

Geographic Research in the USGS Western Region

The two geography research programs of the U.S. Geological Survey (USGS), Land Remote Sensing and Geographic Analysis and Monitoring, have very strong relevance to the USGS mission and science strategy. In the western United States, the particular niche of these geography programs is in connecting USGS science to people and communities.

Reports from the National Academy of Sciences and other organizations invariably encourage the U.S. Geological Survey (USGS) to ensure the quality of its science while finding ways to make it more relevant to important societal issues. Much of the geography research conducted in the USGS Western Region does exactly that. In Menlo Park, California, the geography research team is focused on developing tools and techniques to help people assess risk from natural hazards and environmental impacts. In Flagstaff and Tucson, Arizona,



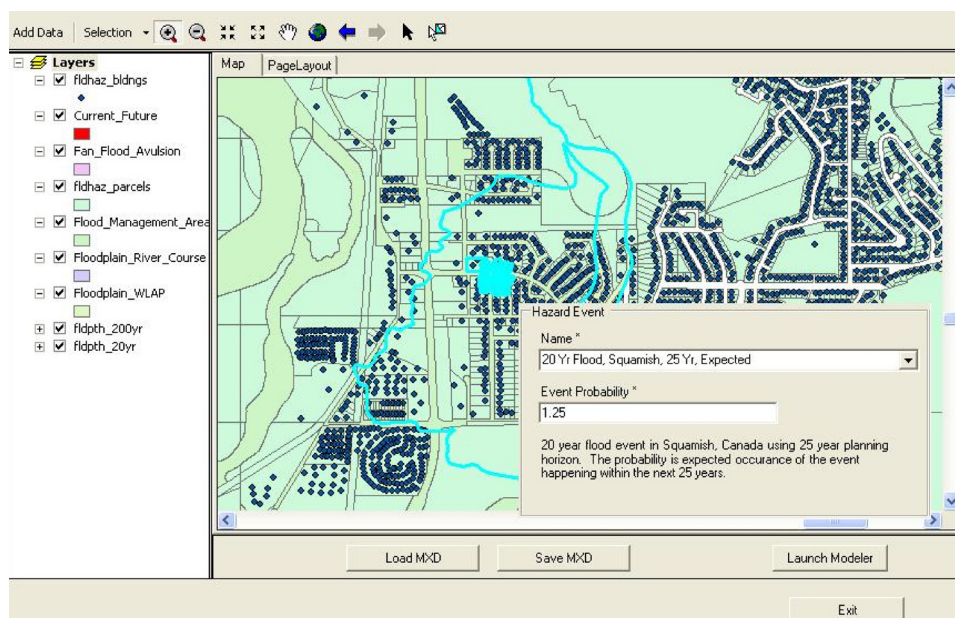
Following a heavy rainstorm, suspended sediment (brown) washed from the land can affect the health of the coral reef off south Molokai, Hawaii. Changes in land-use patterns on the island strongly influence such events.

na, geography scientists explore new ways to use remote sensing to help communities deal with environmental issues.

The Western Geographic Science Center (WGSC) comprises about 50 scientists and support staff, mostly located in Menlo Park, Flagstaff, and Tucson. USGS ge-

ography research programs also support several scientists in the Alaska Science Center in Anchorage who are developing the National Land Cover Database and assessing environmental changes.

The WGSC is conducting innovative research on how to assess risks to communities from natural hazards, given the uncertainty of scientific knowledge. Data from USGS scientists in the geology, biology, and water resources disciplines is used as input into models that combine that knowledge with measurements of the vulnerability of people and property. These WGSC models develop a risk framework that communities can use to evaluate different mitigation strategies. For example, the Land Use Portfolio Model, developed by WGSC scientists in Menlo Park, takes portfolio theory developed for investors and applies it to assess alternative investments in hazard preparation and mitigation. WGSC scientists are now refining this



Example of the Land Use Portfolio Model being used to assess the risk of flooding in Squamish, British Columbia. Black dots show buildings at risk of flooding in a simulated 20-year flood.

