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Accession Number: 2744

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_na2744_audio001
Name: Institute 40th	#	#	#	V	A
Anniversary Oral				#	#
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Description: 2744 **Brenda Hall**, interviewed by Adam Lee Cilli, February 12, 2014, in her office in the Bryand Global Sciences at the University of Maine, Orono. Hall talks about her early interest in glacial geology; conducting research in Antarctica; her contributions to the field; changes in the Climate Change Institute over time; her dual role as scientist and mother; and the CCI's role in educating the public on climate change.

Text: 9 pp. transcript

Recording: **mfc_na2744_audio001** 34 minutes

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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 6.13.2016 by MO'Brien **Use Tracker**

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Previous name(s)

Completed

Narrator: Brenda Hall

Interviewer: Adam Lee Cilli

Transcriber: Adam Lee Cilli

Date of interview: February 12, 2014

ABSTRACT: This interview took place in Brenda Hall's office in the Bryand Global Sciences Center at the University of Maine in Orono. In the beginning of the interview, Hall discussed how she became interested in glacial geology as a young girl when she read a book about glaciers. Later, she spoke at length about her first trips to Antarctica, the research she undertook, and the day to day difficulties she encountered there. In the final third of the interview, she shared her views on several subjects, including what she believed were her most important contributions to climate science, how the Institute has changed over the years, her dual role as a mother and a scientist, and the Institute's role in educating the public about climate.

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

Cilli: This is an interview with Brenda Hall. Today is February 12, 2014, and this is Adam Cilli conducting the interview. Just to get us started off, I'm wondering if you could tell me how you got interested in glacial geology.

Hall: From the very beginning?

Cilli: Yes.

Hall: Well, I was at a very boring family reunion when I was about ten, and they had a great library, so instead of hanging out with the 70-year-olds, I hid behind a chair and read a book on glaciers. And that is what really started my interest in the subject. I decided to become a geologist while in high school, and I always wanted to be a glacial geologist. I already knew that at that point.

Cilli: Did you have any family members that were academics?

Hall: No, not at all. Well, unless you count a great-great uncle. He was a physics professor here, actually (a very long time ago). But, in general, no. My family have all been teachers, but none of them scientists.

Cilli: Interesting. Wow, so, from such an early age you...

Hall: Yeah, it's quite strange that it happened that way. But I definitely remember the moment. It was one of those reunions where you don't know anybody, and your grandparents hardly even know anybody. And so, they had a library.

Cilli: So, when you went to college you studied geology.

Hall: Yes. I did my undergrad at Bates. I studied geology and Russian, actually. I was a double major.

Cilli: And what did you do after completing your undergraduate.

Hall: I got my graduate degrees here, working with George Denton.

Cilli: Masters and PhD?

Hall: Masters and PhD. So, I've actually been here a very long time. Much longer than I've been on the faculty.

Cilli: When was the first time you went to Antarctica?

Hall: 1990.

Cilli: 1990.

Hall: Yeah.

Cilli: How did you expect it would be, and was it different when you got there?

Hall: I had no idea what to expect, at all. So, it wasn't different or anything. I had really no expectations. I didn't know much about Antarctica when I first went. When I got the position as a graduate student, I didn't even really understand that there was dry land that wasn't covered in ice in Antarctica. So, the whole thing was new and really exciting.

Cilli: And I imagine that you had a bit of learning to do on your first trip.

Hall: Yeah, it was definitely a learning experience. Not just the science. I mean, every day was learning, as far as the science. And the way my first trip went was, I went down without my advisor. George came later. And so I left in October, and I had a few days with another graduate student. He sort of got me started. And then I was on my own for three months. So, every day was learning, as far as science, but it was also learning in terms of having to be responsible for a camp. 'Cause we had our own tent camp; it was me and a field assistant. Usually just the two of us.

Cilli: I assume you started at McMurdo.

Hall: Yeah.

Cilli: And then, what? You hiked off with another field assistant?

Hall: We were put into the field by helicopter.

Cilli: Oh, I see.

Hall: And so, at that point there were five of us. And then the other graduate student left with two of the field assistants to go form a camp somewhere. So, it was me and a field assistant, not only doing the science but managing the camp, which included just the basic living in that sort of environment. Which, in October, was pretty darn cold in Antarctica.

Cilli: Managing the camp? [prompting Hall to continue]

Hall: Well, there's no water. So you have to get ice from the glacier to melt water, and the stove

doesn't want to light because it's too cold. And you have to worry about wind blowing away the camp, and then you have to call in every day. And if you don't call in you know that they're going to mobilize this search and rescue if you miss your check-in by even a few minutes. And you have to call for helicopters when you need them. So, there's a whole bunch of sort of logistical stuff, that I sort of learned very quickly.

Cilli: How far were you from help? How far of a helicopter flight was it?

Hall: Oh, we weren't in a very remote area of Antarctica. We were probably 50 miles McMurdo, so maybe an hour helicopter flight. Yeah, but you definitely have the feeling of being the only one out there—in October, anyway.

Cilli: I would think so.

Hall: In the location where we were, we didn't see people very often. We didn't see helicopters very often.

Cilli: Can you walk me through a typical day during that time?

Hall: During that first year?

Cilli: Sure.

Hall: Well, we had to get up and do our morning check-in by 7:30, so that always got us out of bed. And then usually the first one up lit the stove and got snow melting or ice melting for water. In October it took a long time to get going, because all of the food was frozen, not just the water. And so, anything you wanted to eat had to be thawed.

Cilli: Such as?

Hall: Canned fruits, or even peanut butter would be frozen, jam would be frozen. I mean, just everything.

Cilli: How cold was it?

Hall: I don't know. It was cold. But, I mean, that's October; we were up about 3,000 feet. It warms up quite a bit. As I said, it was forty degrees when I left [Antarctica] a couple of weeks ago. But, yeah. So we'd do that, and then we'd go out all day, and it usually involved either walking, making maps of things, or digging. We dug a lot of holes, to look at what the sediments looked like under the surface. So, these were sort of standard one meter square, one meter deep holes that we would dig through the deposits, with pick and shovel. So we got really good at digging. We dug something like 400 holes that year.

Cilli: Wow. Physical stuff, huh?

Hall: A lot of physical stuff, yeah.

Cilli: Tell me about the mapping you did.

Hall: So, we were interested in how the alpine glaciers there had changed over time. And so we were looking at older deposits from those glaciers, and you can identify the landforms in the

field, and so we had aerial photographs that we then marked the different features on those photographs, until every surface of the air photograph had some designation (as to a landform or sediment type). And then we also did some work collecting samples for different dating techniques, and they were mainly volcanic samples that they used for argon dating. Which allows us to get some ages on the deposits.

Cilli: So, digging holes and mapping.

Hall: And mapping, collecting rocks. Yeah.

Cilli: And that was the first year.

Hall: Yup.

Cilli: Did you encounter any serious physical hardships during that year?

Hall: Not out of what you would expect from digging holes and walking all day and being cold.

Cilli: Now, speaking in terms of all of your trips to Antarctica, did you every have any close calls, where you or somebody on your team nearly got injured or did get injured?

Hall: So, I've been pretty fortunate. I've had a couple instances I have not liked, but I wouldn't call them close calls at all. But other... well, for example, that first year the other graduate student, one of his field assistants tore his knee and had to be evacuated. So that was with our larger group. It wasn't at my camp or with me at all, but I knew the person who had to end up leaving the Antarctic. But in my group we've been lucky; we haven't had any real injuries or anything.

Cilli: Did you ever have any moments when it just wasn't fun, and you didn't necessarily want to be there?

Hall: Well, I've had a couple moments in helicopters that I've not been too thrilled about, but it turned out O.K. in the end.

Cilli: Can you tell me about one of those times?

Hall: Oh, there nothing really serious. George is the one who has had serious problems with helicopters, as he probably told you. No, I've just had a couple of instances where, I don't want to say I didn't have a lot of confidence in the pilot, but I might have known the local area better than they did, and I wasn't comfortable with some of the decisions they were making. Probably the closest thing we've had to actually crashing was when we were landing. We landed on a snow patch, but the snow patches are sometimes hollow. And the snow patch did collapse... the back of it, and so our tail nearly hit the ground.

Cilli: So, you got jerked back a bit?

Hall: We got jerked back. Those were navy helicopters at the time, and they always had a crew member. And the crew member was hanging out, [and] he gave this frantic "up, up, up!" sort of thing. Cause he's calling the thing for the pilot, cause the pilot can't see; the pilot is looking straight ahead. At least, that's how the Navy pilots were trained to do it, and they always had a

crew member sort of hanging out the side, telling them where to land and how far they had to go down. And so we had a frantic sort of “up, up, up!” moment.

Cilli: I’m sure that didn’t inspire much confidence.

Hall: No. Well, we all, I mean, I knew what was happening at that point. There’s nothing you can do about it.

Cilli: I wonder if you have any stories about the camaraderie you might have had there in Antarctica. In mean, you’re in a remote place, and you’re camping with a person for long periods of time.

Hall: My best friends are all people I’ve worked with in the field in Antarctica. I have a lot of colleagues that I work with, a lot from different universities (or whatever), or former graduate students. They’re definitely my best friends. You just have a common experience like that, and especially if there’s been any hardship or whatever... yeah. I’ve been fortunate in that I’ve had very good people to work with over the years. Not just my colleagues, but my students as well. You hear stories sometimes about groups that are in the field, and maybe they didn’t all get along, or there was a rift or whatever; I’ve just been really lucky not to have that. It’s fun. It’s a lot of fun being in the field with people.

Cilli: What was the most physically daunting day you had down there?

Hall: In the Antarctic?

Cilli: Yes.

Hall: It’s hard to say. They all blend together. The Antarctic in general is probably not as physically daunting as some of the other field work I do, because we have helicopters. And so any really heavy lifting is by helicopter. Other places we go in the world, sometimes we have to do all the carrying ourselves. Probably the hardest project I’ve had physically when we were in the Antarctic was when we’ve been coring lakes. So, I had three or four seasons where I was coring lakes, and lakes are miserable to cross (a lot of them), because they have very uneven surfaces, with up to a meter or so of relief and hollows. So there are perched water tables on the lake ice, that then freeze, and so you walk onto them and then you crash through, about knee-deep in water. We had to haul all of our gear over that, which required us to flag a route and do a little construction on the ice. And then the coring is just difficult. It starts off by drilling through five to eight meters of ice with a hand auger, and then deploying some sort of coring device, either with or without rods, to the bottom of a lake which might be seventy meters down. And then pounding it in and pulling it back up. Even with a winch, it’s pretty rough to get it back up sometimes. So that definitely was the physically hardest Antarctic season (one of those would be). I think I did permanent damage to my hands from that, because we did a lot of pulling with ropes. Yeah, it was a rough season.

Cilli: When you’re out there in Antarctica, and going to these remote places that few people have ever really seen, did you ever think of yourself as an explorer?

Hall: No, no I haven’t. I guess I see myself as a scientist. No, I’ve never seen myself as an explorer. Even though I’ve been a lot of places not many people have been before.

Cilli: Have you read any of the earliest accounts of Antarctic explorers?

Hall: Yes, I've read, well, virtually anything I get my hands on. But I've read all the early accounts by Shackleton's group and Scott's group. I like reading the diaries of some of the scientists on those projects, because I guess I feel a bond with some of those early scientists. Because they're making observations, and a lot of them made the first observations on an area. And places I've been there've been times when I've made the first observations of an area (of the geology of it, anyway). And I've worked in some of the same places that these earlier scientists worked, and I could still use their field notes. Even after a hundred years you could still see what they were mapping and how things have changed over time. And you can read their accounts of how they were living, and it's very similar, in some ways, to how we live. Our group tends to be old fashioned. We still live in tents out in the field. A lot of groups, especially those who work in the dry valley area, have switched to living in huts, or flying in from McMurdo on a nearly daily basis. And so there aren't that many groups (in the near field anyway, in the McMurdo area) where people still camp. We still do, and it has some similarities to the early groups there. Except we're not sledging. We're flying in by helicopter, which is a whole lot easier.

Cilli: When you travel from your camp, do you have snowmobiles? Or do you go on foot?

Hall: So I work both close to McMurdo (well, relatively close; the dry valleys are considered close; they could be anywhere from 40 minutes to a couple hours from McMurdo) those areas I'm walking. We do mostly all walking in the dry areas. In the more remote places I've gone we've been put in by a small airplane and then we have skidoos and we travel on the glacier from site to site, or at least to our campsite from the airstrip.

Cilli: Where else have you done research?

Hall: So, I've worked in Greenland quite a bit, and also in southern Chile. Those are the areas I've worked the most. I've done odds and ends and bits and pieces in various places, but that and the Antarctic are the main places I've worked. As far as the Antarctic, I've worked all over the Antarctic as well, including some of the sub-Antarctic islands. I'm going to the Falkland Islands in a month to do some work.

Cilli: You mentioned that the fieldwork you did outside Antarctica was more demanding, so I'm assuming Greenland or southern Chile. Well both, really. They're all demanding in their own ways. But I would say one of the Greenland seasons I did was probably more physically demanding, and that's because we had so much gear. It was in an area of east Greenland where the terrain was pretty rugged. The walking is not easy. It's all boulders that you sort have to teeter and balance across. And we were coring a number of lakes. Lake coring is hard. I think that is sort of a general theme. The hardest Antarctic season was lake coring, and the hardest Greenland season also was lake coring. But this we were doing from boats, or inflatable rafts, and we just had a lot of gear. And the lakes were as much as a kilometer apart, up over quite a bit of relief, and we just had a lot of gear to carry. We had to make multiple trips, and, yeah, it was rigorous. You are in very good shape when you return.

Cilli: I imagine so. What do you think has been your most important contribution to climate science?

Hall: I think it's an understanding of the history of the Antarctic ice sheets, and an understanding of the time scale in which they have changed, and their timing relative to other things that have happened in the world, which has allowed us to really change our ideas about what caused the Antarctic ice sheet to grow and shrink. Which is important for sea level. The real reason why people are interested in the Antarctic ice sheet, really, is sea-level prediction. And understanding what causes that ice sheet, particularly the western part, to advance or retreat is really important in understanding what future sea-level change might be. And so a lot of the work I do has been focused on trying to understand the behavior of that ice sheet, to get a long term history of it and to figure out what causes it to advance or retreat. Is it changing sea levels around the world? Which has been one idea over time, that as sea-level drops this ice sheet expands. Is it changing ocean temperature? Which melts the underside of the ice sheets. If that's the case then we're in big trouble, because the ocean temperatures are rising. And so forth. There are various other things that you can look at as well. But that's the area of research where I've made the largest contributions so far. I have a wide variety of research interests, but that's probably the one I've devoted the most time to.

Cilli: When did you become a member of what was then the Quaternary Institute?

Hall: Well, that's hard to say exactly. I did my graduate work here. Even though I was in the Earth Science Department, I was really in both departments. So I've been involved in the Institute, and with the Institute faculty, since I first came in 1990. Went on all the Institute trips...was really a part of it at that time. I became a faculty member in 2000.

Cilli: You obviously had heard of the Institute while you were doing your undergrad. I'm just curious why you decided you wanted to do your graduate work here.

Hall: I came to work with George Denton.

Cilli: So, you had read George's work.

Hall: Right. He was recommended to me. He is the primary reason I came to the University of Maine. I'm from Maine, so I was definitely happy to do graduate work here. But George is definitely the primary reason why I came.

Cilli: How do you think the Institute has changed since you first became involved with it?

Hall: Well, it's changed in a number of ways. It's gotten much, much bigger. That's probably the obvious change. When I started there were probably ten faculty members. Two geologists, two archeologists, two paleoecologists, a glaciologist, an ice sheet modeler, and a marine paleo person. And then there were some people in other departments who were very loosely linked. So, the size has changed dramatically. I think the focus also has shifted. When the Institute was started it really was to look at paleoclimate, and to use an interdisciplinary approach to link between those three primary disciplines. Glacial history/climate with paleoecology and archeology, and there was a real focus on developing long-time records. So not just looking at what's happening now, or what might happen in the future, but going back in time and reconstructing climate through time. I'd say the emphasis now (although we still do that) is developing more short-term climate records, and predicting the future. I think there's been a shift that way. But it's a much larger institute, with a broader range of interests, now.

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

Hall: I think that would be really hard to pin down, because there are so many different interests in this institute. And I think it would be very hard to pick one.

Cilli: You mentioned, while talking about your own contributions, that really they deal with is sea-level and sea-level change. I guess what I'm curious about is, within the scientific community the human role in climate change is pretty well established. But it seems that outside the scientific community people are still debating that, and I'm wondering if you can comment as to why that might be the case.

Hall: Well, I don't think scientists have always made a good case for their arguments about why humans are involved in causing climate change now. In part that may be a lack of good communication. In part it may be that so many scientists see it as obvious that they don't make as much an effort to communicate it as much as possible, I guess. And part I think some of it may have to do with the public's perception of science, or lack of understanding of what science is. The idea that (usually, anyway) science is based on careful observation and testing of ideas which have to be replicated multiple times before people reach a consensus that that's the most likely hypothesis. Science tends to be fairly conservative, for the most part, which is something that's not appreciated by the public at all. It generally takes a long time to change an idea in science. But yeah, I think a lot of it is communication. And unfortunately it's also become a political argument. And so, if you're in what part you're against the idea, and if you're in another part you're for the idea. And I think a lot of people haven't looked necessarily at the evidence. And instead are following one party or the other.

Cilli: Should the Climate Change Institute play a role in educating the public about climate change?

Hall: Yes, I think so. I think that's a natural think for the Institute to do, and we do that quite a bit. The thing I see the most are the school groups that come through, and see the different things that we're doing and learn about the type of work we do. I think we could do that a lot more as well.

Cilli: How often does that happen?

Hall: The school groups?

Cilli: Several times a year. I don't know how often, because I'm not here for large chunks of the year. But several a year, and also I know lots of actually go into the classroom and talk. I go into elementary school classrooms and talk about climate and Antarctica and things like that. I know lots of people in the department do that.

Cilli: Where have you gone?

Hall: Well, my kids are at the East Corinth school system, so I've been in that. And my sister also teaches in southern Maine, so I've gone there as well. And I've been in Old Town and few other places as well.

Cilli: As a mother, is it difficult...Because you're a mother, but you're also a scientist, so you go

out into the field, and being away for a couple of months at a time.

Hall: Yeah, that's the hardest part of my job.

Cilli: Yeah, perhaps even more difficult than the challenging terrain.

Hall: Oh, yeah. That's fine. It's the leaving. When you're away it's not so bad, because you're busy. But it's the actual act of leaving...[of] getting on the plane. Until you get there and get busy, that's the hardest part of my job.

Cilli: What's the longest you were ever away from home?

Hall: Before I had kids I used to go regularly, from about the first of October until right about the middle of February, in the Antarctica (so, I guess that's about four months or so).

Cilli: And now?

Hall: Couple months. I've tried to have shorter seasons. I have more seasons than I used to have, because I don't work just in the Antarctic now, but I try to have shorter seasons. This particular year I ended up having two projects going at once, and so I had a month for each project.

Cilli: How do you see the Institute changing and evolving into the future?

Hall: To be honest, that's not something I spend a lot of time thinking about. I think it's gonna continue to broaden. And I think we will continue down this track of moving more towards short-term records, and maybe even more towards policy. Towards advising lawmakers or other people on how climate might affect their policy decisions. So I think that's an area we probably will move more into in the future.

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

Hall: No, I actually think you've done quite a thorough job. I don't have anything else to add.

Cilli: Well, thank you for participating in this interview.

Hall: Thank you.