

**9th Meeting of the
DBCP ACTION GROUP**

**REPORT
INTERNATIONAL TSUNAMETER PARTNERSHIP(ITP)**

DBCP 29
Tuesday 24 September 2013

UNESCO IOC
Paris

**CHAIR VENKAT
CO CHAIR STEPHEN CUCULLO**

SUPPORT BY KELLY, SHANNON & CHRIS

ITP Members

ITP Attendees	
R. Venkatesen	India
Shannon McArthur	US
Steve Knowles	NZ
Miriam Lucero	Ecuador
Johnny Correa	Ecuador
Gong Gu, Back	Korea
Yun Hee, Park	Korea
Hwang, Chang-Su	Korea
Frederia Desser	Norway
Nick Street	UK
Mateo Vilar	Spain
Kelly Stroker	Intl
Yann Bernard	France
Bernard Aliaga	UNESCO
Christian Meinig	US
Graeme Ball	Australia
Long Jiang	UNESCO
Tom Gross	UNESCO

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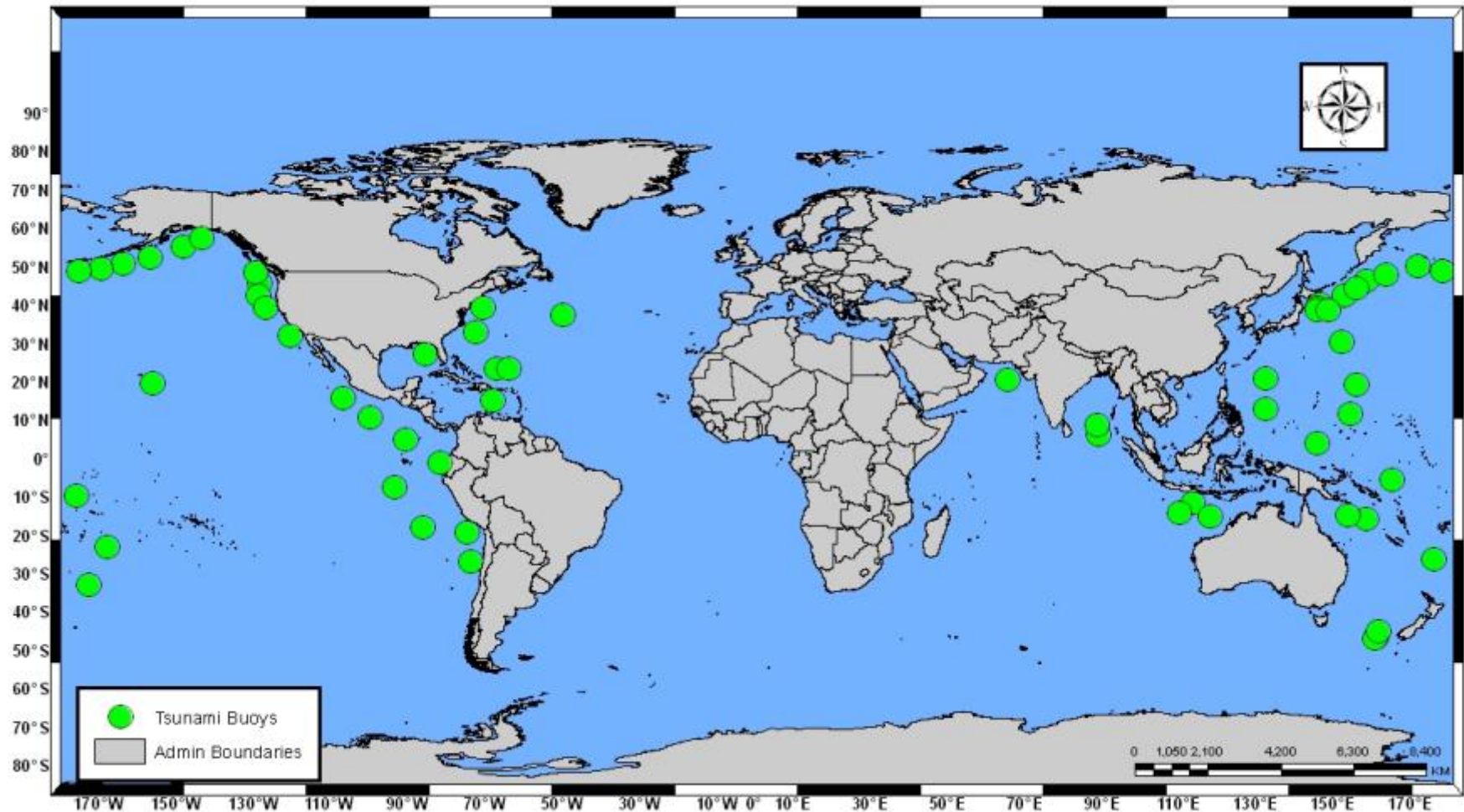
AGENDA

1. Background and Introduction
2. National Reports
3. Near-field Tsunametry
4. Product, Technology or Process Developments
5. Use of Tsunameter Data by Warning Centres / Performance Standards
6. International Data and Metadata Exchange
7. Sustainability and challenges
8. ITU-IOC-WMO cables Worksop
9. Finalisation of Terms of Reference for ITP
10. Review of Actions and Recommendations from Prior Meetings
11. International Tsunami Warning Groups
12. Other Matters
13. Election of Officers
14. Closure of the meeting

Global Tsunameter Network

Country	Planned Network	Currently Operational	Tsunameter Types	Local Reception	Data to GPS	Data to FTP	Data Formats	Vandalized Stations
Australia	9	4	SAIC - STB SAIC - ETD	Yes	Yes	No	NOAA-DART BUFR/CREX	-
Chile	3	2	SAIC - DART - II SAIC - STB	Yes	Yes	Yes	NOAA-DART	-
China	2	1	DART - STB	Yes	No	No	NOAA-DART BUFR	1
Ecuador	2	?	Sonardyne	Yes	Yes	Yes	NOAA-DART	-
India	7	7	SAIC-STB IndianBuoy- Sonardyne	Yes	Yes INCOIS	No	BUFR/CREX	-
Indonesia	14	Not known	InaBuoy SAIC-ETD	Yes	No	No	Local Format NOAA-DART	-
Japan	6	3	SAIC-STB	Yes	Yes	No	CREX	-
Malaysia	3	-	-	Yes	No	No	-	-
Republic of Korea	2	-	-	-	-	-	-	-
Russia	3	1	SAIC-STB SAIC-ETD	No	Yes	Yes	NOAA-DART	-
Thailand	3	1 2	SAIC-STB Environtec	No Yes	Yes Yes	Yes No	NOAADART -	No No
24 September 2013 USA	39	31	DBCP 29 / ITP DART - II	9 UNESCO IOC Yes	Yes	Yes	NOAA-DART	0

GLOBAL TSUNAMI SYSTEM NETWORK



Near-Field Tsunametry

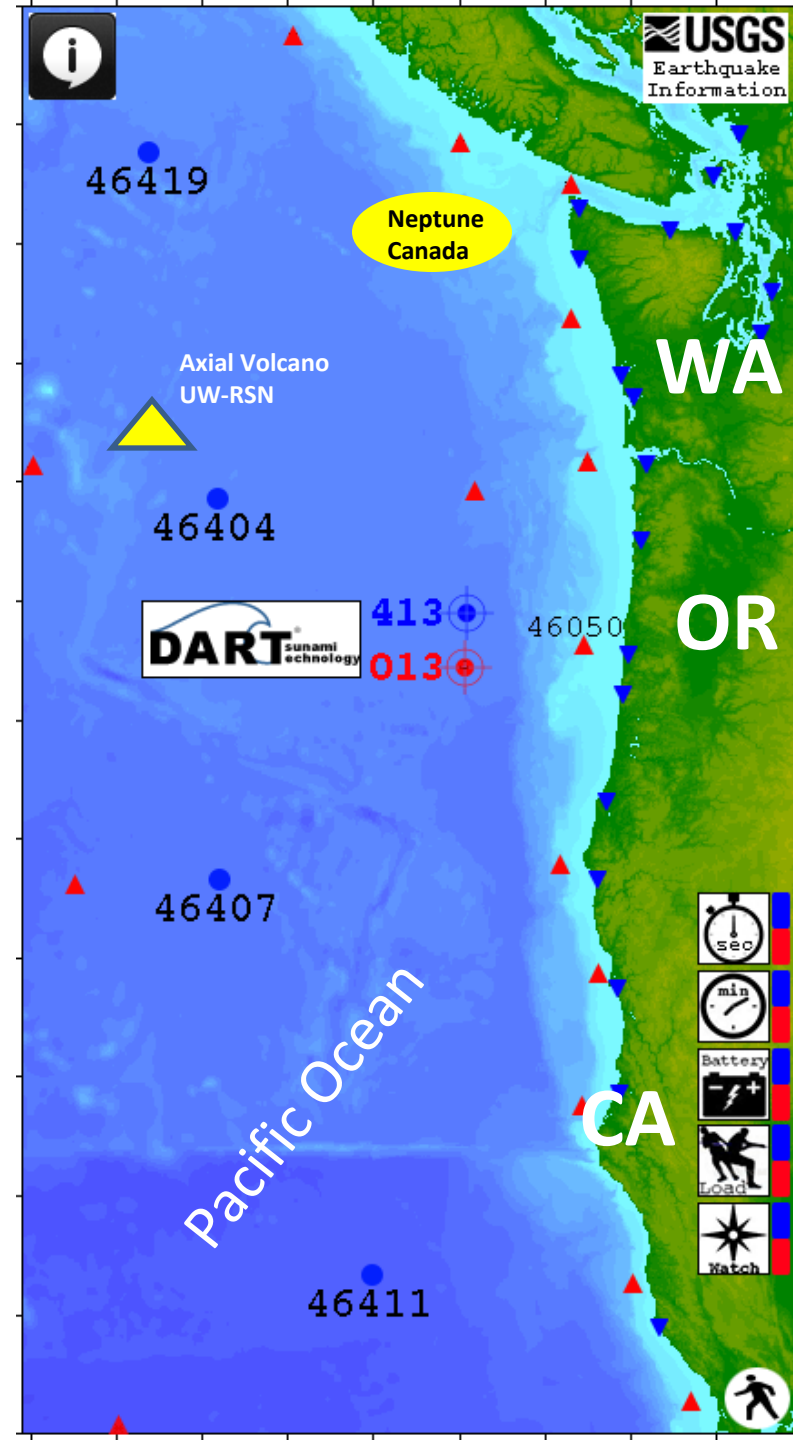
Dr Christian Meinig

- Near-field tsunamis (<1hour) have resulted in the vast majority of deaths and property loss over the past few years.
- Today's best practices in tsunami observations systems need to be advanced in order to measure and report tsunamis in real time in the near-field.
- Technology development is encourage to reduce latency and increase sampling frequency to measure tsunami while the earthquake is still occurring.

NOAA-PMEL DART 4G (4th gen)

Measuring and Reporting Tsunamis as the Earthquake is Rupturing

- New NOAA-PMEL weighted filter algorithm
- Lower latency & higher resolution data
- Sensor and time stamping improvement
 - Same Detection algorithm
- Advanced power management
- Addresses obsolescence
- MET options
- Testbed is within DART array, Neptune Canada and UW-RSN cabled systems nearby



Product, Technology or Process Developments

- Sonar Dyne – Mr Nick Street
- Fugro Oceanor Mr. Fredrik Dessen
- Ecuador tsunami project - Mr Mateo Vilar
MSM Valencia, Spain

Submarine cables

ITU/WMO/IOC joint initiative

'Dual-use' telecom cables:

- The ocean is covered with subsea cables for telecom traffic. Is it possible to add sensors to these system. For the past 25yrs the answer has been 'no', but now things are changing.
- 3 workshop have been held by ITU-WMO-UNESCO IOC Task Force over the past 3 years with numerous inter-sessional conf calls.
- 5 committees:
 - 1)Science & Society, 2)Engineering, 3)Business, 4)Legal, 5)Marketing & Outreach
- Primary sensor recommendation is for pressure for tsunametry, but also high accuracy temperature for sea level rise and seismic instrument.
- Madrid (9/19/13): Current focus is developing and engineering specification for the science requirements and cost estimates to build a wet demonstrator

Next steps

- Science case needs to be strengthened
 - Submission to SCOR to establish a Working Group
 - PLEASE comment by 1 Nov: see www.scor-int.org/2013EC/2013EC.htm
- Eng Functional Spec Document
- Planning of pilot project to build industry confidence

Overarching issues

- Certifying long-term reliability
 - Little history for >10 year deployments
- Long-term drift
 - How to characterise
 - Not important for tsunami detection
 - Important for climate monitoring
- Integration within commercial cable
 - Must not have any risk of disrupting core mission
 - Due diligence already undertaken (by TESubCom....)
 - Legal restrictions linked to Marine Scientific Research

Data management

Distribution of the data (USA) - The NOAA National Data Buoy Center receives data from its buoys via Iridium constellation. National Weather Service Telecommunications Gateway (NWSTG) - distributes the data in real-time to two Tsunami Warning Centers (TWCs) via NWS communications and nationally and internationally via the Global Telecommunications System.

Data Policy

Details on data exchange policy -- Through agreement with NOAA; Russia, Thailand, and Chile have provided the data feed to NOAA-NDBC and the US TWCs. The data for those partners' stations are displayed on the NOAA-NDBC Website. Control of high resolution data or "event mode triggering" for those stations remains with the host countries. Several additional countries make their data available to the GTS (refer to the annex).

Two SAIC data are shared and NIOT buoy data will be shared

Data management (continued)

Real-time data exchange

A significant portion of the users are making their real time data available through the GTS. There continues to be a positive trend and is a notable event in international collaboration.

Delayed mode data exchange

The US recovers and analyzes the data recovered from BPR flash storage. Short durations of high resolution data can be recovered via two way iridium communications if requested by TWCs.

Data quality

The NDBC publishes its *Handbook of Automated Data Quality Control Checks and Procedures* on its website; specifically, at the following URL:

<http://www.ndbc.noaa.gov/NDBCHandbookofAutomatedDataQualityControl2009.pdf>

Finalisation of Terms of Reference for ITP

- 1. To establish, coordinate and support international tsunameter research and development efforts, including joint activities;**
- 2. To set common tsunameter standards, including performance standards and testing and calibration protocols, to ensure that designers and operators of tsunami warning systems can rely on the consistency, comparability, safety and availability of tsunameter data to the maximum extent possible;**
- 3. To provide input as appropriate to sea level observation network design with a view to optimizing the contribution of tsunameter instruments to the operational and cost effectiveness of tsunami warning systems;**
- 4. To evolve methodology to preserve high resolution data which is very valuable to sea-level rise, sat altimetry and ocean bottom temperature**
- 5. To maximise the sharing of tsunameter technology and cooperation among members and with suppliers of tsunameter equipment and components to achieve secure global supplies of high quality systems;**
- 6. To maximise opportunities for coordination and cooperation with regards to ship access, deployment, operation, maintenance and support of tsunameter systems;**
- 7. To help build capacity among members to accelerate the viability and success of regional tsunami warning systems.**

Sustainability and Challenges

- Ship time availability
- Power consumption
- Piracy
- Vandalism
- Safety

Engagement with International Tsunami Warning Groups

UNESCO IOC

- Transmission records and web link - Presently NDBC
- Communicate performance metrics and health of network
- to build communication links with ICG *Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System*
- Very Important to have least time to receive data for a warning, not quantity of data reported.
- To evolve working mechanism with UN agencies FAO and IMO London to safe guard the buoys

- ITP to nominate one expert of the group to each of the ICG's Working Groups whose Terms of Reference include matters related to observing systems, to contribute to the work of the ICGs in the area of tsunameters and keep a link with the work of ITP.
- ITP takes prompt and urgent action to define performance indicators for tsunameters and put in place real time indicators in websites collecting and publishing metadata and data of tsunameters in real time

Action for the intervening period

- To finalise best of practice manual
- To interact with Tsunami Warning Centers through IOC
- To incorporate best practices on safety of H mitigation from battery
- To evolve methodology to get achieve high resolution data is very valuable to sea-level rise, sat altimetry and ocean bottom temperature.
- To work on cable tsunameters specification

Well defined action plans

Election of Officers - Chair and Co Chair

Thank you for your kind attention