



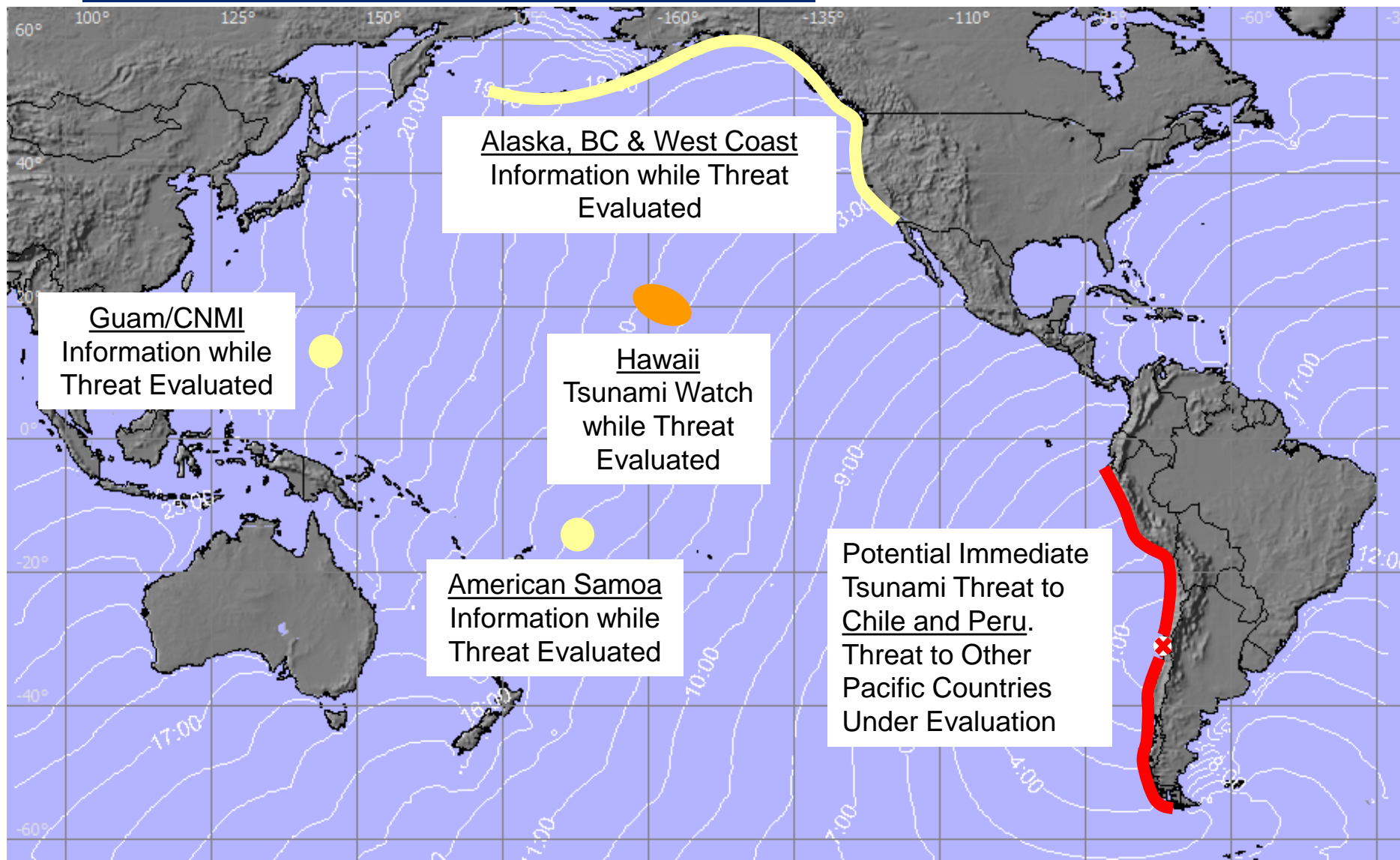
**U.S. National Oceanic and Atmospheric Administration
National Weather Service
Pacific Tsunami Warning Center, Honolulu, Hawaii**



Chile Tsunami of September 16-17, 2015

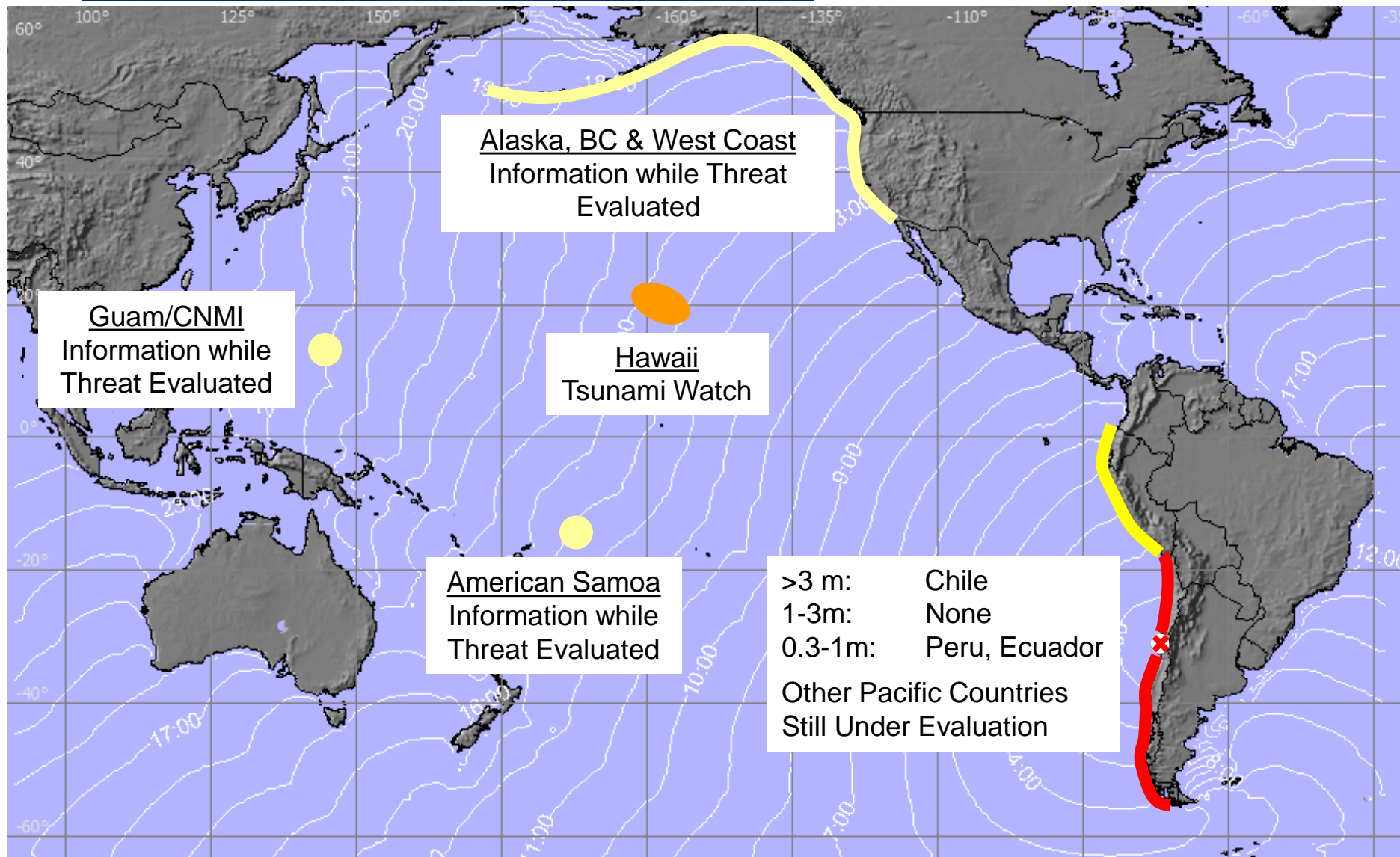
**Charles McCreery
Director, PTWC**

Elapsed Time: 6 Minutes Initial TWC Products Issued

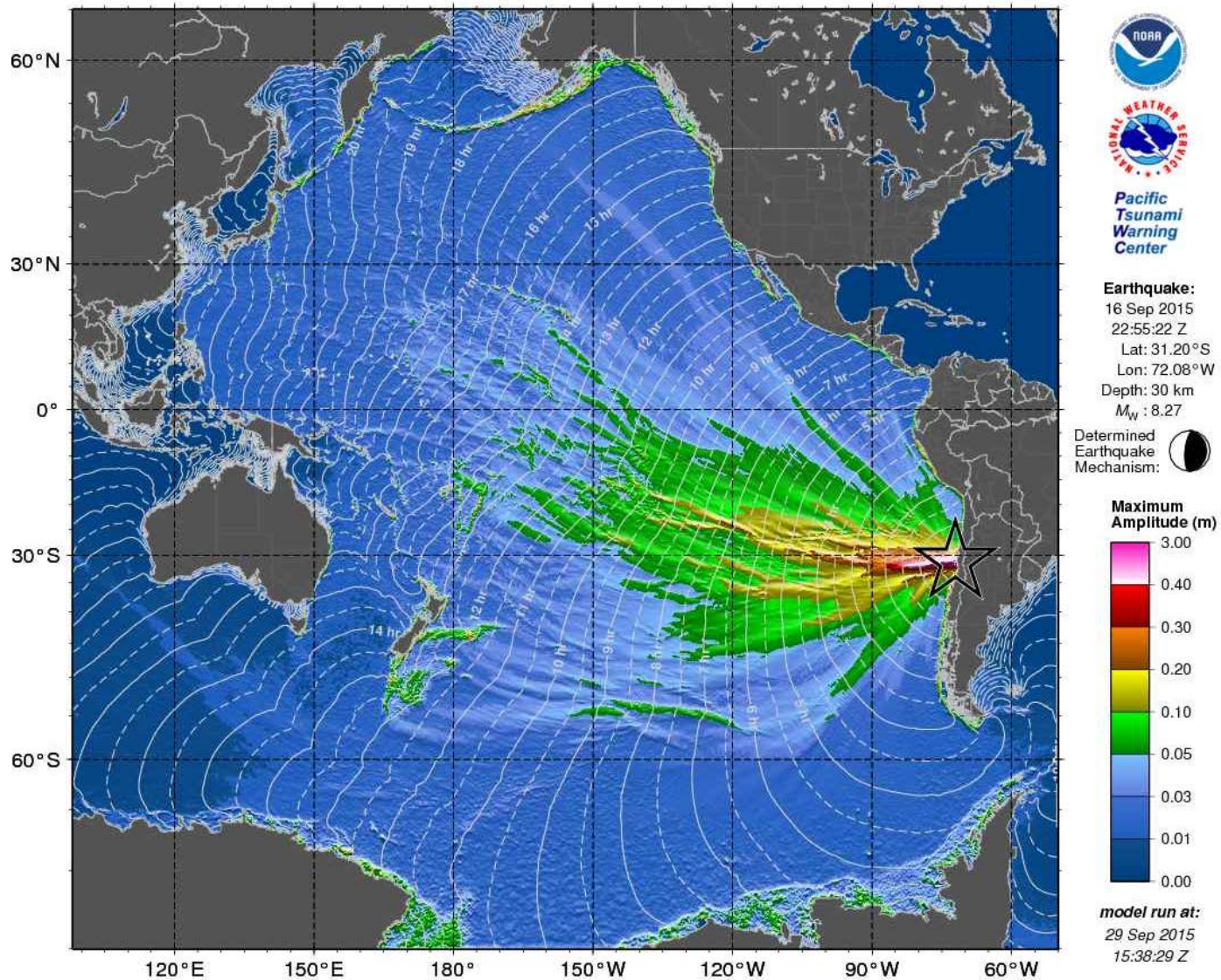


Elapsed Time: 28 Minutes

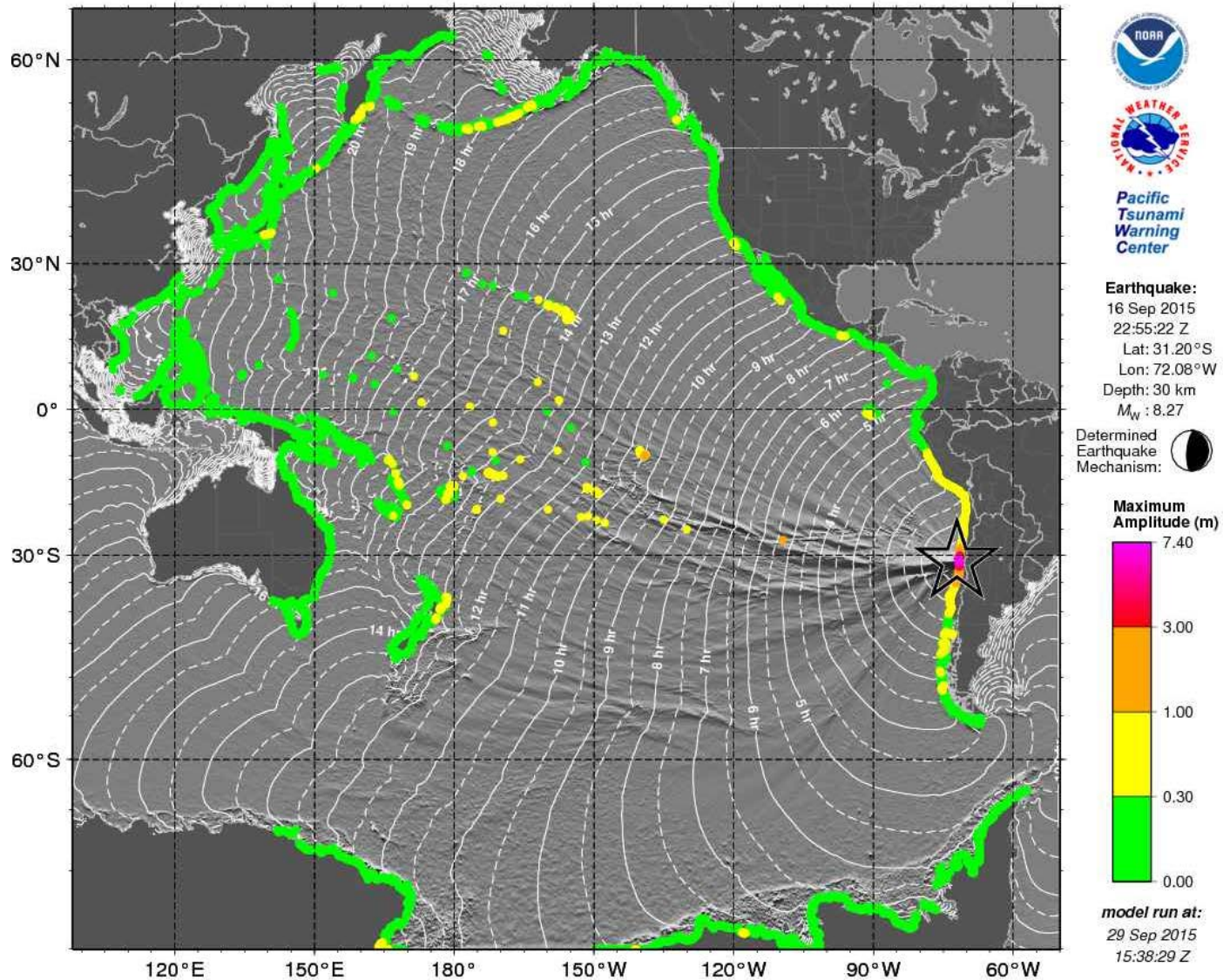
Regional Forecast based on EQ Mechanism



Ocean Forecast

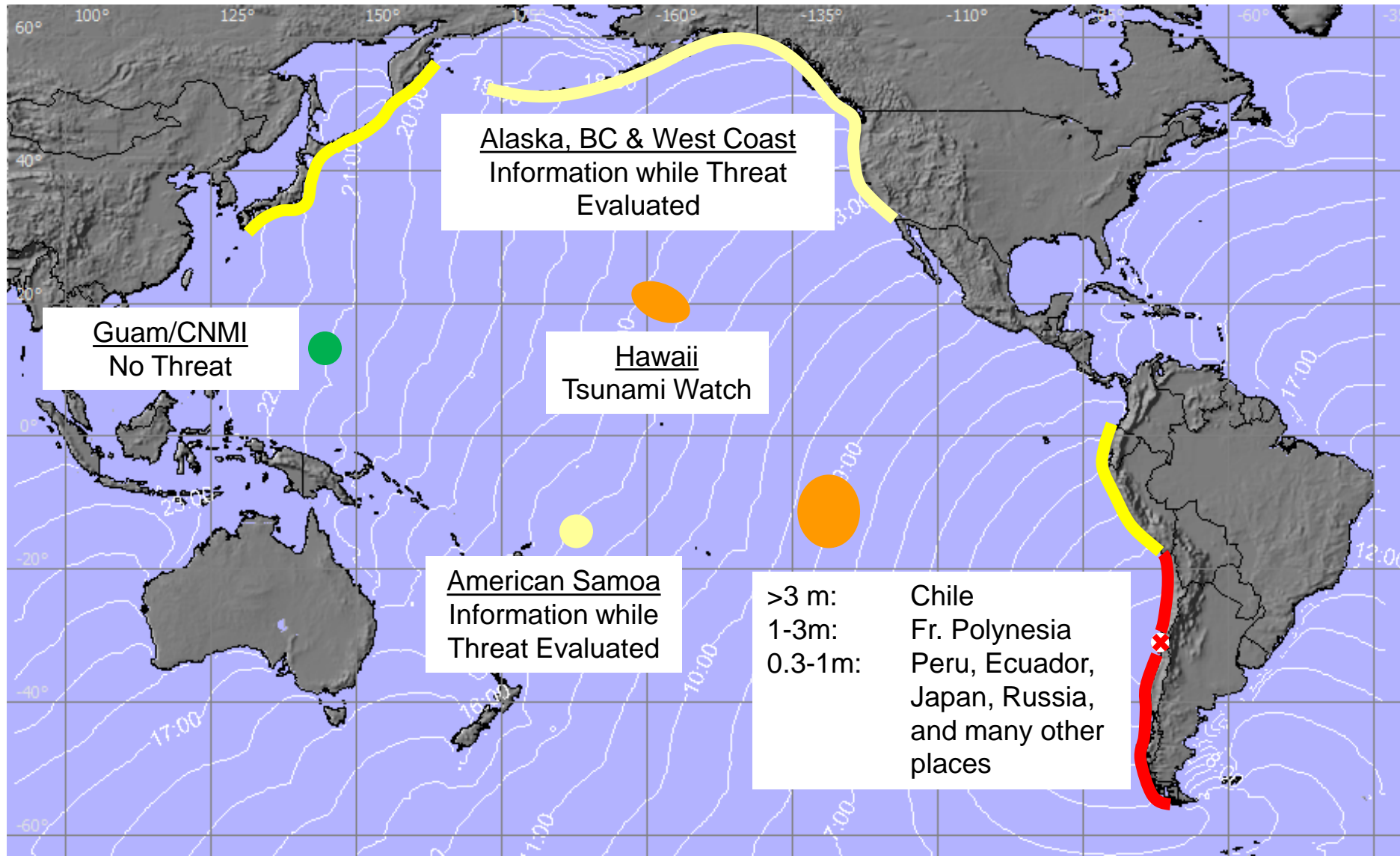


Coastal Forecast



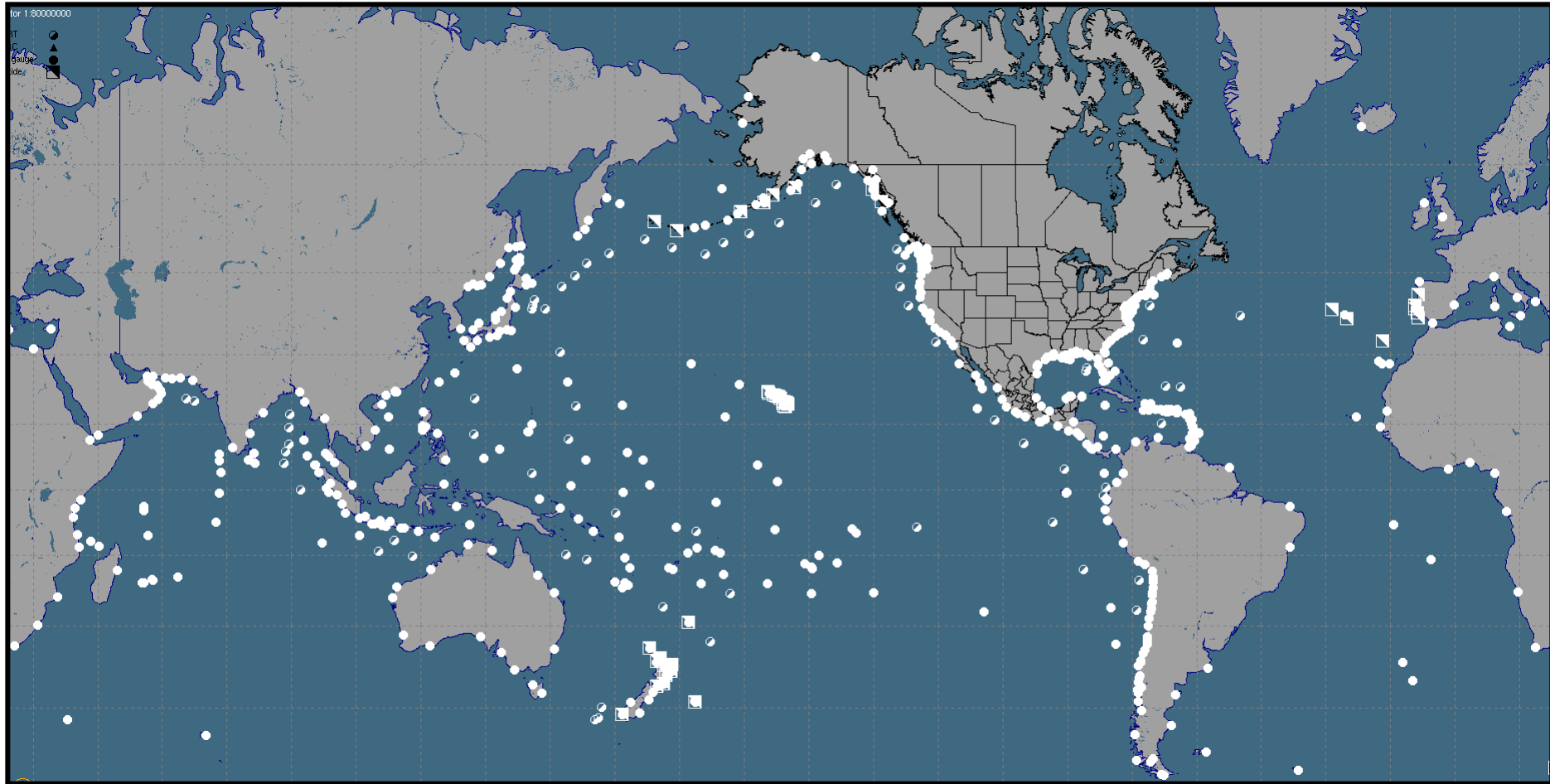
Elapsed Time: 52 Minutes

Forecast based on EQ Mechanism

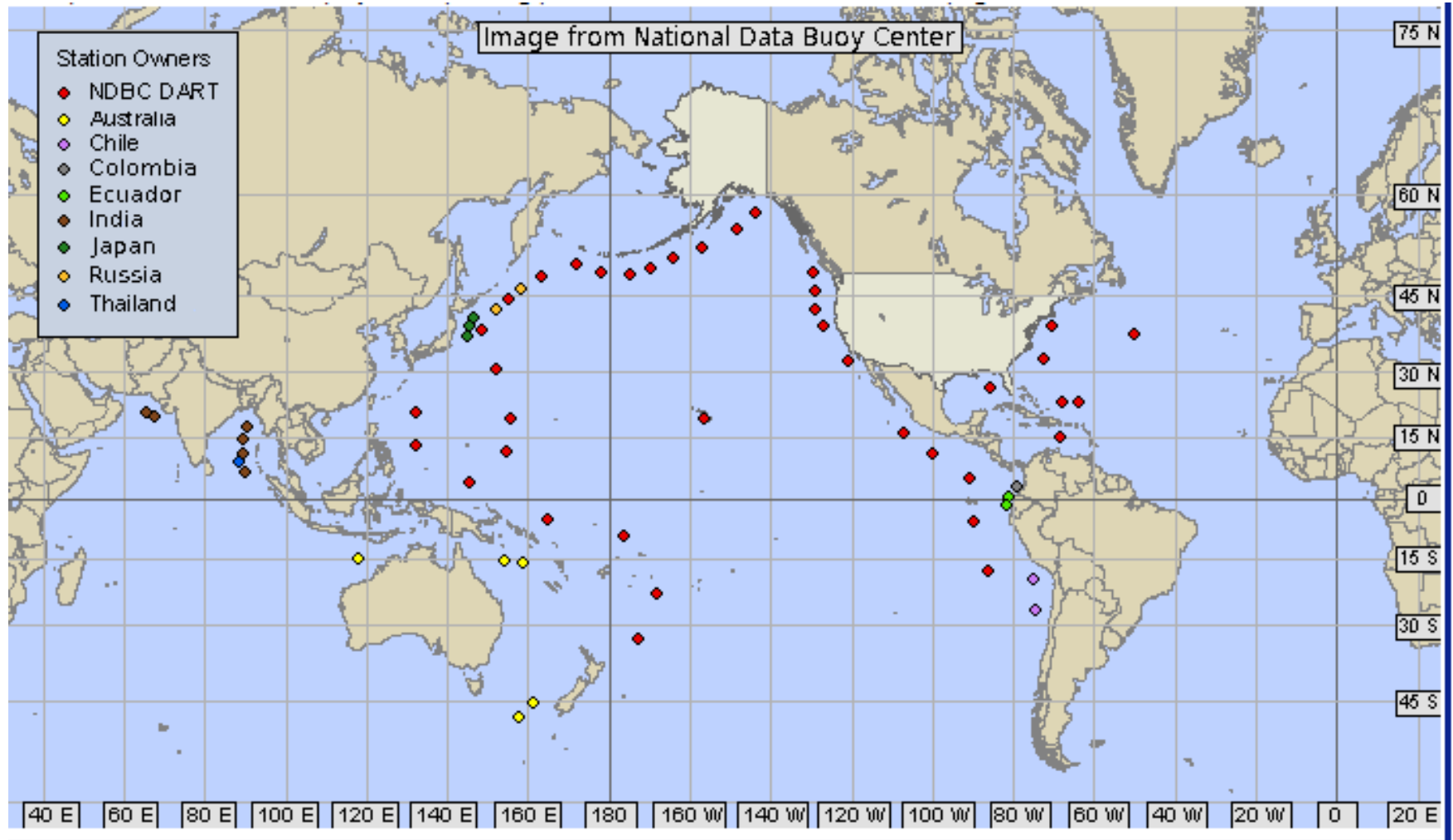




Real-Time Reporting Sea Level Gauges



Real-Time Reporting Deep-Ocean Gauges (DARTs)



Confirmation of Tsunami, Evaluation of Threat, and US Alerts



Elapsed	Place	Event	Max Value
00:10-01:29	Quintero, Chile	Gauge Reading	1.77 m
00:21-00:29	Coquimbo, Chile	Gauge Reading	4.72 m
00:51-01:03	Chanaral, Chile	Gauge Reading	1.14 m
00:25-00:39	DART 32402	Gauge Reading	0.10 m
	TWCs	Models Constrained with DART Data	
01:31-01:46	DART 32401	Gauge Reading	0.05 m
	TWCs	Confidence in All Model Results	
02:29	Hawaii	Advisory	0.3-1 m
02:29	Guam/CNMI	No Threat	<0.3 m
02:48	S. California	Advisory	0.3-1 m
03:14	Am. Samoa	Advisory	0.3-1 m



Summary of Forecast and Observations

PLACE	FORECAST	ALERT	MAXIMUM ON GAUGE
Chile	>3 m	N/A	4.72 m (Coquimbo)
Fr. Polynesia	1-3 m	N/A	1.40 m (Nuku Hiva)
Peru	0.3-1 m	N/A	0.52 m (Callao)
Ecuador	0.3-1 m	N/A	0.18 m (Baltra)
Japan	0.3-1 m	N/A	0.80 (Kuji)
Russia	0.3-1 m	N/A	0.44 m (Shikotan Is.)
Hawaii	0.3-1 m	Advisory	0.85 m (Hilo)
West Coast	0.3-1 m	Advisory	0.33 m (Ventura)
Am. Samoa	0.3-1 m	Advisory	0.63 m (Pago Pago)
Guam/CNMI	<0.3 m	None	<0.03 m (Apra Harbor)



Cancellation of Threat and US Alerts

Elapsed	Place	Event
18:39	Hawaii	Advisory Cancelled
18:39	American Samoa	Advisory Cancelled
20:24	Southern California	Advisory Cancelled
24:10	Countries of the Pacific System (PTWS)	Final Threat Message for the Pacific

Summary of Casualties and Damages (Earthquake and Tsunami)



- ❑ All major effects happened in Chile
- ❑ Over 1 million were evacuated from the coast
- ❑ 13 deaths and 14 injuries (most or all from earthquake)
- ❑ 6 persons missing as of 24 September
- ❑ 55 persons in shelters
- ❑ 13427 without housing
- ❑ 816 homes destroyed
- ❑ 1011 homes uninhabitable
- ❑ Most tsunami damage around Coquimbo and Tongoy
- ❑ Most earthquake damage around Salamanch and Illapel

Particulars Courtesy
of ONEMI and SHOA



Coquimbo Sea Level Gauge (+4.72 m)



Photo Courtesy of SHOA



Multiple Ships Aground at Coquimbo



Photo Courtesy of SHOA



Summary of Event Response

- TWCs Responded Quickly
- Preliminary and Later Seismic Analysis was Accurate
- Judgment of Potential Tsunami Threat was Accurate
- Three Tsunami Forecast Models Used
 - Seismic and Sea Level Model Constraints were Sufficient
 - All Models Gave Consistent and Accurate Forecasts
 - Appropriate Alert and Threat Levels Issued
- Domestic and International Systems Worked Well