TSUNAMI HAZARD IN BC: CHALLENGES, GAPS, & MOVING FORWARD

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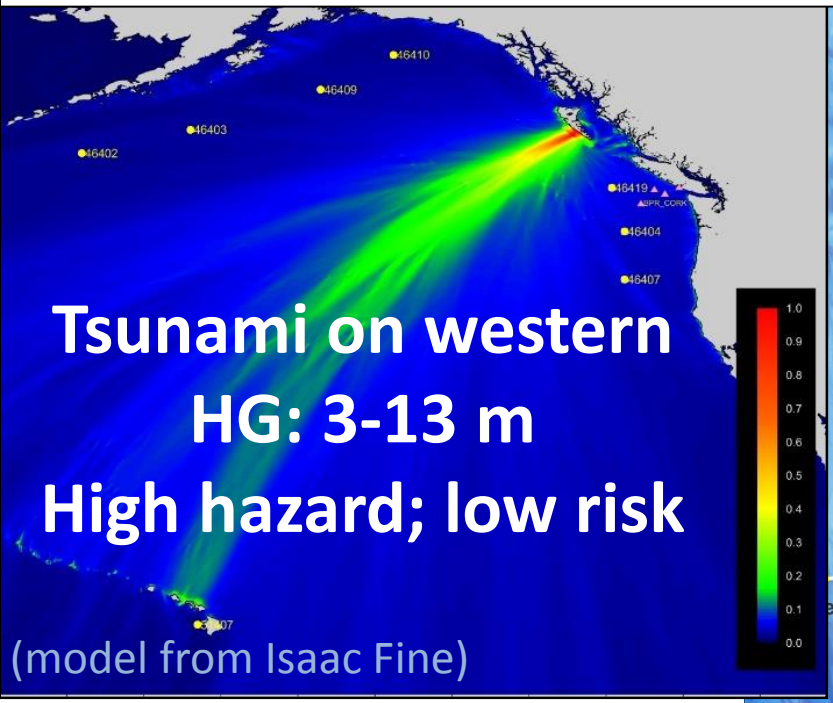
CHALLENGE 1: Get the science right

Avoid blind spots: understand tsunami sources

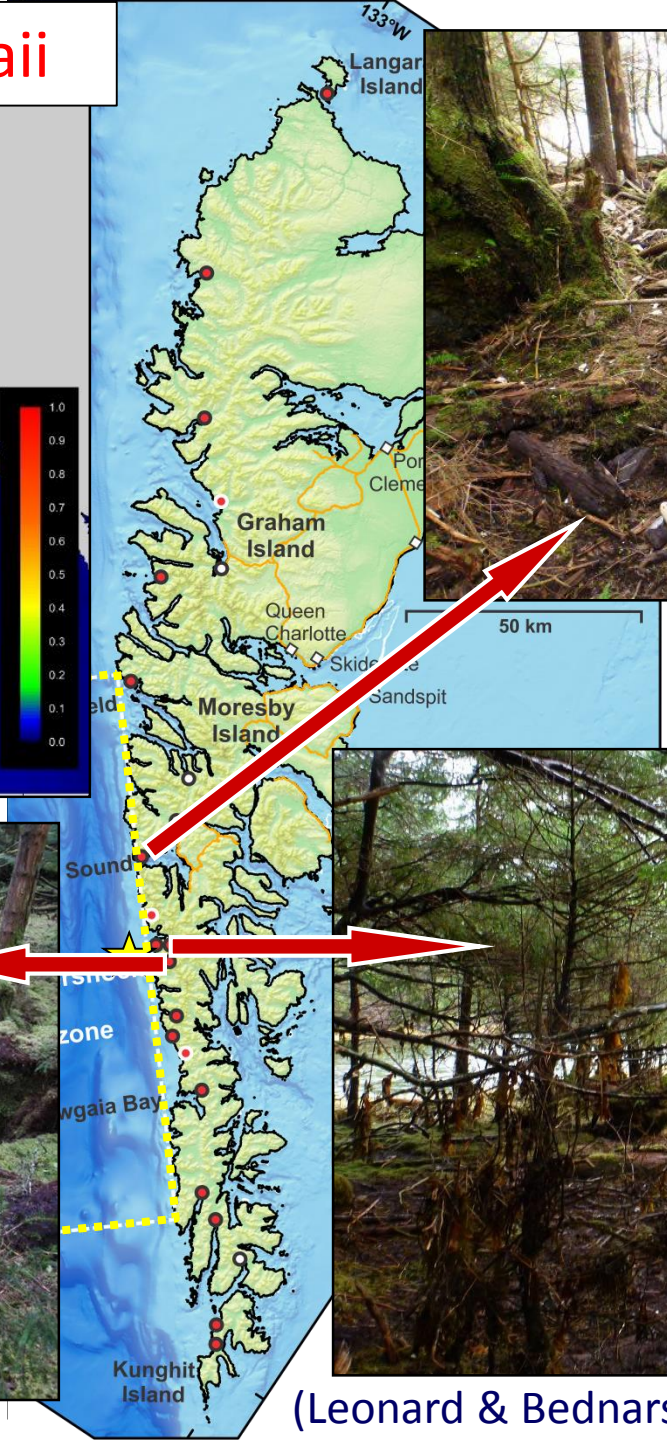
Oct 2012 M7.8 Haida Gwaii



Tsunami on western HG: 3-13 m

High hazard; low risk

(model from Isaac Fine)



(Leonard & Bednarski 2014; 2015)

Tsunami hazard:

E.g., What wave height has a 2% probability of being exceeded in 50 years?

→ More **complicated** than seismic hazard

- Why?

(1) Near and distant tsunami sources

Port Alberni:
Tsunami from 1964 earthquake in Alaska

(2) Multiple tsunami source types

(3) Tsunami modelling requires:

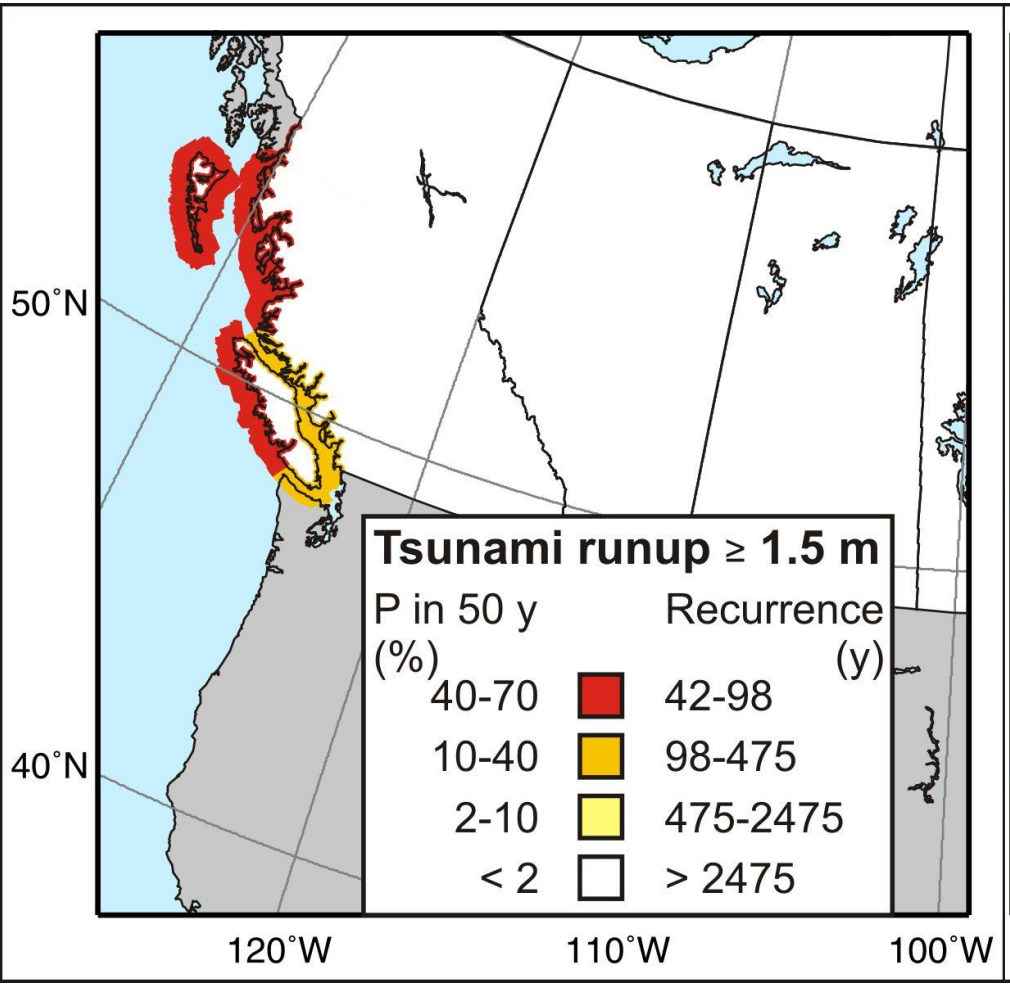
- Source details
- Travel path (high resolution)

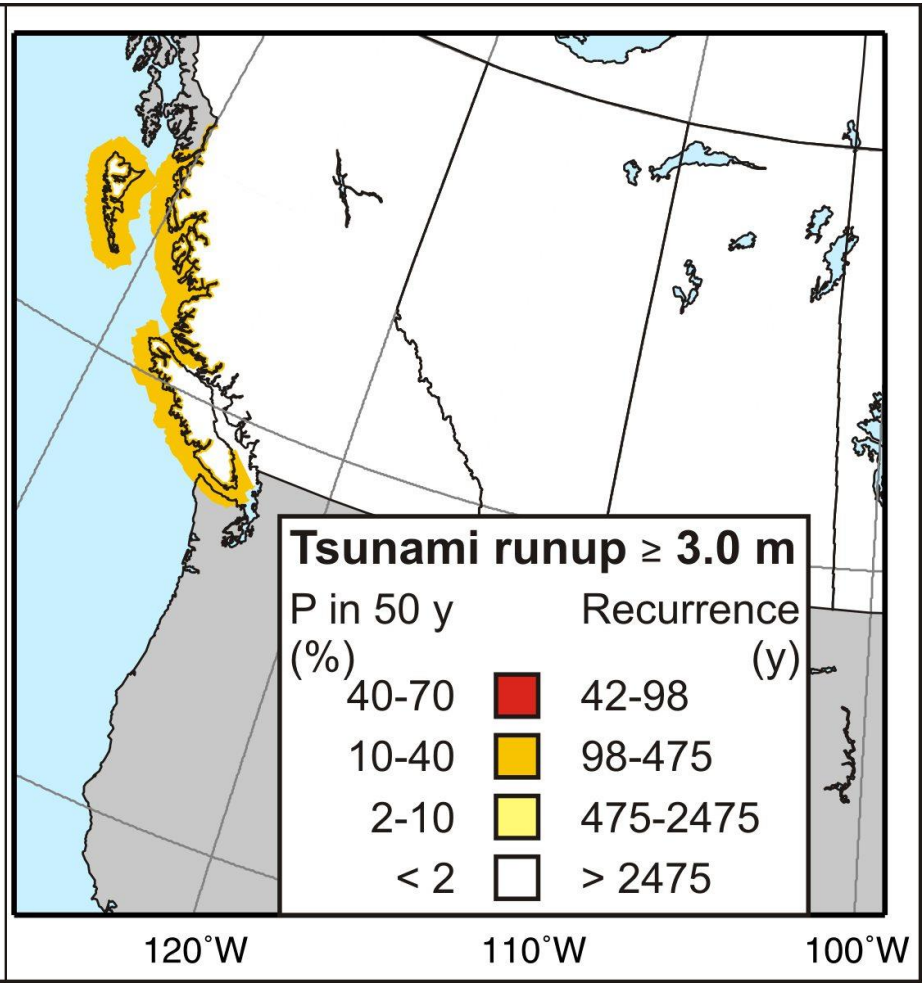
(4) Probabilistic assessment also requires recurrence data

- Tsunami deposits
- Historical fault ruptures
- Dated landslides

→ Largely lacking!

Preliminary Tsunami Hazard Maps





FOR MORE DETAIL:

Leonard et al. (2012): GSC Open File 7201, 126p (download from Geoscan.nrcan.gc.ca).

Leonard et al. (2014): Tsunami hazard assessment of Canada. Natural Hazards 70(1): 237-274.

Move forward?

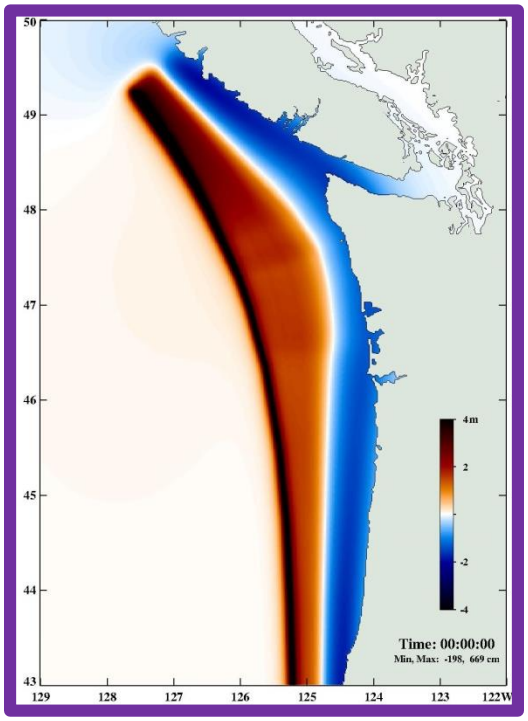
Need more data!

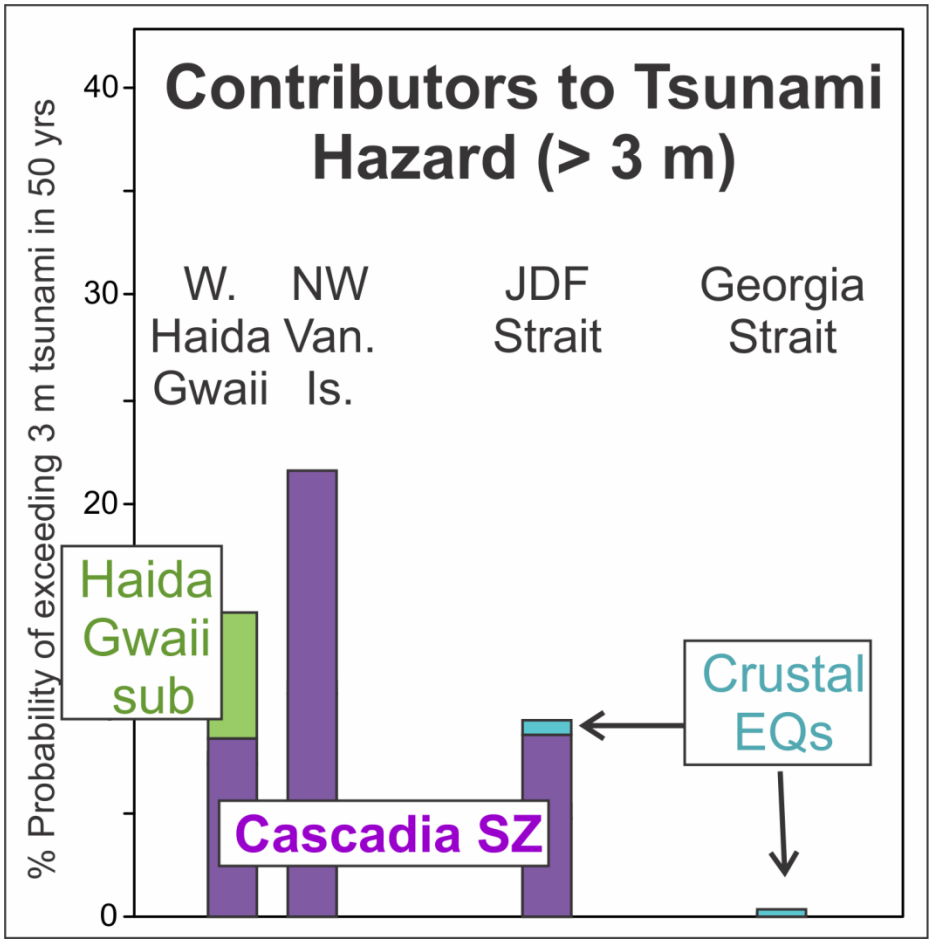
CHALLENGE 2: Move forward now, despite gaps

- We can't wait for all the science
- Use what we do know

→ Mitigation, emergency planning

Cascadia subduction zone dominates hazard*





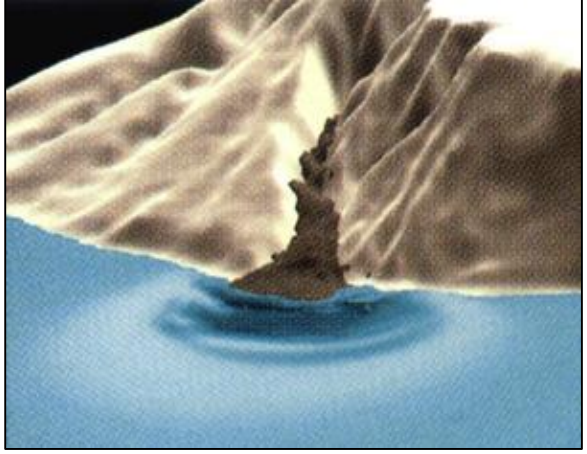
Improved Modelling

→ Maximum event*

→ Site-specific models → Mitigation

*varies by site

CHALLENGE 3: Fill the gaps



- Don’t ignore other sources
  (incl. crustal faults, landslides)

- Paleoseismic/tsunami/landslide data
  → improved recurrence

- Bathymetry/lidar data
  → Improve modelled wave heights,
  currents, impacts, & uncertainties

CHALLENGE 4: Avoid public blind spots

Simple messaging:

- Don’t wait for siren/door knock
- Near any shore: