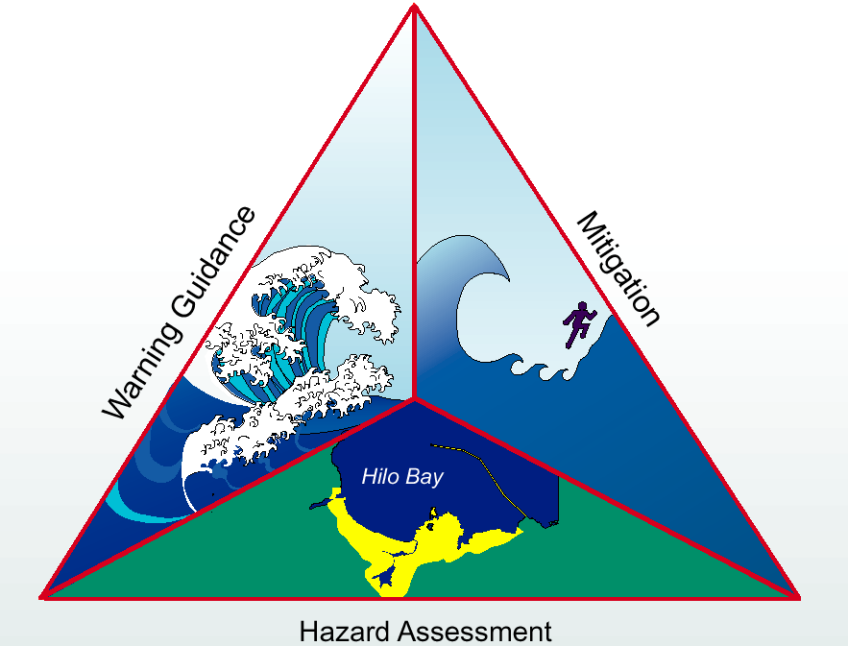
U.S. National Tsunami Hazard Mitigation Program
5-Year Review



National Oceanic and Atmospheric Administration

David Green, NOAA Tsunami Program Manager

NOAA Mission & Vision

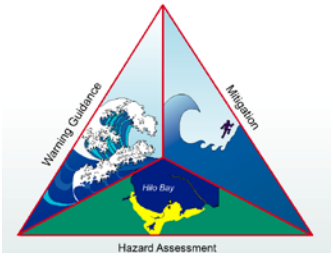
- NOAA's Tsunami Mission is to provide reliable tsunami forecasts and warnings and to promote community resilience.

- Our vision is for the United States to become a tsunami-resilient Nation by minimizing the loss of life and disruption to our economically vital coastal communities from future tsunamis.

NOAA and the NTHMP
Our Role

Fiscal Year	NOAA Admin
1997	$57,000
1998	$55,200
1999	$55,200
2000	$272,090
2001	$128,000
2002	$115,000
2003	$300,000
2004	$300,000
2005	$220,000
2006	$73,100
2007	$50,000

- **P.L. 109-424**
  - Conduct the NTHMP
    - Ensuring at-risk States, Territories, Commonwealths, and Tribal Governments are Represented
    - Meeting Organization
    - Contract Manager
    - Set Model Standards
    - Ensuring Goals of NTHMP and Congress are met
      - Integrating Preparedness and Mitigation Programs
      - Promoting Tsunami Warning and Mitigation Measures

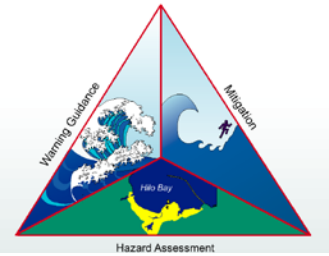


P.L. 109-424 Reporting Requirements

- No later than March 20, 2007, establish a process to monitor and certify contractor performance of contracts for the construction and deployment of tsunami detection equipment.

- Required to notify Congress within 30 days of impaired regional forecasting capabilities due to equipment or system failures and of significant contractor failures or delays in completing work associated with the tsunami forecasting and warning system

- No later than December 20, 2007, transmit a report to Congress on how the TWS will be integrated with other U.S. and global ocean observation systems, GEOSS, GSN, and ANSS

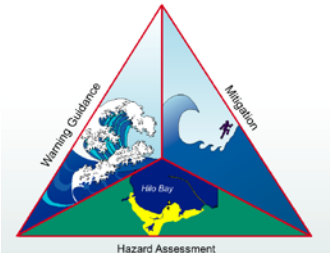


P.L. 109-424 Reporting Requirements

- No later than December 20, 2008, report to Congress on the recommendations from an National Academies Review of the tsunami detection, forecast, and warning program. The review shall assess further modernization and coverage needs as well as long-term operational capabilities. Response must discuss how NOAA will address recommendations

- No later than December 20, 2009, transmit a report to Congress on transition of R&D into the Tsunami Warning Program

- No later than January 31, 2010, transmit a report to Congress that evaluates the current status of tsunami detection, forecasting and warning system and the tsunami hazard mitigation program; and evaluates the NWS' ability to achieve continued improvements in the delivery of tsunami detection, forecasting and warning services; and lists the contributions of funding and other resources from other Federal agencies

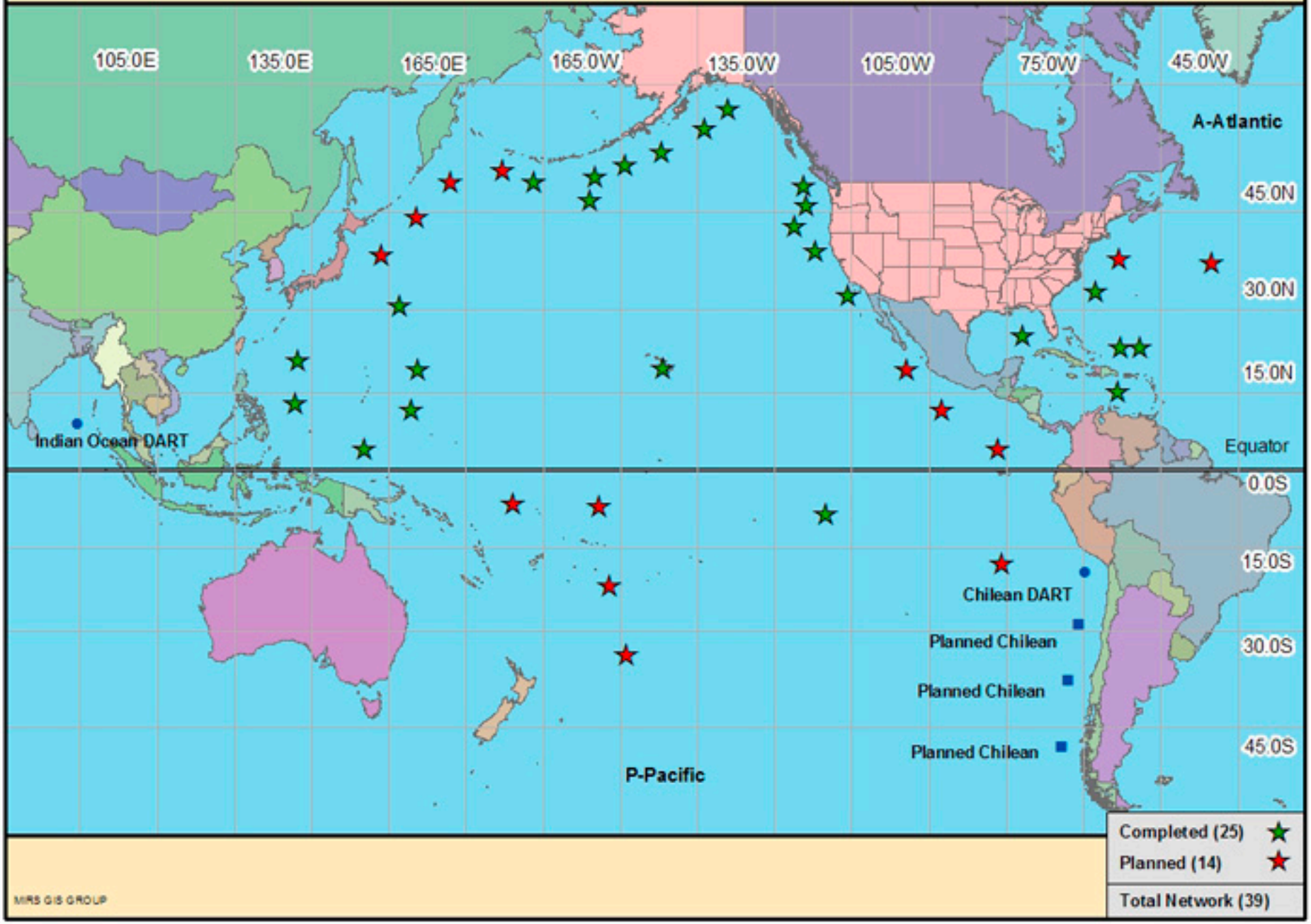


Summary of the NOAA Tsunami Program Elements

1. **Warning Operations**
   - 24x7 at both Alaska and Pacific Tsunami Warning Centers
   - East and Gulf Coasts now covered by Alaska Center
   - 28 of 39 DARTs deployed (72% complete)
   - 5 of 8 new seismic stations operational (62% complete)
   - 15 of 16 new tide stations installed and 33 upgrades complete
2. **Forecast System Development**
   - Version 1.0 forecast system implemented at both tsunami warning centers
   - 20 of 75 (27%) site specific inundation models completed
   - Successful experimental forecast of Nov 15, 2006 tsunami @ 12 harbors
3. **TsunamiReady**
   - 40 TsunamiReady communities recognized
   - TsunamiReady efforts ongoing (Summit in 2007)
4. **Long Term Archive**
   - 200 Gb new data added, 530 Gb new to add; ongoing
   - Digital elevation model development ongoing

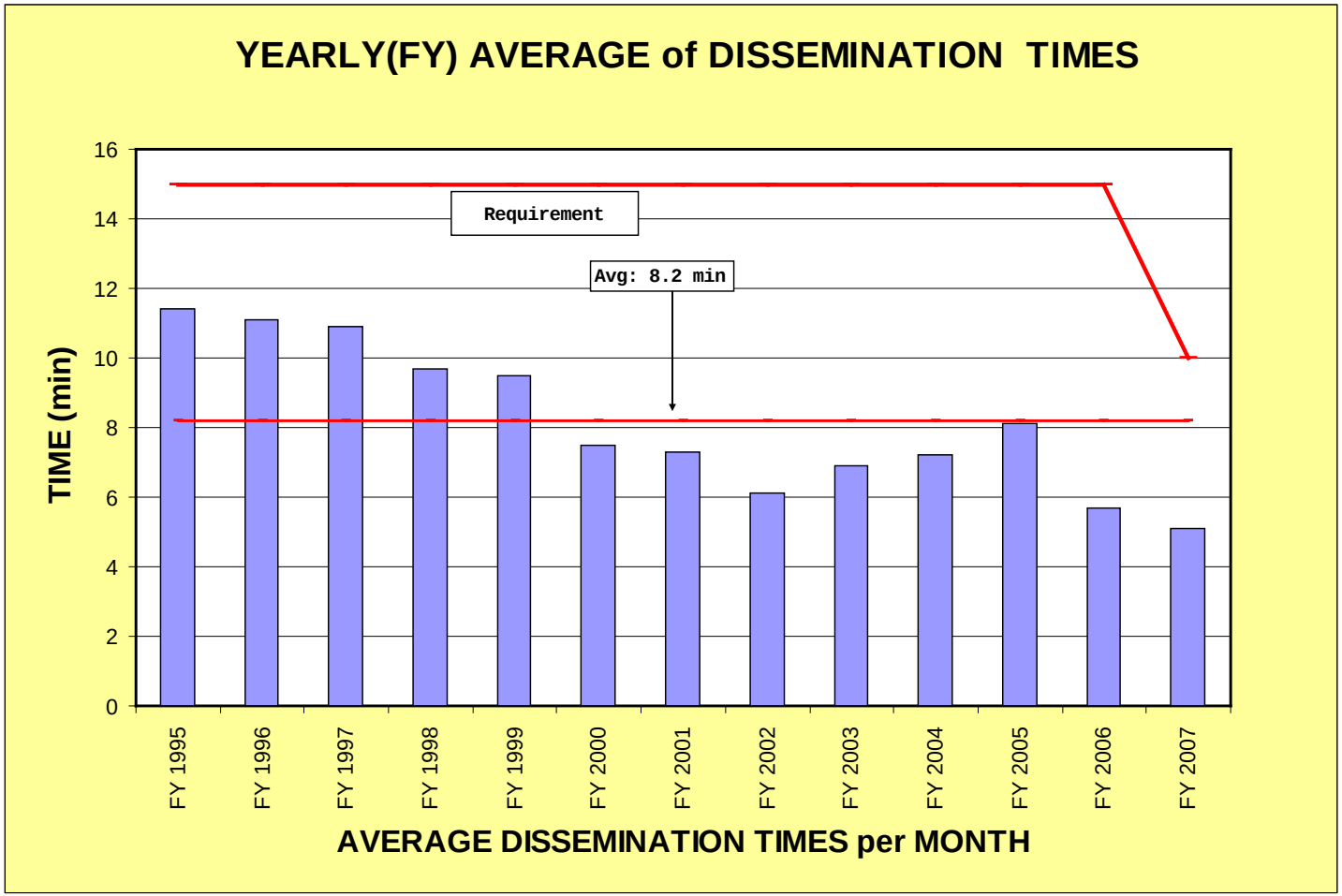
DART LOCATIONS - CONCEPTUAL PLAN

December 2006



Goal #3

- ATWC response to events in 2007 has averaged 5.1 minutes



NTHMP Goals

4. For at least one community per state, issue site- and event-specific forecasts of maximum tsunami flooding depth and inland penetration with an average rms error less than 50%. **NOAA**

5. Develop a suite of graphical products for dissemination from NOAA's tsunami warning system. **NOAA**

NTHMP Goals

4. For at least one community per state, issue site- and event-specific forecasts of maximum tsunami flooding depth and inland penetration with an average rms error less than 50%.

   15 communities have experimental forecast models: Alaska/4, California/2,Hawaii/4,Oregon/2, Washington/3. RMS error around 10%.

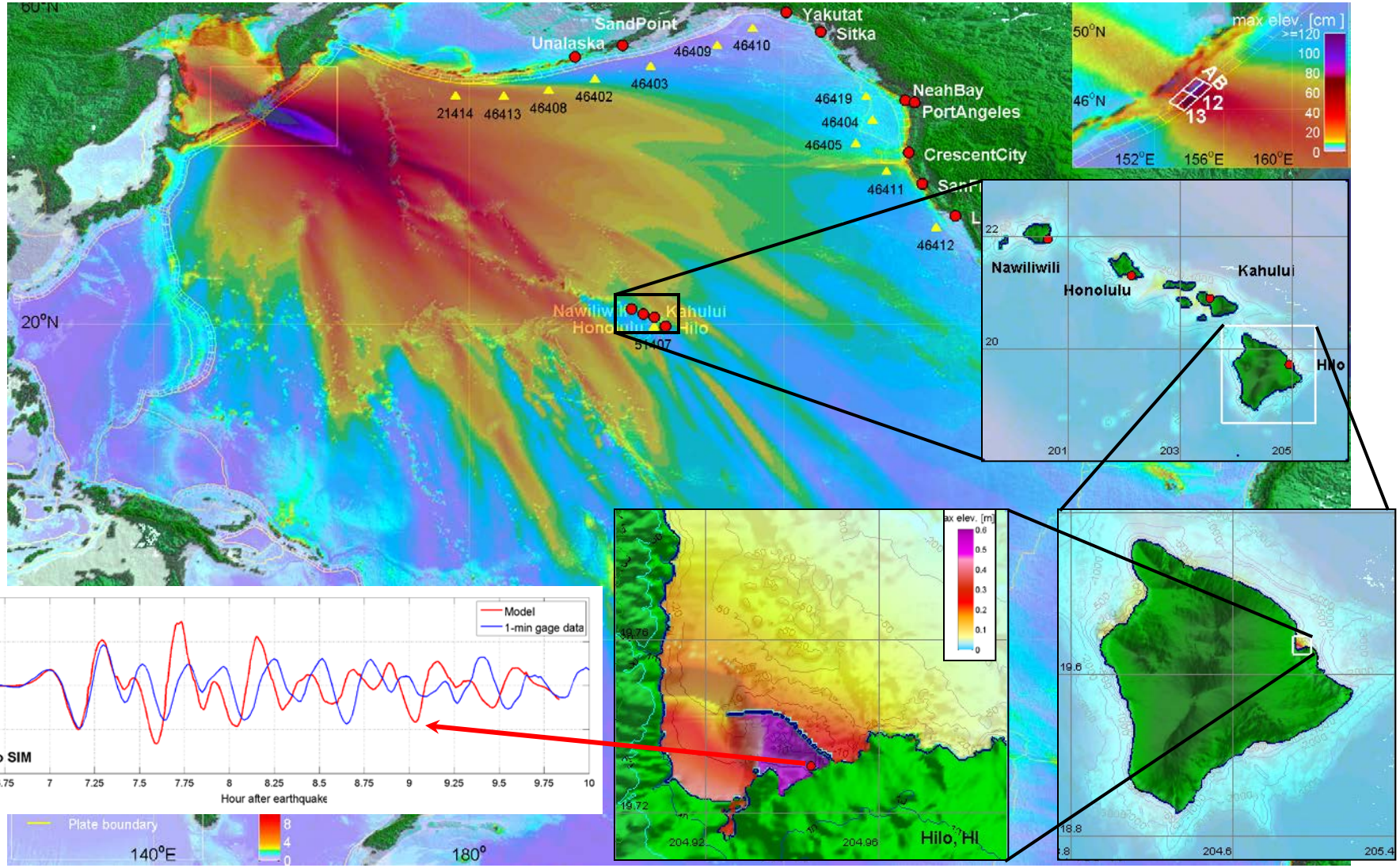
5. Develop a suite of graphical products for dissemination from NOAA's tsunami warning system. **Energy plots scheduled for 2007 and tide gauge forecasts for 2008**

Experimental Forecast for Nov 15,2006 Kurile Tsunami

- PMEL scientists responded to Kurile tsunami by supplying experimental forecasts for 12 harbors in AK,HI,WA,CA to both warning centers hours before tsunami arrival
- Experimental forecasts (4 hours of tsunami amplitude over time at tide stations) were produced using real time DART data and prototype forecast models
- Forecasts were compared with real-time tide data from upgraded NOS tide stations

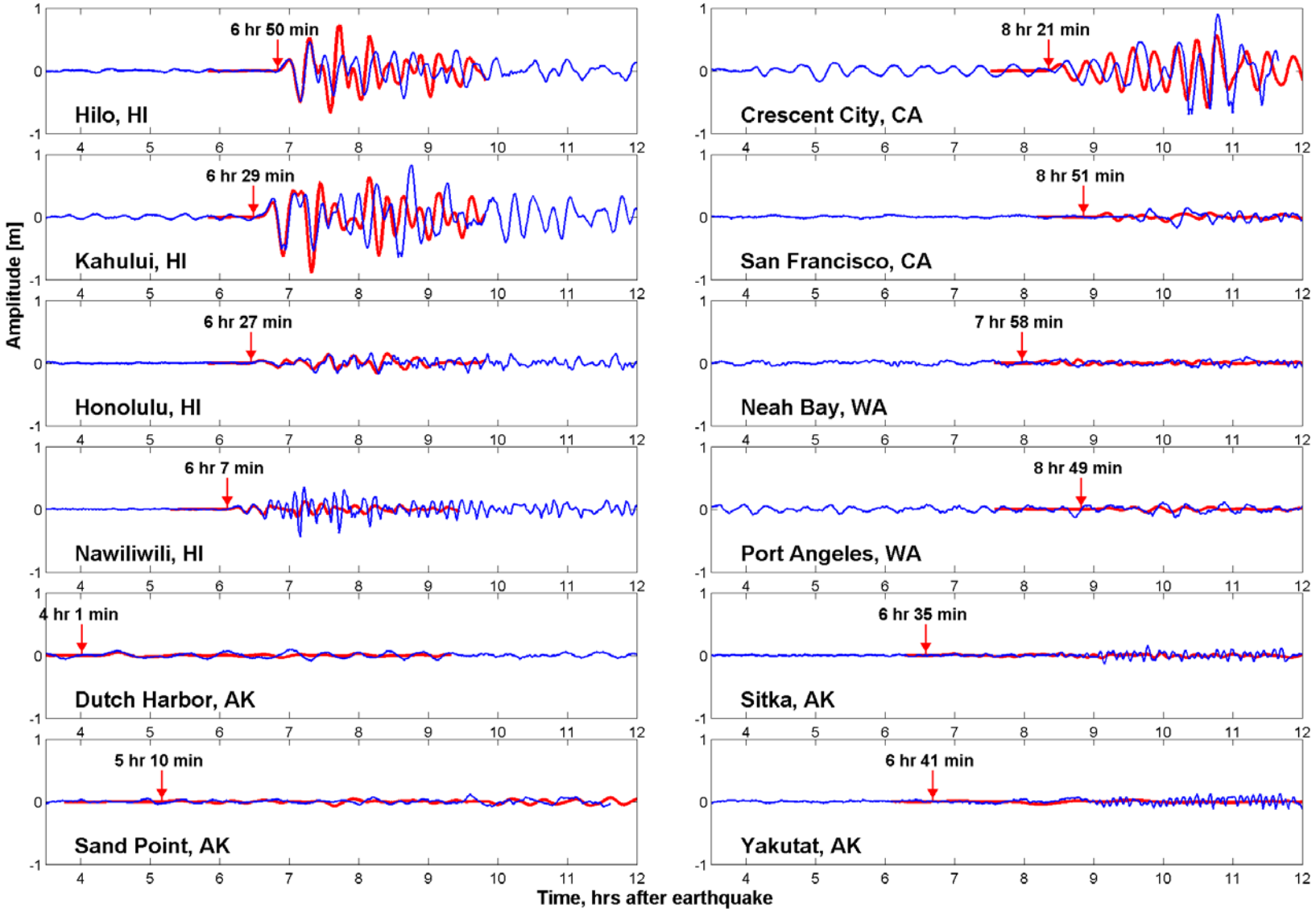
Simulation

The 15 Nov 2006 Central Kuril Tsunami



The November 15, 2006 Central Kuril Tsunami

Forecast *vs* **Observation**



NTHMP Warning Guidance Goal

7. Reduce tsunami warning system false alarms by 20%. **NOAA**

No false alarms issued since 2001

Unnecessary evacuations avoided for

November 2003

June 2005

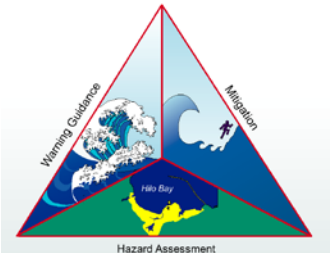
November 2006

January 2007

NTHMP Mitigation Goals

9. Designate that 25% of communities at risk in each state are TsunamiReady. **States/NOAA**

- In 2002 there were 8 TsunamiReady Communities in 5 states.
- In 2007 there are 40 in 10 of our 23 U.S. coastal states.



NOAA and the NTHMP

Challenges/Deficiencies:

- Expansion to 23 new states from 5 original
  - No additional resources
  - How to ensure real risk is addressed
  - TsunamiReady Enhancement
- Increased Reporting Responsibilities Program-wide
- Funding uncertainty
  - Resources not available to meet the demands of the NTHMP and Tsunami Warning Program
- Leadership Changes

Opportunities:

- Expansion to 29 States increases visibility of the program from a regional to a national level (e.g. on the Hill, etc).
- Reporting Responsibilities could be a mechanism of communication to promote NTHMP objectives
  - Resources directed to required program objectives
- The Tsunami Warning and Education Act provides a framework to redefine the NTHMP leadership requirements

Thank you!