

L'Aquila Mayor Massimo Cialente and the regional councilor responsible for civil protection, Daniela Stati.

The tenor of the statements they made, as reported in newspaper articles and television reports, was: Stay calm; it's not possible to predict earthquakes, but we don't expect a major quake is on the way. The newspaper *Il Tempo* reported De Bernardinis as saying that an increase in the magnitude of the tremors was not expected, while TV network *Abruzzo24ore* quoted Cialente as saying that "there should be absolutely no risk" of substantial damage to buildings.

Traditionally, prosecutors argued, people in L'Aquila had been trained by their parents to leave their homes as soon as they felt the ground shake, to avoid the effects of any further, potentially larger, tremors. That was what happened on the day before the meeting, when the magnitude-4.1 event happened; many people gathered near the castle or in one of the town's squares until they felt confident enough to go home. But the meeting of the Major Risks Commission changed many minds, contends the prosecution. "It was as if we were anesthetized, like someone had removed our primitive fear of the earthquake," the court was told by local surgeon Vincenzo Vittorini, whose family stayed inside the night of 5–6 April. "After that damned meeting, they instilled in us the idea that something terrible couldn't happen."

When the earthquake struck, with its epicenter little more than 3 kilometers from the town center, Vittorini lost his wife and daughter. The quake left 309 people dead, at least 1500 injured, and more than 65,000 were forced to leave their homes. More than 3 years later, the town seems frozen in time; most of the city center is abandoned, many of its streets still cordoned off, with some houses completely destroyed. Many older buildings are kept in a straitjacket of metal braces, while more modern apartment blocks have gaping holes that in some cases reveal pieces of furniture that are still standing.

A swarm's significance

With the original courthouse badly damaged in the quake, the trial is being held in a simple, bright blue building on an industrial estate several kilometers outside the town. Inside, there is barely enough room for the defendants and a small army of lawyers to sit, leaving standing room only for many friends and relatives of the victims and journalists.

For Fabio Picuti, the main prosecutor in the trial, the earthquake was the start of an unusual foray into a complex scientific field. Picuti is from L'Aquila and has spent most of his career investigating local organized crime, but he tells *Science* that he has studied the sci-



In session. Public prosecutor Fabio Picuti (left) talks to Judge Marco Billi (right).

ence of the case extensively. He argues that had the commission members properly analyzed the seismic and other data at their disposal on 31 March 2009, and conveyed the results of that analysis accurately to the public, 30 of the victims of the earthquake would not have stayed indoors on the night of 5–6 April.

In his 509-page indictment, Picuti acknowledges that the experts were right to assert that predicting earthquakes is impossible, and that making buildings resistant is the best way to reduce risks. But he argues that these statements were of little use. He told the court that the minutes of the meeting in fact show the defendants to have made a series of "banal and self-contradictory" statements,

many of which were "at best scientifically useless" or, worse, "misleading."

Central to the prosecution's case is the swarm and what it implied about the risk of an impending quake. The scientists on the commission thought the swarm neither increased nor decreased the probability of a major earthquake. "A swarm, of whatever kind and of whatever duration, is never, and I underline never, a precursor of large seismic events," seismologist Giulio Selvaggi of the National Institute of Geophysics and Volcanology (INGV) told local newspaper *Il Centro* 3 weeks before the quake. (Selvaggi is one of three defendants who weren't officially on the commis-

sion but are regarded as members by the prosecution because they attended the 31 March meeting and had relevant expertise.) Barberi, who was the commission's vice-president, is quoted in a draft version of the meeting minutes as saying that "a seismic sequence doesn't forecast anything."

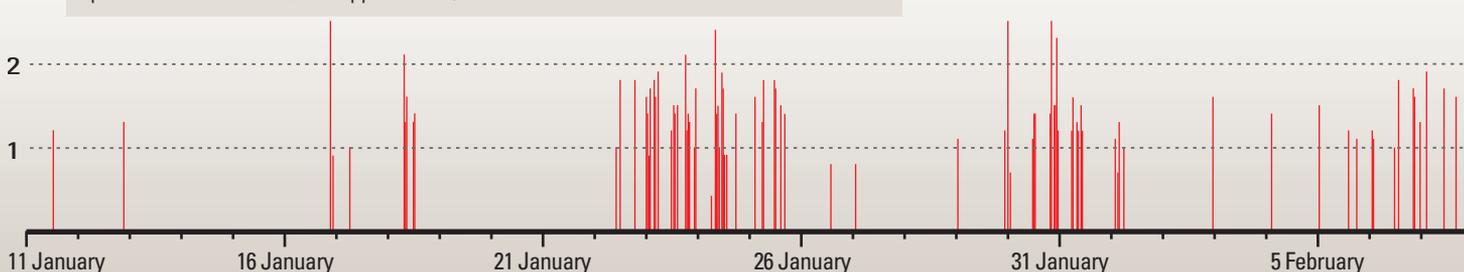
In their testimony, the defendants stuck to that opinion. Enzo Boschi,

a geophysicist at the University of Bologna who for decades was the most prominent Italian geophysicist, told the court: "I refuse to admit that a seismic sequence, whether consisting of big or small tremors, can tell us a big earthquake is on its way." Boschi's lawyer, Marcello Melandri, adds that the experts did not undervalue the significance of the swarm. Melandri tells *Science* that the commission "did not reassure" during its meeting, adding that "it wasn't said that the earthquake wouldn't happen or that it would happen."

Picuti pointed out during his summing up that L'Aquila's 1461 and 1703 quakes were also preceded by foreshocks—and argued that the defendants knew this and should have taken it into consideration. "Why," he asked, "didn't another commission member

LOCAL MAGNITUDE

Trail of tremors. L'Aquila had experienced hundreds of minor quakes in early 2009. A key question in the trial: Did they suggest a big one might be coming? (The timing of individual spikes is based on GMT and is approximate.)



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