NTHMP Annual Meeting
San Diego, CA
6-10 Feb 2012

US Post-Tsunami
Science Survey Protocol

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Michael Shulters, USGS
Rick Wilson, California Geological Survey
Kevin Richards, Hawaii State Civil Defense
Gen Tamura, FEMA Region IX
Edward Young, NOAA NWS Pacific Region
Adam Stein, Jesie Huart, NOAA Pacific Services Center
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U.S. Post-Tsunami Science Survey Protocol Proposal

Laura Kong (NOAA), Michael Shulters (USGS), Rick Wilson (CA GS), Kevin Richards (HI CD),
Gen Tamura (FEMA), Edward Young (NOAA), Adam Stein (NOAA), Chris Chiesa (PDC), Paula Dunbar (NOAA), Jesie Huart (NOAA)

PRiMO
PACIFIC RISK MANAGEMENT 'OHANA

NTHMP

WHY IS A PROTOCOL NEEDED?

Post-tsunami scientific field surveys are critical for improving the understanding of tsunamis and developing tools and programs to mitigate their effects. After a destructive tsunami, international, national, and local tsunami scientists need to gather information, much of which is perishable or degrades significantly with time. An influx of researchers can put stress on State and Local Governments already overwhelmed by humanitarian response to the disaster and by the demands of emergency management and other support agencies

A Protocol that is known about and respected by all stakeholders will ensure that a coordinated and comprehensive damage assessment is conducted in a responsible, respectful, and efficient manner to support emergency response, short-term recovery, long-term planning, and importantly, the fundamental tsunami research still needed to improve risk assessments and implement more effective mitigation measures. Our collective, collaborative efforts will then reach our customers, the affected population, in more meaningful and timely ways.

The US Protocol will follow from the principles and guidance provided by the international UNESCO IOC Post Tsunami Field Survey Guide (2nd edition) to be published in 2012.

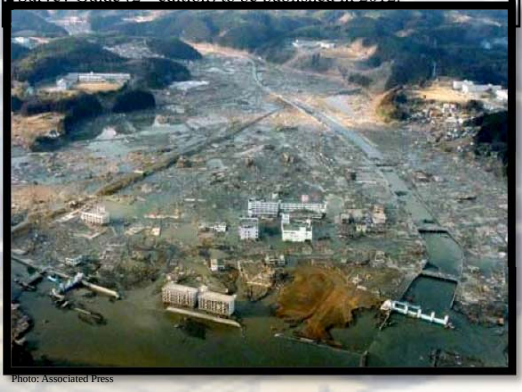
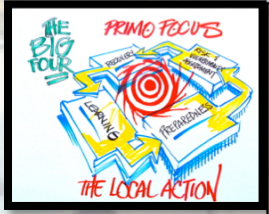


Photo: Associated Press

WHAT IS PRiMO?



PRiMO, Pacific Risk Management O'hana, is a network of partners committed to enhancing the resilience of Pacific Islands through risk management. PRiMO recognizes the value of collective action and works through partnerships to improve coordination, build regional capacity in risk management, and strengthen and sustain hazard-resilient communities.

PROTOCOL FOR POST-TSUNAMI FIELD SURVEYS

PROTOCOL COMPONENTS:

1. Contact designated event coordinator for situational awareness
2. Obtain Official survey badge
3. Coordinate with others
4. Include local experts/officials on your team
5. Check-in onsite
6. Heed all safety regulations
7. Be prepared to answer questions by locals
8. Prepare and provide survey/data collection plan to include regular field reports
9. Check-out, and provide out-briefing to response officials
10. Provide final data immediately to support response and recovery (3-12 months)

QUESTIONS FOR PARTICIPANTS

Would you readily share post-disaster, field data with impacted communities?

What would you want to see added/changed to field Protocol (provided above)?

Is an international/national organization needed to oversee field Protocol? Who would you suggest?

Would you like to be involved with developing formal field Protocol? If so, please provide contact info.

NTHMP POST-TSUNAMI INVOLVEMENT

The National Tsunami Hazard Mitigation Programs (NTHMP) is a partnership sponsored by the National Oceanic and Atmospheric Administration (NOAA) involving relevant Federal agencies and coastal States/Territories. The NTHMP develops and coordinates effective tsunami hazard reduction efforts in the United States over the long term.

The NTHMP will appoint a representative to carry out their post-event response plan, which could incorporate support for this Protocol. Activities of the NTHMP and its representative will include:

1. Provide support to the International Tsunami Information Center (ITIC) and the impacted states/ territories to help facilitate coordinated and efficient response activities.
2. Provide support to impacted states to ensure their needs are met by the field response teams, specifically sharing data that are acquired. This field data may include collection of physical evidence of the tsunami, impacts to structures, information about response effectiveness, and sociological observations about public response. Other data collected, such as post-event modeling, will also be collected by the NTHMP representative and provided to the impacted state(s) and NTHMP member.
3. Work closely with the ITIC, PRiMO, FEMA, field response teams, and other participating organizations (National Science Foundation, Earthquake Engineering Research Institute, etc.) to address NTHMP needs, evaluate gaps in data collection exist, and help advise how to fill these gaps.

KEY PARTNERS

PHYSICAL SCIENTISTS/ENGINEERS: need quick access to collect ephemeral data
SOCIAL SCIENTISTS: interviews with public and officials essential to assessing lessons
EFFECTED COMMUNITIES/POPULATION: relying on help to assure a quick recovery
EMERGENCY RESPONDERS: need immediate info to assist in response /recovery

Photos: Rick Wilson (top and bottom left), Vasily Titov (top right), PMEL (bottom right)

PARTNER/COMMUNITY BENEFITS

EFFICIENT LOGISTICS: a speedy, coordinated response
BETTER QUALITY DATA: helping each other
SAFETY: protecting the community and the responders
RESPECT: understanding everyone's role and responsibility
COORDINATION: maximizing resources
COMMUNICATION: staying in touch with all of the partners
SITUATIONAL AWARENESS: what, when, where?
ACCOUNTABILITY: everyone is responsible for their actions
RECOVERY: recognition of and assistance with specific needs of community
RESILIENCY: preparing communities to reduce impact from future disasters

Fall AGU meeting, 2011

Post-Tsunami Field Surveys - History

- Over last 7 years, ~60 measured tsunamis.
- 9 caused deaths, most notably 26 Dec 2004 Indian Ocean tsunami (230,000 lives). Pacific: Apr 2007 (Solomons 54, Chile 3), Sep 2009 (Samoa 149, Am Samoa 34, Tonga 9), Chile (156), Japan (~20,000)
- After each tsunami, data collected to quantify impacts, response/recovery, improve numerical models, engineering (International Tsunami Survey Teams, ITST)
- ITIC helps to coordinate ITSTs for UNESCO/IOC (UN)

POST-TSUNAMI SURVEYS - Reality & Coordination

For Am Samoa, > 40 intl scientists, > 7 teams from Oct 4; ITIC coord

- **Characteristics: Independent**
  - **Arrange local contacts, e.g., stretch limited logistics (Own funds)**
  - **Science/research focus. Difficult coordination. Publish 1st.**

Did not collect complete primary data AS wanted (inundation, runup)
=> USGS rtn Nov 5-12 to gap-fill
=> NSF team findings to GoAS Dec 14 (2.5 months later)

For Samoa / Tonga, GoS / GoT collaboration; ITIC, SOPAC coord

- **Samoa: > 60 intl scientists (7 countries+), 1 team Oct 14-23**
  Summary/Prelim report to GoS on leaving (Oct 26, 3 weeks)
- **Tonga: 5 intl scientists (Japan, NZ, USA), 2 teams Nov**
  Nov 11-16: Prelim Data to GoT on leaving

For Chile, GoC invited UNESCO/IOC and ITIC coordinate

- **25+ teams (>70 scientists), Mar-May**
- ***Secure prelim data sharing (ITIC)***

For Japan, GoJ invited UNESCO/IOC and ITIC coordinate

- **Japan teams (200+ scientists) did initial; Intl afterward building upon**

Intl Post-Tsunami Surveys

1. Invited by country to help coordinate (IOC, ITIC)
2. Teams provide plan to ITIC
3. ITIC works with Country coordinator
4. IOC / ITIC, Host Country provides ITST Letter
5. ITIC provides ITST Badges for team members
6. Check-in with Country
7. Sharing on secure server (or other means)
8. Check-out with Country
9. Encourage final data to NGDC

=> IOC Post-Tsunami Field Survey Guide (2012)

Post-Tsunami Science Survey – American Samoa
Data Collection to support Response / Planning

- FEMA lead role in disaster response

- Tsunami <u>scientists</u> want to <u>document impacts before evidence disappears</u> (inundation, runup, building impact/scour, eyewitness accounts, etc)
- NSF, EERI, etc funds scientists to conduct surveys, but <u>currently NO requirement to share</u> with Local Govt immediately. Some prefer anonymity (e.g., tourists)
- Federal Agency and Local Govt Agency coordination framework can improve situation
  => Plan needs to be in place beforehand

Coordinated Post-Disaster Efforts

- **Disasters attract large number of local, national, international scientists to investigate scientific, economic, social impacts**
- **At same time, Emergency Agencies must focus on public safety, critical support lifelines and infrastructure, resource mobilization**
- **Needs data mgmt system integrated into emergency operations, perishable data may be logistically difficult to acquire**
- **For best Recovery decision-making, need all data available**

⇒ ***Science / Technical clearinghouse (real-time) efficient framework for central coordination, information sharing / data integration***

Who Needs the Information?

- **Information needed by:**
  - **Emergency Management**
  - **Elected Officials**
  - **Response Organizations**
  - **Media**
  - **The Public**

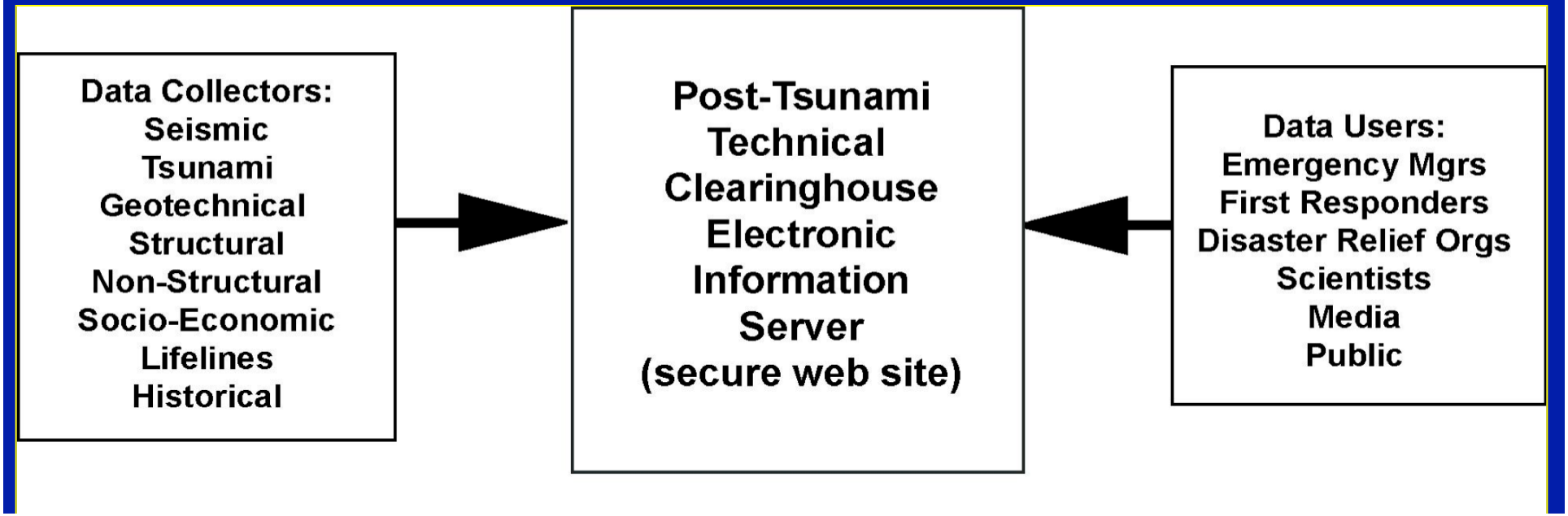
What is the Information used for?

- Determine the extent of the damage
- Efficient use of limited resources
- Status of
  - Transportation routes
  - Utilities
  - Sheltering needs
  - Medical facilities
- Potential dollar loss
- Information for Emergency Declarations
- Need for additional resources
- Recovery priorities

INFORMATION DATA SHARING

- *Needed during Surveys*
- *Essential post-Survey - collecting, compiling, sharing*
  - *Secure Site*
  - *Data collectors can post data*
  - *Data Users can access data*
  - *User-friendly, Simple-to-create graphics*

  Data Summaries for Reports



WHY PROTOCOL NEEDED

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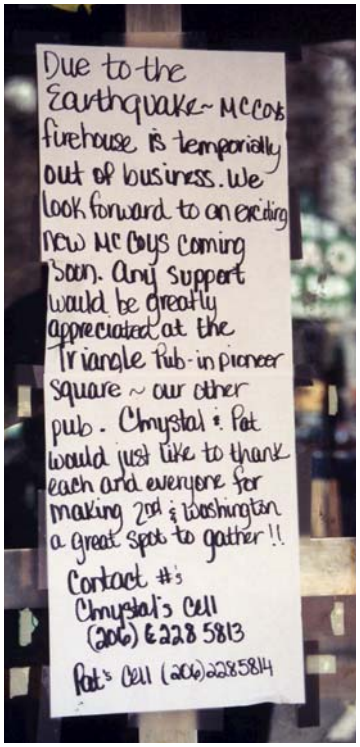

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NTHMP COORDINATION

- **National Tsunami Hazard Mitigation Program (NTHMP)**
  - Partnership sponsored by NOAA of Federal (NOAA, FEMA, USGS) and coastal States/Territories.
  - Develops / coordinates effective tsunami hazard reduction efforts in US over long term
- **For Survey, NTHMP representative should:**
  - Support to ITIC and impacted states/territories for coordinated and efficient response activities.
  - Support to impacted states to ensure needs met by field response teams, specifically data sharing
  - Facilitate timely provision of field (physical, structural, socialogical, etc)
  - Work with ITIC, FEMA, field teams, other stakeholder organizations (NSF, EERI, etc)

PROTOCOL COMPONENTS

1. **Contact Designated** event coordinator for situational awareness
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3. **Coordinate** with others
4. **Include Local** Experts/officials on your team
5. **Check-in** onsite
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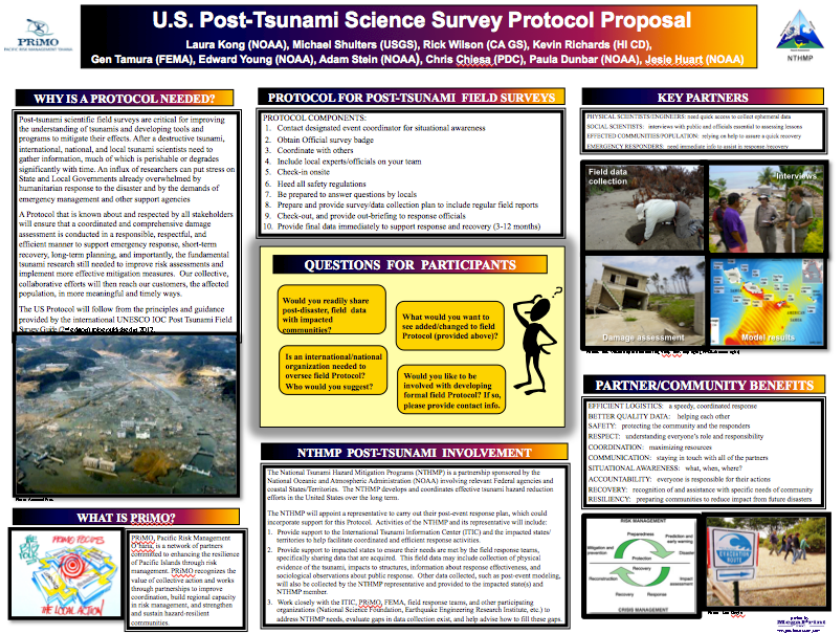

Thank You

Please send Feedback to

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