you get quite a different life style in Maine than you get in other places, and it was attractive. It was a good time in my career. I loved my colleagues at the University of New Hampshire. I had built a giant program there. I had a very successful position there; I had been the Vice President of Research for a while. But the bottom line is that the University of Maine... it took about two years, to discuss the possibility of coming. Part of the reason that I chose initially not to come was because I had just received a very large endowment that had basically been given to me for my institute, and it would have been very insulting to leave. So I couldn't leave for a while. Then I started talking more seriously, and the sorts of the things I was beginning to get involved

in at UNH... I was taking on more and more large programs and they were fascinating programs and I really enjoyed them. But they were taking me away from what I wanted to do. They had a laboratory here that allowed me to do a different sort of measurement than what I normally did; there was the opportunity here to have better base funding, which actually doesn't count... I took a salary cut to come, quite truthfully, because the salaries are lower here. But what I did get was a better situation in terms of eventually space, but initially in the number of people and technical support and colleagues. So, it was a hard decision to make. My wife had a very well-established art business there (she's an artist), but it seemed like it was a good stage in my life to take on this new opportunity. I like the attitude at the University of Maine. The attitude was very much a can-do attitude. They really wanted things to advance. They wanted to hear people with new ideas.

Cilli: Did you find the administration at UNH to be less receptive in that way?

Mayewski: The University of New Hampshire has a *long* history (I've been away long enough now that I can say it) of not putting a lot of resources behind things. And it's not that I need a lot of resources. I've always gotten the funding by myself, but it was not a can-do kind of place. I loved being there; I had great colleagues. We learned a lot from each other. But it was a very hard place to be as creative as I would like to be. I found the University of Maine to be, it's not that it's a rich school by any means. It's a poorer school than UNH, but I found them to be much more receptive to the idea of trying new things. And once they buy into a new idea, they go with it. And it isn't necessarily financial resources. They just want to see this place expand. They had, probably because of the existence Institute, a great appreciation for the kind of work that could be done. Cause I brought a new set of programs to the Institute.

Cilli: Was that part of the negotiation process? I mean, when you spoke with Steven, did you say... was that kind of the stipulation, that you wanted to steer the Institute in a different direction and that you wanted to bring on some new people?

Mayewski: I'd say that was more their intention. I'd say that's more what Steve and George and George wanted. They wanted my program to come and provide a new direction, an additional, not a new direction, an additional direction for the Institute of Quaternary Studies. When I first came I'd already been a director for twenty years, so I was not necessarily eager to become the director here. And then it seemed that maybe it would be a good thing to, 'cause I was trying to make a lot of changes to fit my new group, which was not small. I had a lot of money, compared to what was here, [and] a lot of new requirements for laboratory set-ups. And I was excited about that, 'cause when you build a new laboratory, it takes a long time and you make a lot of mistakes. The opportunity to build another one means that you get a chance to build it much better. You still make mistakes, but you at least don't make the same mistakes. So that was very intriguing to me. And the space that was offered to me here, actually was not available for a couple of years, which is understandable. It takes a while to move people out of space and things. So I was in a position where I couldn't necessarily... I had imagined I would just come here and have a group of people doing my research, interact with the Institute, and that would be it. But I guess those twenty years of being a director some other place took over, and I started to think about new directions the Institute could go. And George Jacobson (who was the director and then we were co-directors together) was very responsive to trying to do something new. And I think he was for a variety of reasons ready not to continue that position, so I sort of slid into it, and every four years I get renewed by the Institute. One day they won't, but for the time

being it's okay. And as long as I can continue to do my research, which for me is taking students out into the field and then coming back and doing my work here, being a director is (cause I've done it my whole career) something I find very comfortable and enjoy. Now, I like the idea of not only having my own research team, which is relatively large portion to the Institute, but ideally trying to steer the Institute in new directions. It's not that what we did was wrong. The Institute has made a tremendous number of important scientific contributions, which I've tried to highlight in our website (under the contribution series), [and] we have very well-known people, but the field of climate change (and we are one of the oldest institutes of our kind in the world) is a constantly emerging field. And we need to constantly re-invent ourselves, without necessarily through away what we've done. But as time goes on the things that you do become easier and easier to do, and I don't believe that you should just continue to do those things. I think you should find new ways to become involved. We're very interdisciplinary. I'm a great believer in us becoming way more interdisciplinary, so we've spread out into associations with other groups on campus: School of Marine Sciences, Earth and Climate Sciences (and I encouraged them, actually, to put the word "climate" in there, because that's where our students get educated), the School for Policy and International Affairs. I'm a great believer that we need to work with more and more disciplines, because climate is something that impacts all of us. So this seemed like a great place to do it. The university of faculty are, I'm gonna say close to half, a very large number are involved in environmental activities. And not just in physical, chemical, biological sciences. Some of them are social sciences, some are related to art, media, writing, this is potentially one of the... If this university had to identify itself in any way, and [UMaine President] Paul Ferguson says this, we are a highly environmentally-minded and directed university. And that was very attractive to me. The place I came from had tons of people; this has even more people. And the difference between UNH and the University of Maine was, when I went to UNH in 75 they were bringing in young, energetic assistant professors who were interested in building research programs; and they are now a very highly ranked research institution. The University of Maine, I think as of around late 1990s through the early 2000s, was doing the same thing and continue to do it. They had always been doing it, but I don't think they actually recognized it themselves until the late 1990s and early 2000s. And there's tremendous research potential here. There's phenomenal programs, and it's now just beginning to find good ways to advertise what they do. And it doesn't mean in any way that I'm saying that research is what is the most important thing in a university, but it's a really important component of a university, and a university needs to find ways to advertise to people what they do with that. So 2000 to the present, in my mind, has been a very exciting time at Maine. Because I've seen the spurt in growth that I saw in UNH before that, and that isn't to say that we're 25 years behind UNH by any means. It's just that, I happened to be at UNH for a spurt of growth and now I'm at Maine for a spurt of growth. And it's fun to see. Personally, it's been great, because I got here at a stage when a lot of people think about winding their careers down, and by starting all over again it's very invigorating. And it continues to be invigorating when in fact you can work with a group of people like the Institute, the university administration here, who are actively interesting in seeing more and more creative solutions for things.

Cilli: Now, I know that when you were at UNH you weren't necessarily following what the Quaternary Institute was doing, but in your view, how do you think the Institute has changed and evolved in forty years?

Mayewski: Well, the Institute was founded on a very different principle than other research institutes. And I've been involved in a couple of them before. The big basic difference is that it's interdisciplinary; the other is that it actually has hard line money, that some of the members of the Institute get a portion or all of their salary through the Institute. But they all have academic appointments. Nobody has tenure at the Institute. They have tenure in their academic departments. And that's a really smart way to assure the collaboration between academic units and research units. Very often it's not a good association at a lot of institutes. Here it's a good association. That's something that developed because of things that happened well before I came. It's a culture that has been developed here, and that is I think the most important thing that has come out of this place, because it has enabled the Institute, its related departments, and the university to grow in a lot of ways, as opposed to being opposed to each other. There are no serious issues between the Institute and any of its academic partners. None, actually. It's been a good, strong association, because we both pay for things together, because we have money, they have money, to hire people. And we can work together to think about how well a person will work for their academic program and for our program, and our program is largely dependent on graduate students who want to make sure they're well-educated, and we teach a lot of those courses. The other thing that I think has come out of this Institute, in the time before I came here, were some amazing ideas about the interaction between ice sheets and sea level. This is work by Terry Hughes and by George Denton, is really very fine research, about how unstable ice sheets can be. And at the time it seemed like a purely academic issue. Who would have ever imagined that sea level would be rising? But this idea of marine-based ice sheets at the center of Hudson's Bay and west Antarctica could be less stable than other portions of ice...And then there've been some amazing findings in the fields of archeology and anthropology. That combination alone, physical science and archeology, alone is remarkable. The work of people like Dan Sandweiss, where he's used the field of archeology to study not only people, but also to come up with records of people responded to climate, and therefore what the changes in climate were, is very unique, and very much outside his discipline. We have had very strong program in ice sheet modeling. People like Jim Fastook and Terry Hughes [produced] some of the earliest models of where ice was, how it's changed over time, how fast it could change, its contribution to sea level. We've had remarkable people like Dave Smith, who's been the heart and soul of the history of science for the Institute, and also the history of the university and its involvement in science. And certainly several others. So, I think that my understanding of this place was much less about the fact that there was an organization here that everybody was in, than about the individuals. Of course, I've heard of George Jacobson, because he worked on lake sediment in Florida which has a very important climate record. Of course I've heard of George Denton, in geology, and on and on. I knew that they were associated, but I didn't necessarily put them together in combination. And I think that was in the spirit of the old Institute in many ways. It was much smaller, more like a family in many ways. More a group of colleagues than an identity together. Since 2000 the place has grown a lot. I'd say it had 35-40 people when I came; now we have 120 people (graduate students, faculty and staff). And I know what it is to go from small groups of people...which you can all sit together in one room and talk about things, to a much, much larger group. There are growing pains. There are things that you lose. There are things that you gain. That's the nature of the beast. One thing the Institute has held on to was this interdisciplinary strength. We've held on the idea that we need to get together every now and again and talk about things. We're very proud of the fact that we offer all of our graduate students the opportunity to work in a remote place and do something very unique. I

don't have graduate students who are research assistants; I have graduate students who are junior colleagues. They get a piece of a project I'm working on, a significant piece. It's theirs, to go with or fail. They never fail; they always do well and they get publications in the process of earning their degrees. So I think the basic culture, some important scientific contributions, and name recognition of five or six people, is what I envision this place as when I came here in 1998 for the twenty-fifth anniversary.

Cilli: So, since then?

Mayewski: Since then, although I was very worried about changing the name, it was one of the things that I found hard to deal with. I know what Quaternary means, but anybody outside our field doesn't. They can't spell it. It's not intuitive. It doesn't describe anything that anybody understands. And I remember some of the early faculty meetings when I came, they were still arguing about how long the Quaternary was as a time period. It was just too complicated. I pushed for a much simpler name. My biggest fear was talking to Hal Borns about it, because I thought that he would have a vested interest in that name. And because he is a forward thinking fellow, he said, "fine. Go do whatever you think you need to do. It makes sense to me, that we have a simpler name." And then, that began a process of thinking about, what is it that we do. We have major strengths in physical, chemical, biological, and social aspects of climate change, and nobody ever really wanted to differentiate those things. They always felt we should just...you know, "I'm a physical scientist and you're a social scientist; as long as we keep working together everything's okay." But if you big enough that doesn't work. So I started to structure it a little bit more. I started to push for us to highlight what some of our significant scientific contributions have been. I pushed... our website was *awful* when I came. So was the university's. In fact, I thought seriously about not coming here, when I finally said yes and then looked at their website. Because in 2000 websites didn't mean that much. It wasn't a reason that you went to a place or not. But it was a pretty awful website; Institute and university. I started pushing for a better web presence, for more discussion about what our scientific legacy is, what we should be doing for the future. I'm certainly not the prime mover by any means, in the interaction between the Institute and various academic units; that was all done for me (and they did it better than me, actually). I probably pushed harder for contacts outside the university. And that's not to say that people in the university didn't have outside contacts, but I think I made those contacts a bit more public and involved the Institute more so with other institutions outside our own. And I also brought some very large programs to the Institute that had a lot of name-recognition and that involved many other institutes and countries. So, as a consequence, things grow. I've been fortunate enough to be the director at times when we've been able to replace positions, so we've had a lot of young new faculty come in who have added dramatically to what we've done. And they bring in new skills, things like cyber infrastructure and various software routines that we have and protocols that we use to deal with data. Those things didn't even exist in 2000, and now they're a mainstay in what we do. And now I'd say we're the world leaders in some of these things, that we didn't know existed in 2000.

Cilli: What do you think the Institute's most important contribution to climate science has been?

Mayewski: There's no doubt at all. There are three things that you can do in climate science. One is to look at the modern climate, and the records go back about 100 years. That's a given for all climate researchers. The next thing you can do is go forward with climate models, and there are a lot groups that do climate modeling, as do we. The thing we do that differentiates us

from everybody else is our ability to go back in time, and provide perspective, so that we know where we came from, climatically, how different things were. In my mind, the last 100 years does not capture everything that can happen in the climate system. My major discovery was how quickly that atmosphere can change from one state to another. But we also have people here who worked on that, in the ocean, and on ice masses. And bringing that one concept, the fact that the climate system is non-linear, is critically important. All of the current projections of what will happen in the future, are actually based on a linearly-evolving climate, and it's not the way climate evolves. It's just the only way modelers can do it. So we're working hard to convince people that you have to think about possible jumps. We just had a big one in the Arctic. The arctic just warmed in places up to nine degrees Fahrenheit in five years. That's immense. An absolutely immense change. That's over the year. Not just one season. Over the year. So, the perspective that we provide for how the climate system operates in its natural state, how humans have impacted it in terms of warming, greenhouse gases, how they have impacted it in terms of pollutants in the atmosphere. These are all things that you cannot tell simply by looking at the last 20, 30, or 50 years of record. And that is, without a doubt, our claim to fame. In some cases we've gone back hundreds of thousands of years. In some cases only a few hundred years... is enough to provide immense information about why we are where we are now, and better models for the future.

Cilli: From what schools do your graduate students come and where do they go when they leave here?

Mayewski: They come from all over. Several come from Europe, Asia, they come from within Maine (Bowdoin, the University of Maine), they come from the University of Kentucky, the University of Virginia, Ohio State... those are the ones that come to mind.

Cilli: If you are thinking about graduate school, and you want to study climate science, should this school be at the top of the list?

Mayewski: If you're thinking about climate science, this should be one of several at the top of your list. If you're thinking about climate science, with a long-term perspective as an underpinning for understanding today and the future, this is one of the best places in the world to go. And we get tons of applications. I raise a lot of money; I just wish I had five times more money for graduate students, because I could easily have five times more graduate students. And there are tons of projects for them, too. Places they go, some have stayed here, some have gone to the University of New Hampshire, Dartmouth, Central Washington University, University of Kansas, the Cold Regions Lab in Hanover, New Hampshire. My students, certainly those places, but we've also had students go to Brown, Columbia, and I think we have at least three students on the faculty at Dartmouth. Some have gone to Europe. It takes a long time to get a degree here. If you're in a normal program, it should take you two years for a master's, three years for a PhD. Our students tend to take longer. It's actually hard to get rid of them. There's not a lot of money, but there's a lot of opportunity to go to amazing places. There's this great spirit of adventure and hard work and cutting-edge science that it's hard to get them out of here. So, I've gotta say that, since I've had students here, many have gone to very successful jobs. I've also had more than a few that don't want to leave.

Cilli: Going back to Antarctic research, can you walk me through a typical day? Because it's so atypical in its nature.

Mayewski: Of course it depends on the program. But the ones I like best, and the ones that I consider to be the most Antarctic-like programs are... imagine you've spent a couple of days along the coast getting your gear at a station that's like a dump hotel. And then you fly in an aircraft to a place a thousand miles away, get dropped on a surface that's effectively a controlled crash, 'cause there are no runways. (This was in the early years, up to ten or fifteen years ago. Now there are runways.) And you set up your camp, and within a couple of weeks you're really used to your environment. And then the typical day is, you wake up in your sleeping bag, you've had your face in the bag covered completely all night, you peel ice off your face because your sleeping bag's frozen to your face from breathing.

Cilli: So you zip it up to your eyes?

Mayewski: No. You completely cover your head.

Cilli: Wow, seems kind of stuffy.

Mayewski: It's not. It's warm. When you're lying down, you need all the warmth... if while you're sleeping the tiniest bit of your sleeping bag opens up you know it. You wear a hat. I never wear a hat. You wear down booties. I don't sleep with anything like that at home. And you've got all your dirty clothes in your sleeping bag. Up until 15 years ago I used to sleep with the radio batter because that was the only way I could keep them warm. Probably with a water bottle so you at least had something to drink in the morning. Wake up, peel the sleeping bag off your face. And there're two of you in your tent. You've cut a little trench in the snow so you can put your feet over the side of... there's no bed. You're sleeping on the snow with a map maybe like that [signifies an inch]. You start up the stove. I like kerosene stoves, because they're safer. They're dirty but they're safe. You start melting some ice, make something to eat, perhaps oatmeal. The whole process probably takes about an hour, to get yourself going in the morning. And you go outside, take the tent down, begin to pack up the sleds, start travelling, and between then and when you set up the tent at night (which never comes, darkness; it's always light), you've probably travelled for twelve, fourteen hours, sometimes many more hours, and gone through crevassed areas and seen beautiful mountains perhaps and seen amazing snow surfaces. At one point, before GPS, you had to put stakes down so you would know where you were going. Do sunshine spots for the sextant. And we would stop to eat, but it's not really quite stopping to eat. I had an Anorak with a big pocket in the front, and I'd put I giant Cadbury chocolate bar in there and a couple hours a day I had a piece of frozen chocolate in my mouth. Never got a cavity from it, 'cause you're trying to bring in 10,000 calories a day to keep warm. And sometimes we're pulling the sleds ourselves, sometimes we're skiing. Even with snowmobiles, it's a lot of physical work. Staying on the back sled, 'cause it's got a brake on it. Almost exactly like that sled [points to an old wooden sled in his office], although that's from the 1930s. We still use the same ones. And you're constantly trying to keep warm, you're loading gear. You're getting off, fixing gear. You're sometimes getting off the sled and walking some distance, so you can probe the surface to make sure you don't fall down a crevasse. Get to a place you're gonna camp, you set up the tent, make a little bit of food (ideally something good and hot, usually something dehydrated), and you go to sloop.

Cilli: What kind of food did you take with you on these trips?

Mayewski: I started with sea rations originally, military food, and then dehydrated foods got better and better, so we would carry dehydrated foods. The biggest thing you do with the stove, actually, is make water. And that's for drinking. It's really only used for drinking and cooking; it's not even used for doing the dishes or cleaning yourself, either. It's just to get the fluid in you. You need a lot of fluid. The humidities in Antarctica are five to ten percent. So, if you wash a set of clothes (assuming it's warm enough in the tent, and you rarely do this), and you put them outside they immediately freeze stiff and about an hour later they're absolutely fluffy, cause all the water sublimated right out of them. And they smell great. They smell really nice and clean.

Cilli: How were you able to keep clean? I can't imagine that was very easy.

Mayewski: No, it's not. Yeah, the bathroom's outside. So, you did a hole if you gotta do anything more than pee. The wind's blowing, so you get snow in your pants, which helps to keep them clean I guess. You don't change clothes very often, but it's cold, so you don't smell. And any bugs that you had die. If you want to get rid of a cold in less than two weeks, go to a cold place and live outside. Every time you sneeze the germs die, they don't come back in and re-infect you or anybody else. If you come into a camp and other people have been there a while, they might get sick for a day from something you brought in, but that's about it. So, keeping clean of course is important, but it's not the same kind of keeping clean. It's a small group of people, and as long as they aren't doing stupid things, even not washing dishes doesn't matter.

Cilli: How typical is that, what you're describing, from environments in which there's actually a kitchen staff and there's a large mess tent. I say that because some of the other Antarctic researchers have said that.

Mayewski: And I have worked out of those camps, but in most cases when I've worked out of those camps, I've used them as a base camp and gone off for two, three weeks at a time and come back. Those camps are very different. They're not my choice of camp. They usually have one large building which is overheated. They do have showers, which is nice, but quite truthfully if you want to keep warm you need some amount dirt and oil on you. And it's not the same... The idea of spending a large amount of time, many many weeks, with a small number of people, of which two or three out of the four are your students, and watching them become more and more confident about their abilities and being able to talk to them about a lot of things, doesn't happen in a large camp. You end up sitting with somebody who's closer to your age, and the interactions are more faculty-student than team member. I never really worked with anybody in the field in which I wasn't, in a relatively short period of time, able to identify something really important and unique about the way they operate. They may not have all been as good in the field, but the skills that they brought to bear were something that was of value to all of us. And you learn; you grow together from those experiences. And you don't do that in those large field camps. Now, those big field camps are more exciting than a lot of other things you can do, but they're not my choice. And the big program I ran in Greenland... [points to picture on wall], I spent twenty months at that site over five years. It was a great program and scientifically probably the most important thing I ever did, and it was a massively expensive program. I ran twenty-five universities. But all I could dream about in those twenty months was how I was going to get back to a remote environment. There were fifty people in that camp. We had cooks and all sorts of things. And to me that was for science; these other projects are for

exploration and personal enrichment. And I don't mean just myself, but for my students, and finding something that we just thought we'd never find in some remote place.

Cilli: How do you think Antarctic research has changed since...

Mayewski: It's changed dramatically. When I started, it sounds pretty sad, but we barely had radios that operated. We were sent out with big radios with giant generators, and it had tubes in it. And the first bump you hit the tubes would break and that was the end of your communication. Nowadays, if you don't communicate on time they'll pull you out of the field. There's much more attention to liability. And I'm not saying it's bad. Many more videos to watch, to train you. There were many things we just didn't realize, and maybe a lot of things we did we were just plain lucky. But we also probably developed a lot more innate natural skills than today. The Antarctic is much more regulated. It needs to be. There are a lot more people there; a lot more chance for people hurting the Antarctic. So, it's not that I don't understand why the transition occurred. I'm happy that I got to see that earlier part. People who are twenty or thirty years older than I am would probably think that what I did was much too regulated. But I've only done half my expeditions or less than that in the Antarctica. In places like the Himalayas, by the time Antarctica was really beginning to become much more regulated and the stations were like small cities (even though we would go away from those for long periods of time), the Himalayas, where I worked, we were not allowed to have any form of communication. We weren't allowed to have maps. I was working in places that nobody knew where we were. I didn't even know when I'd be home. I would tell my wife that, I'd leave in July and will be back in August or September, [and] if I'm not back by October... but I always came back. People have always functioned that way. Sailors always went to sea and you just have to... I'm a great believer in the fact that you really need to learn how to live in a place to be safe there. You can't just have somebody carry you around and be safe. You have to develop your own skills in a place. So, I like having field teams in which every person can do everything that needs to be done to keep us safe and to get the work done. I have a motto in the field, whether I go in the field or not, I tell everybody, "There are three things you need to do. Be safe if the first one. Second is have a good time. And if you do that the third thing is to get the science done." And if you're safe and you have a good time, you'll get the science done. If you're uncomfortable and are in unsafe conditions, you may think you're getting science done, but it's not worth anything if you're unsafe, and it wasn't worth it if you have to do it that way. It needs to be something that you love doing. And the teams that I've had with me, they love doing this stuff.

Cilli: It seems to be the case that climate change and the human role in it, isn't something that's debated in the scientific community. It's well-established. But in American political culture it's still debated, and I'm wondering if you can comment about that.

Mayewski: You're absolutely right in that observation. You can add also to that observation the fact that a large percentage of the American public (well over 70 percent) believes scientists know that they're doing, despite the fact that the vast majority of scientists believe that humans have had a dramatic role in the climate system, but the US population is pretty much divided 50/50 about whether or not scientists agree about the impacts of humans on the climate system. People basically trust scientists, but they don't think that the scientists agree, which is not true. So there are some basic misconceptions that have been propagated. And it's very easy to create misconceptions. It's very simple to pollute a situation by a small untruth by a small segment of a sentence out of context, and that's all it takes. Or by picking on a personality, as opposed to the

problem, just because you don't like the person who has said something. But that's a great way to pick apart consensus. Plus I think that there are other things at play. It's very hard for people to accept change. Nobody likes to have change thrust upon them, that they have not chosen themselves. I like to say, it's easy for the Institute because our middle name is change. It is very hard. None of us like to be... you wouldn't want somebody coming in this room and telling you you've got to do something different right now. People don't like being told that the way they've conducted their lives may not be the most efficient and the healthiest way. It takes a while for people to understand that. And then there's a large group of the population that are very concerned that the only way to resolve this is through large government control. So, it becomes not the scientific problem, but it's a debate over government control. But there are rational answers to all of these things. Employment will go up. How in the world could you not want to be healthier? How in the world could you not want to have a more efficient way of conducting your life, spending less money on energy? When you think about these things it all makes sense. But it's very hard to convince people. And the conversation that we're having right now, I think you understand everything I've said to you, and you think that I understand the questions you've asked me, but I'm sure there are things that we will both walk away with that are very different than what we thought we were telling each other. It's just hard to necessarily walk away with exactly what people believe to be true. And it's even harder to convince them once they made their decision. The vast majority of Americans, in polls, basically say, "I don't want to hear any more about climate change. I already made my decision. I either believe it or I don't, and that's the end of it." But they haven't really heard anywhere close to the whole story. And it's not that it's a complicated story. It's just that the story has been so limited about just a few things when in fact it encompasses much more than that.

Cilli: Where do you think that misinformation is coming from?

Mayewski: There is a large program of misinformation. There's no doubt about it. There are large lobbies, like the Harlan [?] Institute (supported by the Koch brothers) that have been dramatically successful at misinformation. Misinformation is a lot easier than information. I think they probably have been one of the most effective groups in creating uncertainty. That's the big word. "Maybe these scientists are right, but there's a lot of uncertainty in what they say." And that's all you have to say, is that. And suddenly even the facts that were presented to you, and understandably today's fact gets modified a little bit tomorrow, but the important thing is that in my field of climate science, while we may modify things, the direction is always exactly the same. The world is becoming more and more... the climate system is becoming more and more controlled by our activity. What gets modified is how fast, what the next thing will be in ten years and which components and how those components interact, but there's no doubt whatsoever about this trend and the importance of humans.

Cilli: Well, that's all the questions I have, but before we conclude the interview I do want to give you a chance to add something that I didn't think to ask you about.

Mayewski: No, I think I'm talked out.

Cilli: O.K. Thank you. I'll stop the recording now.