Tsunami Inundation Map for Emergency Planning
San Onofre Bluff Quadrangle
June 1, 2009

METHOD OF PREPARATION

Initial tsunami modeling was accomplished by the U.S. Geological Survey (USGS) using the numerical model P3 (Titov and Gonzalez, 1997; Titov and Synolakis, 1998). The tsunami modeling was conducted using the 3 arc-second (75- to 90-meter resolution) Digital Elevation Model (DEM) provided by the National Tsunami Hazard Mitigation Program of NOAA. The inundation mapping (Titov and Gonzalez, 1997; Titov and Synolakis, 1998) was performed using the Synthetic Aperture Radar (IfSAR) Digital Elevation Models from GeoSAR platform (EarthData: Lander, et al., 1993; Intermap, 2003; NOAA, 2004). The location of the enhanced inundation line was determined by using digital imagery and terrain data on a GIS platform with consideration given to historic inundation information (Lander, et al., 1993). In order to enhance the result from the 75- to 90-meter resolution grid data, a method combining inundation results for an ensemble of source events affecting a given region was developed utilizing higher-resolution digital topographic data (3- to 10-meters resolution or higher), were adjusted to “Mean High Water” sea-level conditions, and interpolated to 3 arc-second grid data. This map does not represent inundation from a single scenario event. It was created by combining inundation results for an ensemble of source events affecting a given region or in a particular area and will not likely be repeated by a single local event.

TITLE OF MAP

Tsunami Inundation Area

PURPOSE OF THIS MAP

This tsunami inundation map was prepared to assist state and local agencies in identifying areas at risk. No federal funds were used in the preparation of this map. This map was prepared by the National Tsunami Hazard Mitigation Program and is intended for emergency planning uses only. This map, and the information presented herein, is not a legal document or for any other regulatory purpose. This map should not be used in lieu of a comprehensive inundation assessment. Consult local planning agencies to verify or update risk assessment. The California Emergency Management Agency (CalEMA) by the National Tsunami Hazard Mitigation Program. The tsunami modeling and inundation mapping (Titov and Gonzalez, 1997; Titov and Synolakis, 1998) was performed using the Synthetic Aperture Radar (IfSAR) Digital Elevation Models from GeoSAR platform (EarthData: Lander, et al., 1993; Intermap, 2003; NOAA, 2004). The location of the enhanced inundation line was determined by using digital imagery and terrain data on a GIS platform with consideration given to historic inundation information (Lander, et al., 1993). In order to enhance the result from the 75- to 90-meter resolution grid data, a method combining inundation results for an ensemble of source events affecting a given region was developed utilizing higher-resolution digital topographic data (3- to 10-meters resolution or higher), were adjusted to “Mean High Water” sea-level conditions, and interpolated to 3 arc-second grid data. This map does not represent inundation from a single scenario event. It was created by combining inundation results for an ensemble of source events affecting a given region or in a particular area and will not likely be repeated by a single local event.

TABLE 1: Tsunami sources modeled for the San Diego County coastline

<table>
<thead>
<tr>
<th>Source</th>
<th>M</th>
<th>Region</th>
<th>Moment Magnitude</th>
<th>Mean High Water Sea-Level</th>
<th>Inundation Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cascadia Subduction Zone #3</td>
<td>M9.2</td>
<td>West Coast</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>Central Aleutians Subduction Zone #3</td>
<td>M9.2</td>
<td>East Coast</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>Kuril Islands Subduction Zone #1</td>
<td>M8.8</td>
<td>Alaska</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
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<tr>
<td>1964 Alaska Earthquake</td>
<td>M9.2</td>
<td>Alaska</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>1952 Kamchatka Earthquake</td>
<td>M9.0</td>
<td>Kamchatka</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>San Clemente Island Fault</td>
<td>M8.0</td>
<td>Southern California</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>San Clemente Fault Bend Region</td>
<td>M8.0</td>
<td>Southern California</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
</tr>
<tr>
<td>Lasuen Knoll Fault</td>
<td>M7.5</td>
<td>Southern California</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
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<tr>
<td>Cat Island Fault</td>
<td>M7.5</td>
<td>Southern California</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
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<tr>
<td>Carlsbad Thrust Fault</td>
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<td>Southern California</td>
<td>75.0</td>
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<td>Tijuana Fault</td>
<td>M7.5</td>
<td>Southern California</td>
<td>75.0</td>
<td>0.5</td>
<td>0.25</td>
</tr>
</tbody>
</table>

REFERENCES

University of Southern California
California Emergency Management Agency
California Geological Survey
University of Southern California
Titov, V.V., and Synolakis, C.E., 1998, Numerical modeling of tidal wave runup:...
Titov, V.V., and Gonzalez, F.I., 1997, Implementation and Testing of the Method of Tsunami Synthetic Aperture Radar (IfSAR) Digital Elevation Models from GeoSAR platform (EarthData: Lander, et al., 1993; Intermap, 2003; NOAA, 2004). The location of the enhanced inundation line was determined by using digital imagery and terrain data on a GIS platform with consideration given to historic inundation information (Lander, et al., 1993). In order to enhance the result from the 75- to 90-meter resolution grid data, a method combining inundation results for an ensemble of source events affecting a given region was developed utilizing higher-resolution digital topographic data (3- to 10-meters resolution or higher), were adjusted to “Mean High Water” sea-level conditions, and interpolated to 3 arc-second grid data. This map does not represent inundation from a single scenario event. It was created by combining inundation results for an ensemble of source events affecting a given region or in a particular area and will not likely be repeated by a single local event.

MAP BASE

The California Emergency Management Agency, California Geological Survey, Intermap Technologies, Inc., and the California Coastal Survey (CCS) are no representation, warranty, or guaranty as to the accuracy of the information depicted on the maps or as to their fitness for any purpose other than emergency planning and/or hazard mitigation purposes.

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California Geological Survey
University of Southern California
State of California
County of San Diego
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SAN CLEMENTE
MARGARITA PEAK
SITTON PEAK
WILDOMAR
ENCINITIAS
RANCHO SANTA FE
SAN MARCOS
BACHELOR MTN
JAMUL MOUNTAINS
CAHUILLA MOUNTAIN
EMERGENCY PLANNING
SAGE
JAMUL MOUNTAINS
CAHUILLA MOUNTAIN
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