

Interim and Future SOPs

Bill Fry and Chip McCreery, ICG-PTWS WG2



Te Whakaahuatanga Tere o ngā
R-CET
Rū Whenua me ngā Parawhenua

15 January Hunga Tonga / Hunga Ha'apai eruption

- Tsunamis from volcanoes are not adequately forecast with traditional earthquake approaches
- Tsunami waves from Hunga Tonga Hunga Ha'apai arrived at Nukualofa prior to arrival at any deep ocean (DART) observation sites
- Nearest operational DART was within approximately 20-30 minutes tsunami travel time from Hunga Tonga Hunga Ha'apai

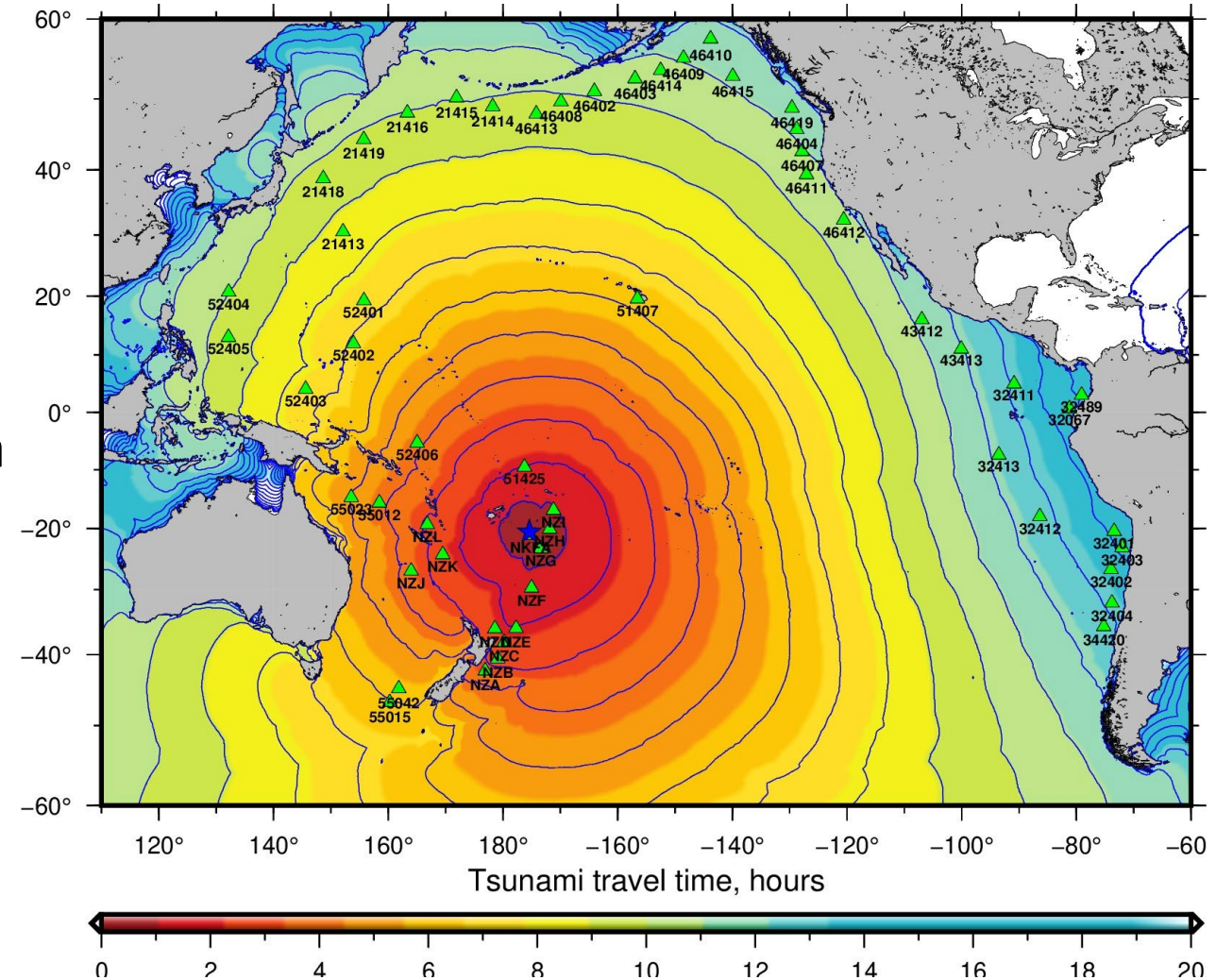


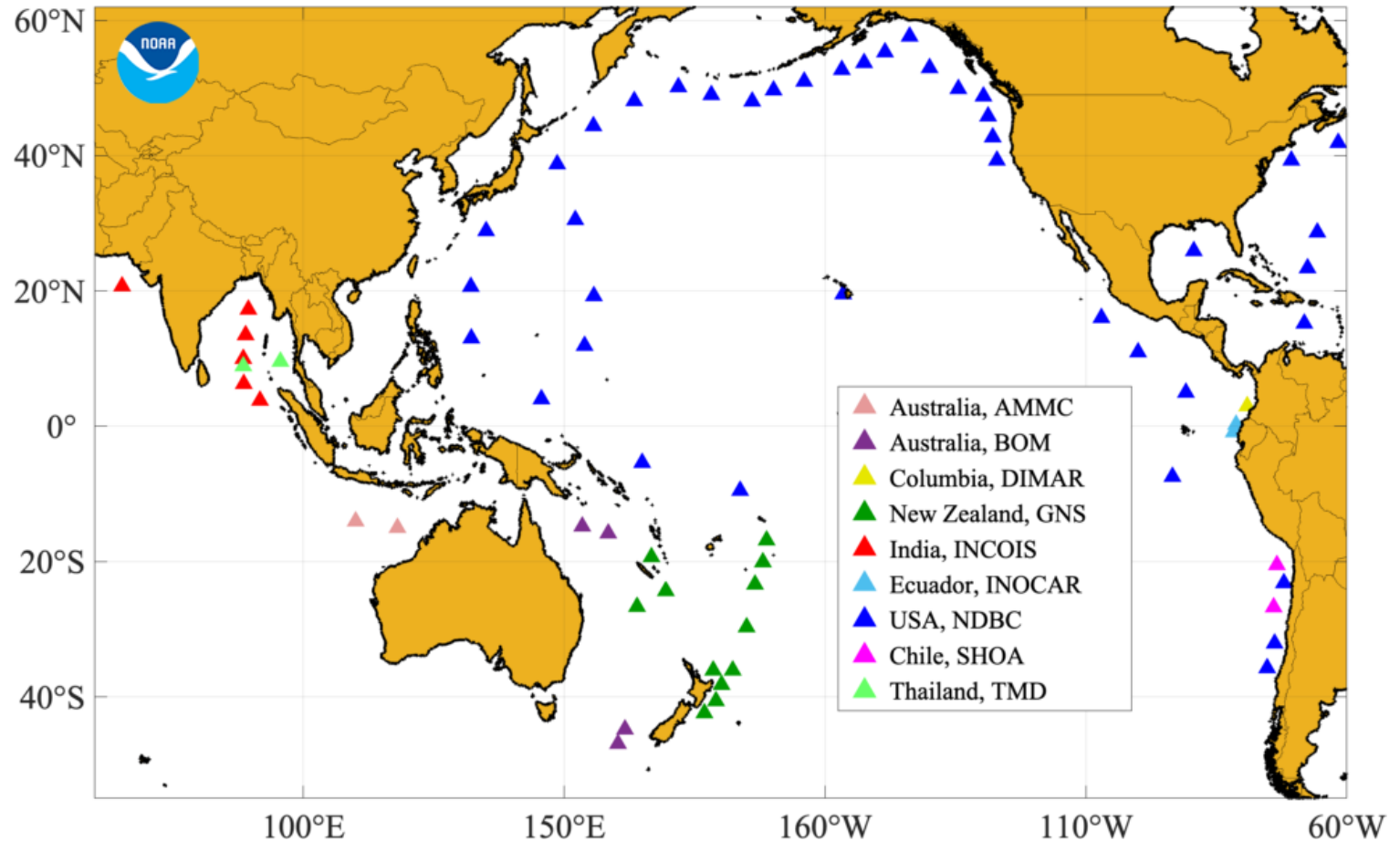
Figure courtesy of Aditya Gusman, Te Pū Ao

Challenge: How do we alert for potential volcanic tsunamis when we don't have an understanding of the source?

- We do not have the ability to measure and adequately describe the tsunami generation process sufficiently quickly to deliver physics-based pre-impact forecasting at local and regional distances
- PTWC will use first available single station (Nuku`alofa tide gauge or DART) amplitudes as an early indication of potential tsunami severity.

Implications for future Pacific events

- To protect communities at local travel time distances (<1 hour), pre-event **planning** and **education** must be complemented with a densification of ocean observation networks
- IF sufficient evidence of a significant tsunami exists, even without enough evidence for a refined forecasts, we must attempt to alert communities at least within regional (3 hour) travel times.



Toward local instrumental TEW

- Get tsunami ready
- Densification of observation
 - DART
 - Cabled observatories
 - SMART cables
 - Coastal tide gauges
- Aspirational: Forecasts for atypical events are best done by observing the tsunami wavefield directly, rather than using observations of the source (e.g. monitoring of volcanoes, earthquakes, etc.).