ACCESSION SHEET
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Accession Number: 3999

Accession Date: 2016.06.14 **T#** **C#** **PM#** **DAT** **CD#**

Collection Number: MF 192

Collection Name: Climate Change Institute 40th Anniversary Oral

P# **S#** **V#** **DV#** **DA#** mfc_na3999_audio001

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Description: **3999 Andrei Kurbatov,** interviewed by Adam Lee Cilli, November 26, 2013, in his office in Sawyer Hall at the University of Maine, Orono. Kurbatov talks about his research in volcanology; conducting research in Antarctica; the beginnings of his volcanology career in Moscow and Kamchatka; the reality of anthropogenic climate change; and the Climate Change Institute's growth over the years.

Text: 8 pp. transcript
Recording: **mfc_na3999_audio001** 43 minutes

Related Collections & Accessions

Restrictions

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

Notes

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Date last updated 6.14.2016 by MO'Brien **Use Tracker** **To transcriber**

Previous name(s) **Completed**

Narrator: Andrei Kurbatov

Interviewer: Adam Lee Cilli

Transcriber: Adam Lee Cilli

Date of interview: November 26, 2013

ABSTRACT: This interview took place in Andrei Kurbatov's office in Sawyer Hall at the University of Maine in Orono. In the first half of the interview, Kurbatov discussed his research in volcanology and his field experiences in Antarctica. Later, he reflected on his training, background, and work in Moscow and Kamchatka. Towards the end of the interview, he shared his views on the so-called climate change debate and considered how the Institute has grown since he first joined.

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

Cilli: This is Adam Cilli. Today is November 26, 2013, and I'm here with Andrei Kurbatov to interview him about his experiences with the Climate Change Institute. I'm wondering if you can tell me about how you got interested in the connection between volcanoes and climate science.

Kurbatov: I just finished my PhD about twelve years ago and I was looking for any position available, and I saw email on volcanology list that Greg Zelinsky (a former faculty here, who was moving from New Hampshire) was looking for a student. So my adviser emailed him and asked him if he needed any postdocs. So Greg replied and basically said come over. So I came over here in November for the brief interview, and they were actually moving from New Hampshire, Paul and Institute members. They were doing ice cores. So, they were moving things around. Everything was in a chaotic state. I knew of Greg because of his work on Greenland ice cores, and I knew of Paul for the same reason. That's why I realized it would be interesting part to work on, but I actually never work on climate change related topics before. So my first ice core was Siple Dome. That's my first project in Antarctica. And assignment was very simple—look for anything volcanic in the core. It wasn't even related to climate. It was simply look at the volcanic history and reconstruct the volcanology of Antarctica.

Cilli: And that was after you came here, that you went to Antarctica?

Kurbatov: No. That was just a core collected in Antarctica years before. So, because they move here they basically had a hard time in continuity with students. So they start looking for new students, and I was lucky that I was able to get this postdoc position. The basic job is very simple. You're looking at the melt layers. We had about 6,000 samples basically, so we look at every sample and try to find volcanic material.

Cilli: When did you first go to Antarctica?

Kurbatov: Probably 2004, about three years after I came here.

Cilli: What did you think Antarctica would be like, and was it different when you actually got there and saw it?

Kurbatov: I kinda work in the Russian north before, so my imagination was that it would be similar to this. A couple trailors sitting in the middle of nowhere. And I was actually surprised when I wound up in a base that was like a bit town, McMurdo. And everyone was wearing sneakers and tee shirts there; it's extremely hot in the building. It wasn't like anything Antarctica there. It was more like you're in a gym or something.

Cilli: How big is the McMurdo base?

Kurbatov: It's a huge base. I think in the summer they easily have one or two thousand people there. But we were lucky. We immediately went to west Antarctica and another site near the base; so I got to see two sides in the first year. It was pretty good for only being a month in the field.

Cilli: So, you actually went on trips far from McMurdo. Did you have to camp in a tent?

Kurbatov: For the first site we had to go by huge aircraft, C130. So it landed in an open field and then we had to get transferred to a smaller aircraft that landed there basically. At the same time one team was coming down from the mountain. It was like 3,000 meters elevation. So we had to sit, basically, at like 2,000 meters and get some acclimatization. Then we few on the twin otter, and then we were driving snowmobiles, mapping the area. So that was a remote field, but everything was ready for us. Cause they left tents, the previous group. So all we had to do was unzip the tent and get in.

Cilli: When you were out there doing research, were there every any moments where you or someone you're working with almost got hurt?

Kurbatov: Not really. Because it's a very comfortable environment, when you have all logistics done for you, by US Antarctic program. So there are a lot of people who have been doing this for ten, fifteen years. So behind you you have radio support, you have huge aircrafts, and come on, it was the 21st century. So there was nothing extreme. Obviously it's cold, but you have warm clothing. It's very comfortable.

Cilli: You did your research in the summer time?

Kurbatov: Antarctic summer. On this trip we came really late in the season, so it was mid-January. It was extremely warm. I remember we went to the field camp. Newcomers have to take a snow camp, where they make you sleep in the snow, they make you work a lot. You're sweating; they make you work in the cold. It's basically like a big game. But the idea is that it's psychologically helping people who are not comfortable with the environment. And lot of mountaineering people. Usually the guys spent years doing something like climbing in Alaska or something. That's mainly like people who work there; a lot of kiwis from New Zealand. They're all very experienced climbers. And again, we're scientists. We're not climbers. We just go there for the research projects.

Cilli: What was the average temperature when you were there?

Kurbatov: If I remember right, it was like minus 10 Celsius. The issue wasn't really temperature. It could get pretty windy, so you could easily get 40 MPH wind. So we were working in the blue ice area, and the reason they have blue ice is because of the strong winds there. Always windy there. But nothing dramatic. That's another thing about blue ice area. And I never thought about until one person I work with mentioned, "You know, it's always windy, but it's not like hurricane force wind."

Cilli: Were there any particular hardships that come to mind?

Kurbatov: Not during this first season, really. It's a very comfortable program, really. Because you have nice tents, you have nice sleeping bags, you have nice baths and everything. You have nice kitchen, nice supplies. It's not like people used to work in 60s and 70s. It's extremely comfortable.

Cilli: But you had hardships on later trips?

Kurbatov: Not really. I went like four times on mainland and twice on Antarctic Peninsula. We always had good logistics. We always were comfortable.

Cilli: How do you think it was in the 60s and 70s for Antarctic research?

Kurbatov: I honestly don't know. I would assume it was harder, because clothes were not as good, equipment was not as good, they had no radio communications. Last time we were in the field, we had a satellite phone with unlimited minutes. So I saw students talking with grandmothers when they wanted. So I would assume it was harder. Food wasn't as good. I think it was different. Plus nowadays you're flying there with GPS. You can't get lost. You need to be insane to get lost. Probably in the 60s, if you're in an absolutely empty space, how do you navigate there? And if little bit of snow you don't see the sun.

Cilli: It sounds like when you went there it was pretty controlled. You were pretty much guided around by experienced people.

Kurbatov: That's true. And the assignment we had was very focused. We knew exactly where we were going, we had a good plan. It was very straight forward. So we never had anything problematic.

Cilli: When you were out there, did you think of yourself as an explorer?

Kurbatov: No. [laughs] Not in the 21st century, no. It's more like add on to research expedition, where you basically go with people that know what they're doing and they help you. It's very comfortable. And a lot of students from the Institute went through this program as well. Now, it's not like exploring, it's more doing the science right. 'Cause it's finally comfortable, so you don't have to worry about surviving. It's more about experiments.

Cilli: So help me understand the kinds of research you did there.

Kurbatov: The first time I just went along to learn more about how to be in the field, and I basically even though I already had a PhD, I went with one of our students here: Beluf Spikes [?]. And he was Gordon Hamilton's student. And in reality he already had five or six seasons in this blue ice area, he was working with people as a student, helping them to collect meteorites. He was the one to follow up on the original idea that came from his adviser back in Ohio State that these blue ice areas could have records of climate that are exposed at the surface. Just imagine snow that's building up, layer by layer, at the surface, and it's flowing down, kind of the side of Antarctic continent. Then it hits bedrock, and because it hits bedrock ice pushes it down and up to the surface, so eventually you get this really old ice exposed at the surface. So you're just walking on this blue surface. It's really beautiful. And you're just collecting samples right at the surface. So that was our first project. So I went along and just wanted learn what's going on. And we did some GPS work, where we put some metal sticks on the ground. We did some radar survey. We did some surface

sampling. The idea was basically to demonstrate that we could get some samples. Meaning, collect environmental records and establish were ice is going, and that will help us to understand where is oldest ice, where is youngest ice. We started this project in 2004, then we came back with a follow-up in 2009, and we actually succeeded in one place, because first of all we found oldest ice on earth. That's our claim right now. University of Washington measure gas composition, and it seems pointing that we found oldest ice on year, million years old. Close to the surface, about 300 feet below the surface. And next big thing we found, a continuous record that can be collected now, if you walk two miles along the surface, you can actually go and collect a record, that from a present day would cover the last 400,000 years. So you have an unlimited supply of ice. So you can go there with a chainsaw and sample ice and pick the time when you want and basically look at the time interval and sample it. And obviously it's expensive to get there, but then you don't have to worry about drilling or collecting small samples. You take as much as you want. So that's where we are at in the present. We know that this ice exists. We know where it is. We know it is suitable for environmental records… Then another trip I had was with the International Trans-Antarctic Scientific Expedition (ITASE). And again, my interest was, I am working on the volcanic records, and I'd like to know what kind of sedimentation of the snow could impact the record. So how records are preserved. So I really want to be in the field to try to understand how this happens. I have access to oldest records that Paul collected over the years, but I really want to understand the local environment. So it's always helpful to be in the field, 'cause it helps you make some observations. That's why it's important to be in the field, 'cause you can't really do this research by sitting in the lab. You really have to be exposed to this local environment. It will help you later to make right decisions. So that was another trip. And twice I went to Antarctic Peninsula; collect one core with Brazilian and Chilean collaborators. And we succeeded also. We went to probably northernmost ice cores for Antarctica. At this elevation that didn't experience any melting. Cause anything north from that spot would have melting, seasonal melting. So that's what we were doing.

Cilli: I'm wondering if you can tell me about your earliest experiences doing science.

Kurbatov: In Russia?

Cilli: Yes.

Cilli: Russian program in geology training, is designed to train people who can go on their own at the age of 20 into the field in remote parts of Siberia, and be in charge of 20 or 30 people who have no training in geology. And the idea is that these people get trained to function independently with very few resources. So in the five years when I was enrolled in the university, I went on probably five field trips. For students, that's a lot. We had about two field camps, where we basically exposed to mapping, geological mapping, anything related to field work. So the program was very field work centric. It was kind of interesting, and when I finished it I actually got a job in Kamchatka. I worked in one of the most volcanic regions on earth. I think right now there are three volcanoes erupting right now. And it's always like this; there are always one or two eruptions per year basically. I visit my first volcano in my first two months there, so it was a very rapid introduction to volcanoes.

Cilli: And what was that like?

Kurbatov: It was very interesting. First of all, just imagine bunch of Russian-looking bombs, wearing green cloths and rubber boots, walking to the top of the volcano with just one sandwich for entire day, and you basically just walk there with a hammer and shovel, because we were collecting some volcanic debris samples. And it was an active volcano. Local

authorities were worried about the region. And we were there to help them understand what was happening. And the first thing we did was go into the crater. There was actually no reason to do that. It's just that people I worked with were hard-core volcanologists who always want to go into the crater. In reality there's not much to do in a crater, but everybody goes. It's tradition, I guess. So we went there, and volcano erupted. And we were just looking at this big cloud covering us, everybody was running away, there's bombs coming down. It was kind of interesting. So, it was really intense time for four years. Even though Soviet Union was collapsing, we were still working. I was really young, so I was open to anything. I really enjoy my time.

Cilli: So, what about the early 90s? What did you do before you came to the United States?

Kurbatov: That's the job I had. It was at the Institute of Volcanology in Kamchatka. So after Moscow state I went there and worked there for two years. First you get a job title as an engineer, even though you're not. That was Soviet bureaucracy at work. Second year we get Junior Research Scientist or something. And I worked there for like four years. But it was a bad time for the Soviet Union, 'cause it was collapsing. But that's where I met my PhD adviser and master's adviser. Because he came there with a NASA team. And we went to one of the southernmost coldares in Kamchatka. I was just helping them, and also met couple of good friends from US.

Cilli: So that's where you got the idea to go to graduate school in the US?

Kurbatov: We didn't know much about graduate school. We thought one computer was entire internet for Institute. We had very limited information about the West. I had no idea about graduate school there; I assumed it would be like Russian system. It wasn't. In Russia you do a lot of research and teaching. In US you take courses and then do research, if you're lucky. So it was like a different system, but I think I had a good background, cause I was trained for four years. I was working with very strong group… So, it was pretty easy for me to transition to graduate school in US. And Buffalo was just growing as a volcanology program. Now it's established. But then it was new. It was a very interesting program, because we had lot of interesting and fruitful conversations. A lot of foreigners there, because any volcanological region was represented. They had people from Guatemala, Italy, Iceland.

Cilli: When you were there, at the University of Buffalo, you were actually there for six years. Had you heard of the Quaternary Institute?

Kurbatov: Never heard of it until I basically got this email. But then I start asking people, and they told me they knew about this. And interestingly enough, Buffalo had very strong ice core program back in 70s. But I didn't know any of this. We saw some kind of evidence of former ice core program. They had freezers. They had one person who still was working on ice cores. But I never thought I would work in it. I was working on more the physics of volcanism.

Cilli: When you came here and joined the Climate Change Institute, did you do any interdisciplinary research with other members of the Institute?

Kurbatov: The field I'm at, we usually do things slowly, because we have so many samples to run. So it took me the first year to finish the ice core I was working on, and I didn't have many students. So I had to do most of it by myself. I never had a big tephra project until last year, when I finally was funded to do tephra. So now I use what I learned in last ten years

about climate, and I will interlink it with volcanic work. 'Cause it's still learning curve for me, I think. And I'm getting to less steep part. I'm learning faster. Cause it's hard to switch from one field to another.

Cilli: Was it difficult to transition to using English for your professional work?

Kurbatov: I'm still transitioning, but I don't see any problems right now really. I'm pretty comfortable. At least I understand most of the things people say around me. [laughs] But obviously there are certain cultural differences. And I think at this stage it's not English any more, it's more lack of cultural experience. That I'm learning now that my kid's growing up; like kids' books. People make jokes before, that reference kids' books, that I didn't get.

Cilli: When did you learn English.

Kurbatov: We learned a little in high school, but it wasn't a strong program. Looking back, I don't think my teacher knew much English. Cause I came from Uzbekistan. We had good programs in math and physics, but language wasn't a big part of it…. Then I moved to Kamchatka and started working with foreign scientists, and that's when I learned I had big gap in my language education. So I started picking up words. Everybody was learning English back then; Soviet Union was collapsing; we were listing to records, we were taking classes.

Cilli: But obviously, you have some publications that you have with Gordon Hamilton, Paul Mayewski. What kind of work did you do with them?

Kurbatov: The main focus of my work was this volcanic stuff. So that was my original paper…and it's actually a reasonably well cited paper, because it's very hard to produce these records. I said it's a lot of samples; it's a lot of meticulous work. But once you done it, people are using it. It's more like you put a dictionary together. You wouldn't read it every night, but you would use it once in a while. So that's kind of the paper we produce first, with Greg Zelinsky. It's twelve thousand year old records from Siple Dome ice core. Then I work with students, we work on several projects. Now I have a student, Nicki, she finishd here with her PhD last spring. She had two papers. And that's our major contribution in this blue ice area. Our work on understanding this blue ice area and demonstrating that we could get information about the climate system from this area. And obviously oldest ice. But I always want to do the volcanic stuff, but with the funding cycle with NSF, cause you need resources. So finally we have this opportunity now, and we have very interesting project on tephra. Basically we're putting together a huge database on anything that ever erupted in Antarctica. We're putting together a website where anybody can go there to learn about volcanoes in Antarctica. So I think it will be my reasonably good contribution to climate research, because people routinely use volcanoes for dating events and landforms.

Cilli: And this is a project that you're working with multiple people on?

Kurbatov: My basic collaboration comes from two projects. The blue ice area, and another group we work with is at New Mexico Tech… And those groups basically do a lot of tephra related work. And we have some work here with Marty and Chris Gerby; they both have access to these instruments, a microprobe. They're in School of Earth Science and Climate.

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

Kurbatov: I think its interdisciplinary nature, cause in early days it was a home for people from different disciplines. When it started 40 years ago, it wasn't common for different fields to talk to each other. It was more like field-specific view of the world. But now that's what cutting-edge is. So ironically something that was created 40 years ago, now is cutting edge of science. Now, anything you do in science is interdisciplinary. There is no single answer in a single discipline, cause in order to understand climate records, you need to understand physics, chemistry, chemistry of atmosphere, deposition, how earth basically works. You need to know solar mechanics, and things like this. It's a complicated field. So I think this is the biggest achievement of the Institute.

Cilli: In the scientific community, the human role in climate change is not debated. It's understood. But outside the scientific community, in American political culture, it's still an issue that's debated. I'm wondering if you can speculate as to why that might be the case. Well, first of all, I would not say it's my scientific opinion, because as a scientist I'm just trying to collect data and represent it to the public and other scientists. But if you're talking about political aspect, I probably would say it's money-driven, this denial, because there are some political groups that want to continue making money on oil, gas, coal, or whatever. Obviously everybody understand that it's a big problem, but people don't want to think about big future, because they think they can buy their way. And I don't think they fully understand the impact of what humans did to earth. And it's hard to understand unless you work in these polar regions and deal with the records. For example, if you're thinking about normal climate driving features like dust in the atmosphere, those things have become irrelevant, because anthropogenic emissions are blocking everything. And they're like 200 times more than any natural forces…. And obviously, problem here that we don't really understand what we're destroying well. So, just simply stopping everything will not necessarily give you desirable benefit. This idea of geoengineering, for example. People basically saying, "oh, we'll just block solar radiation and it will chill the earth." It's such an immature approach to scientific problem. So we need to be very careful where we're at. So obviously conservation is where we need to go. But you can't go back to the caves. We need to be realistic about this.

Cilli: I don't know how long it's been since you've been in Europe, but what I'm curious about is whether you noticed if there are more climate change deniers than there are in Eastern Europe.

Kurbatov: Well, the people I deal with here and there are scientists, so they are all on the same page. So I don't see much difference. And in the newspaper, in Eastern Europe, were very well controlled by the government, and the government over there is basically the biggest oil company in the world. So it's really hard to not be biased about this. So, again, it's money driven. Again, people of the earth, I think it's a very simple solution: taxation. Tax this dirty source of fuel and energy. We'll benefit twice from it.

Cilli: How do you think the Institute has changed since it was first formed?

Kurbatov: I couldn't really tell you much about the past, because I wasn't here. The last ten years I see we got little bit more interdisciplinary in one way, because we introduce several more disciplines. In my mind it's more powerful. We talk more about outreach; we're not simply just producing data. We talk about relevance to people of Maine and global people. But NSF also does the same thing; they encourage you to do this. So I don't know how much of this is the Institute, or how much of it is just in the air. But I think Institute definitely growing. Since I came it's at least acquired 20 more people.

Cilli: What different disciplines were added?

Kurbatov: We got more people who do computing, climate models. We got some people who do lake, like ecology, because more it was forest ecology. So those fields new to the Institute.

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.

Kurbatov: Well, thank you for doing it. That's what I want to add. I don't think my personal contribution is important, but we definitely have some very interesting people at the Institute. I wish you did it five, six years ago when Dave Smith was alive. We have so many interesting people. So, that's obviously would be good to preserve, these memories, especially from early founders of the Institute. You know, the spirit they had, and why they were doing things. How closely they were working together. It was a smaller team. More dynamic. On a personal level, they were close to each other. They were building houses together; they were doing field work together. It was more like a family. We don't do that. We're too big; we're more like a business. But thank you for doing it.

Cilli: Well, thanks again for participating in this interview.

Kurbatov: Sure.