USArray Status Update

Bob Woodward & David Simpson
IRIS

EarthScope Steering Committee
October 8, 2013
Boulder, CO
A Ten Year Plan

Transportable Array Installation Plan
As of August 15, 2007.

Station removal follows in 24 months.
• Celebrating the completion of the TA deployment
• September 30, 2013
• Woods Hole
TA Science Symposium and All Hands Team Meeting

An afternoon of talks highlighting the science resulting from the TA

Fine-Scale Continental Tomography
Scott Burdick
Rob D. van der Hilst
USAArray Transportable Array Research Symposium
September 30, 2013

Understanding deformation of the western US: what have we learned from USAArray?
Maureen Long
Yale University

Plate Boundaries Old and New: Insights from USAArray
Karen M. Fischer¹, Emily Hopper¹, Ved Lekic², Heather Ford³,
Lara Wagner⁴, Rob Hawman⁵
¹Brown University, ²University of Maryland, ³Yale University,
⁴UNC Chapel Hill, ⁵University of Georgia
Network availability typically exceeds 98%

Station noise highly uniform and quite low for temporary installations

The quality and consistency of the data have been key to the science
Atmospheric Acoustic Transportable Array

- Infrasound data provides unprecedented profiles for azimuth and distance

Google: *IRIS infrasound* For events and detections

Figures from Catherine deGroot-Hedlin, UCSD
Legacy of Permanent Stations
Leveraging the TA

- FA experiments have leveraged the TA and drilled down on specific targets
- TA approach has also been emulated by some FA experiments
• 2013 field season well along
Data Products

Level 0-1
Time series data

Level 2-3 Products

- gmv
- emc
- event plots
- event bulletins
- Western US Ambient Noise X-Correlation
- backprojections
- ears
Engaging Students in Site Reconnaissance

- 135 students, 50+ universities
Newspaper, television, magazines
• ~125 students over four summers
• Developing new strategies for dealing with the flood of data
The TA Comes to Washington
Recent Meetings

• USArray – Canada Science Opportunities
  • Feb 19-20, Sidney, BC, Canada
  • Workshop report (Freymueller, Hyndman, eds.)
• EarthScope funded in 5 year increments

• We just completed Year 10
  • As of midnight last night

• The August 2012 proposal was recommended for funding by the National Science Board
  • High marks
  • Numerous reviews, questions, and meetings
  • A new five year agreement

Good News: Funding!
• ~300 sites
• 85 km spacing
• Broadband Seismometers
  • Infrasound, pressure
  • Some met packages
• Communications
• fully deployed 2017

www.usarray.org/alaska
Project Schedule

Number of Stations Deployed

- Schedule balances roll-up in east with roll-out in Alaska
- Alaska field schedule is seasonally driven
  - Late spring – early fall
- Schedule provides longer operational window in AK
- Additional time for Alaska organizations to assemble plans to make selected stations permanent or collaborative science.
A five year plan to leave behind ~200 TA seismic stations for:
  - Research
  - Hazards assessment
  - Critical facilities

Multi-agency collaboration:
  - NSF
  - USGS
  - US NRC
  - DOE

Funded in FY13

“Good government”
  - Recognition of a unique opportunity to address multiple missions / needs
Recent Meetings

- MT Siting workshop in Raleigh, NC

http://www.iris.edu/hq/mt_planning_workshop
EarthScope Symposium & Reception

- 009, Washington D.C.
- Community sponsored
  - IRIS, UNAVCO, SSA, NMT, Stanford, AGI, GSA, AGU
- Attendance
  - Congressional, NSF, agencies, etc.

Propose similar event for 2014
Global Array of Broadband Arrays

GABBA Concept
Multiple broadband arrays for coordinated studies of deep Earth structure and source

Workshop held in May 2013
Significant discussion of capabilities, results, and possibilities

http://www.iris.edu/hq/arrays_workshop
The Big Idea: A Subduction Zone Observatory

A coherent, structured, multi-disciplinary observatory along the length of the eastern Pacific

Discussion group at ESNM in Raleigh
Follow-up meeting at AGU
• The TA has already, and will continue, to enable breakthrough science

• The Transportable Array has changed the way our field thinks about “big science” projects

• The TA has reset the bar for what is possible in large seismic network operations

• The TA has been and continues to be a transformative project
EarthScope is being constructed, operated, and maintained as a collaborative effort with UNAVCO, and IRIS, with contributions from the US Geological Survey, NASA and several other national and international organizations.

On the Web

- EarthScope  
  www.earthscope.org
- USArray  
  www.iris.edu/usarray
- National Science Foundation  
  www.nsf.gov

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