
Mosley-Thompson

Ellen Mosley-Thompson is a University Distinguished Scholar in the Department of Geography at Ohio State University and a research scientist at the Byrd Polar Research Center. She examines the chemical and physical properties of glacial ice from Antarctica and Greenland, as well as high elevation low-latitude glaciers, to help unravel the Earth's climate history, provide data for determining the mass balance of the Greenland ice sheet, and to help explain abrupt climate changes.

Ellen has spent more than thirty years at Ohio State University (OSU). She earned a BS in physics at Marshall University, and an MA and PhD in geography (climatology) at OSU.

The careers of Ellen and her husband Lonnie Thompson, a professor of geological sciences at OSU, are the primary focus of the book *Thin Ice*, by Mark Bowen (Henry Holt & Co., 2005).

AAG: Your undergraduate degree was in physics. How did you come to be a geographer?
Ellen: I had originally started a master's program in physics at Miami University [Ohio] but I saw many new PhDs having trouble finding jobs so instead of going forward I decided to work for a while. I spent one year teaching junior high math in my hometown and then in 1971 I came to Ohio State University (OSU) where Lonnie, my husband, was a grad student. I found climate and atmospheric dynamics to be interesting and one day I saw an ad in the geology department that said, "Interested in Climate and Weather? If so, apply for a fellowship in atmospheric sciences." So I applied and got a fellowship.

AAG: When did you start working with polar ice?
Ellen: In 1973 I started with the Institute of Polar Studies which later became the Byrd Polar Research Center. Following the first deep ice cores drilled to bedrock in Greenland in 1966 and Antarctica in 1968, my master's thesis was to work on dust concentrations in those ice cores. For my PhD I analyzed and interpreted the dust content in a 1,000 year record from the South Pole Station. Lonnie also did his master's on dust concentrations in glacial ice so together we became the world's experts on dust in ice cores.

AAG: You were part of an emerging field of research.
Ellen: Paleoclimatology is a relatively new endeavor. It's only been for about 100 years that people have realized that glaciers waxed and waned and for that matter only for the last sixty that people have accepted plate tectonics. Ice cores are a tremendous window into the past.

It was basic research no one had done and through it we could look back at the physical and chemical state of the atmosphere to understand the history of the Earth's climate.

Later, we were the first to drill ice cores in the Andes, Himalayas, and on Kilimanjaro. After all, people don't live at the poles. In the tropics we can use ice core records to look at the history of changes in systems such as the monsoons, El Niño Southern Oscillation (ELSO), and hurricanes.

AAG: How does geography fit in?
Ellen: Sometimes people—especially geologists—ask me why we should be worried about the impact of human activity on the atmosphere, since there have been plenty of large climate changes in the Earth's history. I tell them that we now have 6.4 billion people on the planet and nearly half of them are living in coastal regions. I think geography is key to that kind of understanding. It really gives me a broader perspective that includes consideration of the social, economic, and political implications of climate changes for people. The Earth system no longer functions in isolation from human activity. Today humans move more sediment than all the rivers of the earth!

AAG: What are your goals for future research?
Ellen: Right now our guiding questions are: How will the loss of glaciers in the Andes of South America, as well as on Kilimanjaro and in the Himalaya affect water resources for people living in the region? Are the Greenland and Antarctic ice sheets losing or gaining mass and how does this affect global sea level? What is the role of volcanic activity in short term climate variability? We're trying to reconstruct the history of monsoon failures and identify more reliable paleoindicators of variability in ELSO.

AAG: How did you get involved the global climate change arena?
Ellen: I was a member of the National Academies of Science Board of Global Change in the mid 1980s. We were charged to formulate the U.S. Global Climate Change Research Program—a national plan for global climate change. We were beginning to realize the scope of anthropogenic climate change and we had lots of data but very little of it was linked.

AAG: How did your geographic approach inform this effort?
Ellen: We had an expression, "taking the pulse of the planet." We tried to think of the planet as a patient and come up with a list of key health indicators. We came up with a big list of physical observations, but quickly realized that we needed to address the social aspects of the problem.

AAG: What achievements are you most proud of?
Ellen: As far as contributions with lasting effects, what we did as a committee on the [NAS] Board on Global Change has resulted in a very vibrant program for studying climate change. From a personal perspective I really promoted high-resolution studies within the ice-core community—that is, changes over years, decades and centuries, rather than millennia, because those are the time scales on which climate changes affect people. Lonnie and I also lead the glaciology community from the poles into the tropics. And from the non-scientific side I'm proud to witness the increase in the number of women in geophysics. I started going to Antarctica in the 1980s and was one of the first women to lead my own field teams there. I like to think I helped open the door for other women. ■