International Tsunameter Partnership

Ken Jarrott

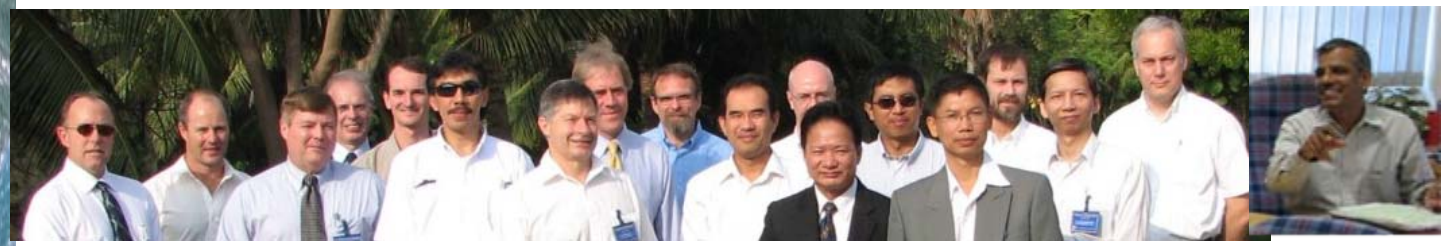
Chair IOC/ICG IOTWS

International Tsunameter Partnership

DBCP Oct ’07
Jeju, Republic of Korea

Tsunameter Partnership Team – 1ST Steps

Terms of Ref. established & endorsed Jul '06 **after ref. to Pacific Tsunami Warning & Mitigation System (PTWS) and IOTWS.**



ITP-1
Chennai
Feb 07

ITP-2
Jakarta
Sep 07

NATIONAL / IOC REPS

India Thailand Malaysia
Indonesia Australia USA
Taiwan Germany Korea
IOC/UNESCO

SUPPLIERS / DEVELOPERS

NOAA-PMEL (USA) **GFZ (Germany)**
Fugro Oceanor (Norway) **Sonardyne (UK)**
Envirtech (Italy) **SAIC (USA)**
Lighthouse R&D (USA) **SeaBird (USA)**

IOTWS Focus vs Rest of World

- Indian Ocean is focus of tsunameter network expansion, engagement of new product suppliers, tightly-coupled interdependent warning centres with short warning times.
- Main focus of ITP is the predominant DART-like product type (surface comms buoy, mooring, bottom pressure sensor). Chilean representative retired this year – need to restablish. Korea, Taiwan participation expand representation beyond Indian Ocean.
- Periodic informal contacts with NEAMTWS – they are tending to follow IOTWS leads in instrument standards, data interoperability. Have yet to plan their observation network (a current activity).
- One supplier represents cabled-tsunameter technology – e.g. Gulf of Oman pilot installation.

Agenda – Meet 1

[Build trust and open-ness between suppliers & national operators]

- Review and endorse tsunameter instrument and data standards
- Review deep ocean network designs, plans and current status for Indian Ocean and other global tsunami warning regions
- Share experience of buoy technology and developments from tsunameter operating countries and from equipment suppliers
- Hold a technical exchange session with focus on underwater acoustic communications
- Review and explore opportunities for international collaboration and capacity building
- Review Terms of Reference and governance arrangements; nominate Chair and Vice Chair

Meeting 1 Outcomes

Trust & open-ness between suppliers & national operators: work-in-progress

- Draft tsunameter equipment performance standards discussed during meeting, and issued in following month for review.
- Useful technical exchange on underwater acoustic communications, led by Chris Meinig, PMEL
- Product disclosures by suppliers, and review of national plans and operating experiences. India's competitve technology trial of multiple Ocean Bottom Units of special interest.
- Reviewed extent of current international collaboration and capacity building activities – Indonesia-Germany-US-Australia-Thailand-Malaysia involved, some through formal MoU agreements.
- Chair and Vice Chair nominated:
  - Ken Jarrott (Australia) - CHAIR
  - Ridwan Djamaluddin (Indonesia) - VICE CHAIR
- Action items for next meeting – data communications performance metrics, GTS data latency analysis, sustainability challenge

Meeting 2 Objectives

Trust & open-ness between suppliers & national operators.

- ❑ Review & endorse instrument performance standards & guidelines
- ❑ Agree common performance measures for tsunameter data comms.
- ❑ Consider proposition for international exchange of data and metadata
- ❑ Review deep ocean network plans and current status for Indian Ocean and other global tsunami warning regions
- ❑ Share experience of observed tsunameter performance and product developments
- ❑ Technical exchange on tsunameter test & acceptance practices
- ❑ Develop framework for analysing and communicating sustainability challenges.

Meeting 2 Outcomes

Trust and open-ness between suppliers and national operators - a work-in-progress.

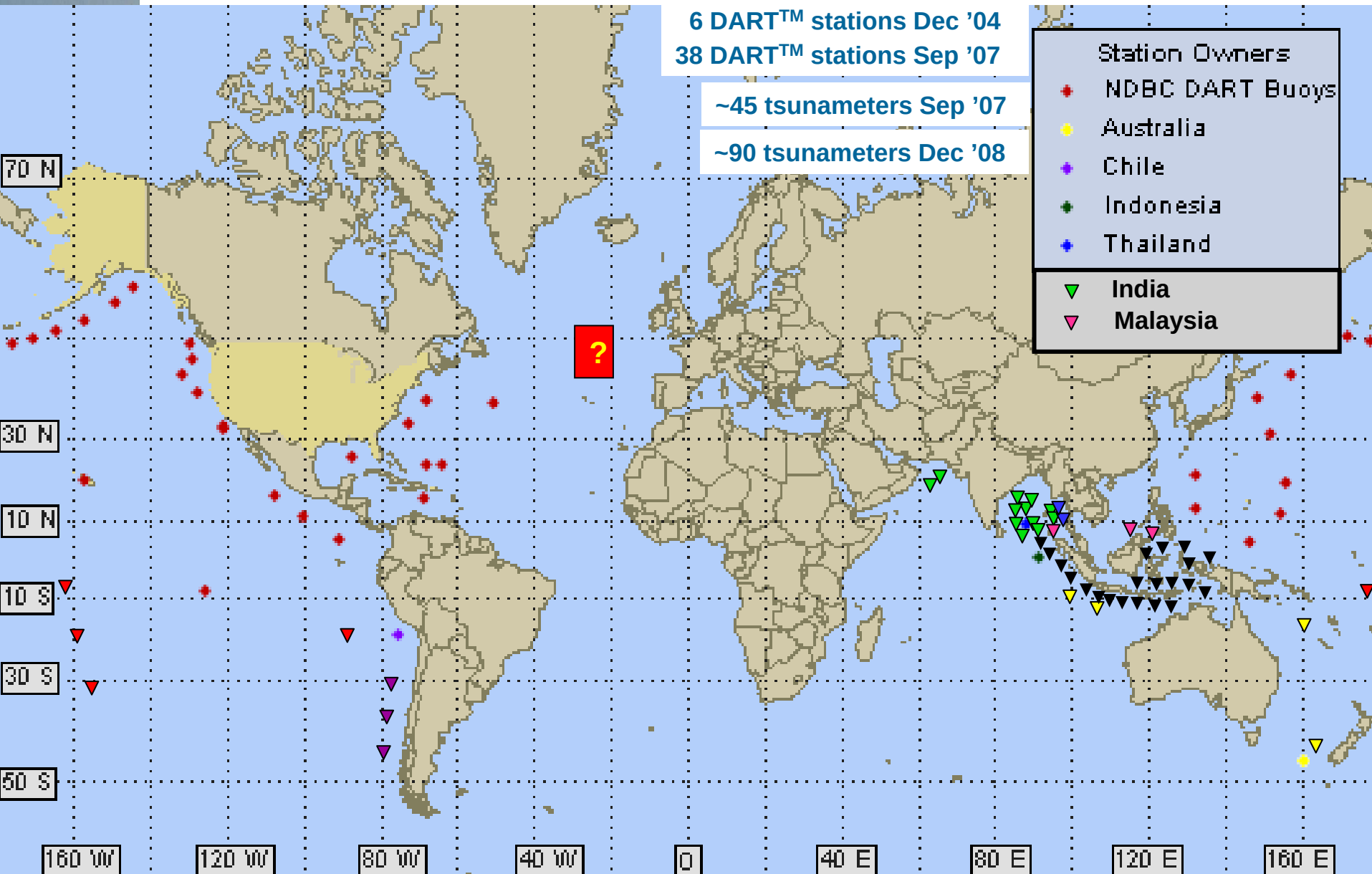
- Tsunameter equipment performance standards amended and endorsed for release as Issue 1 (incomplete, but better out there than waiting for perfection).
- Data comms performance measures agreed – will provide baseline for inter-comparison of different products in different sites, and recognition of best practice.
- Metadata and international GTS sea level data communications protocols considered, and referred to IOC Secretariat for further consultation and technical finalisation – Australia to provide tech support - Dec 07 the target.
- Test and acceptance standards short work-shop – best practice processes / manuals to be compiled & shared (NDBC/PMEL most likely lead source).
- Preliminary framework for assessing dimensions of the sustainability problem (especially in India Ocean) was discussed, and drafting group formed to develop a discussion document for consideration at next IOTWS meeting (Feb 08).
- Some interaction with the IOTWS Warning System Operators (IOTWS Working Group 5) established through a joint session that day before the ITOP meeting.
- Visit to Indonesian tsunami warning centre was valuable.

Issues

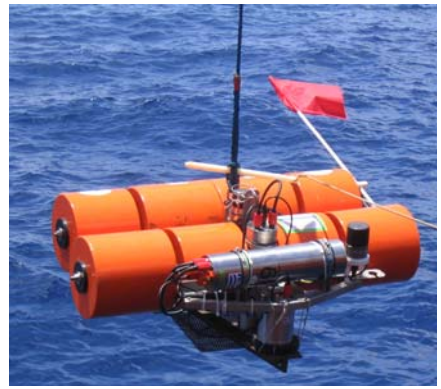
Trust and open-ness between suppliers & national operators – building.

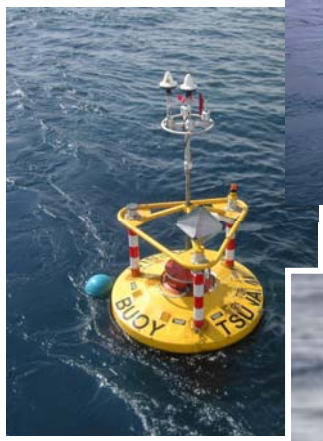
- INTERNATIONAL REAL-TIME DATA SHARING!!!!!!!!
  - "Locally operational" data buoys in Indian, Malaysian nets not being seen by neighbours.
  - US-sourced DART™ products (Indonesia, Thailand, Australia) are delivering data via NDBC web site, but this dependence also can isolate operating warning centre from live buoy control during events.
  - GTS data comms standards in development, but expedient web-based delivery mechanisms also to be pursued as an alternative, pending GTS protocol ratification and adoption.
  - GTS connectivity to warn centres a problem - not always MET agency.
  - Metadata standards in same condition – actions underway in next intersession period.
- Dramatic expansion plans for several countries in next 15 months – instrument qualification and inter-comparison challenges (and trust).
- Have yet to establish effective web-site "home" for exchange and document hosting, and progress tracking – IOC responsibility.

Global Tsunameter Population (+Plans)

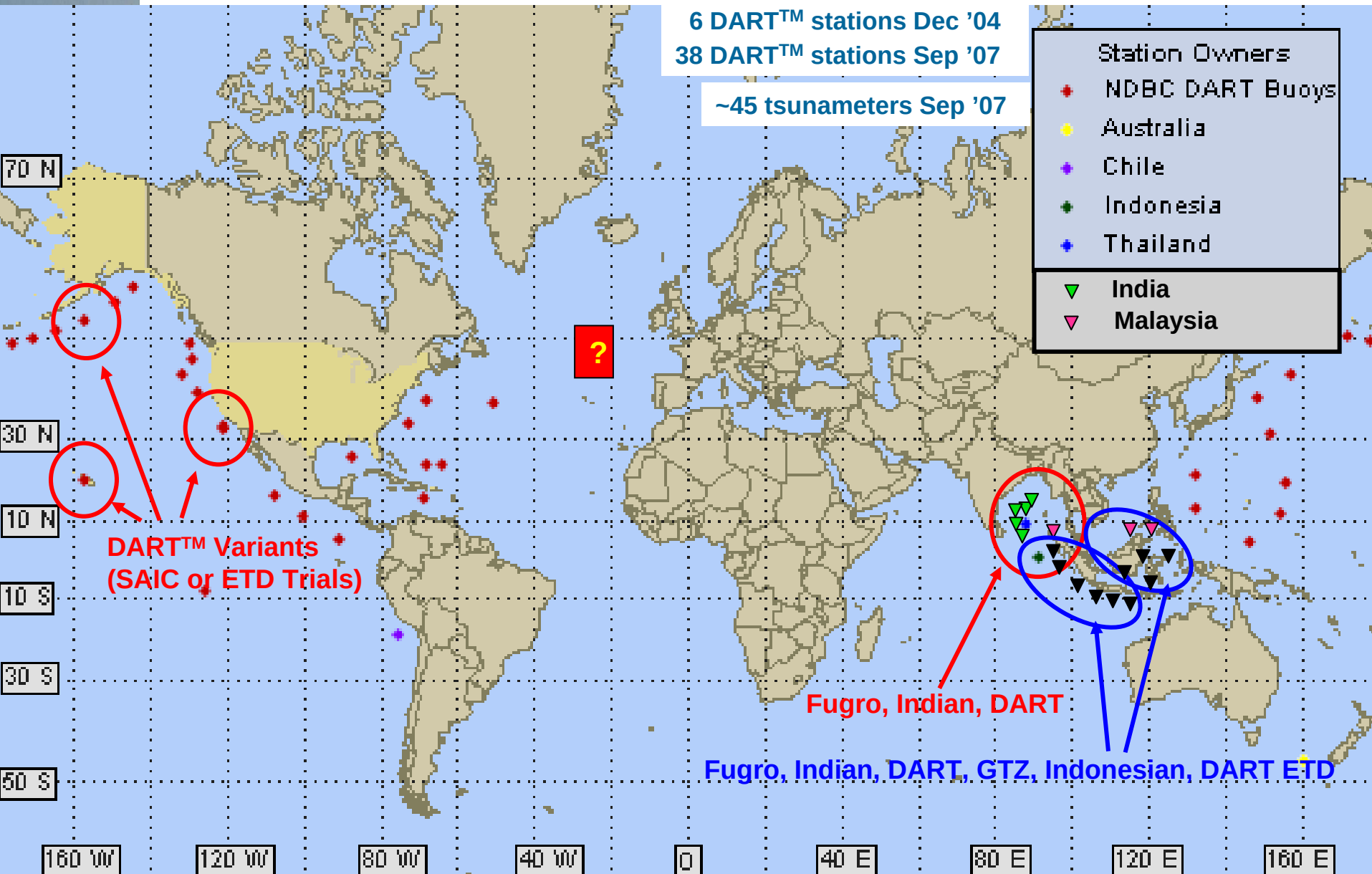


Tsunameter Equipment Variants (some) Excluding Cabled Instruments

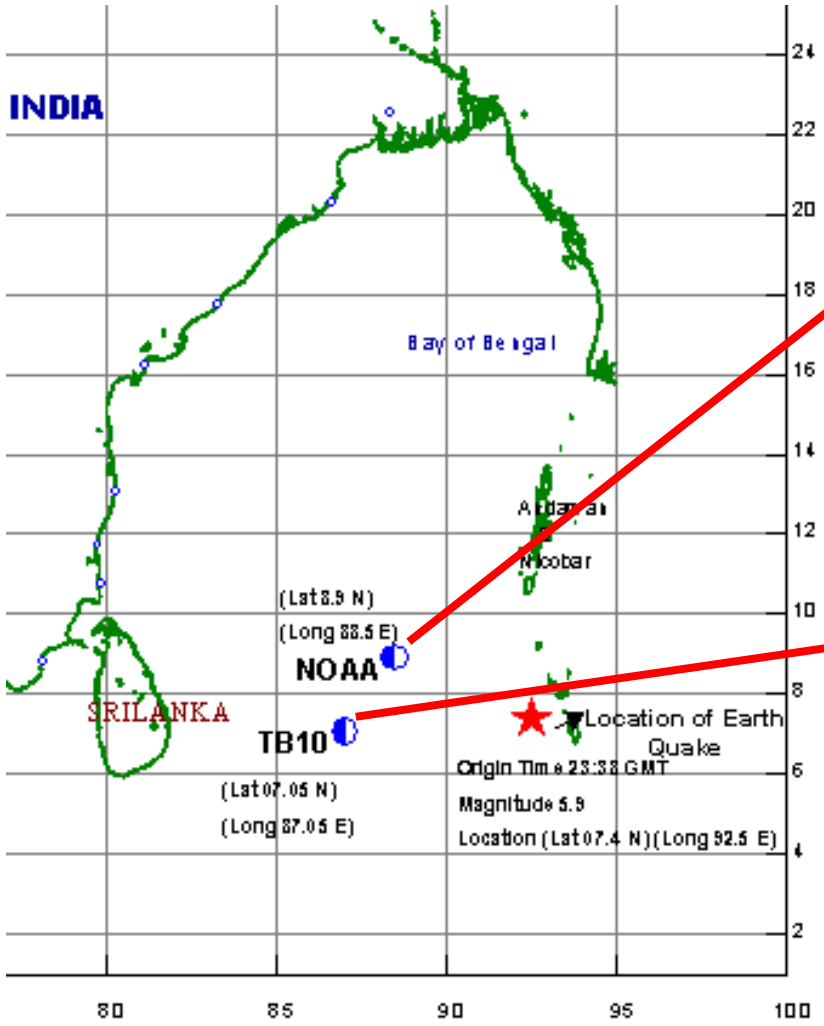


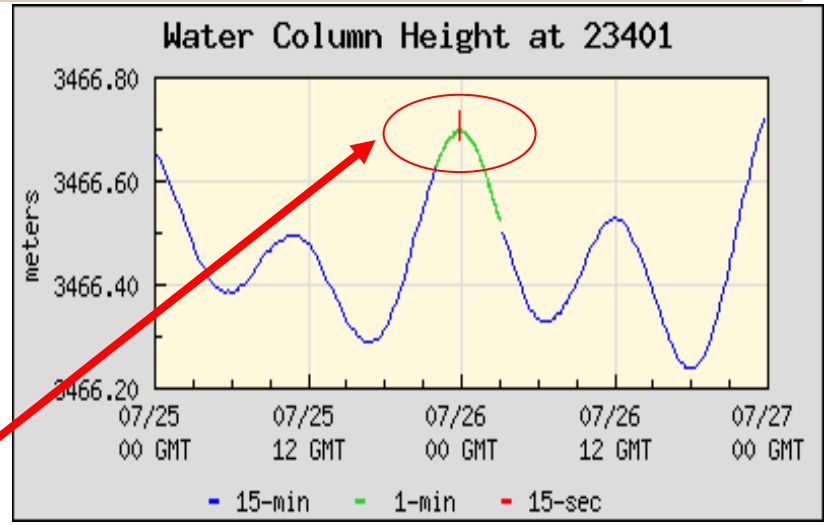


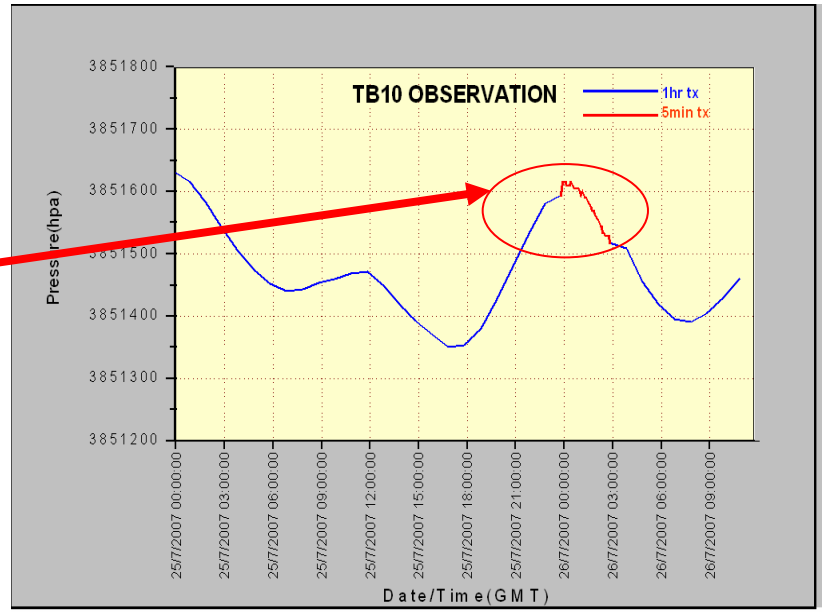
Locales in 07 with Dissimilar "Neighbours"



25 July ’07 Earthquake – Indian and US Tsunameter Records







A Question

How to best tap DBCP Engagement and Experience Injection?

- Metadata, data standards?
- International data dissemination?
- Building equipment standards and test / acceptance protocols?