

The Telegraph, Calcutta, 03 Feb 2008

## Lost: correct quake reader

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**New Delhi, Feb. 2:** The loss of a position-determining antenna in Bangalore will cripple India's ability for high-accuracy readings of the build-up of underground strain and earthquake hazard for at least a year, scientists said today.

The antenna — part of a worldwide network measuring the shift in earth's landmass — was stolen from the Indian Institute of Science, Bangalore, on January 8. It was the only reference point in India for nearly 50 seismic strain measuring stations nationwide.

Accurate measurements of the deformation of the earth's crust help scientists track accumulation of strain in sub-

terranean rocks that leads to earthquakes. The antenna at the IISc used satellites to determine ground positions to an accuracy of a single millimetre.

"We've effectively lost the accuracy we had achieved after nearly 13 years," said Sridevi Jade, a scientist at the Centre for Mathematical Modeling and Computer Simulation, Bangalore, that received data from the antenna.

Although scientists expect to install a new antenna in a month, the new instrument will not deliver the same level of accuracy as the old one. In the early months of operation, position readings based on data from the new antenna could have an error of up to 5mm.

The replacement antenna

would have to be placed at the exact spot as the old one. Subtle design changes in the new antenna could also add to error. Scientists hope to eliminate these errors over several months. "We expect it will take us a year to get back to 1mm accuracy," Jade said.

Until then, research groups — most of them in the Himalayan and Northeast regions — would be unable to determine with high accuracy their own coordinates from the Bangalore reference point.

"As a result, our capacity to measure the rate at which the Indian landmass is deforming will be compromised," said Vinod Gaur, former director of the National Geophysical Research Institute, Hyderabad, who had set up the antenna —

borrowed from a US laboratory — at the IISc in 1994.

"This is a big setback," said Shyam Sunder Rai, a scientist at the National Geophysical Research Institute, Hyderabad. "Everyone in India measuring crust movements depended on this antenna."

The antenna had been mounted on a hard rock on the IISc campus, located in one of the most stable regions of the Indian crust, immobile and underformed for nearly 2.5 billion years. "It was an immobile spot, a reference point from which to measure how fast other points on the Indian landmass are moving," Rai said.

Jade said she had asked the IISc to help provide an electrified fence around the new antenna.