Local Source (Cascadia Subduction Zone) Tsunami Inundation Map

Saunders Lake, Oregon

Introduction

The Cascadia Subduction Zone (CSZ) is a 1,000-kilometer-long fault that extends from northern California to southern British Columbia. It is known for its potential for large earthquakes, with the last major event occurring in 1700. The fault is characterized by megathrust earthquakes, which generate tsunamis when the locked segment of the fault suddenly slips. The resulting event is a full-rupture earthquake, characterized by a sudden release of strain.

Fault movement associated with these earthquakes is westward, which means that the coast on the west side of the fault will experience the first impact of a tsunami. The coast of Oregon is particularly vulnerable to tsunamis generated by events along the CSZ, as it is located near the northern end of the subduction zone.

Map Explanation

The map provided is a tsunami inundation map for Saunders Lake, Oregon. The map is based on a combination of historical data, including GIS (Geographic Information System) data, geological maps, and earthquake models. The primary data source is the Cascadia Large Earthquake Scenario (CLASS), which is a scientific approach used to assess the potential impacts of large earthquakes along the Cascadia subduction zone.

The map uses different colors to represent varying levels of inundation. Yellow indicates areas with the highest probability of inundation, while green represents areas with the lowest probability. The map also includes a legend that explains the various symbols and colors used to depict different types of data.

The inundation maps were developed using a 3D tsunami modeling methodology that incorporates tsunami wave physics and hydrodynamic models. The methodology is based on the Uniform Hazard Maps (UHMs) developed by the Cascadia Tsunami Source Model (CTSM) project, which is a collaboration between the United States Geological Survey (USGS) and the Washington Office for Coastal Management (WOCM). The UHMs provide a probabilistic assessment of the expected run-up height and inundation extent for a range of tsunami scenarios, including those associated with large earthquakes along the CSZ.

The inundation maps are produced by the Oregon Department of Geology and Geophysical Hazards (DOGAMI), which is responsible for the development and dissemination of tsunami hazard maps and guidance for tsunami preparedness and response in Oregon. The maps are intended to help communities and emergency managers prepare for and respond to potential tsunami events.

The map includes several key features, such as the coastline, major highways, and populated areas. These features help to identify areas that may be at higher risk of inundation and areas that may require additional planning and preparedness efforts.

References


The maps are intended to help communities and emergency managers prepare for and respond to potential tsunami events. They are part of the broader effort to enhance tsunami awareness and preparedness in Oregon and other coastal areas along the Cascadia subduction zone.