Chen received the whopping $16 million grant, supervision of how funding was spent was “not very serious” at most labs and universities. Many projects “[didn’t] use the money strictly according to the budget,” he says. It’s common for scientists to apply for funds for one purpose and then use them for a different one, though usually without criminal intent: Researchers often fudge budget line items to pay stipends to graduate students, for instance, which would otherwise be forbidden under some grants.

Pillorying Chen could be a sign that the government is seeking to tighten the reins on research spending. Budget auditing has become more intense in the past couple of years, Zhu notes: Research institutions are becoming “more and more strict.” But the ultimate solution to China’s woes may be a more transparent grant distribution and monitoring system, Cao says. Until then, the corruption scandal poisoning the waters around Lake Tai is unlikely to be the last mess in need of cleanup in China’s scientific community.

—CHRISTINA LARSON

With additional reporting by Ma Qionghui.

PALEOCLIMATOLOGY

How to Make a Great Ice Age, Again and Again and Again

For more than 30 years, climate researchers have been trying to figure out how slight changes in Earth’s orbit could drive the major climate events of the last million years: the great ice ages. The long-standing idea that a rhythmic stretching of Earth’s egg-shaped orbit around the sun every 100,000 years paces the growth and decay of continent-sized ice sheets has survived all challenges. But this orbital variation by itself is far too weak to actually drive the buildup and decay of the ice sheets.

Now, a group says that it has found an answer by building what many say is the best computer model of the ice ages yet. The researchers have confirmed that the 100,000-year cycle amplifies the influence of a second orbital cycle: the 23,000-year wobble of Earth’s spin axis. The new modeling also suggests that each time around, the sheer mass of the North American ice sheet doomed it to its distinctively abrupt end. “They’re getting the global [glacial] cycles pretty convincingly” in the new model, says climate researcher Shawn Marshall of the University of Calgary in Canada. “They’re getting lots of things that previous studies haven’t been able to capture before.”

As paleoclimate modeler Ayako Abe-Ouchi of the University of Tokyo and her colleagues reported in this week’s issue of Nature, they indirectly linked a full-blown global climate model of the sort used to forecast global warming with a reasonably complex model of the northern ice sheets. They drove the climate model with data on the changing distribution of sunlight around the globe that resulted from the orbital variations and with the swings in atmospheric carbon dioxide, a greenhouse gas, that were recorded in ice cores as the ice ages came and went. Then they fed snapshots of the changing climate into the ice sheet model.

When compared with the behavior of the real ice sheets, the combined models performed well. The simulated ice sheets grew in the same places and at a similar pace as the real ones. Over tens of thousands of years, they slowly expanded to volumes as large as seen in the past. Then, roughly every 100,000 years, they collapsed in a matter of a few thousand years. “It’s doing it all on its own” without contrived climate forcings or grossly simplistic processes in the model, says paleoclimatologist Maureen Raymo of the Lamont-Doherty Earth Observatory in Palisades, New York, an author on the Nature paper. More work needs to be done, Abe-Ouchi writes in an e-mail, but “of course I have a strong intuition and confidence that it was OK.”

The success of the model allowed Abe-Ouchi and her colleagues to point to two processes that they believe are key to a realistic glacial cycle. One is the interaction of the 23,000-year and 100,000-year cycles. For almost 100,000 years, they keep incoming solar energy low enough during the summer in northern high latitudes to let winter snows survive summer heating and pile up into ice sheets. But periodically, an increasing 100,000-year cycle combines with a rising 23,000-year cycle to give added summer warmth in high northern latitudes.

At that point the other key factor comes into play: the vast mass of the North American ice sheet, which spread from coast to coast and well south of Chicago. It reached so far south that, when the two orbital cycles conspired to warm northern summers, the ice began to melt back around its edges.

In the meantime, though, the ice sheet’s huge weight had pressed it a kilometer or more into the solid Earth. So it was melting back deeper and deeper into a hole, where the atmosphere gets warmer with depth. This warming feedback is the primary reason the model ice sheet melts away so rapidly, the authors say.

“This is the best so far, a really nice advance, because they’re using more comprehensive models,” says paleoclimate modeler David Pollard of Pennsylvanian State University, University Park. The next step—a direct, interactive link between sophisticated climate and ice sheet models—must “wait for greater computer power to become available.”

—RICHARD A. KERR