

# THE *Current*

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## **Images Show Underwater Fault Surfaces**

Marc Kamerling, a researcher with UC Santa Barbara's Institute for Crustal Studies, has developed a new series of images of fault surfaces in the ocean floor from Ventura to Santa Barbara. He presented the images and a talk at the Geological Society of America in Universal City last week, and one of the images is now available on the web. (See below.)

The pictures, compiled from several sources, provide information that can then be applied to models of ground shaking during earthquakes, since the angle and configuration of the faults strongly influence how much the ground shakes.

"A lot of previous work has been done on faults on land that you can see," said Kamerling. "But faults on shore are really just subsidiaries to faults that come out of the channel and dip under the coast and the mountains."

Pitas Point, North Channel faults, and Red Mountain fault were among those studied by Kamerling and his associate Christopher Sorlien, also a researcher with the Institute for Crustal Studies (ICS).

The researchers found that the North Channel fault is a nested system of faults that overlap. "These relationships are hard to describe which is why we are mapping them in three dimensions," said Kamerling.

Kamerling and Sorlien also put a structure map of a geologic horizon

(also the area under the channel) into a computer program that flattened it out. From that information they were then able to deduce the rate at which tectonic plates are being compressed together -- information that relates to earthquake hazard. The faster the plates are compressed the more likely earthquakes are to occur.

"By imaging faults in three dimensions and showing earthquakes in three dimensions, it is easier to see along which fault lines earthquakes are happening," said Kamerling.

Ralph Archuleta, director of ICS, provided support for the imaging work which will help with the ground shaking modeling that ICS researcher Kim Olsen will be doing. Craig Nicholson, also a researcher at ICS, provided data used in the images developed by Kamerling and Sorlien.

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