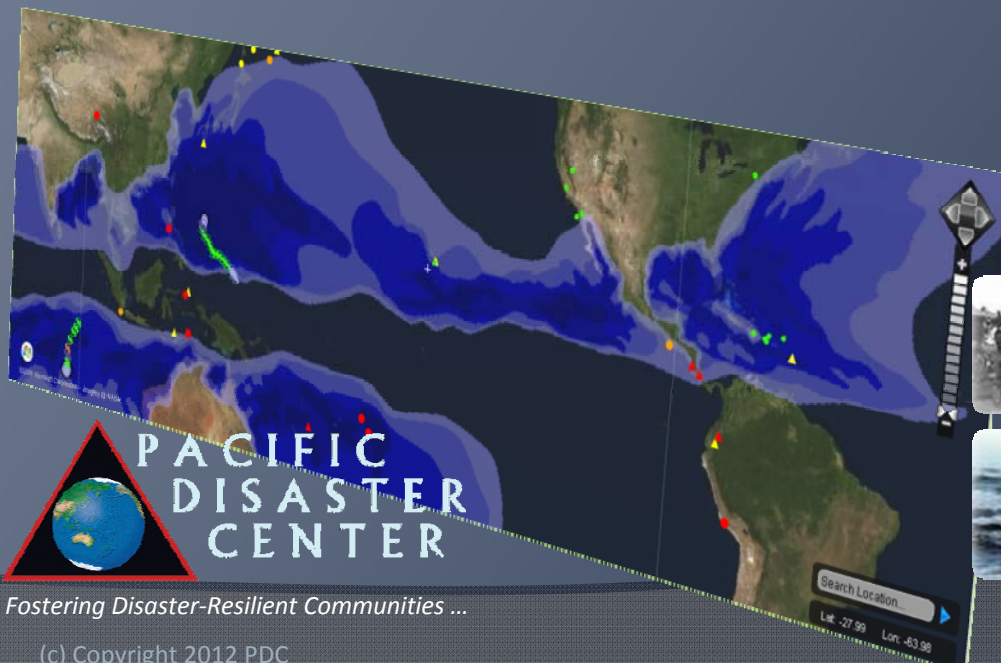


Chengdu Forum on UN-GGIM
Global Map for Sustainable Development:
Development and Applications in Urban Hazard Mapping
Chengdu, Sichuan Province, China
15-17 Oct 2013

Hazard Detection, Monitoring, Modeling, Assessment and Warning in the Asia Pacific Region

Chris Chiesa
Deputy Executive Director
Pacific Disaster Center
www.pdc.org



Fostering Disaster-Resilient Communities ...

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University of Hawaii: Managing Partnering

Avoid Hazards => Disasters => Crises

● Vision: **Safer & More Secure World**

- Sustainable communities, safer nations, and a more secure world through Disaster Risk Reducing

● Goal: **Disaster Resiliency**

- Foster disaster-resilient communities through information, science, technology, and exchange

● Mission: **Reduce Disaster Risks**

- Provide applied information research and evidence-base analysis supporting development of more effective disaster risk reduction (**DRR**) policies and practices; and applications and information products supporting Humanitarian Assistance and Disaster Relief (**HA/DR**) operators and practitioners in the Asia Pacific region and beyond.



Asia Pacific:

- 38% of World's Disasters
- 80% of World's Casualties

PDC Presence and Composition

- Became Operational in 1996
 - Currently Managed by University of Hawaii
- 60% Public funds, 40% Proposals/Grants
- About 45 full time staff and contractors
 - Offices
 - Hawaii: Maui and Oahu
 - Washington DC, Colorado Springs, Miami, SE Asia
 - Experts:
 - Disaster Management Scientists
 - Geospatial Data and Visualization Experts & Analysts
 - Information System Engineers & Technologies Experts
 - Modeling, Simulation, and Impact Assessment Specialists; Public Health SME



PDC's Integrated Approach

- Applied Science & Technology
- Capability Building
- Evidence-Based Information Products
 - Policy & Decision Makers
 - Disaster Managers
 - Planners
 - Humanitarian Assist. Missions



Observation Systems, Data Collection

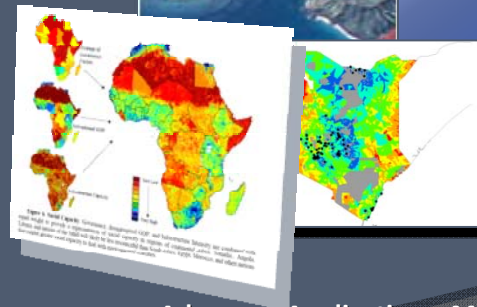


GIS, Visualization and Display Systems

Integrating Information, Science, Technology



Improve Decision-Support Capabilities



Advanced Applications, Models, Risk & Vulnerability Assessment



Communication Systems and Networks

DM Challenges & Gaps ...

- ◎ Inadequate Tools for the Decision Makers
 - Information is Scattered
 - Warnings are Hard to Quickly Digest
 - Lack Situational Awareness
 - No Risk Context
 - Dissemination is Limited
- ◎ Time is LIFE
 - Information not easily understood isn't particularly useful



Overcoming Challenges

Tools for Decision Makers

- Simplify, Integrate, & Expedite Processing
- Understand Exposure
- Disseminate Early Warning
- Support Decisions Based on Latest Assessments

Info for Policy Makers & Planners

- Assess Socio-Econ Risks & Vulnerabilities

Capacity for Practitioners

- Training & Exercise
- Workshops

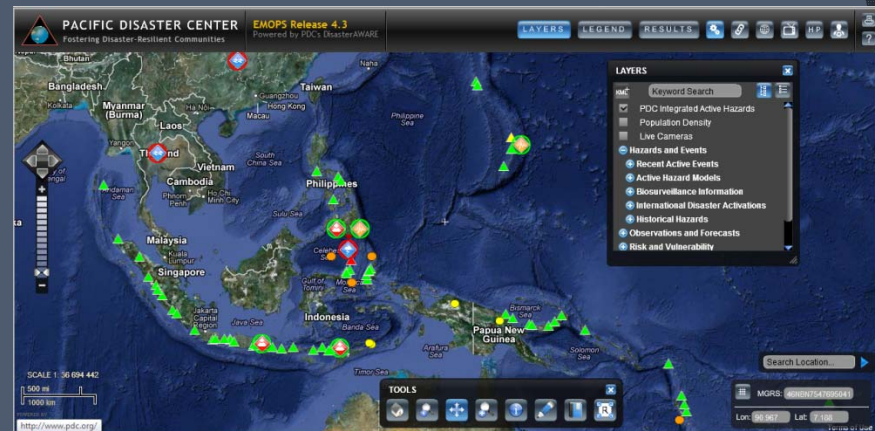


Hazard Detection and Modeling

Automated Hazards

Dynamic Data Processing and Publication

- Earthquakes
- Tsunamis
- Tropical Cyclones
- Wildfires
- Volcanoes
- Floods



Stored in Enterprise Geospatial Database

Published as standards-based Map Services

Consumed in Web & Mobile Apps, Social Media, Plug-in Widget

Hazard Modeling Capabilities

- Floods / Dam Failures
 - “MIKE 11/21” (DHI, inc.)
- Hurricanes
 - “CATS” (DTRA)
 - “TAOS” (KA Corp)
- Earthquakes
 - “ShakeMap” (USGS)
 - “HAZUS-MH” (DHS/FEMA)
- Tsunamis
 - “TTT” (NOAA)
- Plume Modeling
 - “HPAC” (DTRA)



Disaster Assessment, Monitoring and Warning

DisasterAWARE

- Integrated Multi-hazard Hazard Monitoring
- Disaster Early Warning
- Automated / Integrated Modeling
- Exposure (Risk) Maps & Historical Hazard data
- Customized Impact Modeling **AND**
- Intra-Agency Info Sharing
 - User-provided Situation Reports
 - Damage Assessment
- Wide Dissemination
 - Web
 - Social Media
 - Mobile Apps

May 10, 2010

Social Media

Mobile App

May 10, 2010

#1273455896244 - Windows Internet Explorer

PACIFIC DISASTER CENTER EMOPS Release 4.0

Available Product(s)	Edit	Flags	Updated By	Organization	GMT	Last Update	GMT-10:00
7.4 - northern Sumatra, Indonesia		42p2	PDC	PDC	2010-05-09 08:24	2010-05-08 20:24	
7.2 - northern Sumatra, Indonesia		42p2	PDC	PDC	2010-05-09 08:14	2010-05-08 22:14	
7.4 - northern Sumatra, Indonesia		42p2	PDC	PDC	2010-05-09 08:24	2010-05-08 20:24	
7.2 - northern Sumatra, Indonesia		42p2	PDC	PDC	2010-05-09 08:14	2010-05-08 22:14	
Subsided Product - Regional Disaster		42p2	PDC	PDC	2010-05-09 08:24	2010-05-08 20:24	
Subsided Product - Hazard & Risk		42p2	PDC	PDC	2010-05-09 08:24	2010-05-08 20:24	

Regional Reporter - Windows Internet Explorer

Population 2001
Total Population / Population Density (lat/lon)

Population 2002
Total Population / Population Density (lat/lon)

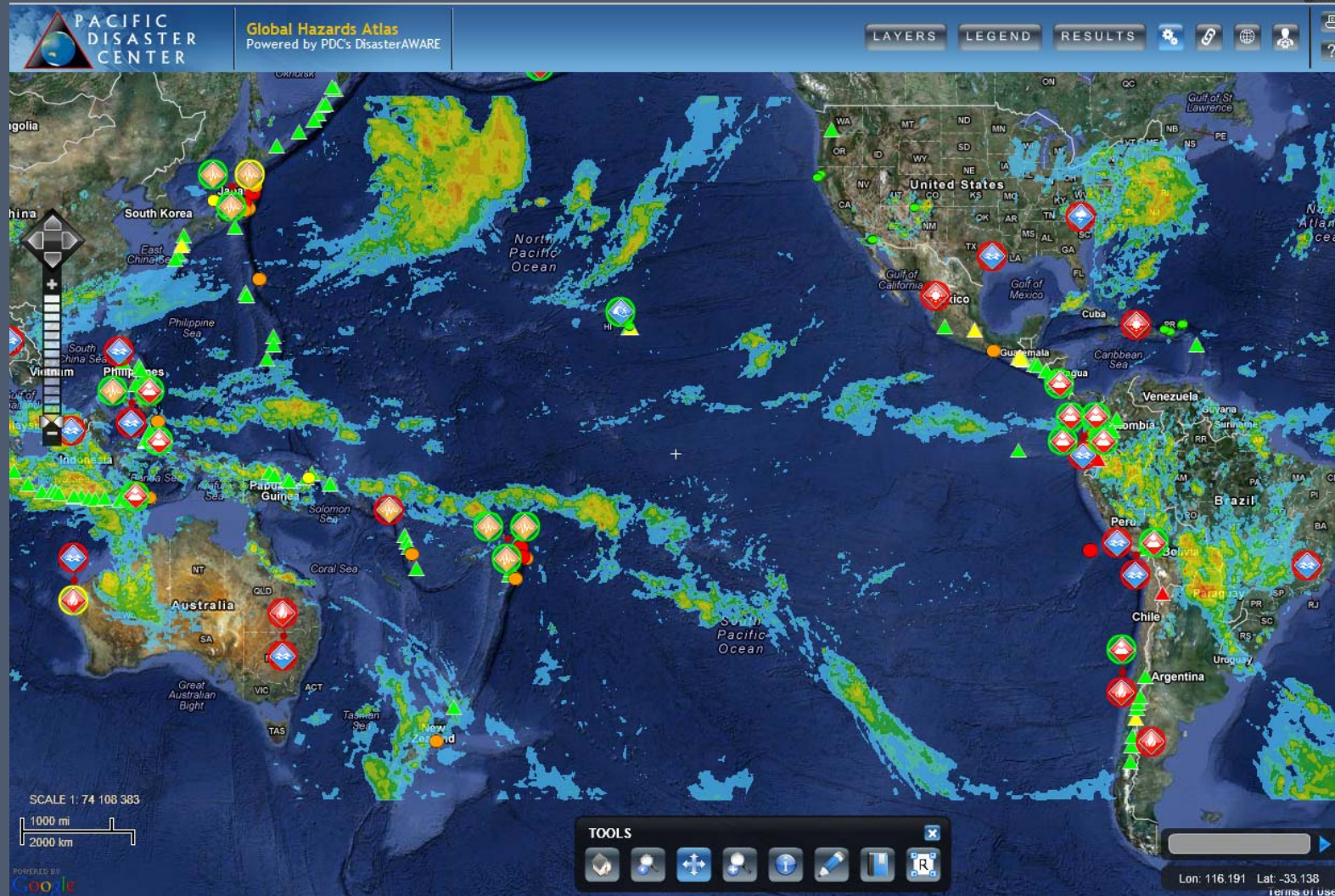
Population 2006
Total Population / Population Density (lat/lon)

Population 2007
Total Population / Population Density (lat/lon)

Situation Reports

Copyright 2006-2011
PACIFIC DISASTER CENTER

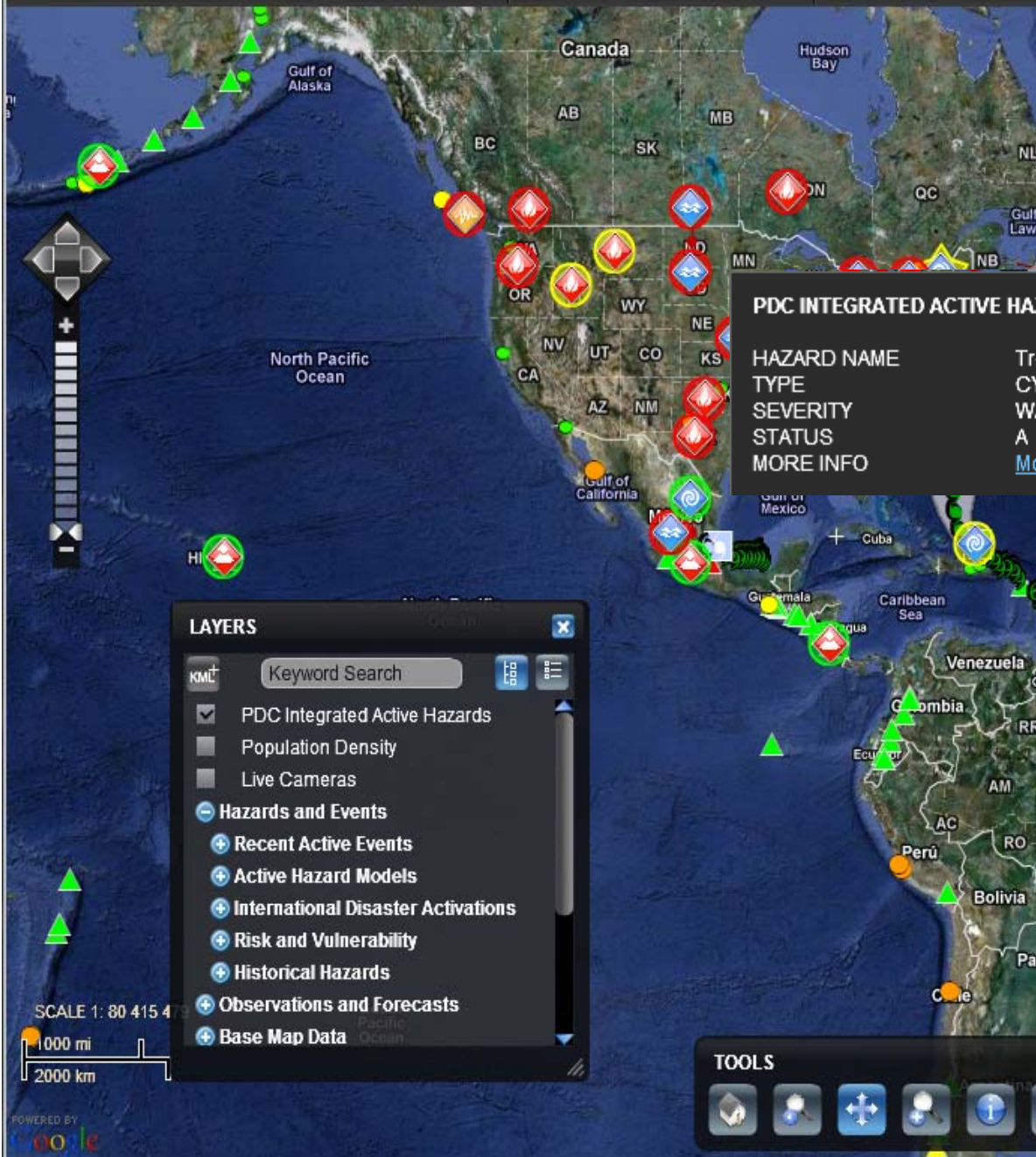
PDC Global Hazards Atlas



<http://www.pdc.org/atlas>

(c) Copyright 2006-2010 - PDC





PDC INTEGRATED ACTIVE HAZARDS

HAZARD NAME	TYPE	SEVERITY	STATUS	MORE INFO

LAYERS

KML

- PDC Integrated Active Hazards
- Population Density
- Live Cameras
- Hazards and Events**
 - Recent Active Events
 - Active Hazard Models
 - International Disaster Activations
 - Risk and Vulnerability
 - Historical Hazards
- Observations and Forecasts
- Base Map Data

PDC Hazard Information

Tropical Storm - Maria

REGIONAL REPORT

WATCH

Like Be the first of your friends to like this.

Status: UPDATE Source: NWS

Reported: September 06, 2011 21:00:00 GMT

Last Update: September 12, 2011 15:00:36 GMT

[Resources / Information](#)

[Frequently Asked Questions \(FAQ\)](#)

Powered by PDC's DisasterAWARE

TOOLS

Warning Notification / Subscription



Emergency Operations: EMOPS

Powered by PDC's DisasterAWARE: All-Hazard Warnings, Analysis, and Risk Evaluation System

Subscription Service

Please select from the following services:

[My Information](#) ↓

❖ **TROPICAL CYCLONE COORDINATION WORKSHEET (TCCW)**

TCCWs are based on information from NWS storm advisories, plus calculations of the closest approaches to key cities in Hawaii and predicted times of arrival.

❖ **EVENT_CYCLONE_WARNING**

Hazard subscription for Tropical Cyclone Event at the Warn severity level.

Method(s):

E-mail

Region(s):

[Atlantic](#) [Hawaii](#) [Indian](#) [Pacific](#)

Note: If no regions are selected then the entire world is used for the method(s).

❖ **EVENT_CYCLONE_WATCH**

Hazard subscription for Tropical Cyclone Event at the Watch severity level.

Method(s):

E-mail

Region(s):

[Atlantic](#) [Hawaii](#) [Indian](#) [Pacific](#)

Note: If no regions are selected then the entire world is used for the method(s).

Change Picture



PACIFIC DISASTER CENTER WWW.PDC.ORG

DISASTER ALERT MOBILE APP



IPHONE/IPAD ANDROID

Wall

Hidden Posts

- Info
- Tools
- News
- Photos
- Notes
- Links
- EDIT

About

Edit

Fostering disaster-resilient communities through information, science, tech...

Pacific Disaster Center

Non-Profit Organization · Kihei, Hawaii · Edit Info

Edit Page



Wall

Pacific Disaster Center · Everyone (Top Posts)

Share: Status Photo Link Video Question

Write something...



Pacific Disaster Center

[ADV] UPDATE #5, Tropical Depression - Eighteen, NW Pacific Ocean, Winds 30 kt, Gusts 40 kt, reported by JTWC. http://t.co/UyvzD2o

8 hours ago via Selective Tweets · Like · Comment · Share



Pacific Disaster Center

[WATCH] UPDATE #24, Tropical Storm - Maria, Atlantic Ocean, Winds 45 kt, Gusts 55 kt, reported by NWS. http://t.co/qvyPfdp

8 hours ago via Selective Tweets · Like · Comment · Share



Rebecca Devereaux This is a really cool app I have on my phone and wanted to share it with you> You can see things being tracked all over the globe with daily updates

4 hours ago · Like

Write a comment...



Pacific Disaster Center

[ADV] UPDATE #4, Tropical Depression - Eighteen, NW Pacific Ocean, Winds 30 kt, Gusts 40 kt, reported by JTWC. http://t.co/IU4qSy9

11 hours ago via Selective Tweets · Like · Comment · Share



Pacific Disaster Center

[WATCH] UPDATE #23, Tropical Storm - Maria, Atlantic Ocean, Winds 50 kt, Gusts 60 kt, reported by NWS. http://t.co/8OfKHns

11 hours ago via Selective Tweets · Like · Comment · Share



Pacific Disaster Center

[WATCH] UPDATE #22, Tropical Storm - Maria, Atlantic Ocean, Winds 50 kt, Gusts 60 kt, reported by NWS. http://t.co/wXTUkoq

Admins (6)

See All



Use Facebook as Pacific Disaster Center

Notifications 64

Promote with an Ad

View Insights

Invite Friends

Quick Tips

Get more people to like your Page with Facebook Ads today!

Sample Ad: Pacific Disaster Center



The text of your ad will go here.

Like · Chris Chiesa likes this.

Get More Likes

Sponsored

Create an Ad

Hilo Free Event Sept. 28

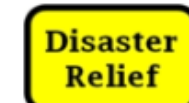
anthonymorrisonregistration.com



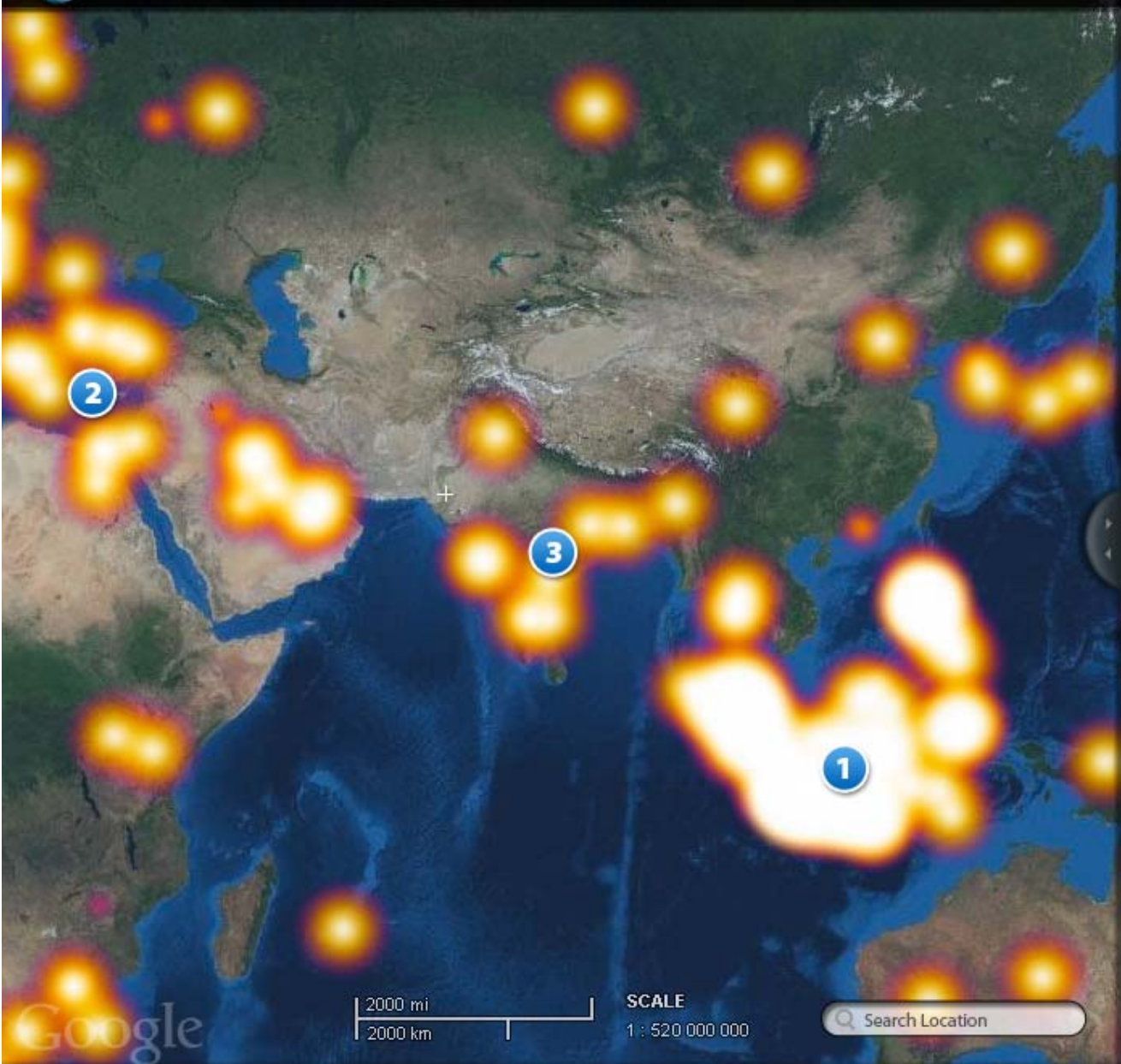
Free Educational Seminar Sept. 28th in Hilo. Learn to make money using simple methods online today. No technical experience needed!

Disaster Relief Work

degreaamerica.com



Get an Accredited Degree in Emergency Management. Find Programs and Apply today.



SOCIAL FEED ▶ ✕

Social Heatmap Type:

<p>1</p> <p>11,732</p>	<p>belt activity heavy rain acceleration damage danger frequency scale magnitude alert</p>
<p>2</p> <p>10,123</p>	<p>commotion activity riot tumult disturbance damage revolt uproar strike magnitude alert</p>
<p>3</p> <p>6,937</p>	<p>force storm track eq hurricane winter strap damage tail end scale insurance alert</p>



MGRS: 52SCF8386027532

Lon: 98.965 Lat: -35.030

Mobile Public Disaster Alert Application

- *Disaster Alert* provides a listing and an interactive map of Active Hazards occurring around the globe.
- Available for **Android** and **iPhone** via the Android Market and iTunes on-line stores.



Interactive map




Hazards list




Details of an event

AP Regional Deployments

Thailand NDWC (2006)

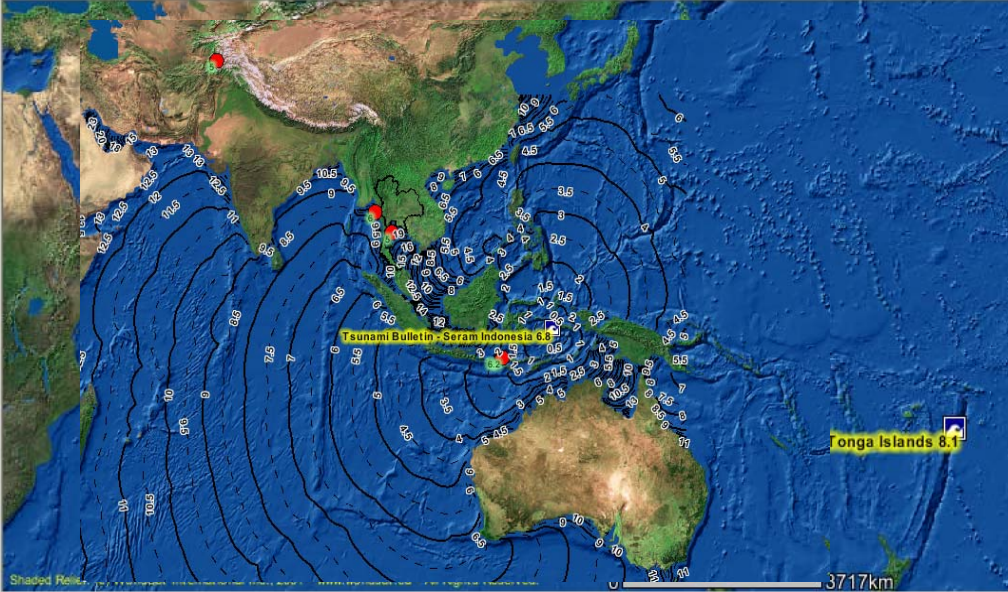


National Disaster Warning Center, Thailand
DisasterAWARE

Powered by  Pacific Disaster Center

Tools

- Legend/Layers
- Overview
- Zoom In
- Zoom Out
- Full Extent
- Zoom Active
- Zoom Last
- Pan
- Identify
- Identify All
- Query
- Find
- Measure
- Set Units
- Bookmark
- Buffer
- Select Box
- Clear
- Print



Refresh Map Legend

Reload Hazards

Layers

- Hazards
 - Current Hazards
 - Hazards
 - Recent Earthquakes
 - Historical Hazards
 - Hazard Model Outputs
 - Tsunami Travel Time
 - Possible Earthquake Damage
- Risk & Vulnerability
- Historical Weather Data
- Basemap Layers
 - Demography
 - Infrastructure
 - Hydrography
 - Boundaries
 - Imagery/Elevation

TOC Help

- Closed group, click to open
- Open group, click to close
- Hidden group/layer, click to make visible
- Hidden layer w/tool, click to make visible/active
- Visible group/layer, click to hide
- Visible layer w/tool, click to hide
- Visible layer, but not at this scale
- Visible layer w/tool, but not at this scale
- Partially visible group, click to make visible
- Inactive layer, click to make active
- Active layer
- Open the layer filter window
- Rasters cannot be activated

Updated at 13:49:24 | Auto-refresh in 4:47

Reset Hazards Actions

Now showing: all active hazards

Hazard Listing	Category	# Prods	Last Update	Status
Tsunami Warning - East Of Kuril Islands 8.2	Event	9	01/13/2007 03:07	Active
Tsunami Watch - Eastern Gulf Of Aden 6.5	Event	5	12/29/2006 23:07	Active
Tsunami Bulletin - Taiwan Region 7.2	Event	4	12/26/2006 02:53	Active
Tsunami Bulletin - East Of Kuril Islands 6.5	Event	4	12/07/2006 09:38	Active
High Surf into Harbor	Event	0	11/21/2006 15:28	Active

Tools

- [Hazard Listing](#)
- [Automated Hazard Map](#)
- [Message Traffic](#)
- [Model Information](#)
- Administration**
- [User Preferences](#)
- [Administration](#)

Vietnam DMC (2010)

The screenshot displays the VINAWARE web application interface, which is powered by PDC's DisasterAware. The interface features a top navigation bar with buttons for 'CÁC LỚP' (Layers), 'CHỦ GIẢI' (Legend), and 'KẾT QUẢ' (Results). The main map area shows a topographic view of a region in Vietnam, with a blue shaded area representing a flood simulation. The map includes labels for various locations such as Tu Núc, Trại An Diêm, An Diêm, Thành Đại, Mộ Than, Hồ Khách, Đại Sơn, Sông Vư Gia, and Trại Dục.

On the left side, there is a legend titled 'CHỦ GIẢI' (Legend) and a 'KẾT QUẢ' (Results) window. The legend lists various features and their symbols, including Maximum Water Depth, Khu trú ẩn (Shelter), Trường học (Schools), Khu tái định cư (Resettlement Area), UBND (Peoples Committee), Cơ sở y tế (Medical), Vết lũ (Flood Marker), and various types of roads and bridges. The 'KẾT QUẢ' window shows a table of results for 'Xác định 1' (Identify 1), listing shelter locations and their details.

On the right side, there is a 'CHỦ GIẢI' (Legend) window showing a list of storm categories and their corresponding wind speeds, such as 'ne/Typhoon > 150 mph', 'ne/Typhoon > 74 mph', 'I Storm', 'I Depression', 'e/Typhoon > 150 mph', 'e/Typhoon > 74 mph', and 'Storm'. Below this is a 'Thiên tai #22915' (Disaster #22915) window showing a list of dates and times, and a search bar for 'Tìm kiếm vị trí...' (Search location...). The bottom right corner of the map area shows coordinates 'X=180.123 Y=180.123'.

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ASEAN AHA Centre (2012)



(c) Copyright 2006-2010 - PDC

Indonesia BNPB (2013, planned)



AP Disaster Response Resource

UN OCHA ROAP (Bangkok)

New Guide

- Published April 2013

Resources:

- Regulatory Actions
- Humanitarian Actors
- Int'l Coordination Mechanisms

Tools & Services

- Satellite imagery
- Mapping data
- Assessment tools
- Preparedness planning
- Warning systems



🕒 Google “OCHA ROAP disaster response guide”

Chris Chiesa
cchiesa@pdc.org



**PACIFIC
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CENTER**

Fostering Disaster-Resilient Communities

For more Information:
<http://www.pdc.org>

Follow us on:    DisasterAWARE

Contact us at: info@pdc.org