

1975 China Quake Shows Prediction ‘Not Impossible’

April 4—Despite the claims of vocal anti-science assets, earthquakes *can* be predicted. People had enough warning of a 7.3 magnitude quake in China in 1975, for example, that they were able to evacuate in time to save thousands of lives. The U.S.-initiated international team of scientists which investigated the following year, the Haicheng Earthquake Study Delegation, proclaimed it to be “the first major shock to have been accurately predicted anywhere in the world.” This documented, modern-era prediction should give us optimism not only for predicting, but eventually preventing such destructive phenomena.

The “precursory anomalies” that gave indication of the coming 1975 quake were both microscopic and macroscopic, and underscore the necessity of correlating an array of measurements and observations to be able to make accurate predictions, since earthquakes have different characteristics. The microscopic anomalies were detected with then-modern instruments and measured changes in seismicity, geodetic deformation, water chemistry, geomagnetic field, telluric current, crustal stress, and so forth. The macroscopic anomalies included changes in animal behavior, groundwater (level, flow, color, smell, etc.), unusual light and sound, and so forth.

As a study published in the June 2006 *Bulletin of the Seismological Society of America* notes, a wide

area around the future site of the Haicheng quake had experienced lesser quakes going back to the mid-1960s. This had prompted the government to wage an awareness campaign about earthquakes, implement more stringent construction standards, and expand monitoring systems.

A “middle-term” prediction (predicting a quake in one to two years) of the Feb. 4, 1975 quake was issued at a national conference in June 1974. A “short-term” prediction (less than six months) was issued at another national conference in mid-January 1975. The first foreshock (which not all quakes have) was felt at 1:35 a.m. on Feb. 1. And an “imminent” prediction and warning was issued at 12:30 a.m. on Feb. 4, more than 19 hours before the quake hit.

The epicenter of the quake was about 200 km from where it was predicted in northeast China. Nonetheless, the predictions, and the actions of officials, scientists, and others, who initiated evacuation procedures, saved lives. About 2,000 people died in the quake, and nearly 28,000 were injured—this in a city of a million people and a region of 3 million, where more than 90% of the structures were damaged. Estimates are that had it not been for the evacuations, more than 150,000 lives would have been lost.

As Qi-Fu Chen, a research professor with the China Earthquake Administration in Beijing said, the Haicheng quake is a “useful reference” that shows that while “precursor earthquake prediction is not impossible,” it is nonetheless a challenging task that “will require many years of research.”

—Franklin Bell