Use of Tsunami Forecast Tools in Hazard Assessment
Creation of the Reference Set of Grids

1. Creation of a Telescopic set of 3 grids centered around the NWS Warning Point.
   a) Grid A (Large Coverage, Coarse Resolution)
   b) Grid B (Medium Coverage, Medium Resolution)
   c) Grid C (Small Coverage, Fine Resolution)
2. Selection of an appropriate tsunami source.
   a) Historical Event (for gage data validation).
   b) Potential Worst Case Scenario (to test grids for robustness).

Alaska-Aleutian Subduction Zone Source Parameters
3. Run the selected source on the telescopic set of grids.

4. Troubleshoot possible instabilities.
   - Faulty bathymetric data, Single node islands, Under-resolved bathymetric features…

5. Tide gage data comparison whenever available for validation.

Kahului Harbor: 1996.06.10 0404 Andrearov Tsunami (Source: AASZ Mw 7.9 1.00*a4+3.50*b4)

Time [hour]
Reference Case

Selected Source: 1964 Alaska Tsunami

Pacific Northwestern Coast
Regional Animation
(wave height is in cm.)

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Selected Source:
1964 Alaska Tsunami.

Seaside Inundation Animation
(Fine Resolution, Inundation Grid shown.)
1. Identification of vital assets within the fine resolution inundation grid.
   a) Major population centers.
   b) Vital Infrastructure: Roads, Airports, Hospitals…..
2. Reduction of the area covered by each of grids in the reference set, while preserving coverage of vital assets.

3. Sub-sampling of each of the reduced grids to minimize run time.
Comparison of Coverage and Resolution of the Reference and SIM grids.

Reference:
A. Resolution: 36’’ x 36’’
B. Resolution: 6’’ x 6’’
C. Resolution: 1/3’’ x 1/3’’

SIM:
A. Resolution: 72’’ x 72’’
B. Resolution: 12’’ x 12’’
C. Resolution: 1’’ x 1’’
4. Monitor time series degradation at Warning Point and/or Tide Gage by comparison with Reference Run. (No tide-gage data available for Seaside)
3. Iterate steps 4 and 5 till run time is below 10 mins while minimizing signal degradation.
Comparison of the and SIM (10 mins) Reference (5.2 hours)

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Use SIM computational speed to simulate a large number of scenarios.
Worst-case Scenario is selected