



APEC Workshop on Scientific
Decision Making for Emergency
Preparedness of Natural Hazards

Taipei, 27-31 July 2015

PACIFIC DISASTER CENTER: DISASTERAWARE SUPPORTING NEPAL M7.8 EARTHQUAKE

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Agenda

- ◎ PDC Overview
- ◎ Introducing DisasterAWARE
- ◎ DisasterAWARE supporting Nepal earthquake response
- ◎ (Demonstration)

PDC Background

- ◉ Works to bridge the gap between science/technology providers & decision makers through **applied** information research and **evidence-based** analysis.
- ◉ A global program Headquartered in Hawaii with offices/staff in Asia and US Mainland.
- ◉ Established in 1996.
- ◉ Managed by the **University of Hawaii** since 2006.



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PDC's Integrated Approach

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

Integrating Information, Science, Observation Systems & Technology

Improve Decision-support Capabilities

Advanced Applications, Models, Risk & Vulnerability Assessments

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Challenges & Gaps ...

Sample Advisories

○ Inadequate Tools for the Decision Makers

- Lack Situational Awareness
- Warnings are Hard to Digest
- Information is Scattered
- Risks are not Understood
- Dissemination is Limited

○ Information not easily understood is not particularly useful



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Overcoming Challenges

○ Tools for Decision Makers

- Simplify, Automate, & Integrate
- Understand Exposure
- Estimate (Model) Impacts
- Disseminate Early Warning
 - Social Media, Mobile App
- Support Decisions Based on Latest Assessments

○ Knowledge for Policy Make

- Assess Socio-Economic Risks & Vulnerabilities

○ Capacity for Practitioners

- Training & Exercise
- Workshops
- Engagements



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DisasterAWARE Platform

- DisasterAWARE (**A**ll-hazard **W**arning, **A**nalysis and **R**isk **E**valuation)
 - An integrated platform providing situational awareness, decision support, and information exchange capabilities to disaster management decision makers.
- DisasterAWARE incorporates international best practice methodologies and technologies for **data acquisition, hazard modeling, risk and vulnerability assessment, mapping, visualization, and communications.**

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DisasterAWARE Platform

Key Features

- Integrated Multi-hazard Monitoring
- Disaster Early Warning
- Automated / Integrated Modeling
- Hazard Maps and Historical Hazard Data
- Intra-Agency Info Sharing
 - User Added Situation Reports
 - Damage Products, ...
- Remote Access (Disaster Alert)



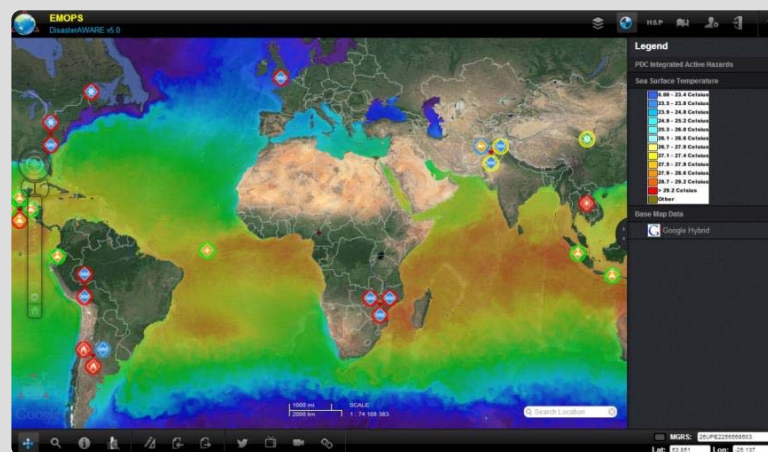
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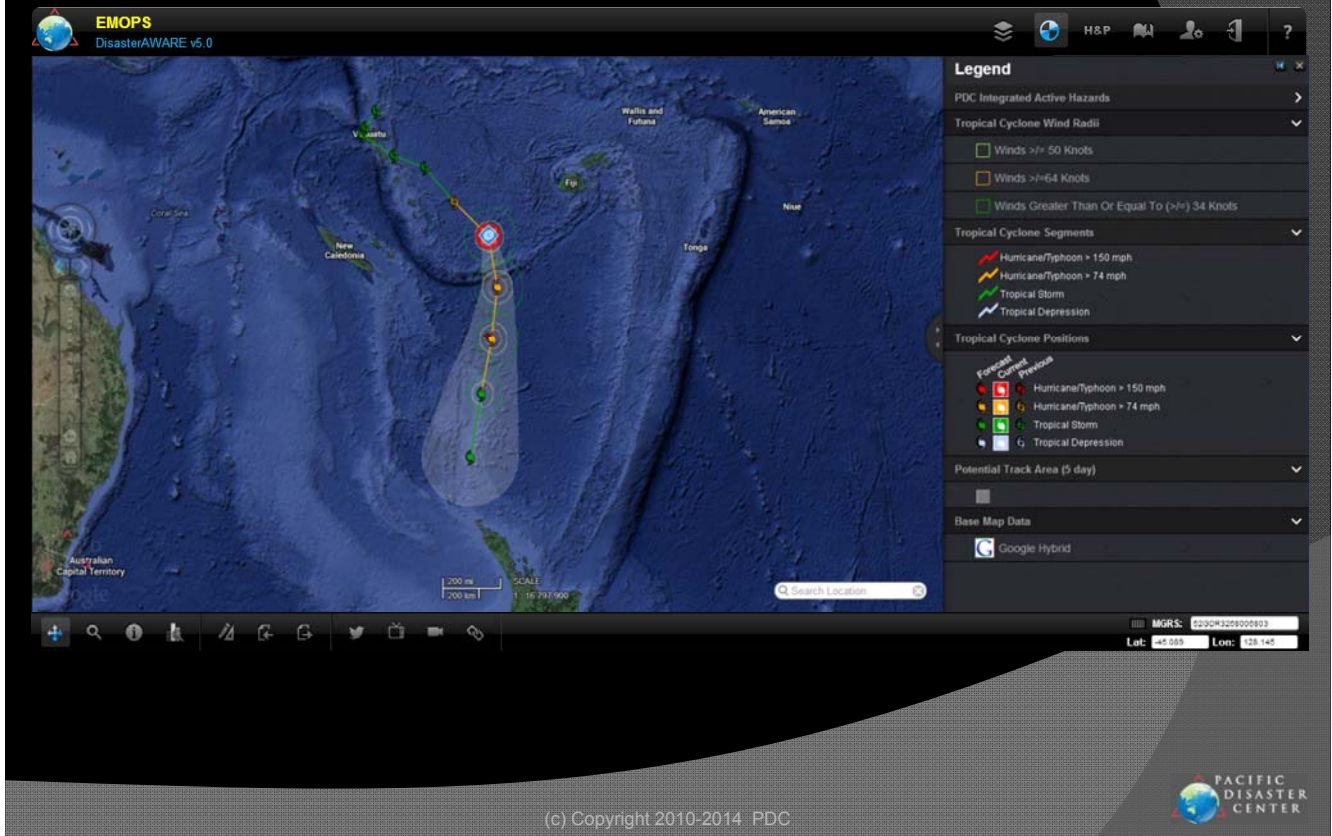
Applications

EMOPS is made freely available to disaster management practitioners around to support disaster risk reduction and humanitarian assistance activities.

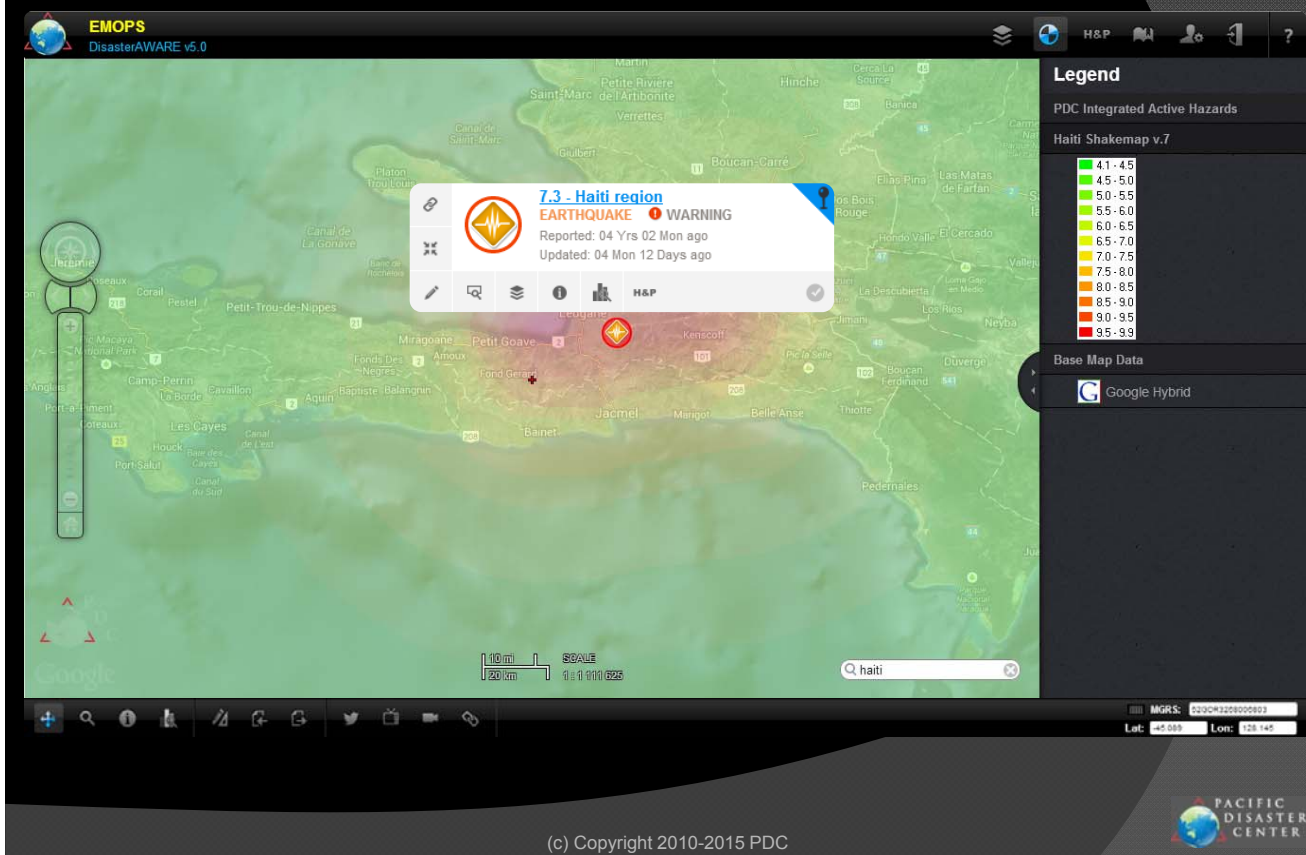


<http://emops.pdc.org>

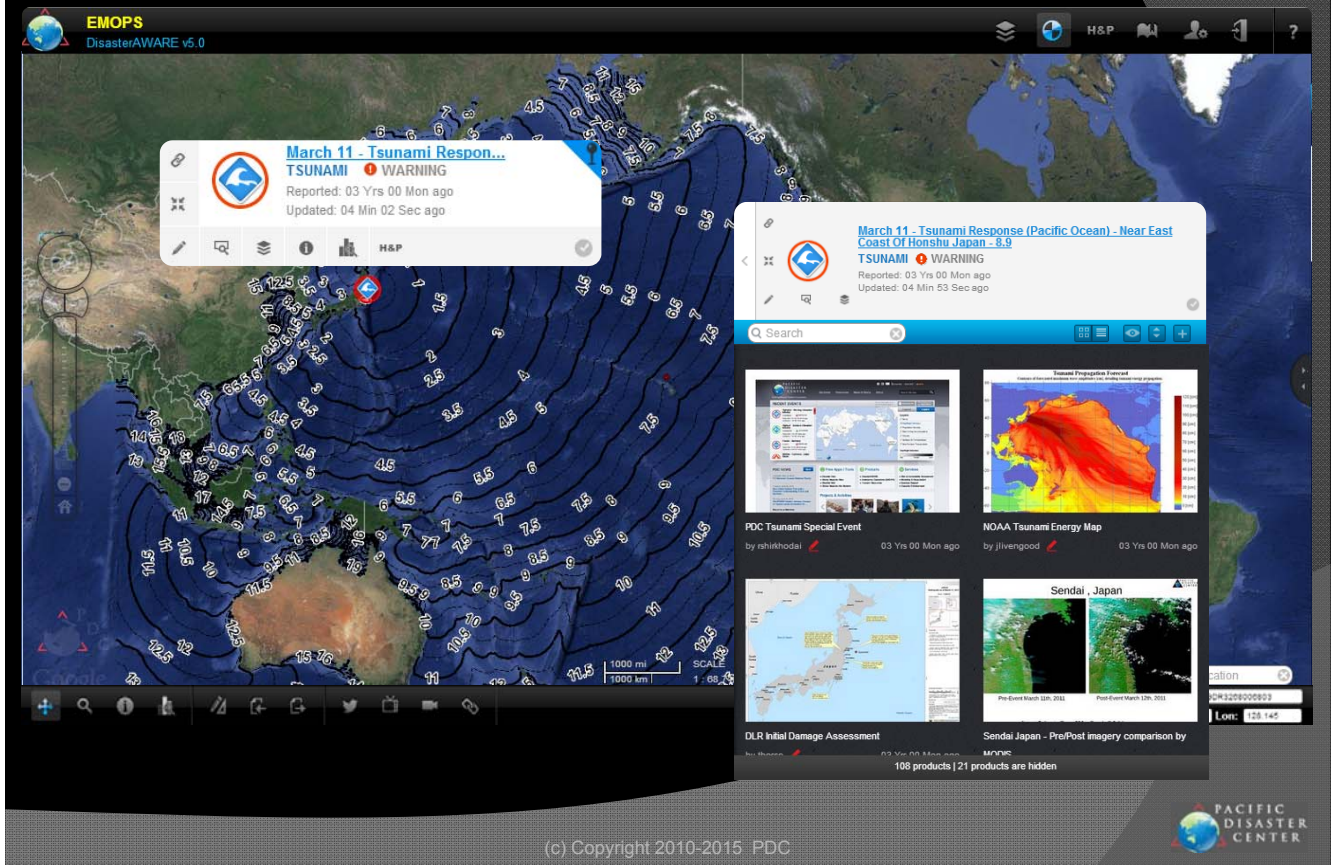
Example: Tropical Cyclones



Example: Earthquakes



Example: Tsunamis



Applications

Disaster
Alert

Atlas

EMOPS

Custom

Customized versions of DisasterAWARE, such as the AHA Centre's DMRS, incorporate specific national or regional data, provide for customized alerting rule and distribution, and allow access by authorized users.



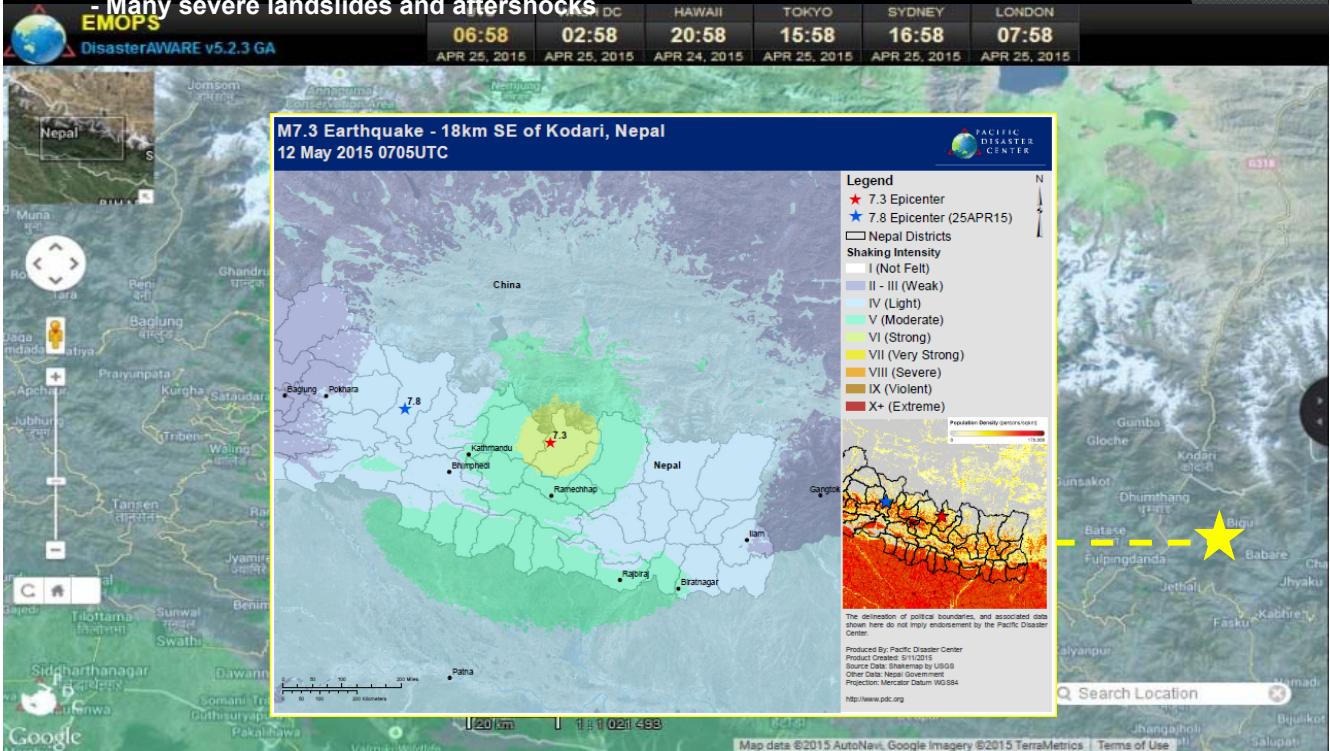
2015 Nepal Earthquakes

(25 APR) A powerful M7.8 earthquake struck Nepal.

- Over **8,000** people killed in Nepal (UNOCHA)
- Over **24** people killed in neighboring India, China, and Bangladesh
- Many severe landslides and aftershocks

(12 MAY) An M7.3 aftershock impacts Nepal.

- At least **65** additional deaths
 - Over **1,900** more people injured
 - Many previously damaged buildings collapsed
- Over **473,000** homes destroyed by both events combined



PDC Response to Nepal

- Full Activation of the Disaster Services Team
 - Remotely
 - Maui, Oahu, Washington DC, Miami, Colorado, Bangkok
- Direct support to Govt. of Nepal and others:
 - e.g. Nepal National Emergency Operations Center (NEOC), Nepalese Army, US Embassy Nepal, USAID OFDA, U.S. Army Corps of Engineers (USACE), US PACOM/JTF505, UN Field Teams, UN-OCHA, World Food Program, ICIMOD
- Over 140 PDC products and reports issued:
 - e.g. Damage & Impacts, Urban Search & Rescue, RVA, Health, Shelter & Displaced Populations, and additional threats (Rain, Flooding, Landslides)



Disaster Planning & Preparedness



PDC Pre-Earthquake Activities in Nepal

- ◎ **Key Information Sharing & Collaboration Activities**
 - Data Sharing Activities since 2009
 - Ongoing GIS Integration Project (USACE/PDC)
- ◎ **In-Country Disaster Management Engagement**
 - Geospatial Information Gap Assessment & Way Forward Supporting Ministry of Home Affairs & Nepalese Army
 - Data Sharing Workshops – National Emergency Operations Center (NEOC) - 36 hours before Major 7.8 Event in April 2015
- ◎ **Exercises Support**
 - MPAT Tempest Express 11 Exercise
 - USPACOM/J6 Pacific Endeavor
- ◎ **Partnership Development**
 - Ministry of Home Affairs (MOHA)
 - Nepalese Army
 - USAID/US Embassy
 - NGOs (ICIMOD, KLL)

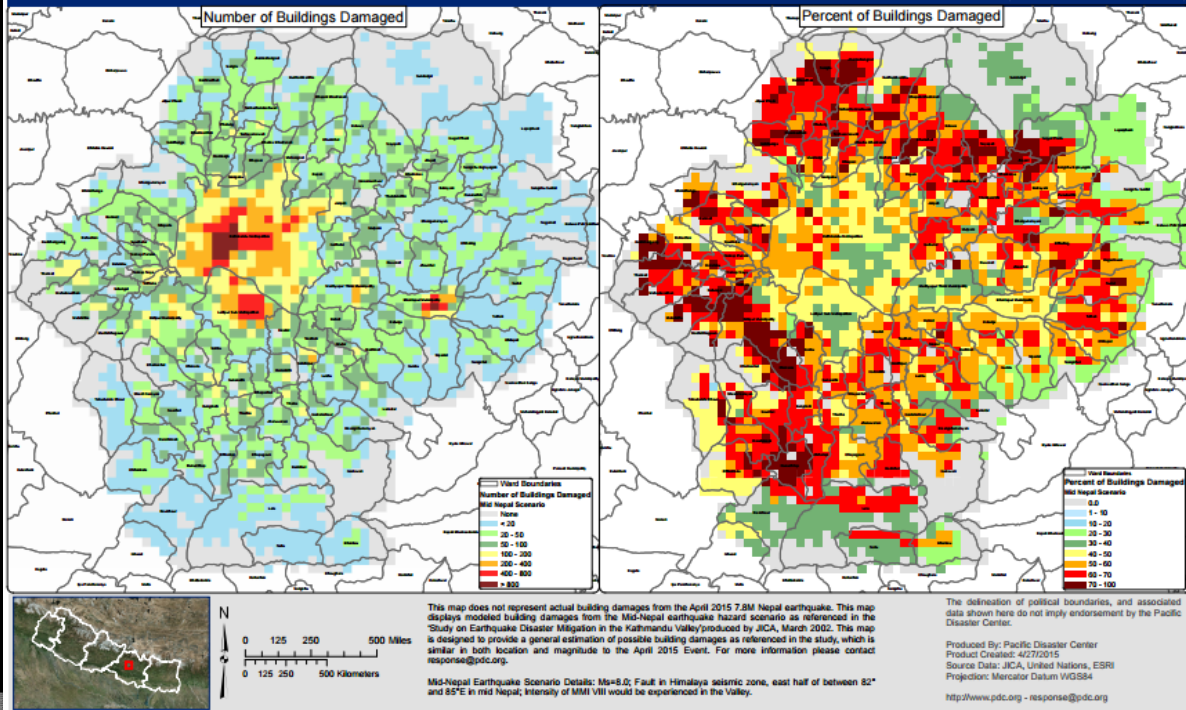


Exercise: Modeled Damage and Losses

(Pre-run Scenarios) *Also used to support USAR following M7.8 event

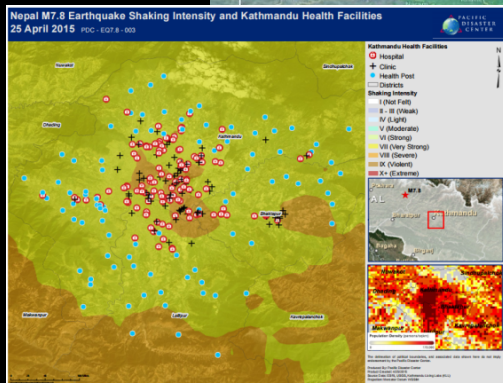
FOR PLANNING PURPOSES ONLY

Mid-Nepal Scenario, JICA, 2002 - MODELED Earthquake Building Damage - Kathmandu Valley, Nepal
PDC - KTM - MNS001

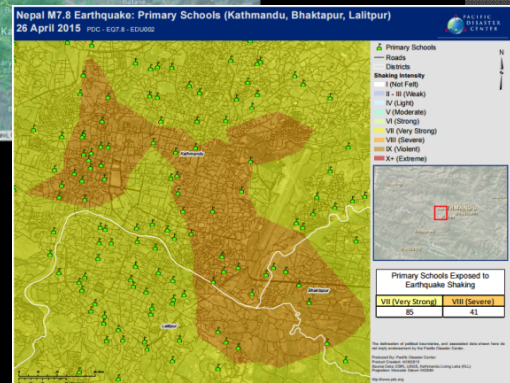


Immediate PDC Support

Shaking Intensity (ShakeMap) ↓

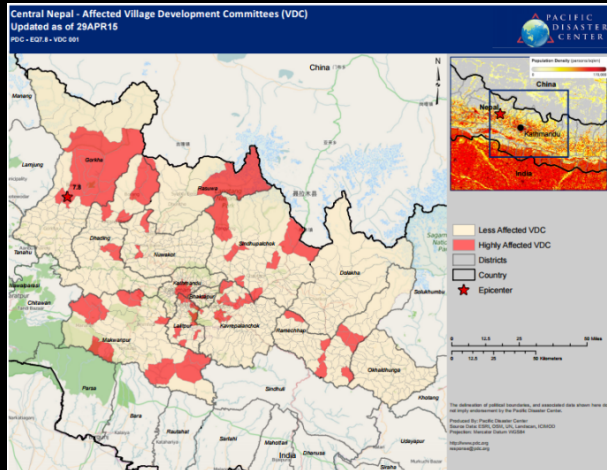


↑ Affected Health Facilities

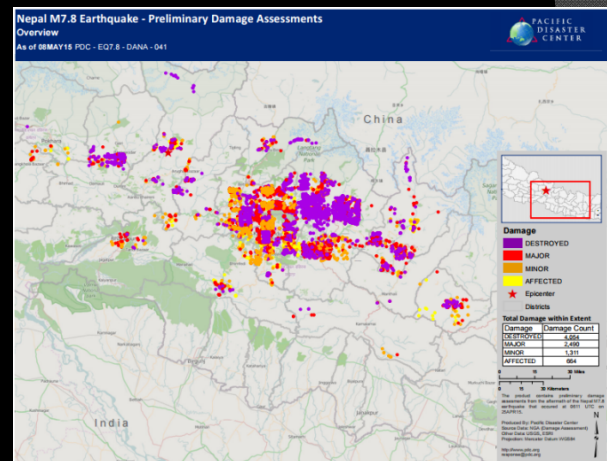


↑ Affected Primary Schools

Assessed Damage & Impacts



Affected Village Development Committees ↑

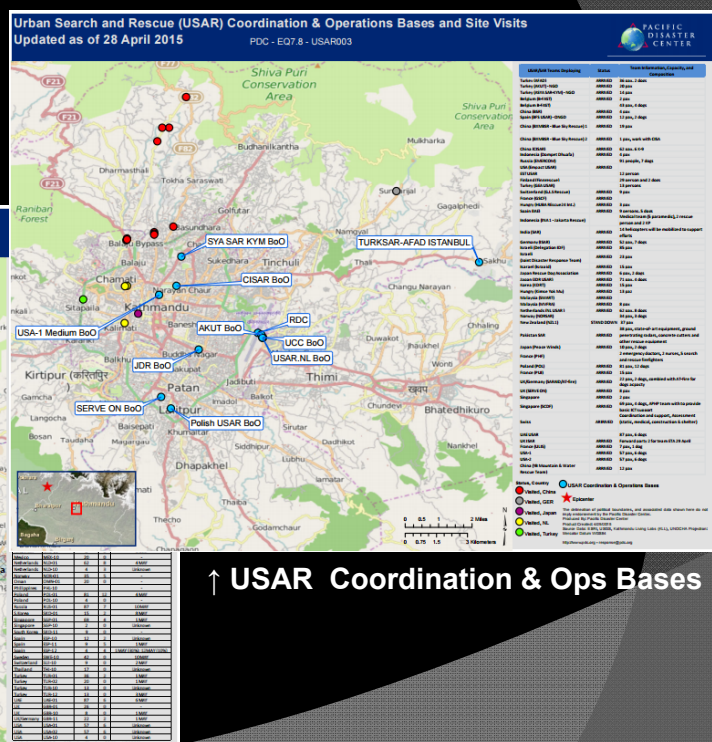
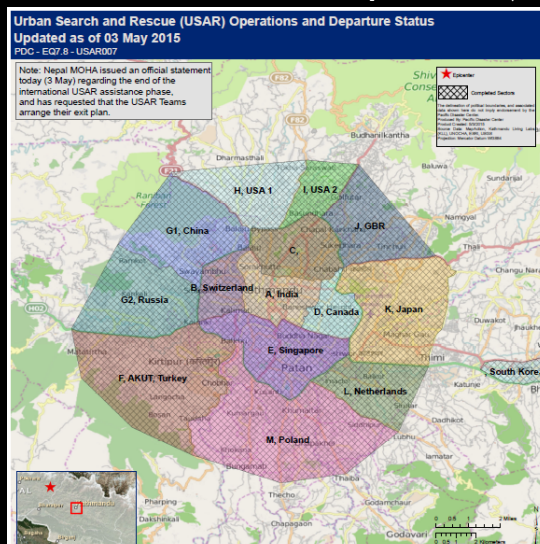


↑ Preliminary Damage Assessments

Urban Search and Rescue Support

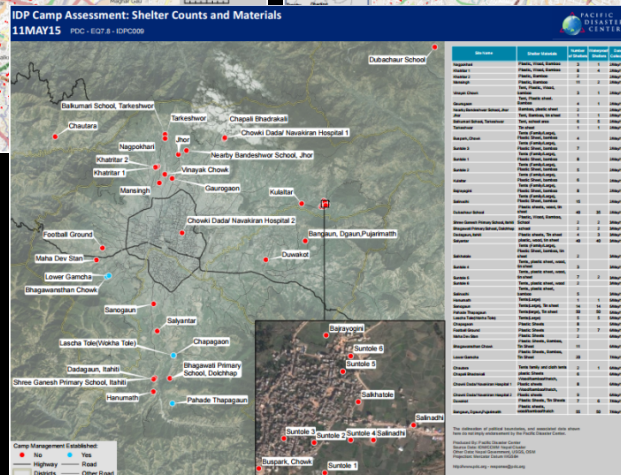
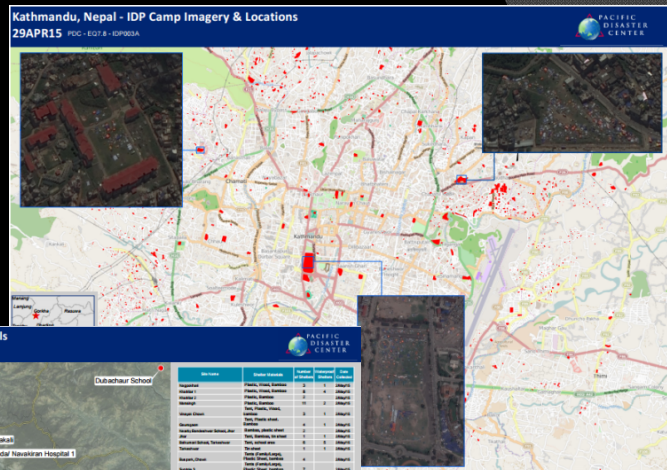
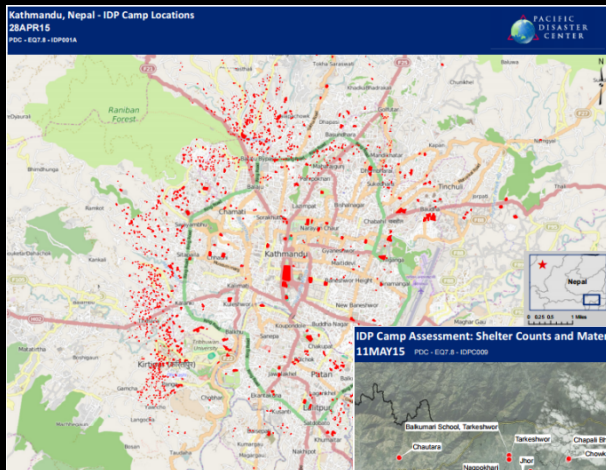


USAR Coordination & Ops Bases ↓



↑ USAR Coordination & Ops Bases

Shelters and IDP Camp Support



↑ Internally Displaced Persons (IDP) Camps

IDP Camp Imagery↑

Shelter Locations Status

Risk and Vulnerability



Country RVA Profiles↓

Risk and Vulnerability Profile: Nepal (Healthcare Capacity) RVA NPL-004

Healthcare Capacity Index:

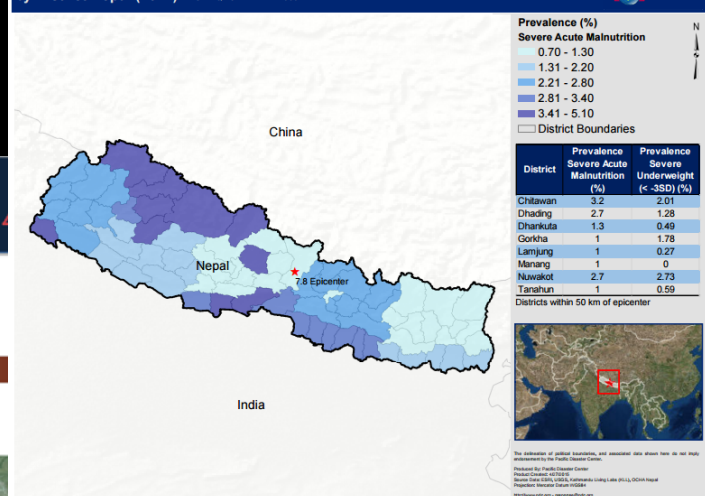
Nepal ranks 133 out of 190 countries on PDC's global Healthcare Capacity Index.



Component Indicators	Relative Score	Rank	Out of	Raw Data Value
Physicians	0.27	113	199	2.09 per 10,000
Nurses Midwives	0.29	161	190	2.09 per 10,000
Hospital Beds	0.77	37	192	50 per 10,000

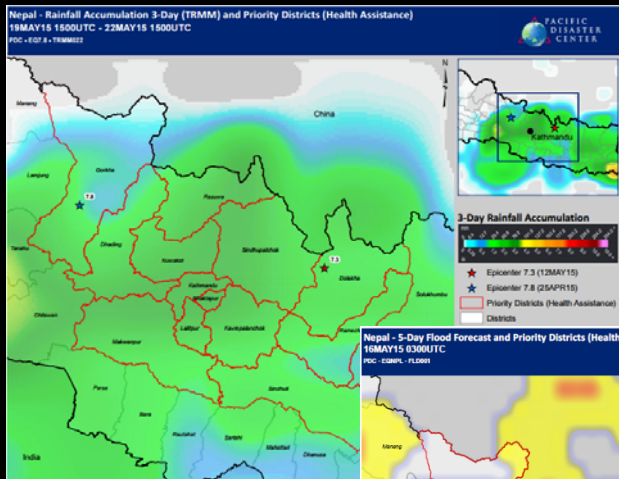


Vulnerable Populations: Prevalence of Children with Severe Acute Malnutrition by District Nepal (2012) PDC - EOT 8 - RVA NPL-006

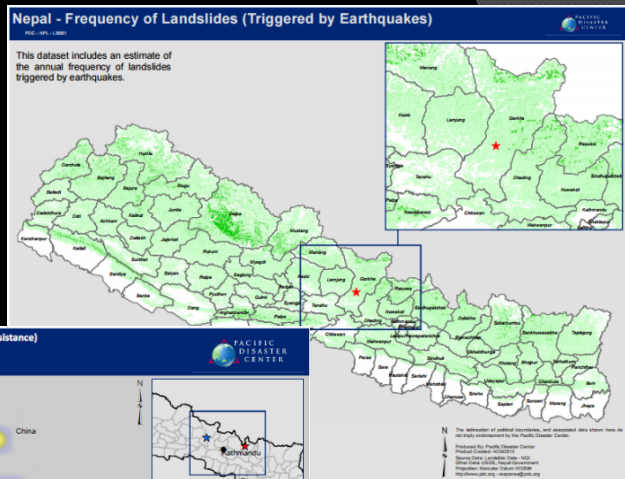


↑ Vulnerable Populations

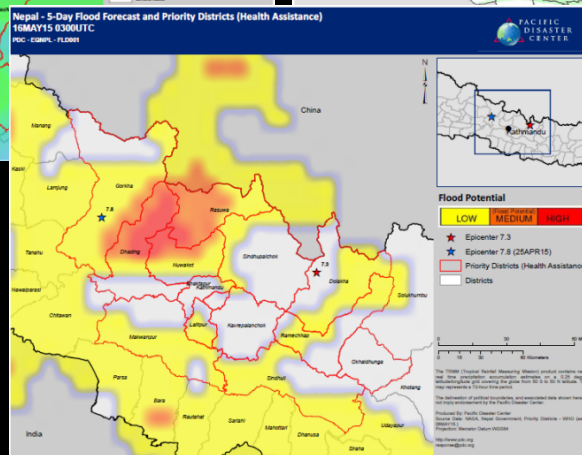
Hazard Monitoring



↑ Rainfall Observations

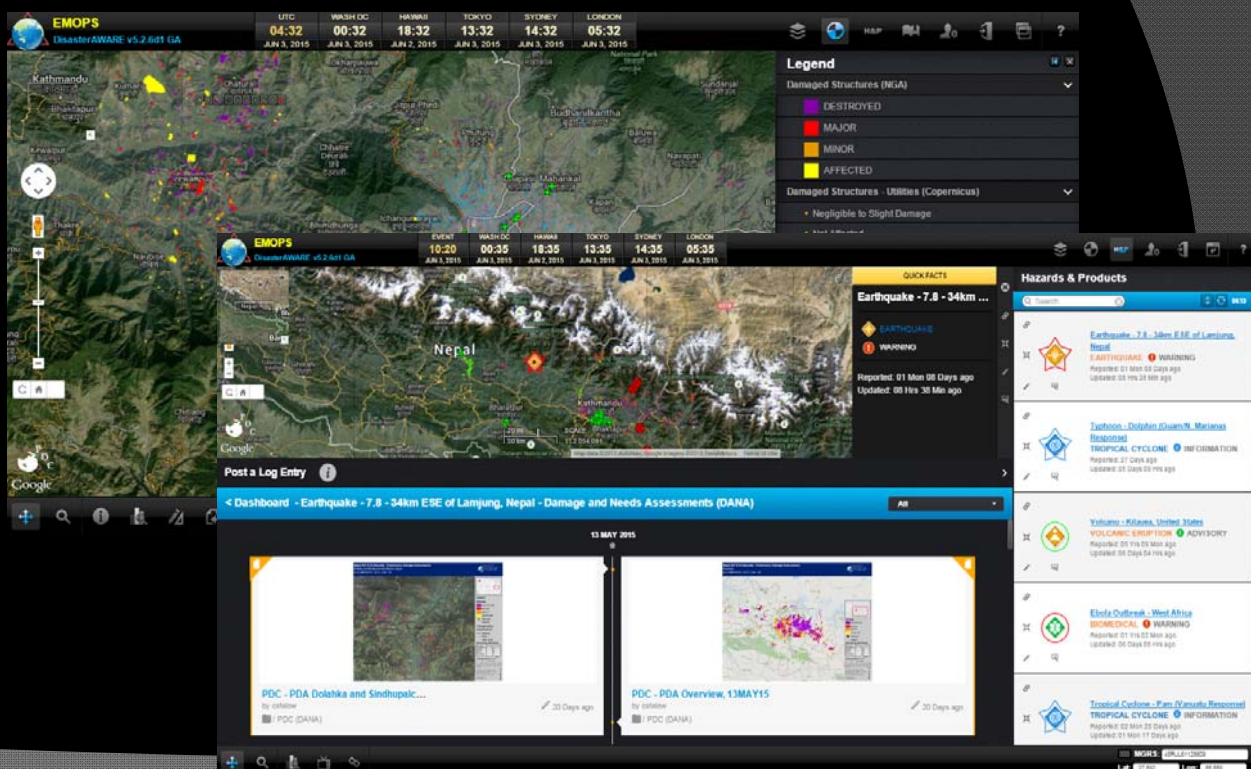


Landslide Potential ↑



Flood Potential

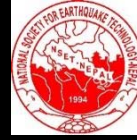
Common Operating Picture & Civilian/Military Information Sharing



Who We Worked With



Nepal National EOC/
Ministry of Home Affairs



NSET-NEPAL



US Embassy
Kathmandu, Nepal



JTF-505



USPACOM



USARPAC



USMARFORPAC



USACAPOC(A)



USACE



CFE



NGA



USAID OFDA



Int'l Charter



CCCM Nepal IMU



United Nations



WFP



IOM - OIM



Key Lessons

- Know your partners - Exercises and Training are critical!
 - Since 2009, PDC has participated in multiple engagements, trainings, and exercises in Nepal.
 - Scenarios focused on similar catastrophic earthquakes.
 - Partnerships are key - Share information and collaborate!
- Access to data and information is important
 - Since 2011, PDC and partners have been working to enhance and increase Nepal's internal GIS and data-sharing capacity.
 - Baseline data was critical for initial assessments.
 - Location of affected Schools, medical facilities, roads, etc.
 - Information and Data Distribution
 - Multiple ways to access PDC Products
 - Multiple ways to access PDC data
 - Integration into DisasterAWARE (EMOPS)



"Fostering Disaster-Resilient Communities"

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