USArray Array Network Facility

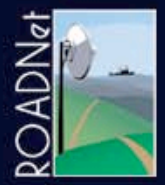
Antelope User Group Meeting

Trieste, Italy

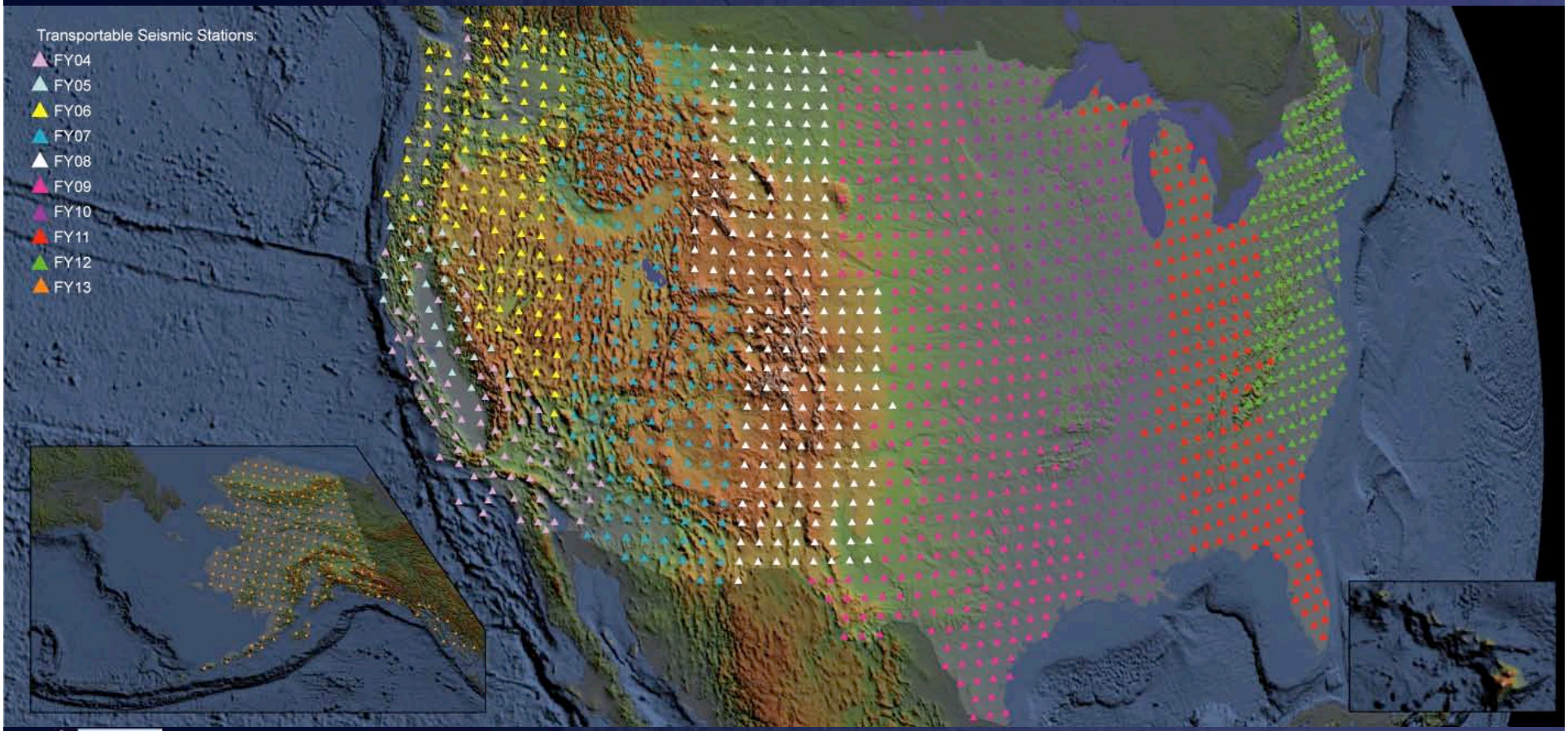
27 February 2007

Frank Vernon

UCSD



The EarthScope Transportable Array

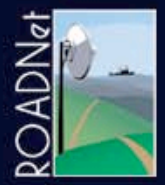


ROADNet

Image Credit: EarthScope.org

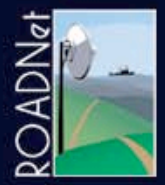
The Array Network Facility

- Acquisition of data from
  - Transportable Array
  - Flexible Array
- Hosted at Institute for Geophysics and Planetary Physics (IGPP), UCSD
- Maintenance of station metadata
- Quality control of incoming seismic data
- Control of the running stations



ANF challenges

- New datalogger - Q330
- Multiple communication types
- Dynamic IP assignment for dataloggers
- Dynamic station deployment
- Intermittent communications
- Data integration with regional networks
- Data integration with Baler 14 data
- Deep archive

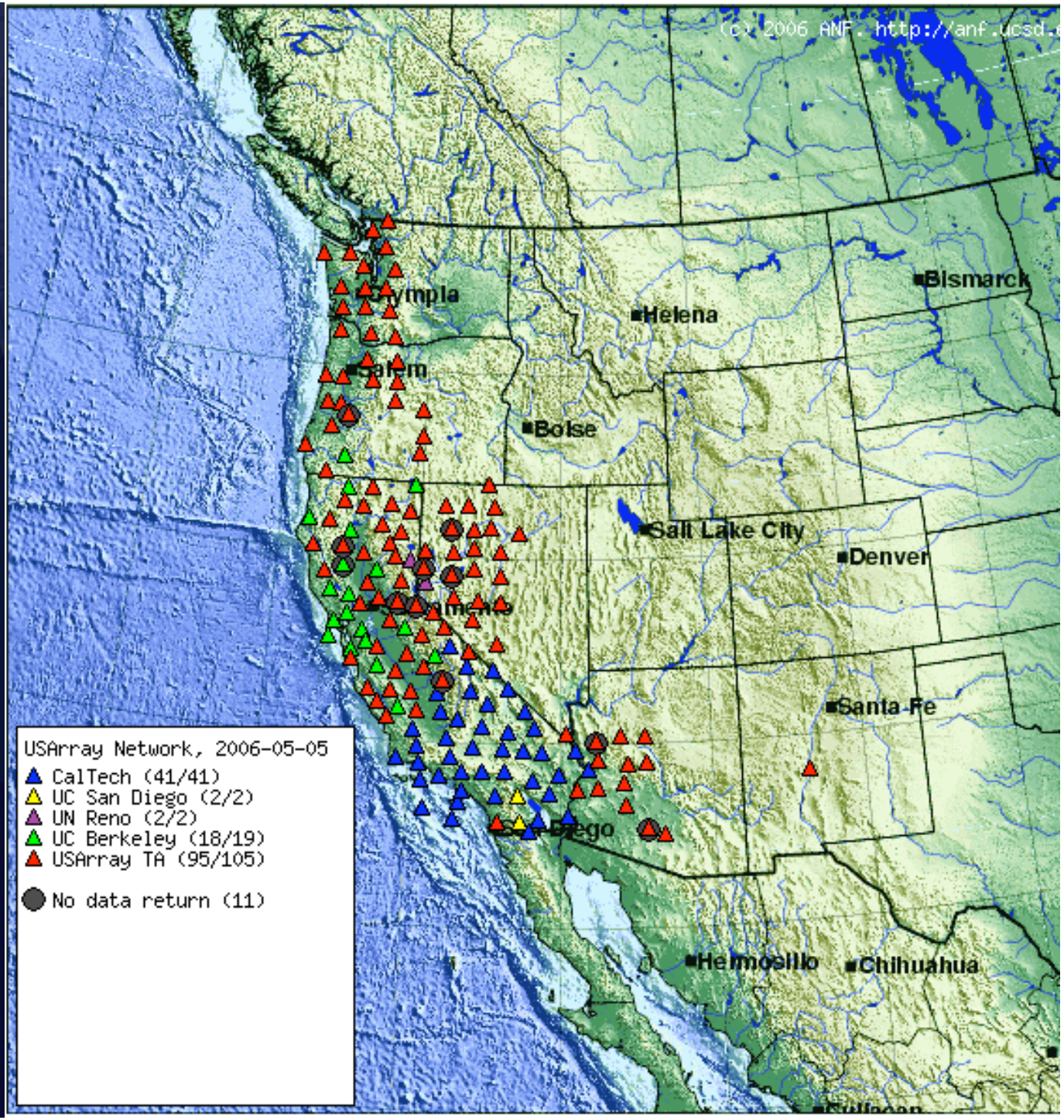


USArray

158 Telemetry

169 Deployed

07 May 2006

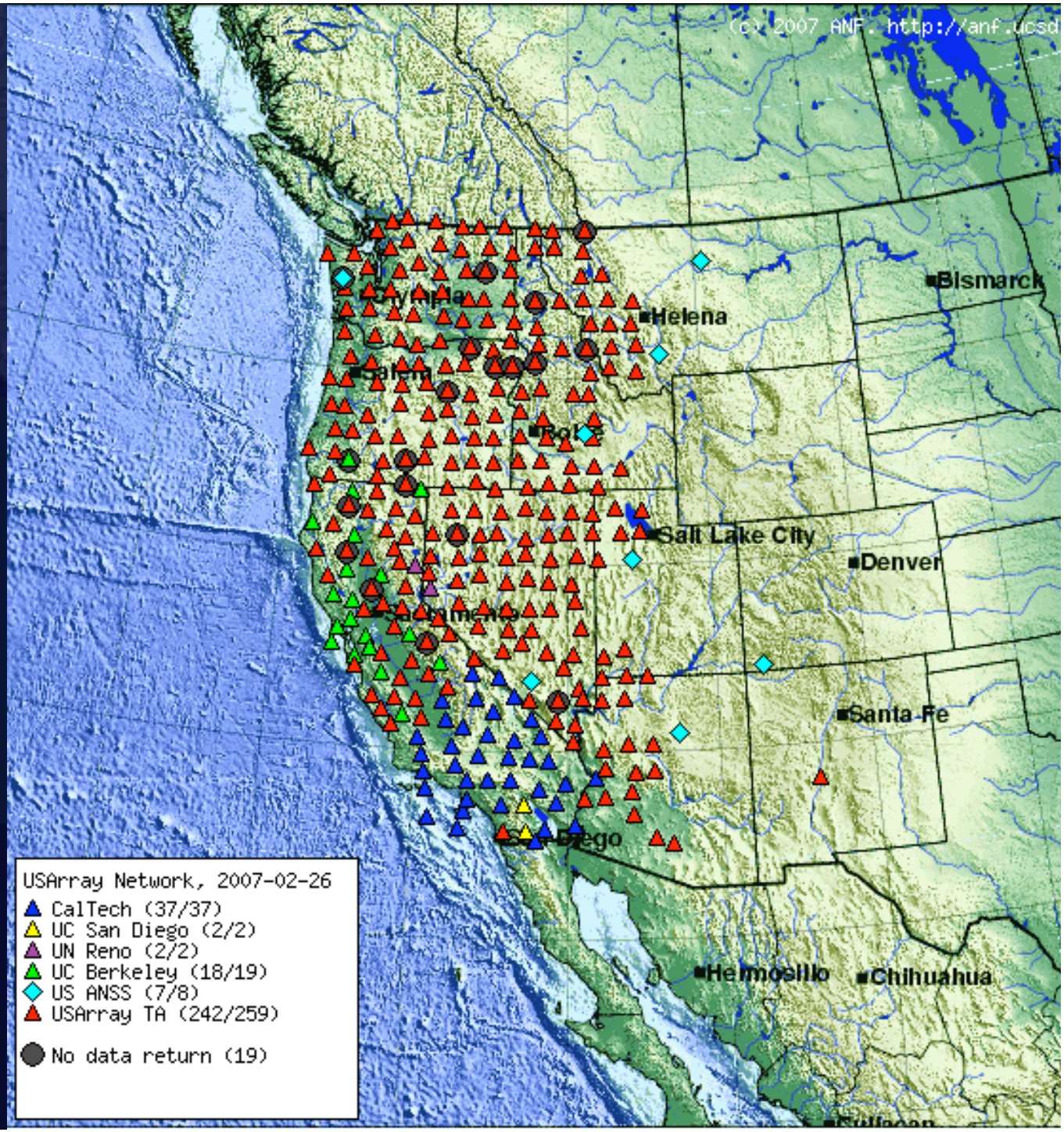


USArray

304 Telemetry

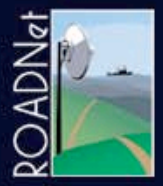
327 Deployed

26 Feb 2007

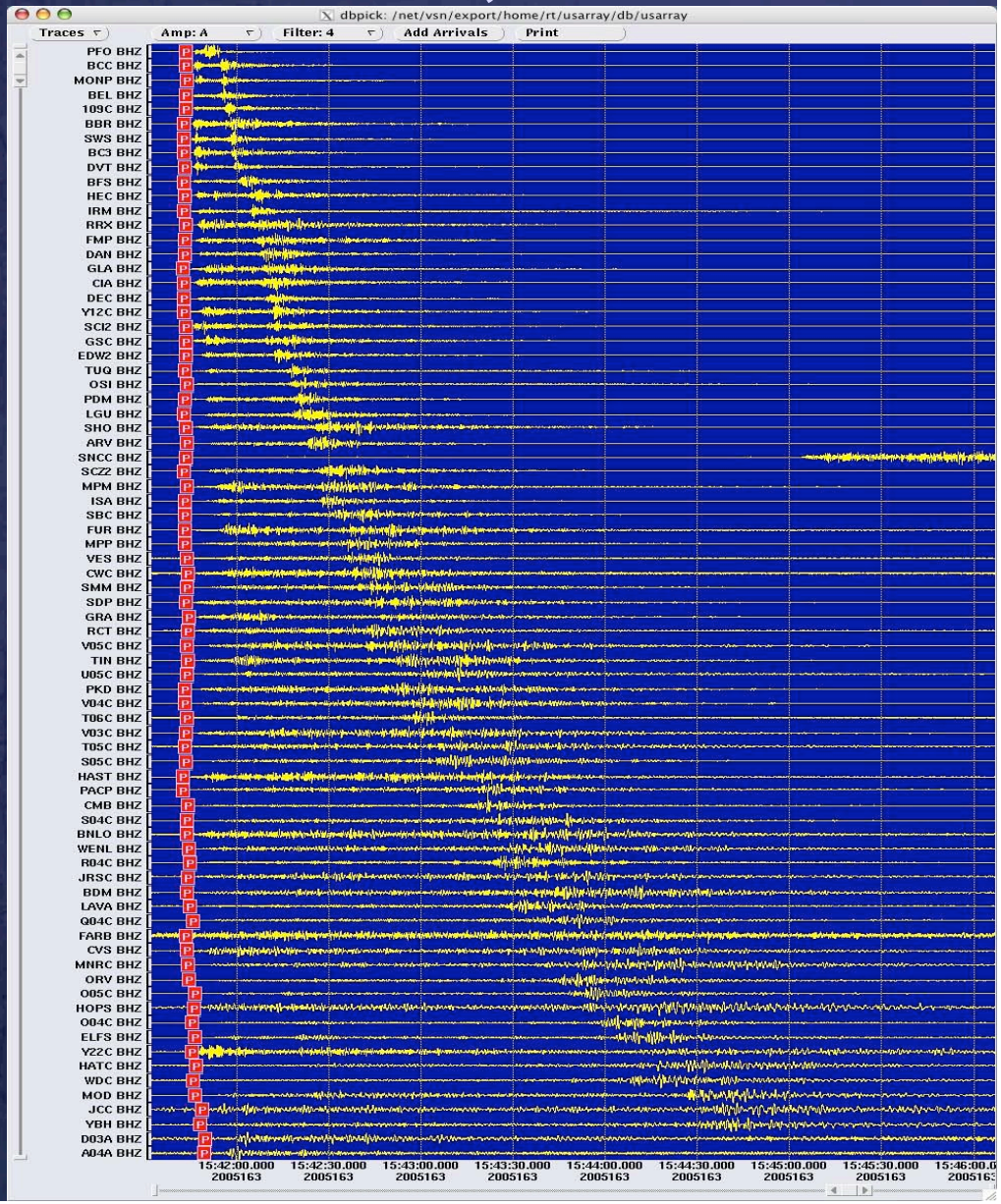


Real-time Data Exchange Issues

- Transparent waveform data exchange
  - Multiple data logger types
  - Multiple data server types
  - Multiple sensor types
- Metadata and Data products
  - Transfer Functions
  - Site Info
- Attribution and Acknowledgement



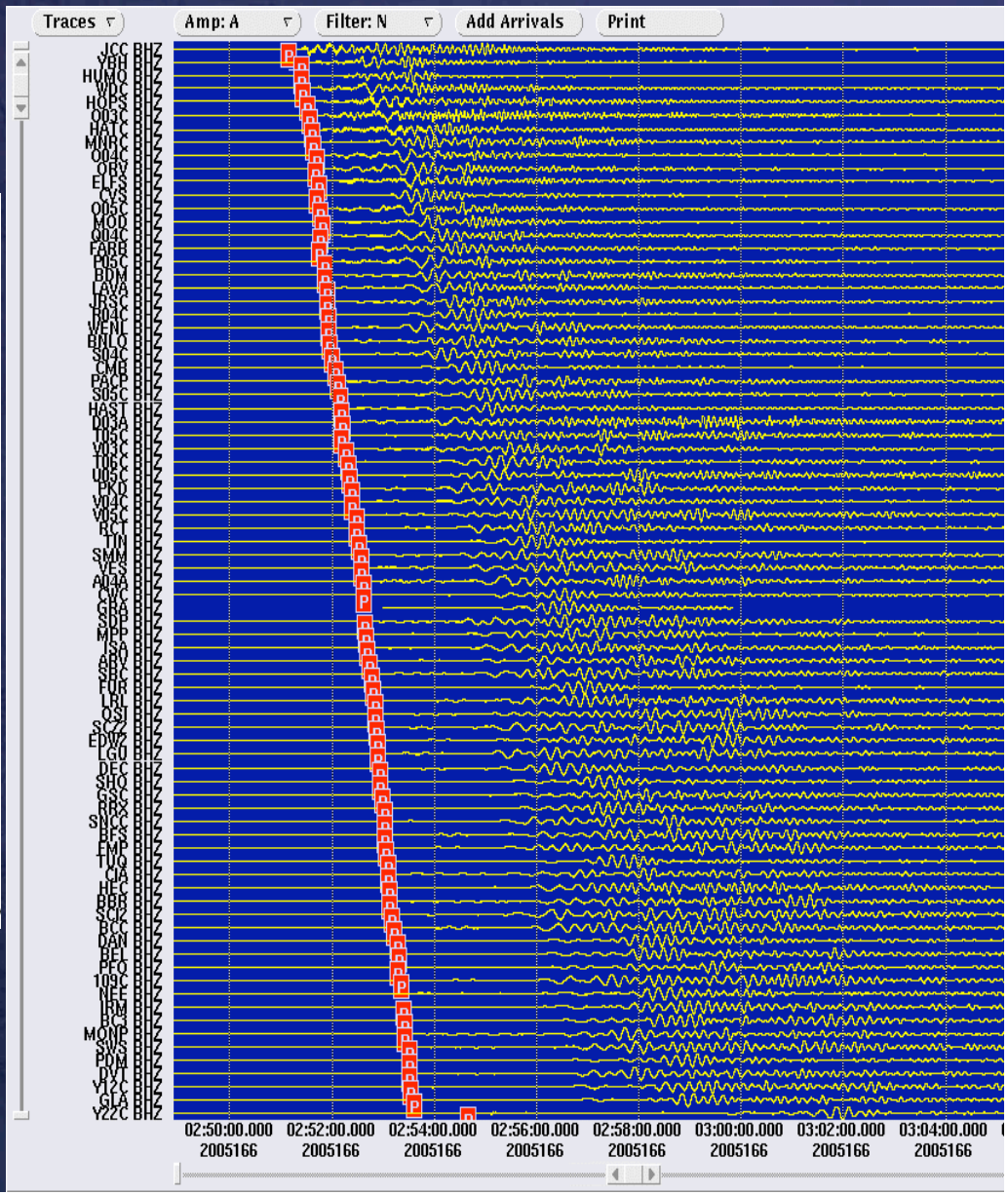
Anza CA June 12, 2005



ROADNet

Mw 5.2

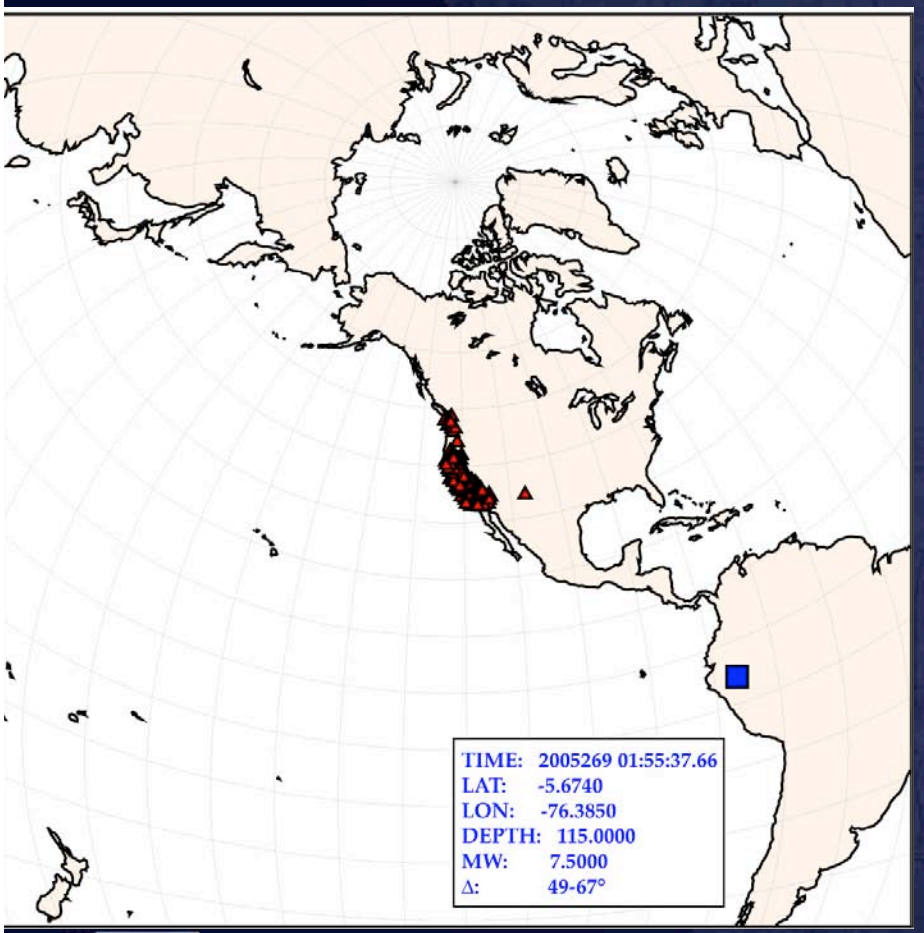
Mendicino, CA June 15, 2005



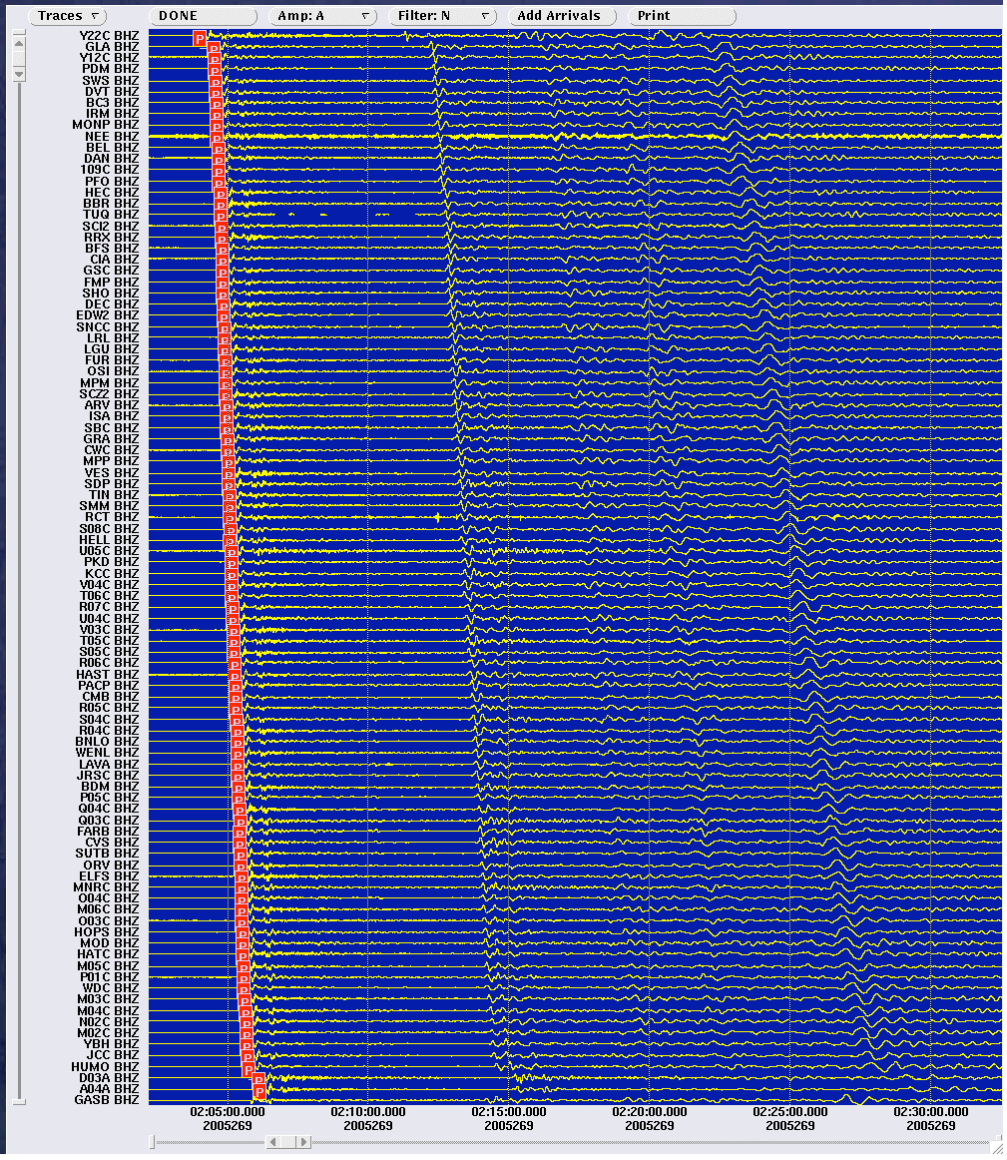
ROADNet

Mw 7.2

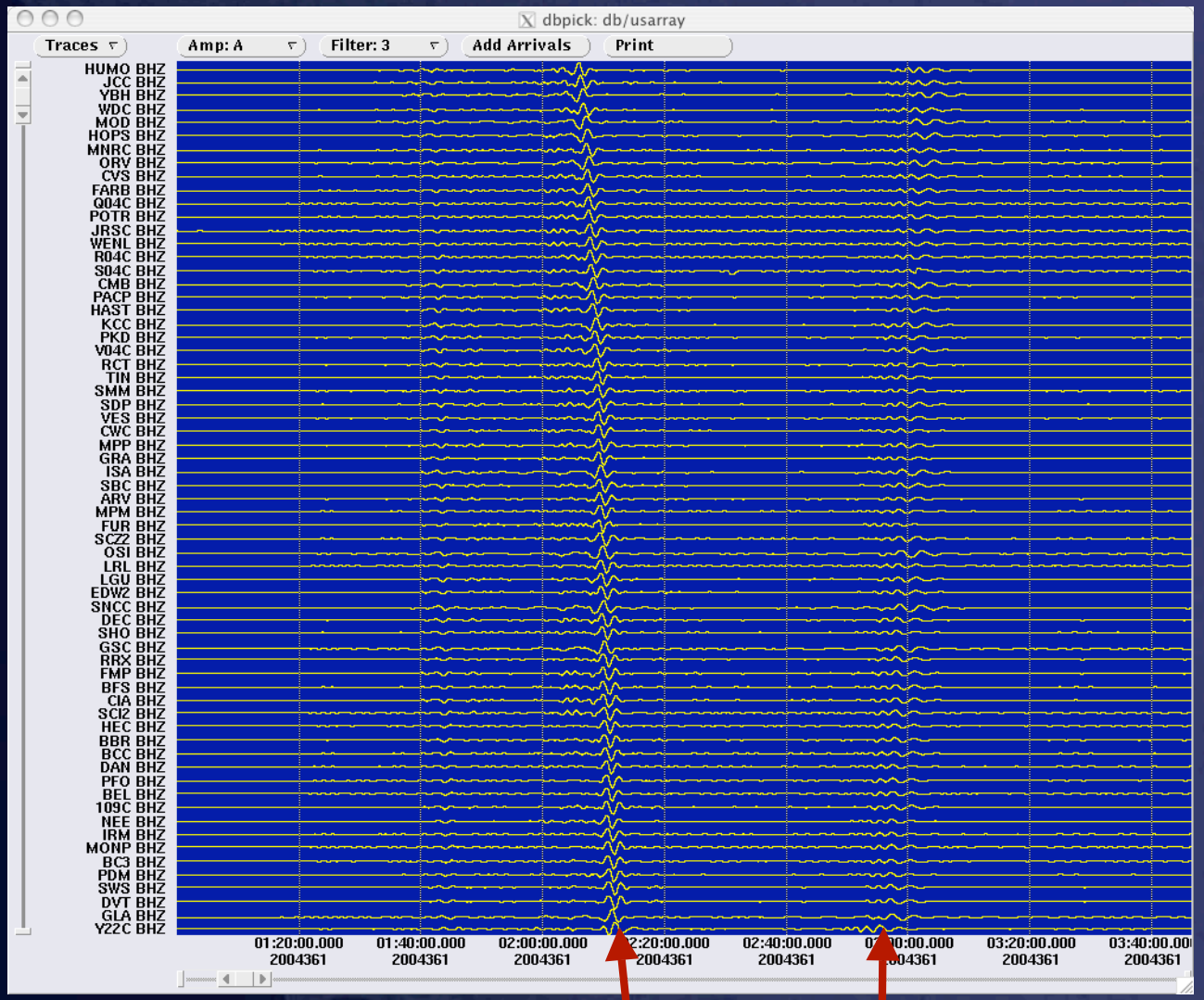
Peru September 26, 2005



Mw 7.5

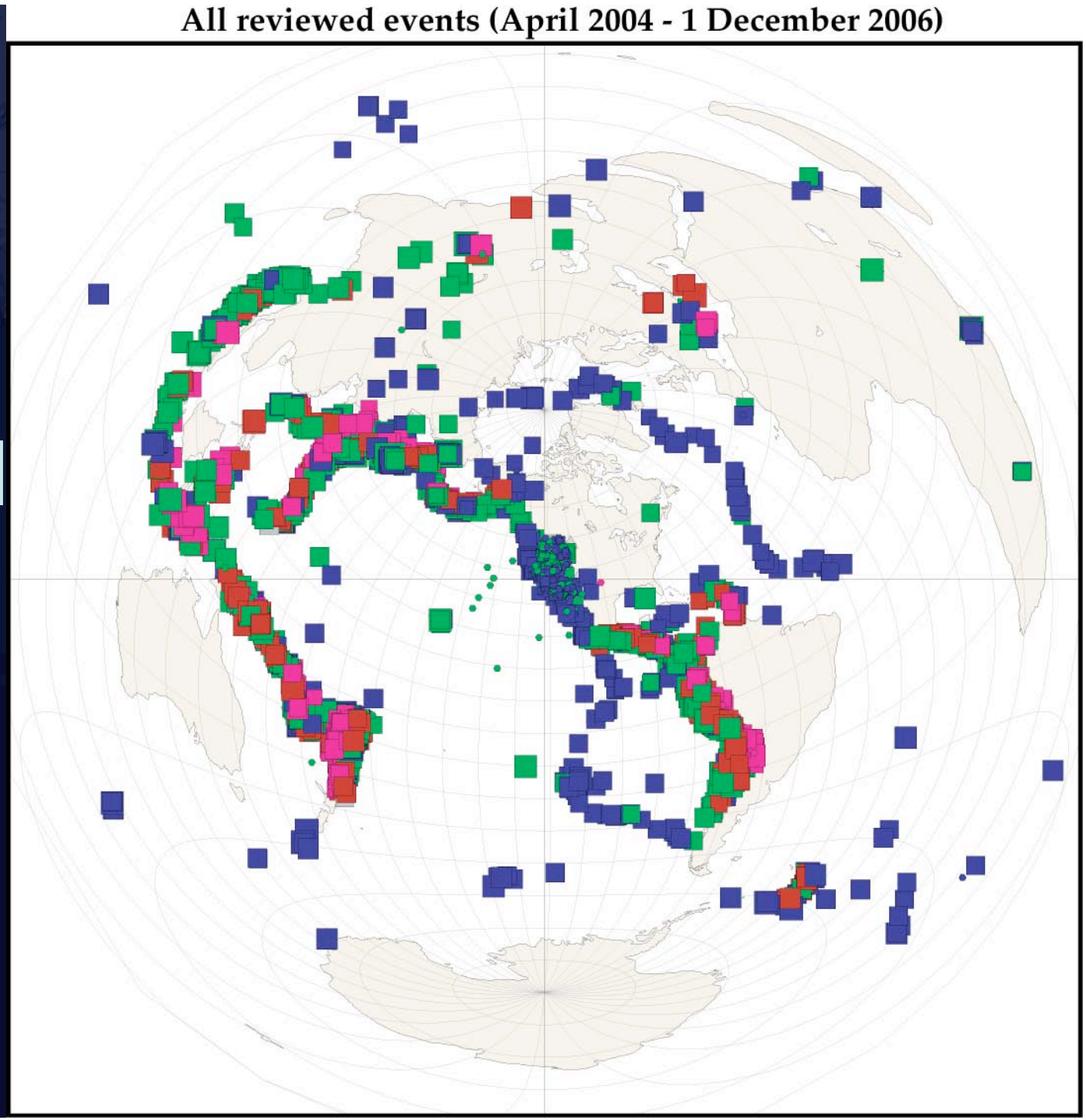


Sumatra -USArray
0.01 Hz LP Filtered

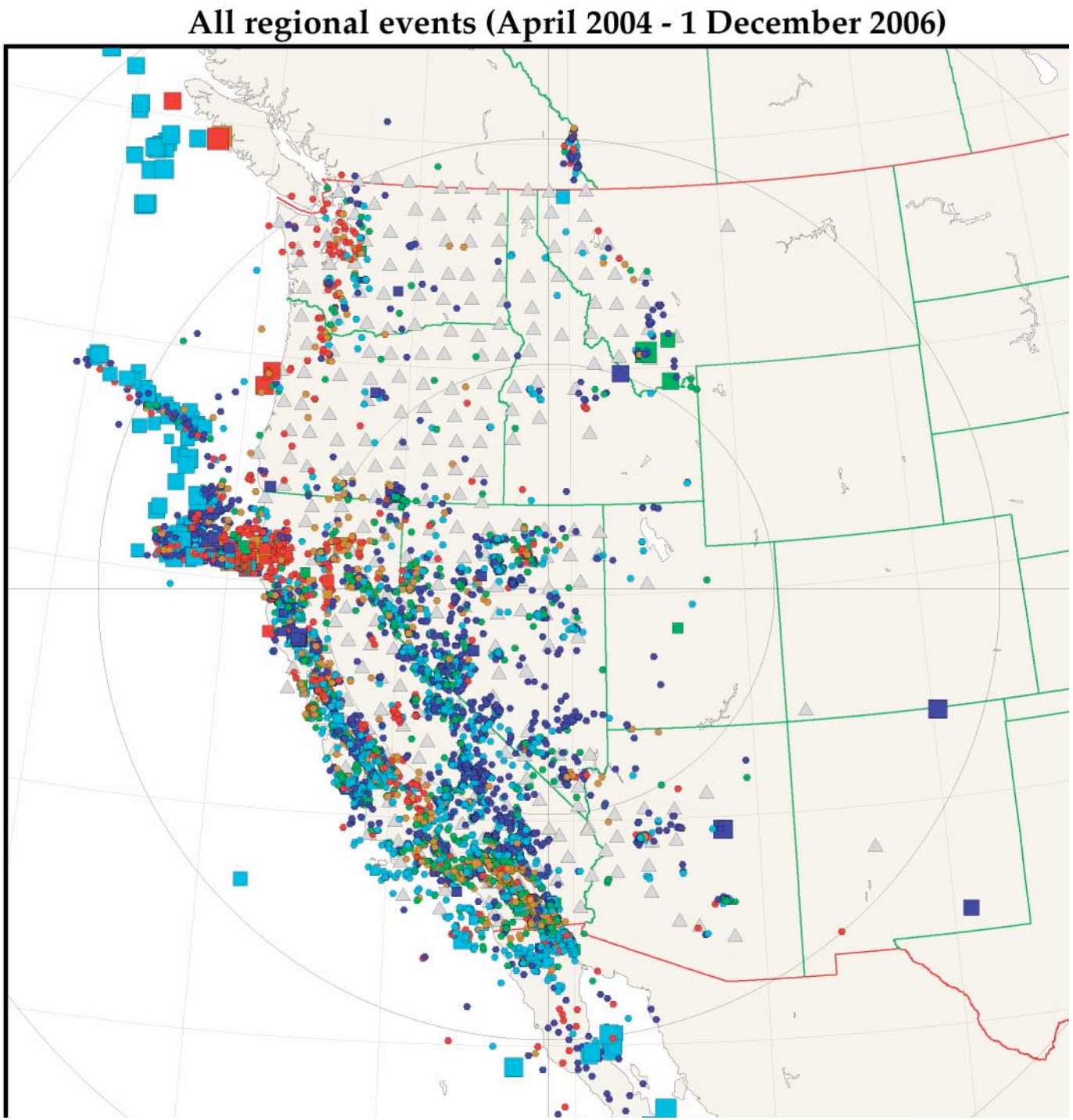


ROADNet

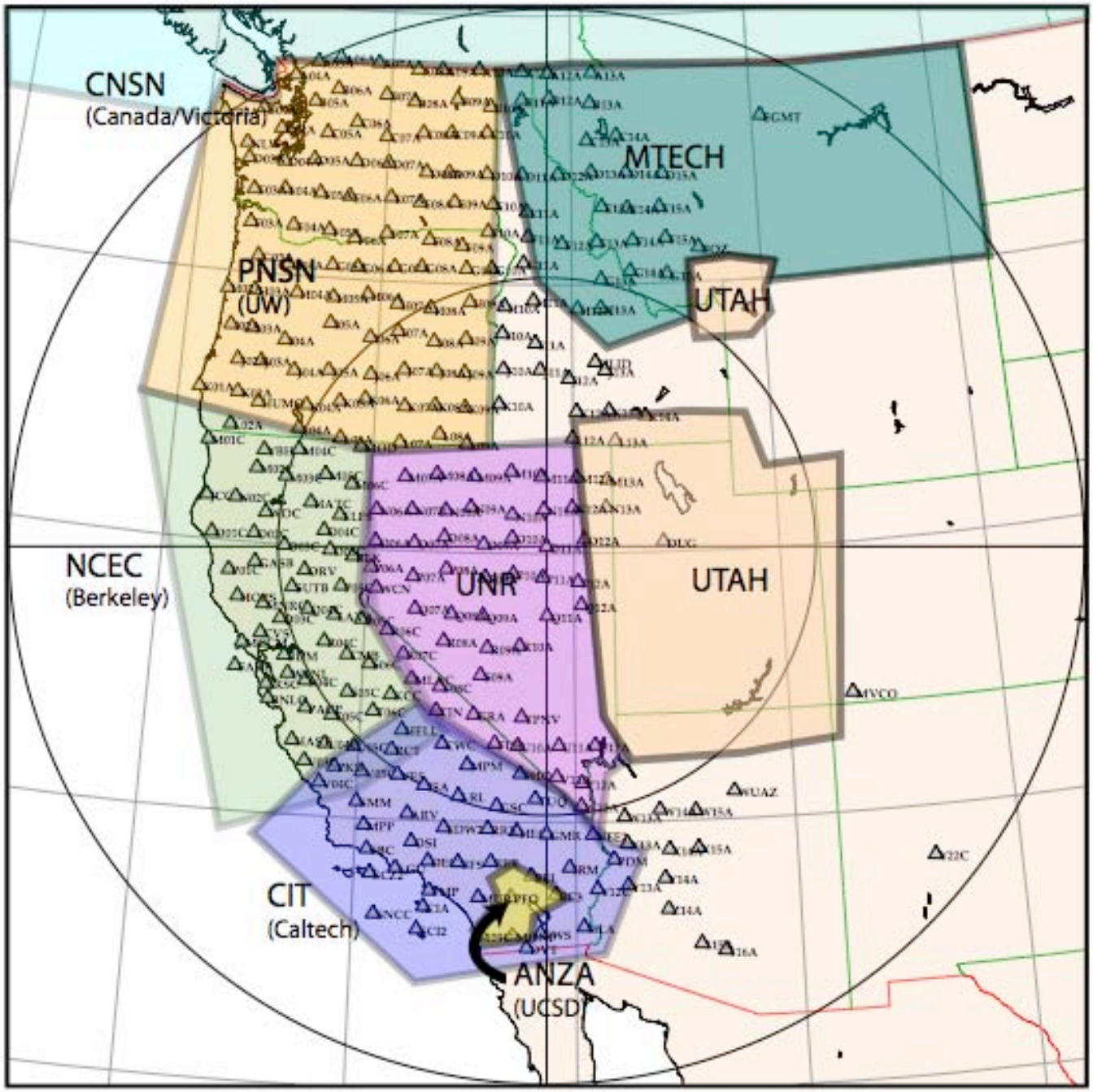
NEIC Global Events Recorded on TA



TA Regional Events



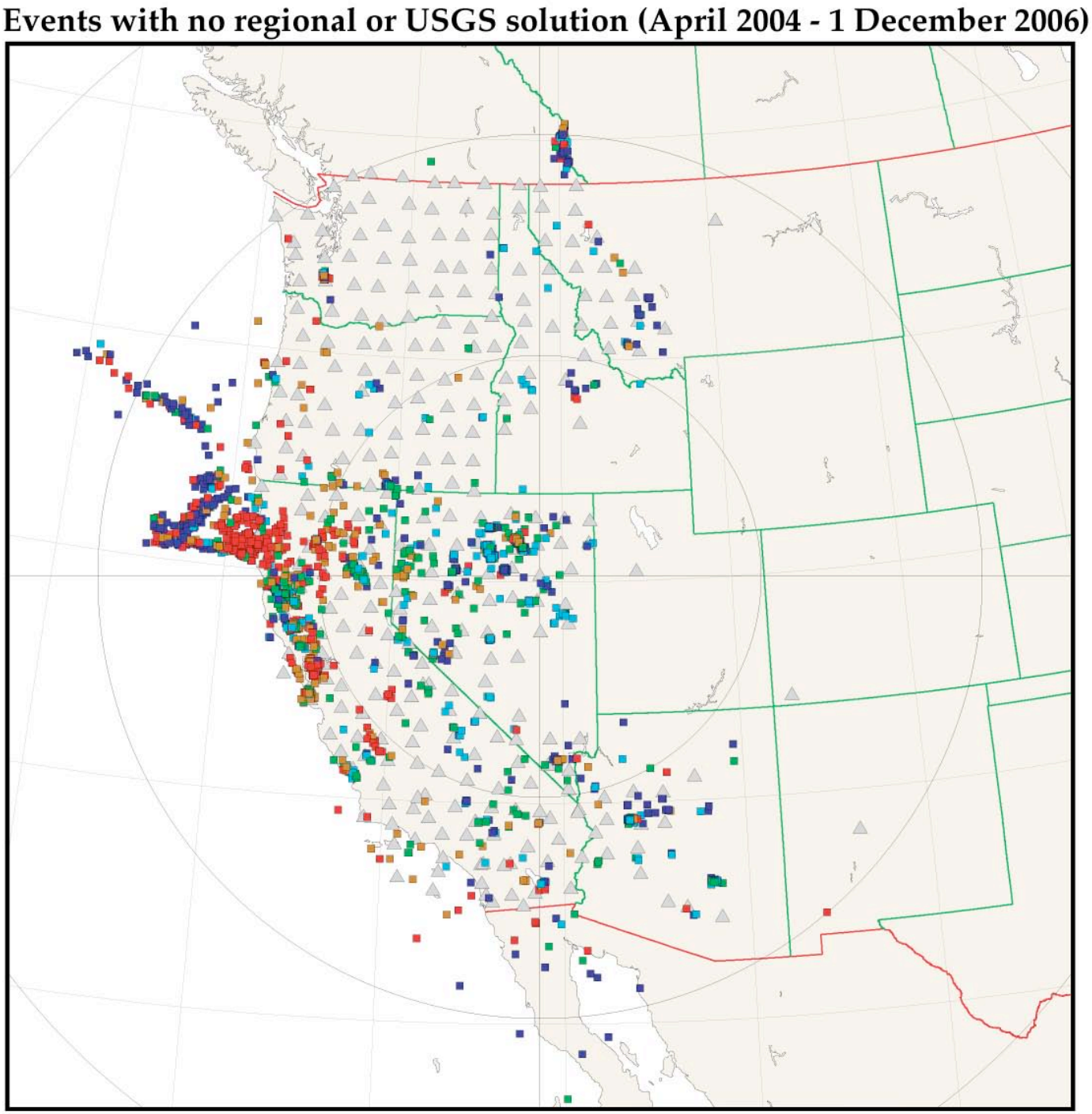
Authoritative Regions map: 2007-01-23



ROADNet

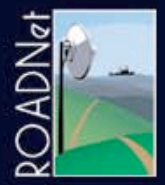
TA only Regional Events

10+ arrivals



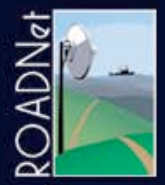
USArray Data Flow

- 1.5 Terabytes of data Apr. 2004 – Feb 2007
- > 3.8 Million seismic waveform segments
- As of Feb 2007:
  - 3.2 GB/day ingestion rate
  - 327 seismic stations
  - 1944 seismic channels
  - 1.4 Mbit/sec

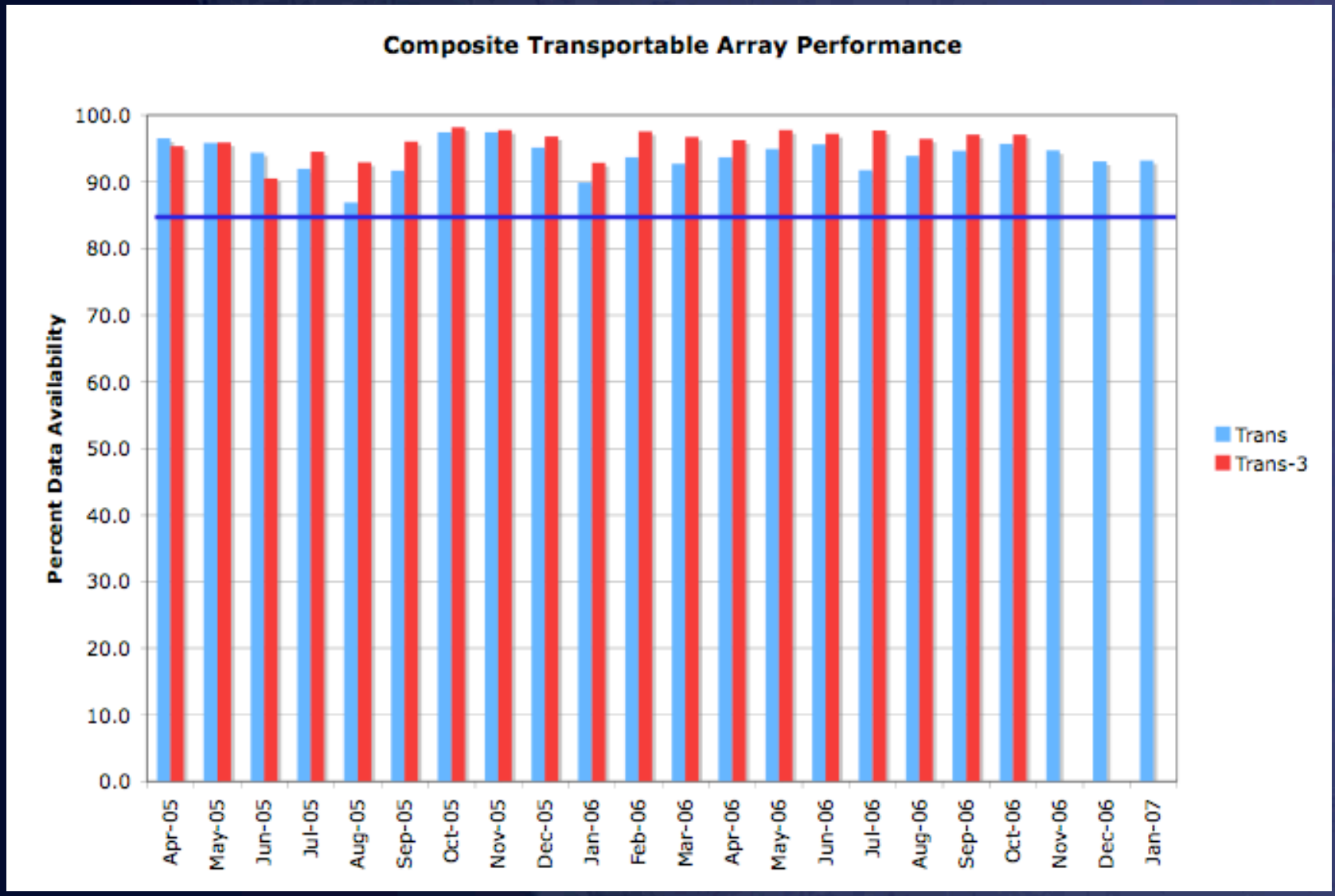


USArray SRB Usage

- Datascope used as primary real-time buffer database and initial processing database
- Proximal goal:
  - Immediate backup and archiving of incoming data, protection against loss at operations facility
- Additional benefits:
  - Resource virtualization, distributed access
- Independent from long-term organizational archiving in the community (IRIS etc)

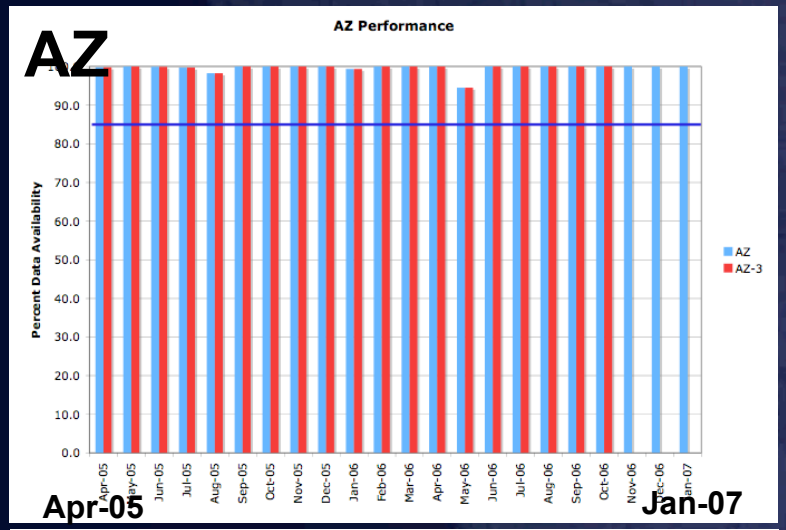


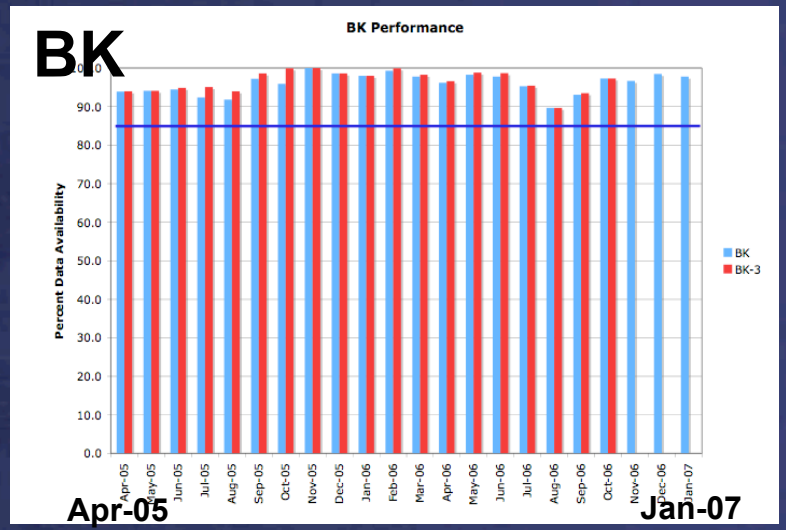
Transportable Array Performance

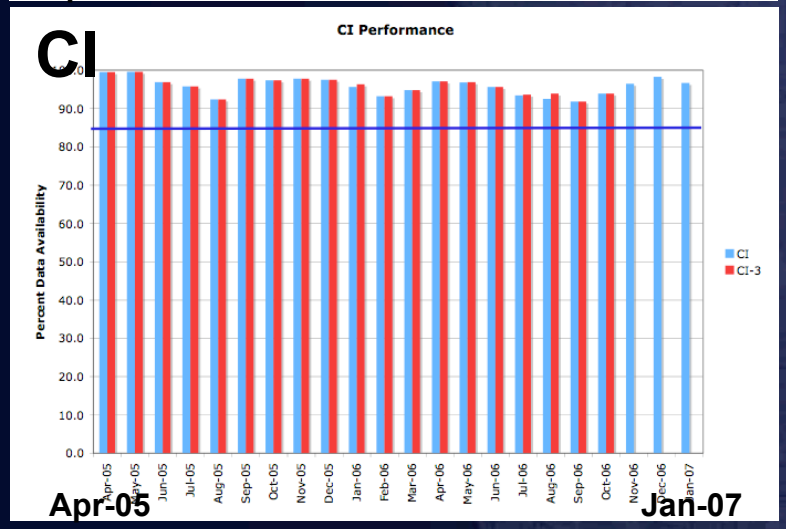


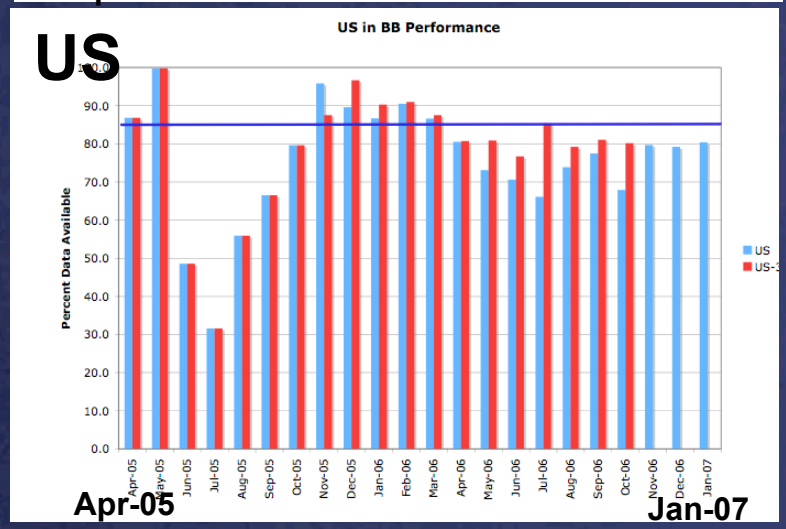
USArray Performance Metrics

TA Contributing

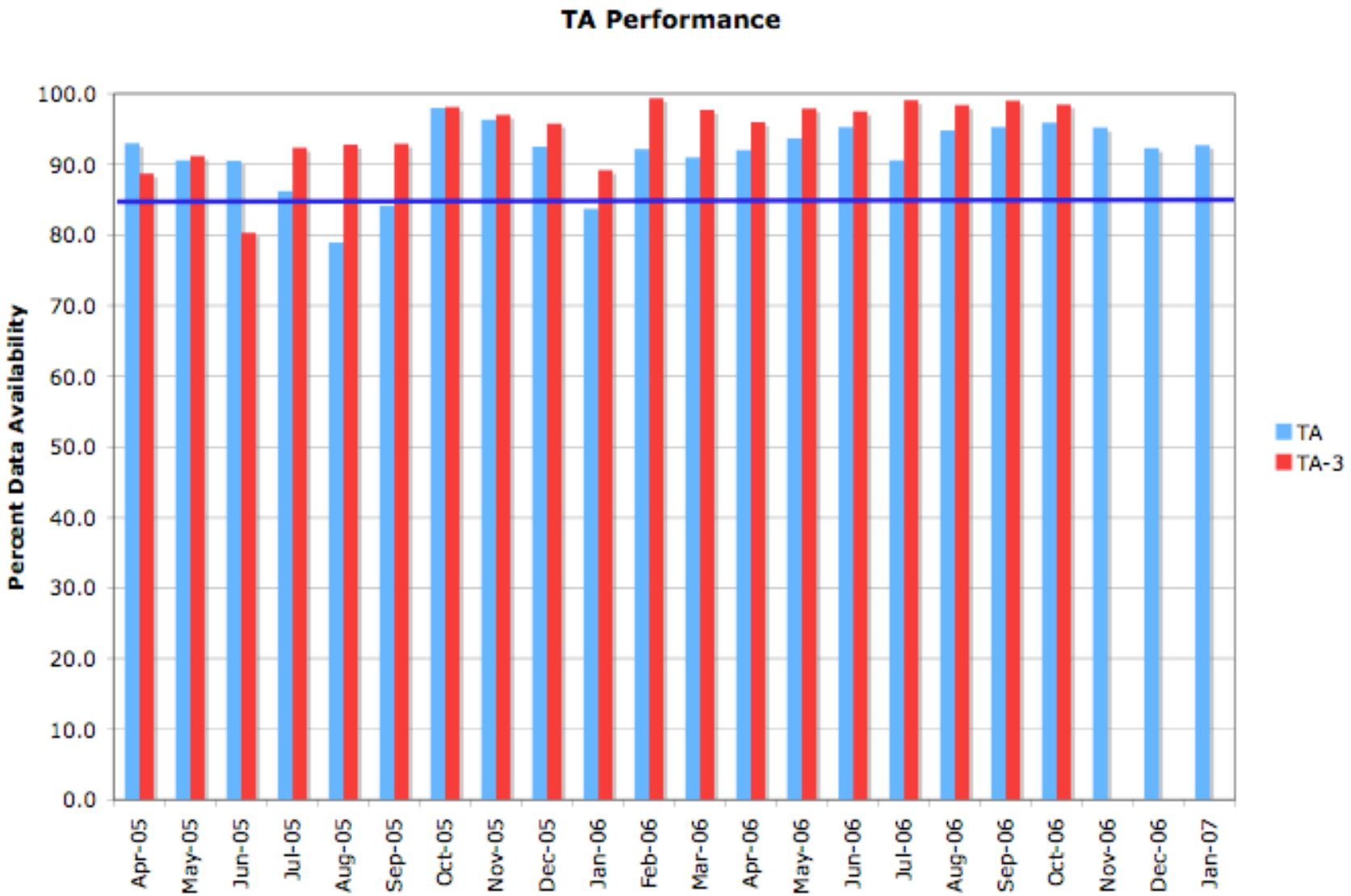








USArray Performance Metrics
New TA Stations



Relevant Web Pages

- http://anf.ucsd.edu/stations.php
- http://anf.ucsd.edu/tools/dlmon/anfdlmon.php
- http://anf.ucsd.edu/tools/orbmon/orbmonrtd24hrBHZ.php
- http://anf.ucsd.edu/dbrecenteqs/usarray_w_map.html
- http://anf.ucsd.edu/spevents/