

Agenda

8:00 Tsunami Overview

8:30 Tsunami Forecast **Modeling** and Discussion

9:15 Tsunami Hazard Assessment and Discussion

10:00 *Break*

10:15 Tsunami **Measurements**: Tour and Discussion

11:30 Tsunami Forecast System Demonstration

12:15 Tsunami Wrap-up

Eddie Bernard

Vasily Titov

Diego Arcas

Chris Meinig

Don Denbo, Chris Moore

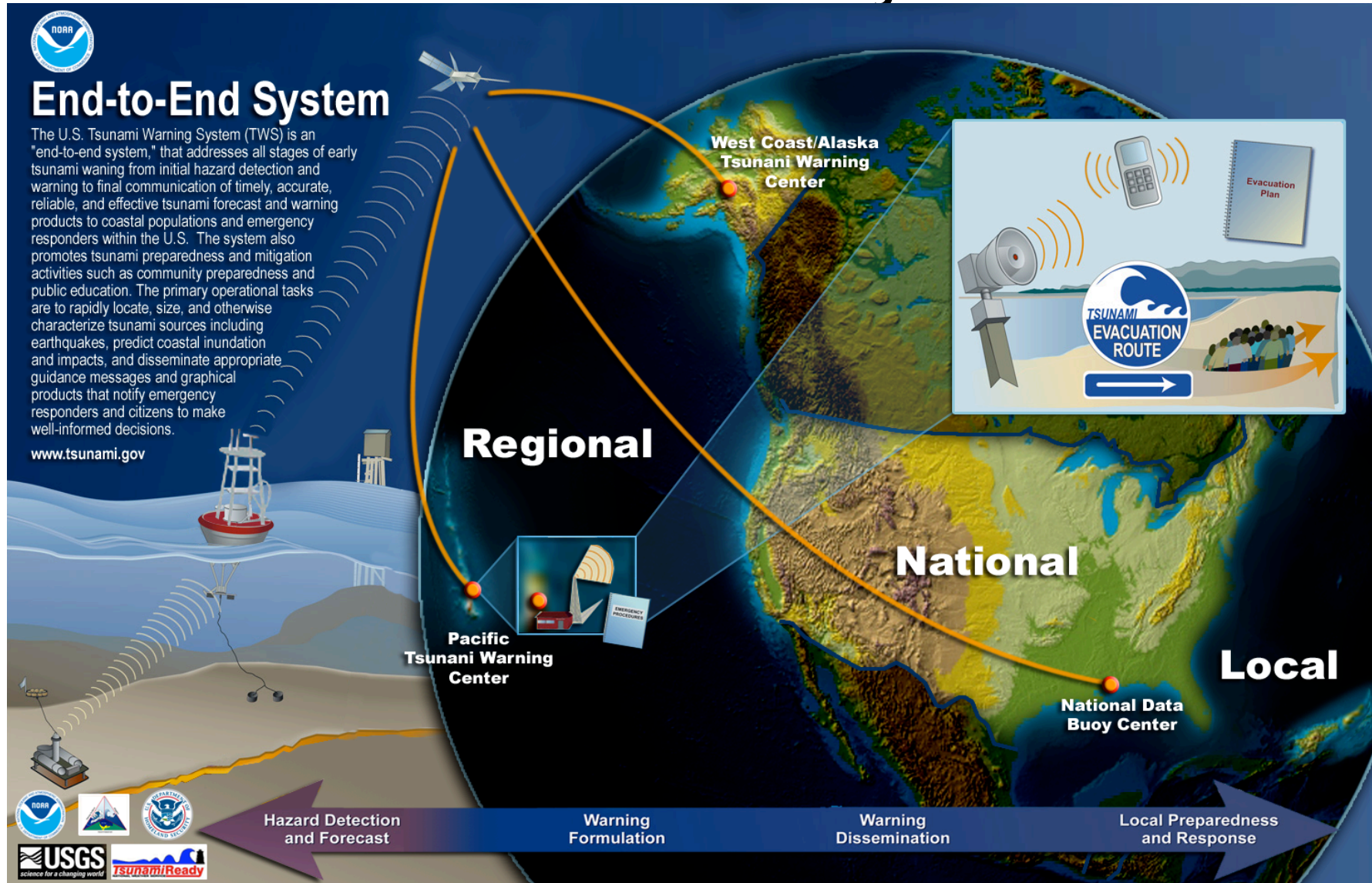
Eddie Bernard

Tsunami Wrap-up

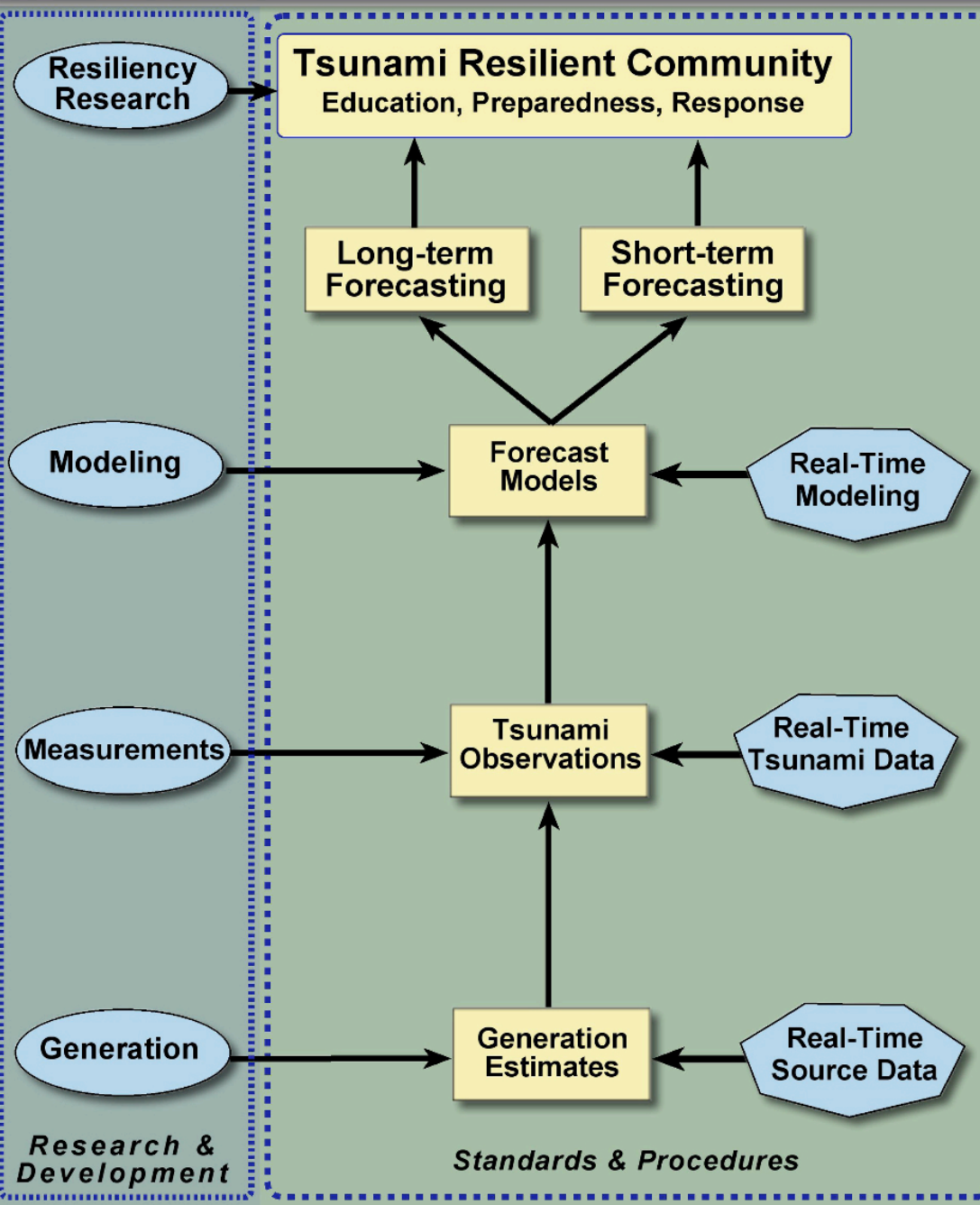


Eddie Bernard
Pacific Marine Environmental Laboratory
August 28, 2008

U.S. Tsunami Warning and Forecast System



Tsunami Resilience Framework



PMEL's Contribution to NOAA's Future Tsunami Program FY08-12

- Warnings (65%)- **Forecast system**
- Mitigation (27%)- **Forecasts models**
- Research (8%)- **Lead through test-bed**
- International (0%)- **Capacity Building**

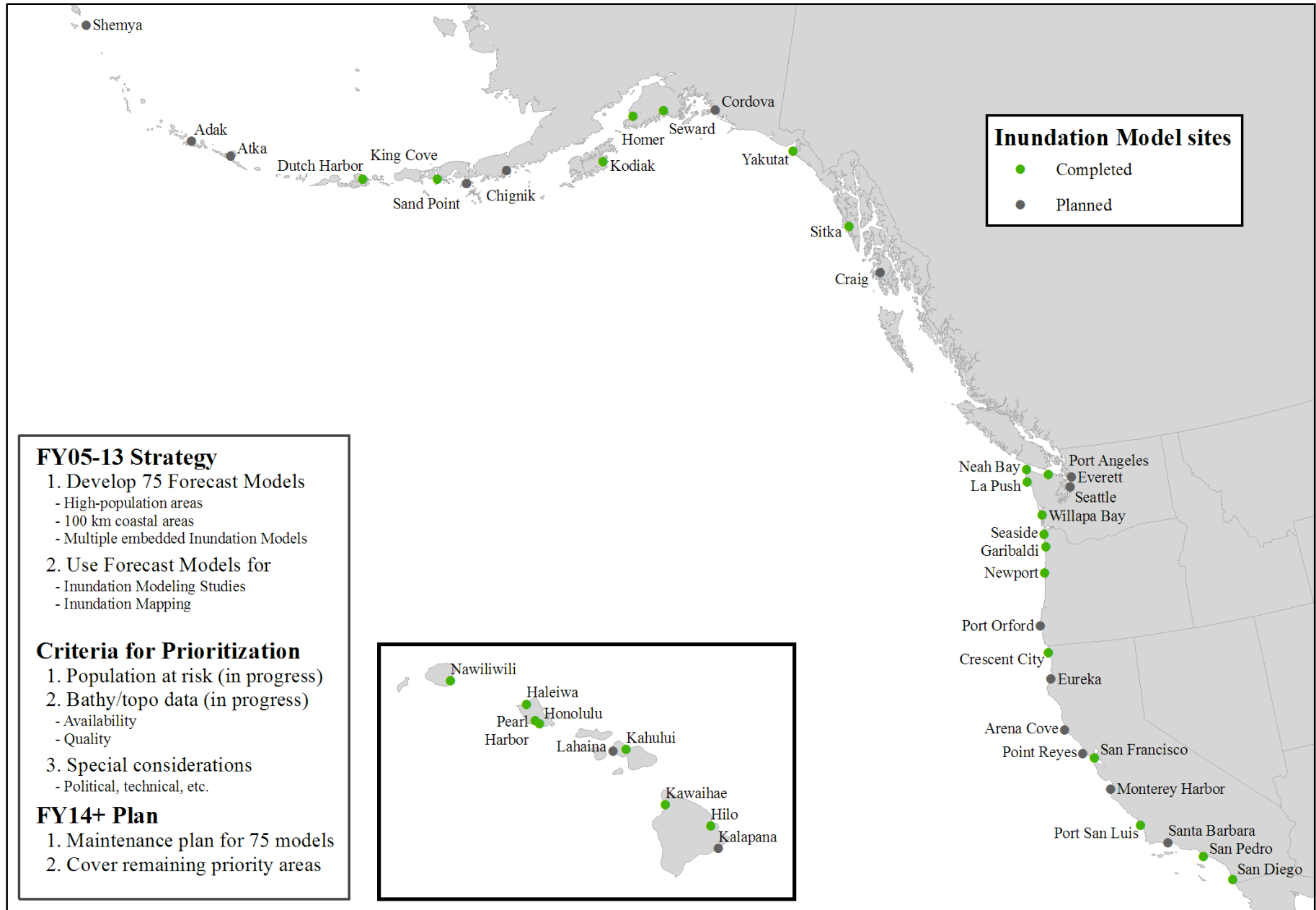
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Future NOAA Tsunami Warning Activities

- Complete transition for Forecast Model System to National Weather Service
- Complete 45 site specific inundation models
- Continue to seek cost savings in tsunami warning system operations
- Support warning operations through model applications

NOAA Tsunami Forecast Modeling and Mapping



NOAA Tsunami Forecast Modeling and Mapping

FY05-13 Strategy

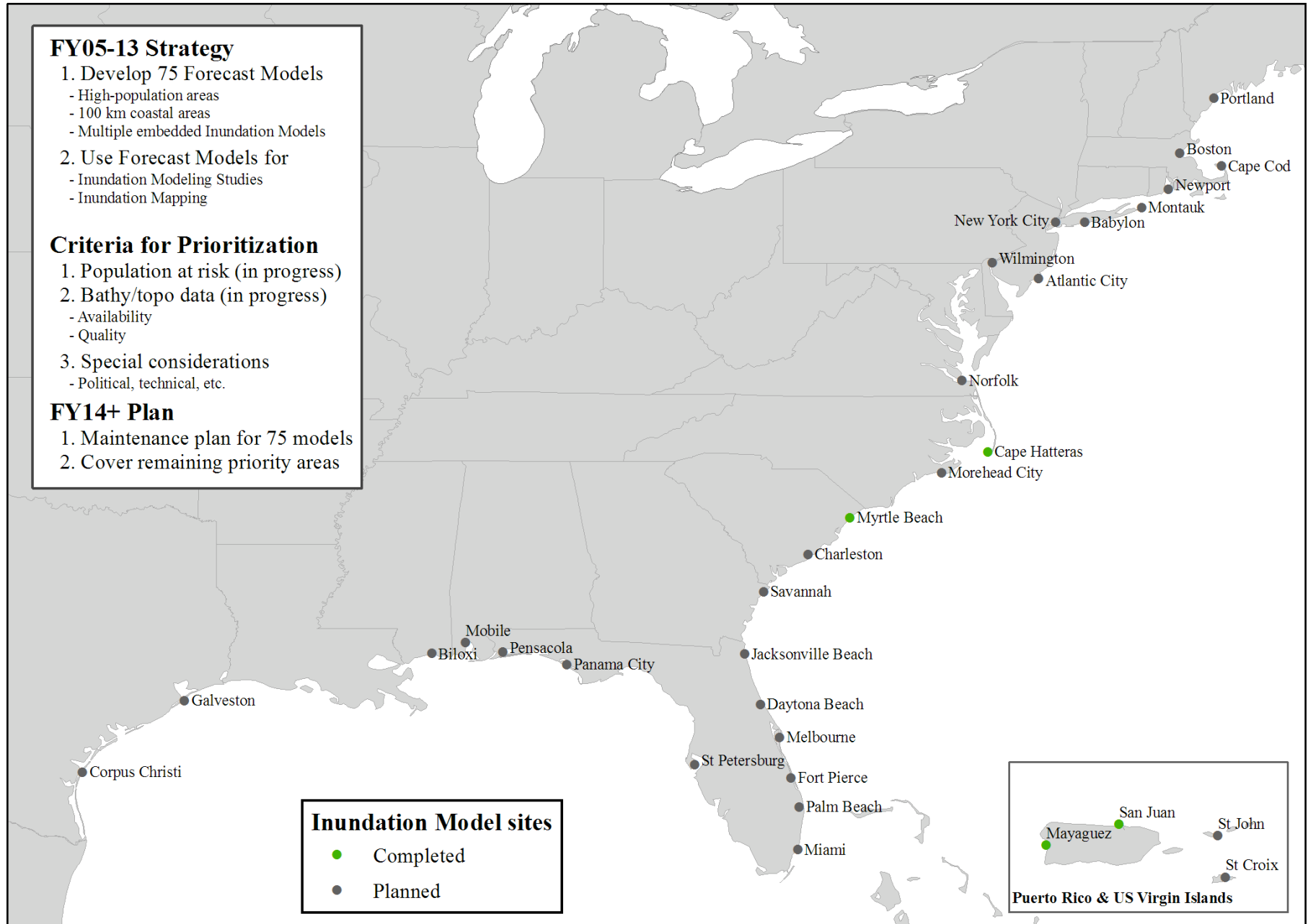
1. Develop 75 Forecast Models
 - High-population areas
 - 100 km coastal areas
 - Multiple embedded Inundation Models
2. Use Forecast Models for
 - Inundation Modeling Studies
 - Inundation Mapping

Criteria for Prioritization

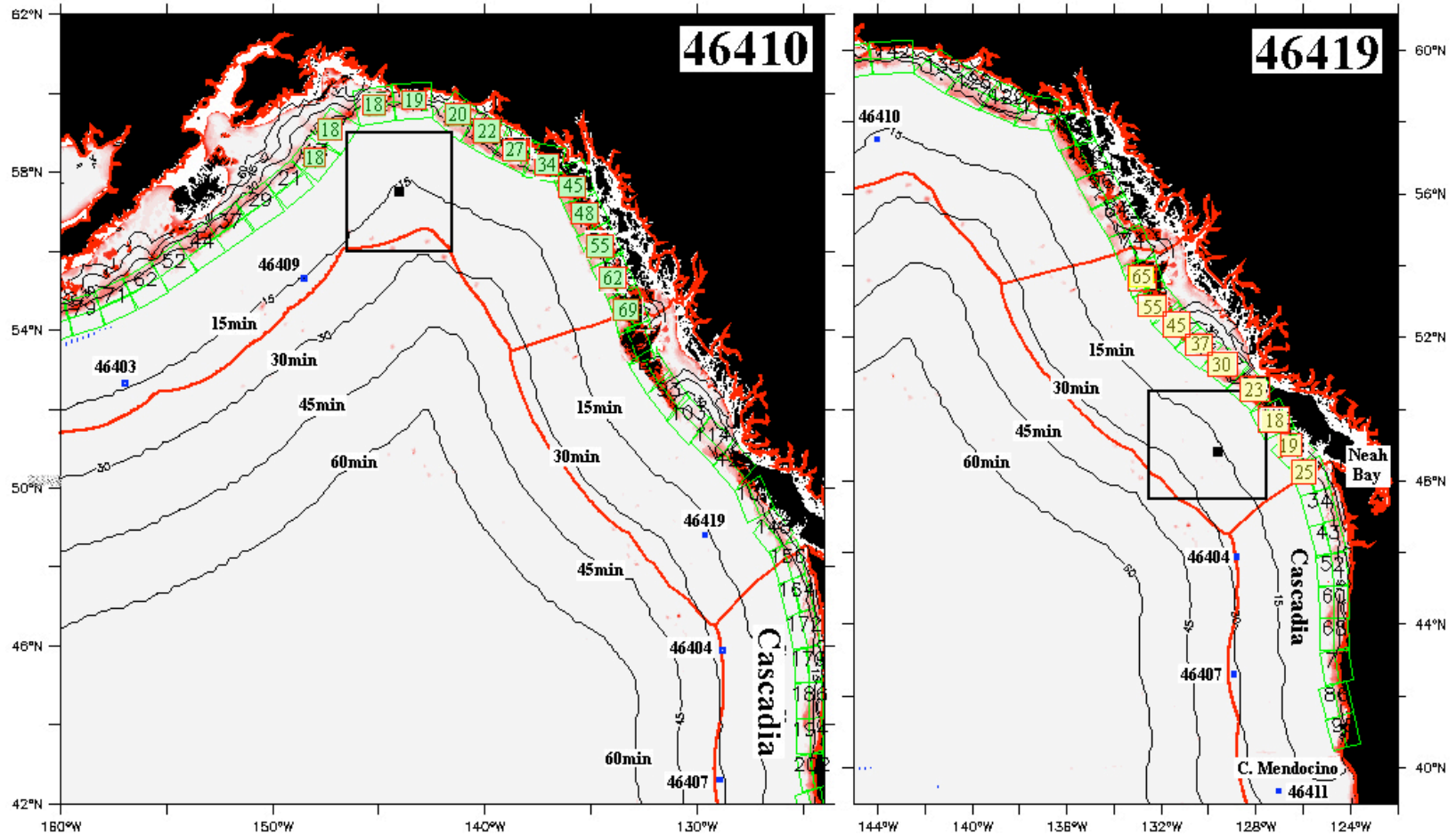
1. Population at risk (in progress)
2. Bathy/topo data (in progress)
 - Availability
 - Quality
3. Special considerations
 - Political, technical, etc.

FY14+ Plan

1. Maintenance plan for 75 models
2. Cover remaining priority areas



DART Outage Analysis



- Results:
1. 30 minute delay in tsunami detection
 2. Degradation of forecast skill for west coast

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Tsunami Mitigation Products

- Long term forecast applications for Nuclear Regulatory Commission, FEMA, States, NOAA, and others

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Tsunami Research

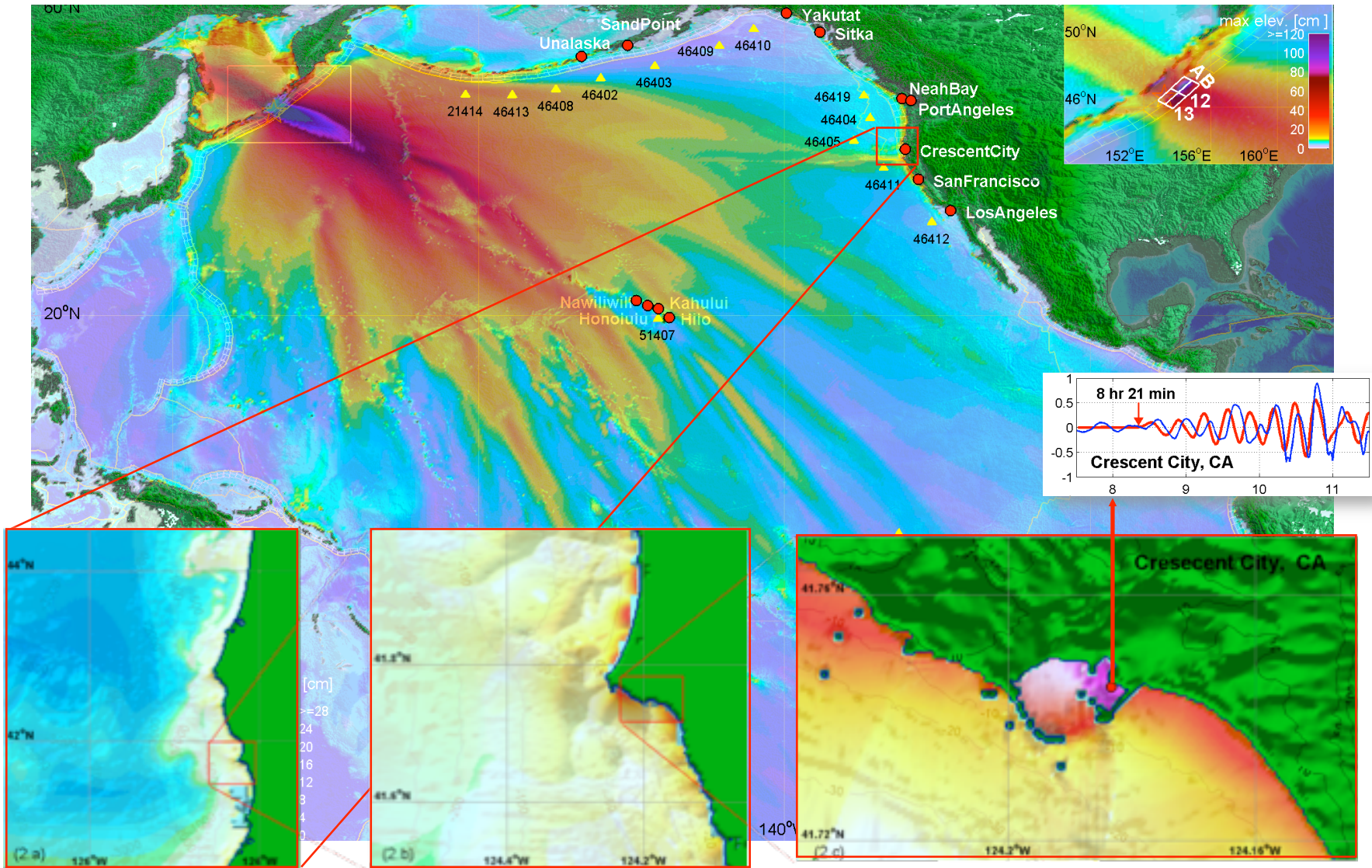
- Measurements: improvements/ exploration & testing of new technologies
- Modeling: improvements/ exploration & testing of new methods and products
- Mitigation: Community based educational products, independent evaluation of progress in resilience at community level

Example of R&D for a New NOAA Warning Product

Partners

National Ocean Service (tides), National
Weather Service (warning centers),
National Geophysical Data Center,
Humbolt University

The 15 Nov 2006 Central Kuril Tsunami



Animation



AP / Bryant Anderson

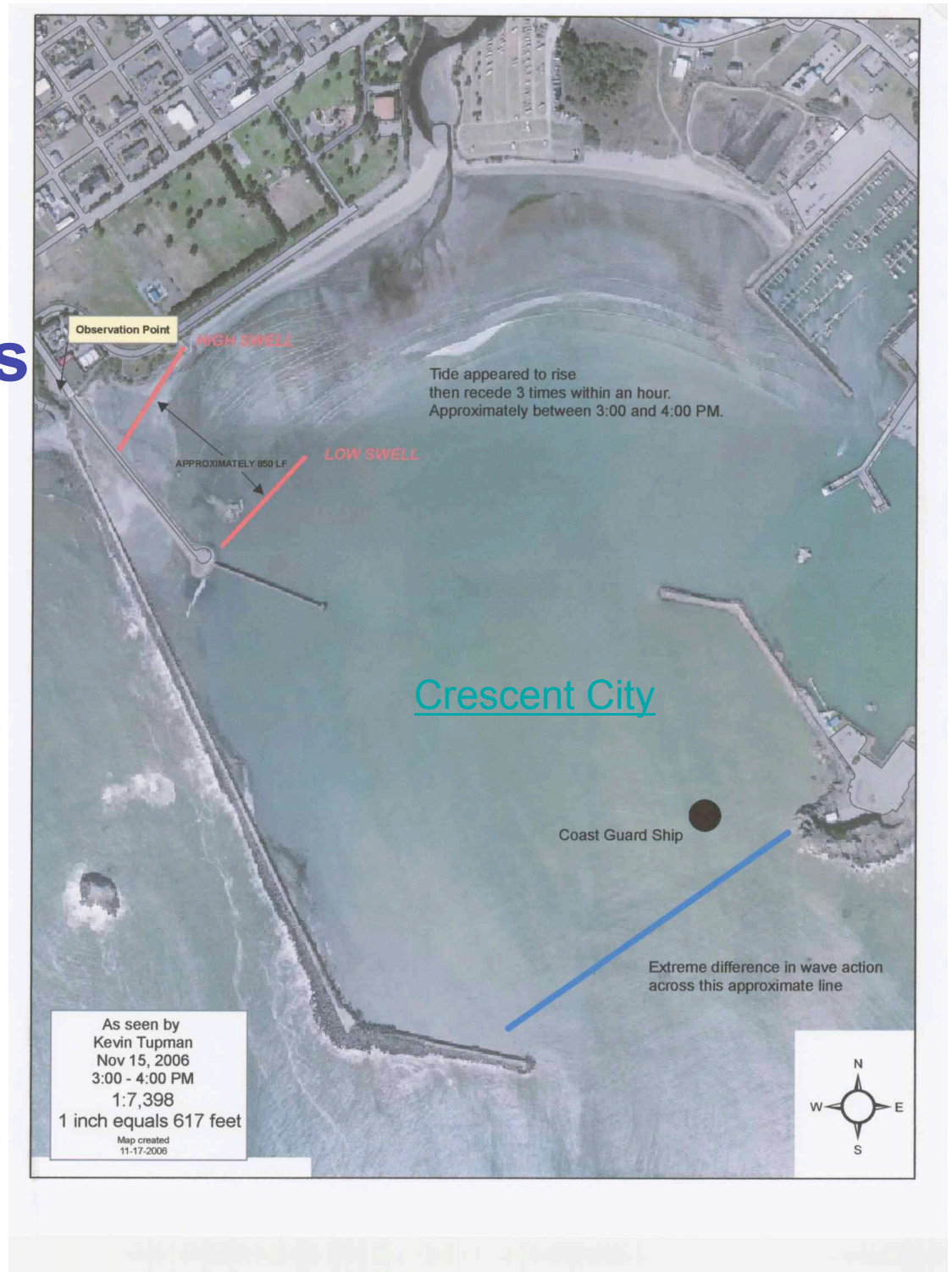
AP / Bryant Anderson

**Crescent City, California
November 15-16, 2006
Tsunami Damage**

Example of New Tsunami Product

Currents in Harbors

Requires four parts of
NOAA working together
with California partners



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Capacity Building

- **National:**

1. Use test bed/ simulator to train and educate Federal/ State Partners.
2. Host visiting scientists

- **International:**

1. Use test bed/ simulator to train and educate International Partners.
2. Host visiting scientists

Future Summary

- **Quality:** Continue to maintain National and International standards for tsunami measurement and modeling by quality publications and new warning/resilience products
- **Relevance:** National demand (States, NRC and FEMA) & Global demand (UNESCO) of these technologies offers opportunity to create a “community forecast model” through a tsunami resilience framework to systematically improve tsunami products
- **Productivity:**
 1. Measurement: DART ETD (commercialized model) holds promise for lower cost operations for domestic and international programs
 2. Modeling: PMEL tsunami forecast system will be transitioned into NWS operations and 45 site specific models will be completed that can be used for long term forecast applications
 3. Education/Capacity Building: Test bed environment will assist in building National and International capacity through training and visiting scientists programs