



GEOPHYSICS: Ancient Cataclysm Marred the Med

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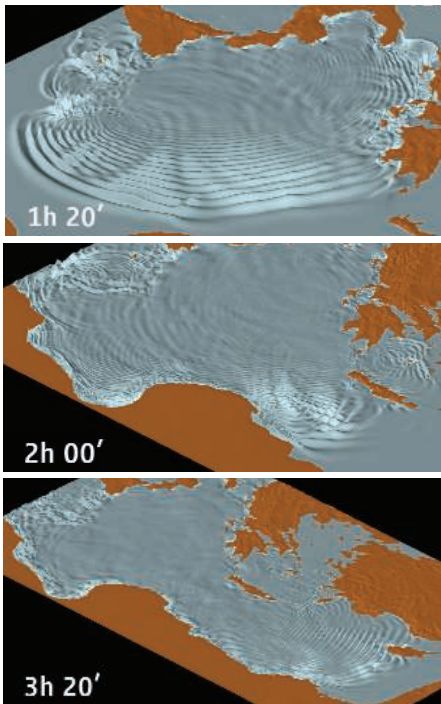
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GEOPHYSICS

Ancient Cataclysm Marred the Med

It's a terrifying vision: A violent eruption of Italy's Mount Etna triggers a massive collapse of one flank of the volcano, sending 35 cubic kilometers of debris—the equivalent of 10,000 Cheops pyramids—hurtling at 400 kilometers an hour into the Ionian Sea. The Big Splash unleashes a 50-meter-tall wall of water that, within a few hours, wipes out coastal settlements across the Mediterranean. This catastrophe happened 8000 years ago—and a Mediterranean monster of similar magnitude could happen again.

That's the scenario invoked in an analysis in last week's *Geophysical Research Letters*. "It was an extraordinary event, probably the largest tsunami unleashed in the Mediterranean in the past several millennia," says co-author Maria Pareschi of the National Insti-



Ripple effect. An Etna collapse 8000 years ago spawned a huge tsunami.

tute of Geology and Volcanology (INGV) in Italy, whose team announced its findings at a press briefing in Rome on 5 December.

The paper may solve a long-standing puzzle about the cause of an ancient, devastating tsunami known from sea-floor sediments. "This is a very careful and reasonable work," says Stéphan Grilli, an ocean engineer at the University of Rhode Island, Narragansett. Not everyone agrees. The INGV model has fatal flaws, argues Costas Synolakis, a top tsunami

modeler at the University of Southern California in Los Angeles. "The lost tsunami is yet to be discovered," he says.

The Mediterranean basin is a crucible of killer waves. More than 300 tsunamis have been recorded in the last 3300 years, with volcanic activity known to have triggered a dozen in the last 2 millennia. The most recent occurred in December 2002, when a colossal chunk of the Stromboli volcano slid into the Aeolian Sea, creating a 10-meter-high tsunami that snapped moorings of oil tankers in Milazzo harbor 100 kilometers away but did little other damage.

That was a kiddo wave compared to one that left a trail of sediment between Sicily and North Africa. The leading suspect has been a collapse of the Santorini volcano in the Aegean Sea some 3600 years ago. However, INGV's simulations suggest that the Santorini event was largely confined to the Aegean.

The INGV researchers fingered Etna, a highly active volcano on Sicily, as a likely culprit. They carried out seismic surveys and found telltale debris from a landslide spreading 20 kilometers off Sicily. The team carbon-dated the debris to about 8000 years ago. Next, they mapped similarly aged mudslides that flowed hundreds of kilometers, from the Ionian Sea all the way to the Sidra Gulf off Libya. Corroborating evidence comes from an excavation at Atlit-Yam, a coastal village in present-day Israel, which appears to have been abandoned suddenly 8 millennia ago.

Synolakis is unconvinced. He says INGV's model uses "unrealistic" initial conditions, including an impossibly fast underwater velocity of the Etna collapse. Pareschi counters: "Even taking the slowest speed that we considered, the tsunami would occur."

Not in dispute is the notion that volcanism could spawn future megatsunamis. Sicily, Stromboli, and other volcanic islands should be monitored closely, says Grilli. But the worst nightmare may be spawned farther afield. Last year, scientists warned that a massive collapse of Cumbre Vieja, a volcano in the Canary Islands, would trigger a towering tsunami that could pummel coasts on both sides of the Atlantic. Such a collapse could be 10 times larger than the Etna slide—an "immense geological event," says Pareschi. Forget Atlit-Yam: Such a doomsday wave could overwhelm settlements with familiar names, like New York, Miami, and Lisbon. —**JACOPO PASOTTI**

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My, How That Sun Shines

The dealmaking continues for both the Scripps Research Institute and the state of Florida. Last week, Scripps officials announced a \$100 million pact with Pfizer that grants the world's largest drugmaker access to 47% of the institute's discoveries for the next 5 years. The agreement succeeds a similar deal with the Swiss pharma giant Novartis that expires at the end of this year. According to Scripps spokesperson Keith McKeown, the difference between the deals is that Pfizer scientists will have an opportunity to take a more hands-on role in ongoing research. But McKeown says, "we still have complete control over the direction of our research."

The deal could be a boon for Florida, which paid \$310 million to lure the California research giant to open a branch in Palm Beach County. According to the terms of that deal, Scripps must pay Florida 15% of the royalties it earns on technology developed in the state, up to \$155 million. Meanwhile, Florida's pharma connections may also be growing. This week, Scripps's Florida outpost and two south Florida universities are hosting a delegation of 25 Swiss scientists, business executives, and government officials looking to expand their collaborations with bioscientists in the Sunshine State.

—**ROBERT F. SERVICE**

Progress for Bioethics Rules

SEOUL—Hoping to close loopholes exploited during the Woo Suk Hwang cloning scandal, South Korea's National Bioethics Committee has approved stronger regulations on sperm and egg donations for research and medical use. The committee is still mulling a proposal to ban researchers from transplanting human stem cells into nuclei-removed embryos of humans or other primates.

Scientists say that nuclear transfer could lead to insights into cures for spinal cord injury or diseases such as Parkinson's. Activists fear that such research could allow researchers to create chimeras. Less-contentious provisions include prohibiting minors or women who have never given birth from donating eggs. Also banned are donations in which coercion between donor and recipient is possible—such as a junior researcher donating for an experiment, as had occurred in Hwang's lab. Although barred from selling eggs, donors can be compensated for their expenses. After the committee decides whether to propose a nuclear-transfer ban, the rules would require approval from the National Assembly before they become law.

—**D. YVETTE WOHN**