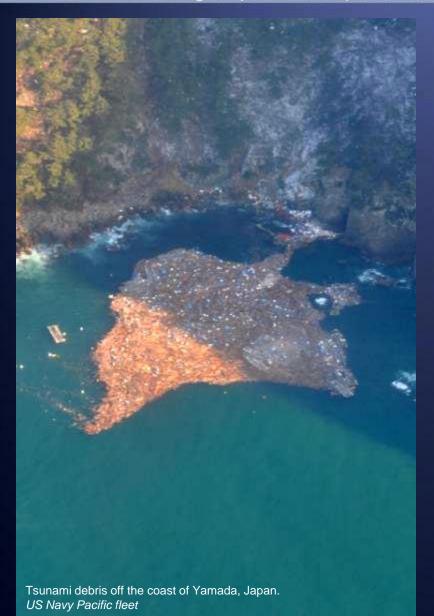
NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service



Japan Tsunami Marine Debris

**Overview and Status Update** 

**PSMFC** Annual Meeting

August 21, 2012

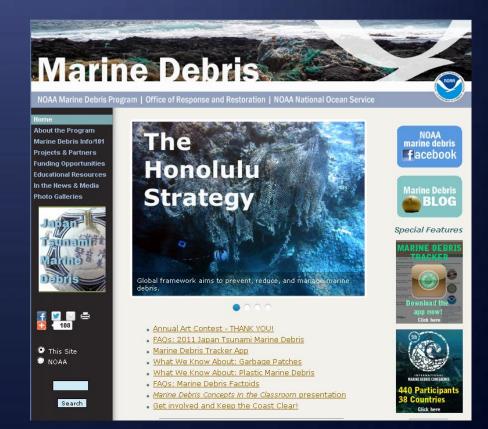
Nir Barnea NOAA Marine Debris Program

NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

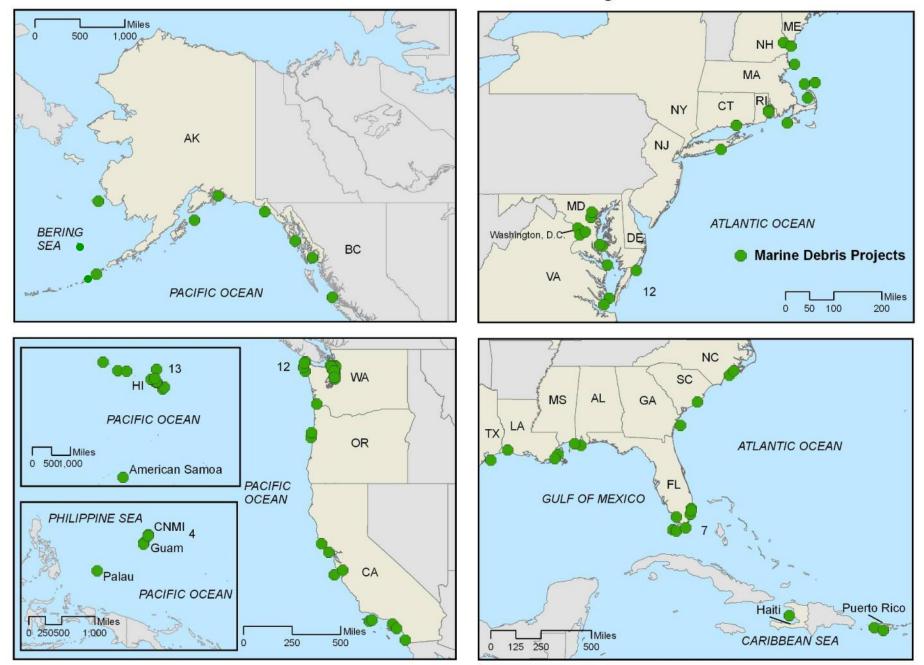
### **NOAA Marine Debris Program**

- Established in 2005
- Mandated by the Marine Debris Research, Prevention, and Reduction Act, Dec. 2006
- Dedicated to promoting and leading research, prevention, and reduction activities nationwide
- MDP has regional coordinators for the East Coast, Gulf of Mexico & Caribbean, Great Lakes, West Coast, Alaska, and Hawaii
- Website:

www.marinedebris.noaa.gov



#### **NOAA Marine Debris Projects**



NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Event Overview**

- 9.0 magnitude earthquake
- Tsunami: 130 ft max wave height
- 217 square miles inundation
- 15,867 people confirmed dead, 2,904 missing (as of 7/27/12)
- Massive damage



NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Early Debris**



#### Debris on March 13 off the Sendai coast

- Patches and fields
- Wood, construction materials abundant
- The debris dispersed, some sunk



NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Safety First**

- Maritime Advisory
- Guidelines for Debris Handling



**Drifting vessel** 

Photo: USCG





NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Modeling: Where and When**

#### **Ocean currents**



UNDAGE

Winds

Winds have a greater effect on the movement of debris with a larger sail area

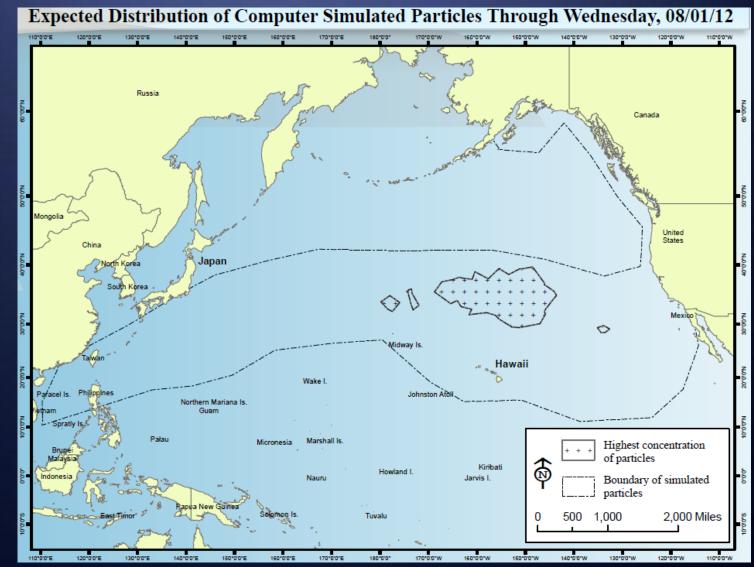
- Combination of sail area and drag
- Low = slow (e.g., wood, nets)
- Medium = moderate (e.g., fishing vessel)
- High = fast (e.g., unoccupied inflatable life raft, Styrofoam)

NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Modeling Output**

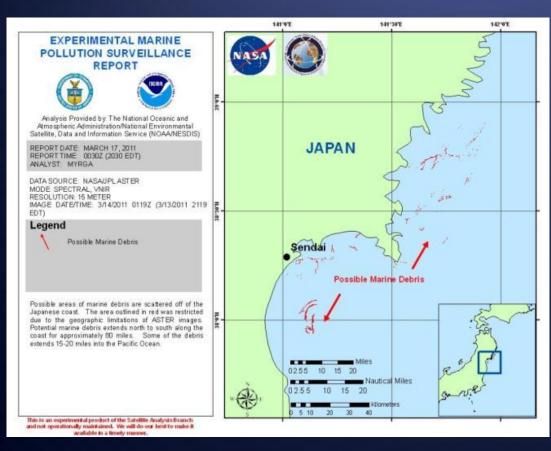
#### http://marinedebris.noaa.gov/tsunamidebris/debris\_model.html

- 8,000 total particles from 8 locations
- Random windage: low to high
- Where debris may be NOW



NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Satellite and Aerial Detection**





NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **At-sea Sightings**





#### disasterdebris@noaa.gov



NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

#### <u>disasterdebris@noaa.gov</u>

### Shoreline Sightings



Float, December 2011, Washington



Small boat, June 2012, Washington



Soccer ball, March 2012, Alaska



Floating dock, June 2012, Oregon

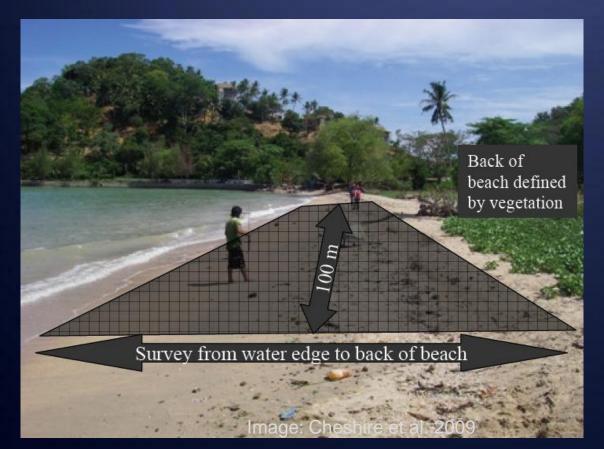


Kerosene can, March 2012 Oregon

NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### Marine Debris Monitoring MD.monitoring@noaa.gov

- Survey a defined stretch of shoreline on a regular basis
- Follow established protocols
- Record types and amounts of marine debris present





#### NOAA Marine Debris Shoreline Survey Field Guide

Sarah Opfer, Courtney Arthur, and Sherry Lippiatt



U.S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Service Office of Response and Restoration Marine Debris Program

NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Monitoring Locations**

#### Washington, Oregon and BC

C 2012 Cnes Spot Image

49 10 40 00" N 100 0757 66" IN

California

© 2012 Cnes/Spot Image

37 00'22 82" N 120'15'21 38" W elev 0 ft

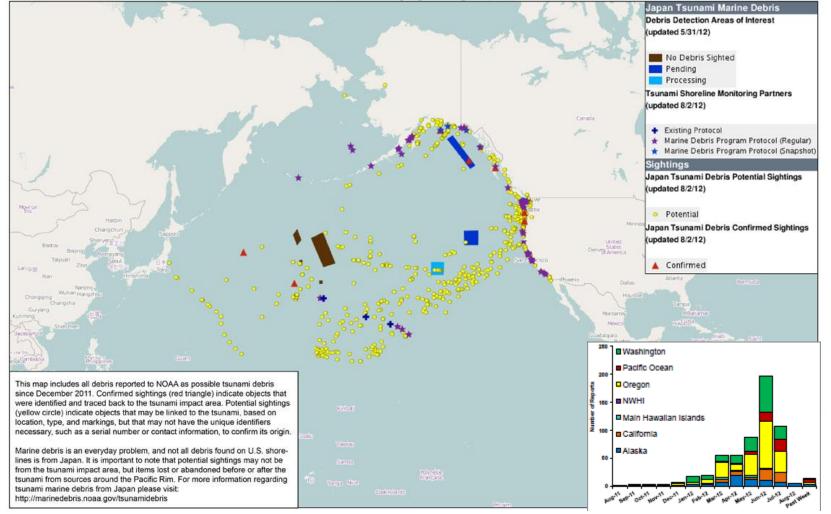
n(Park - Bc Minis C Ministry of Env (est) h Columbia Manila Beach - Ocean Conserv Alberta Schoolhouse Beach, Sonoma Surfrider Doran Beach - Sonoma Sur Portugese Beach - Sonoma Surfrider Gulf of Farallones NMS (5 sites) Youngers Lagoon - Save our Shores Discovery Island - BC Ministry of Environment Monterey Surfrider California Olympic Coast NMS + MRCs (multiple sites) Washington SOLV (5 8 sites) Carbon Beach - Heal the Bay Malaga Cove - Heal the Idaho Port Orford - Redfish Rocks Community Team Curry County Fairgroun Image © 2012 TerraMetrics mage @ 2012 TerraMetrics Data SIO, NOAA, U.S. Navy, NGA, GEBCO D 2012 Google

NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **ERMA**

#### http://marinedebris.noaa.gov/tsunamidebris/debris\_sightings.html





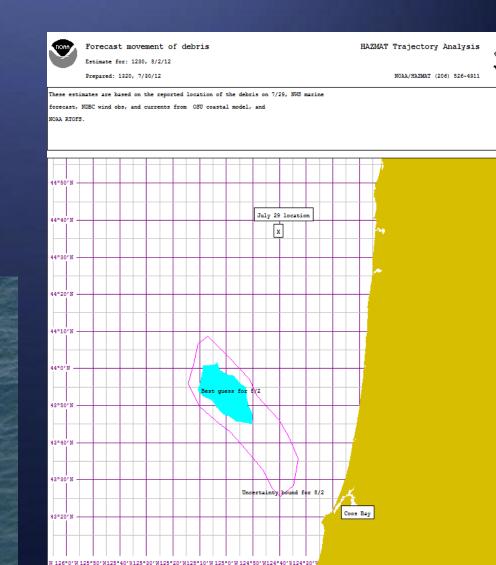


NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Trajectories**

- NOAA Emergency Response Division, using GNOME model
- Hindcast or forecast
- Caveats, uncertainties, and limitations





NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### **Outreach and Communication**

http://marinedebris.noaa.gov/info/japanfaqs.html

- Over 70 outreach events along the West Coast
- Provide information, address perception
- NOAA, JIC, and states Websites



Public meeting in Washington



**Radiation detection** 

NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

### Planning

- All five states
- Collaborative approach
- Plans address
  - Routine marine debris on land
  - Large debris on land
  - Offshore debris
  - Hazardous debris
  - Communication and outreach
- Unprecedented event, best addressed by a collaborative effort



	Washington State
Marine Debris Response Plan July 2012 DRAFT	

14

Tsunami Debris Response Plan Oregen Parka al Recration Department Salon, Oregon Venion 1.0 June 29, 2012





Photes of Japanese dock at Agare

panese dock at Agate Beach, lewport, Oregon, June 2012, atos courtesy of OPRD staff.

Prenared by OPRD Staff: John Allen, Coastal Region Manager Chris Havel, Associate Director and Public Information Officer Robert Smith, Safety and Risk Management David Solomons, Safety and Risk Management State of California California Emergency Management Agency

Japan Tsunami Marine Debris

(JTMD) Concept of Operations



June 15, 2012

Edmond G. Brown Jr. Governor

Mark Ghilarducci Secretary Califomia Emergency Management Agency

NOAA Marine Debris Program | Office of Response and Restoration | NOAA National Ocean Service

# Thank you

Get info: <a href="http://marinedebris.noaa.gov/tsunamidebris/">http://marinedebris.noaa.gov/tsunamidebris/</a> Report sightings: <a href="mailto:disasterdebris@noaa.gov">disasterdebris@noaa.gov</a>

> Nir Barnea Nir.barnea@noaa.gov 206-526-6943