

## RECOMMENDED TSUNAMI PLANNING LEVELS



The following recommended tsunami planning levels for communities are provided as guidance to emergency managers for determining evacuation areas, evacuation routes and safe areas for preparing emergency response plans and in providing public education to their communities. These planning levels have been developed based on current science and are intended to provide a margin of error by incorporating the probable maximum wave height, consideration for wave run-up, earthquake subsidence and a safety margin.

The recommended planning levels for communities are based on the most current scientific data available and have taken into consideration:

1. Observed data (where available);
2. Numerical model results (where available);
3. Sedimentary core samples (where available); and
4. Knowledge of the source regions.
5. The Cascadia subduction zone has not accumulated sufficient strain for a maximum earthquake at this time.

Primary contributors to this document have been Natural Resources Canada, Fisheries and Oceans Canada, local authorities and the Provincial Emergency Program.

The following recommended planning levels represent the worst case-scenario for a distant earthquake and tsunami and a local major earthquake and tsunami event. All levels are to be measured from the **normal highest tide** at each location. All values are in metres.

ZONE	WAVE HEIGHT	RUN-UP (x 2.0)	SAFETY (x 1.5)	SUBSIDENCE	PLANNING LEVEL
Zone A (North Coast)	2.0	4.0	6.0		6
Zone B (Central Coast)	2.0	4.0	6.0		6
Zone C (West Coast Vancouver Is)	3.0	6.0	9.0	1.0	10
Zone D (Juan de Fuca Strait)	1.3	2.7	4.1		4
Zone E (Strait of Georgia)	0.5	1.0	1.5		2

**Wave height** represents the best consensus of scientific estimates of wave height at this time.

**Run-up** allows for run-up which is expected to be less than a factor of 2 except at the heads of some inlets.

**Safety** adds a safety factor of 50% to allow for uncertainties in scientific interpretation and non-tidal variations in sea level (e.g. storm surge, El Nino).

**Subsidence** allows for subsidence that will occur during a Cascadia subduction earthquake.

**Planning** level is the sum of the values *Safety* plus *Subsidence*.

Tsunami wave heights can vary due to location, shape of the coastline, effects of offshore bathymetry and/or onshore topography and tide. This variation can occur over very short distances and it is impossible to predict accurately what these localized variations will be without additional modeling work. Detailed modelling of run-up and inundation is not currently available for most areas of coastal British Columbia.

In some localized areas wave heights may exceed the recommended planning levels. Of most concern would be areas at the heads of inlets or those areas with unique bathymetric features, for example, in Zone C at Port Alberni.

Large earthquakes can trigger landslides which could produce local waves larger than the stated planning levels. Large landslide induced waves can also happen on lakes. These situations are not addressed in this document.