

Instrument Sharing and Joint Experiments

**Dr. James Gridley
IRIS / PASSCAL Program Manager**

- Overview of IRIS
- IRIS Instrumentation Services
- PASSCAL Program
- Experiment Examples

University Consortium sponsored by NSF to manage the key infrastructure resources to support academic research in seismology.



Purpose:

Acquiring, managing, and *distributing freely available seismic data.*

IRIS Mission

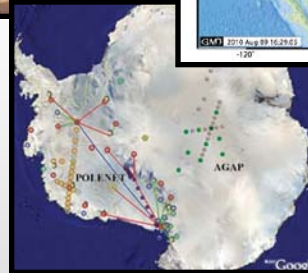
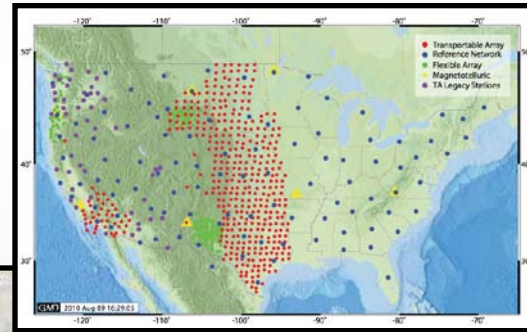
IRIS provides the expertise, support, and equipment to enable the investigators to work together, practice science, and educate the community.

**Multiparty
Collaboration**

**Community
Driven**

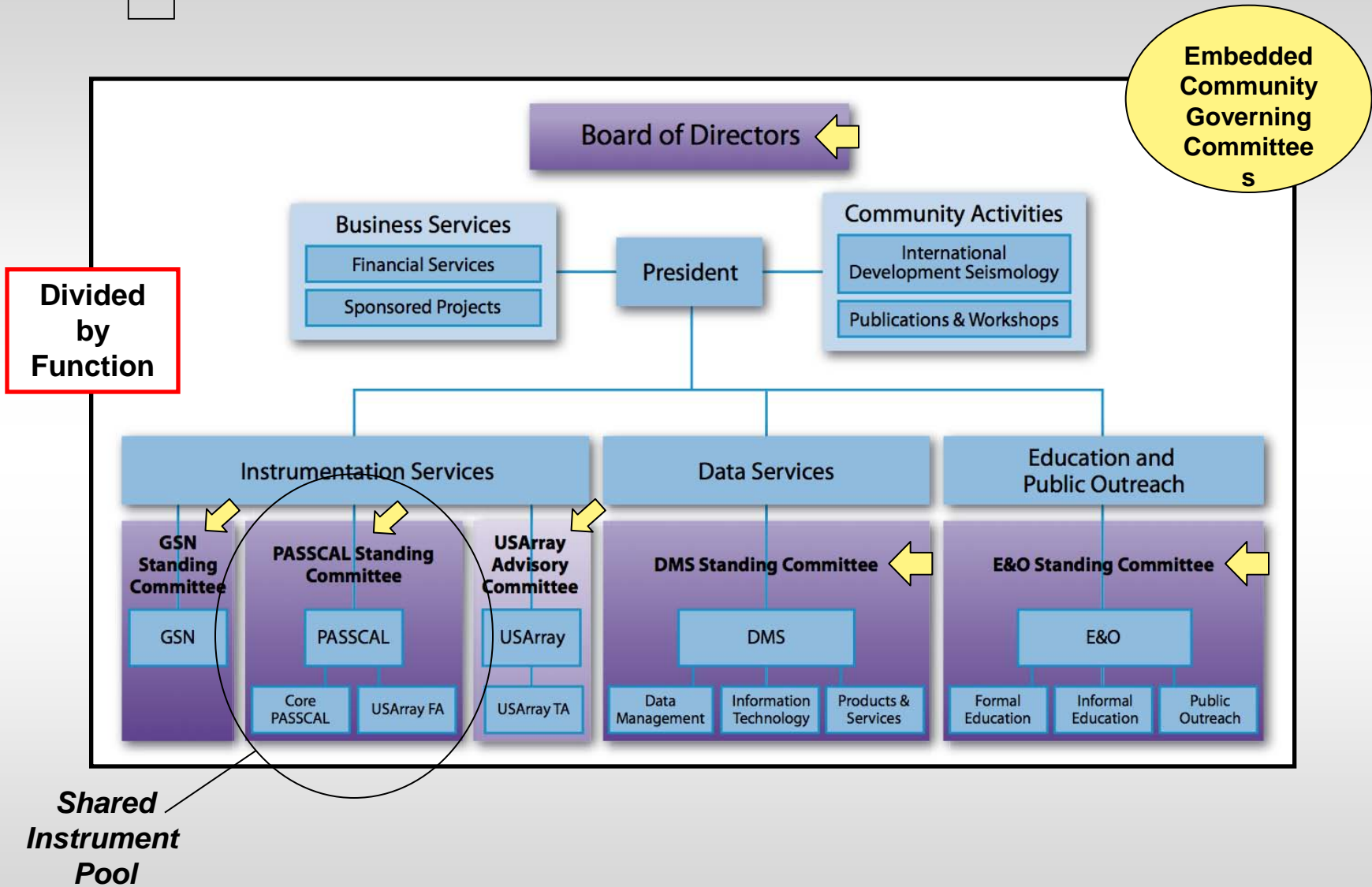
Open Data

**Sharing
Information**



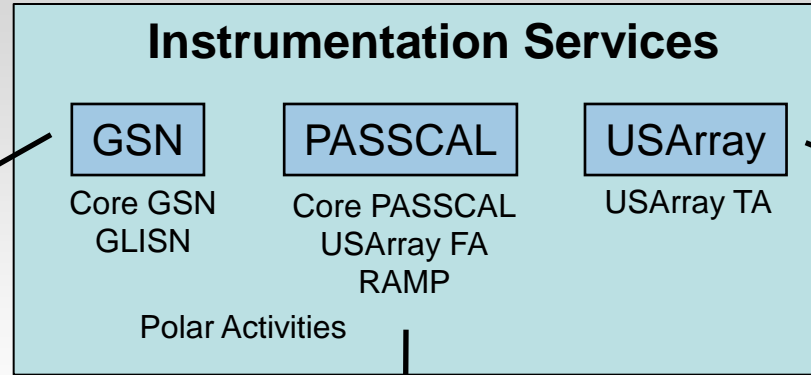
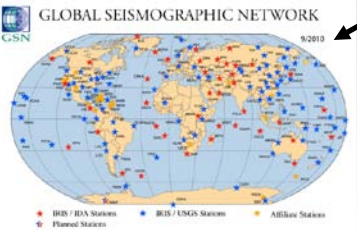
Facilitate, Collaborate, Educate

IRIS Organization



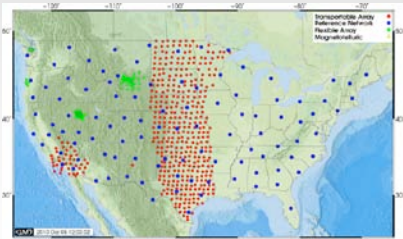
Managed by IRIS, Governed by Consortium Members

Instrumentation Services

Global Seismographic Network

- Global
- Broadband
- Standardized Stations
- Permanent Duration
- Broad Range of Targets



Regional / Global

- Broadband
- Consistent Vaults
- Finite Dwell Period
- Survey Approach to Targets



Local/Regional

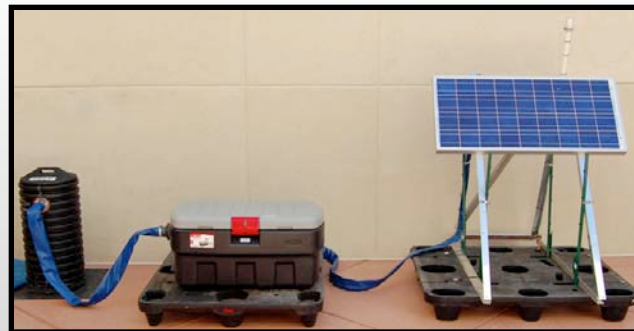
- Broadband/Short Period
- Various Emplacements Options
- Temporary Duration
- Focused Targets

IRIS enables investigators to conduct various types of science
PASSCAL is specific to portable systems

PASSCAL Facility Support: *(Shared Instrument Pool)*

- Instrument Sharing
- Experiment Planning
- Engineering Solutions
- **Training**
- Shipping
- In-Field Support
- Deployment Assistance
- Service and Maintenance
- Data Processing Support
- End of Experiment Transition

IRIS / PASSCAL Instrument Center (PIC)
New Mexico Tech, Socorro, New Mexico



Focus on Customer Service and Producing High Quality Data



PASSCAL Sensing System Pool

PASSCAL Impact:

- Increased reliability of all equipment used in experiments
- Improved facilities for data archiving support
- Expanded experiment support services
- Specialized support for extreme environment
 - including polar regions

| Program | Data Loggers | Sensors |
|------------------------|--------------|---------|
| PASSCAL Core | 1858 | 1345 |
| PASSCAL Polar | 50 | 56 |
| USArray Flexible Array | 2147 | 547 |

The PASSCAL Instrument Sharing Process (Synchronizing ASynchronicity)

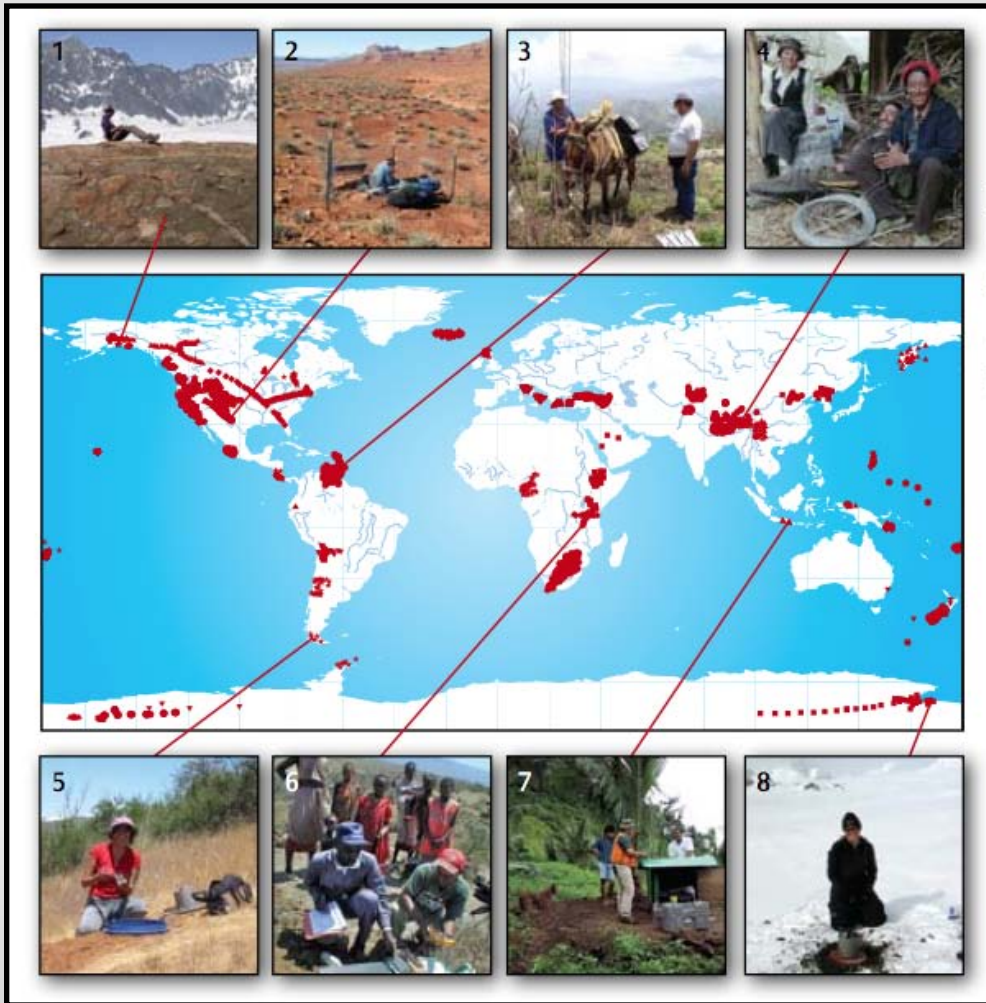
- Investigator funded
 - Investigator contacts PASSCAL
 - PA and investigators collaborate to facilitate investigations
 - Schedule sensor loan
1. **Educate/Train field staff**
 2. Conduct deployment
 3. Secure data and prepare for DMS
 4. Transition to next investigation

Service, Service, Service

The Effect:

Investigators:

1. Gain knowledge and experience
2. Contribute into IRIS guidance
3. Conduct more investigations
4. More complex investigations

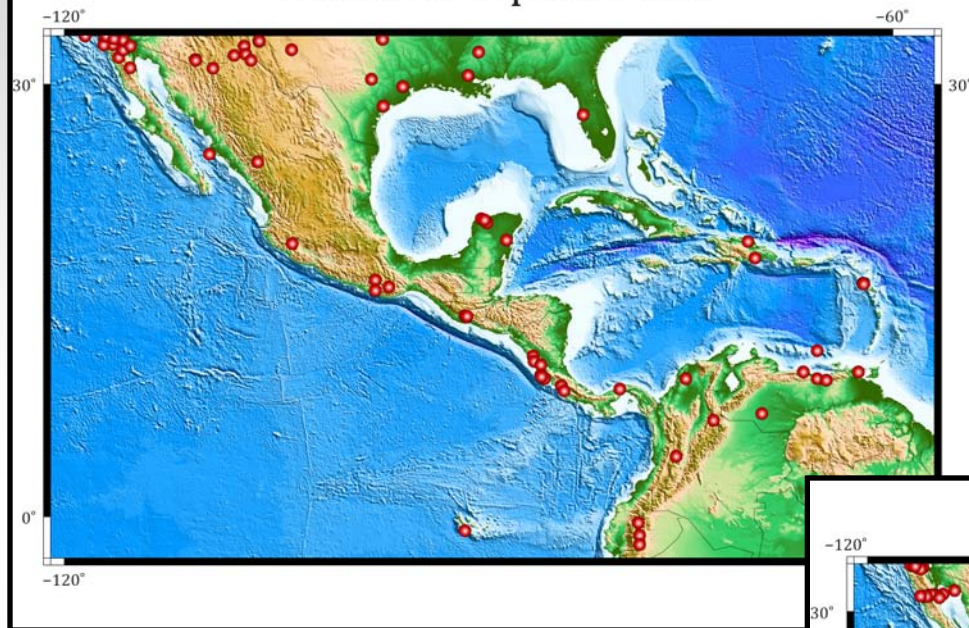


Global Extent of PASSCAL:

1. Alaska STEEP
2. La RISTRA, New Mexico
3. Venezuela
4. Tibet
5. Chile
6. Kenya
7. Tiwi
8. Mt. Erebus

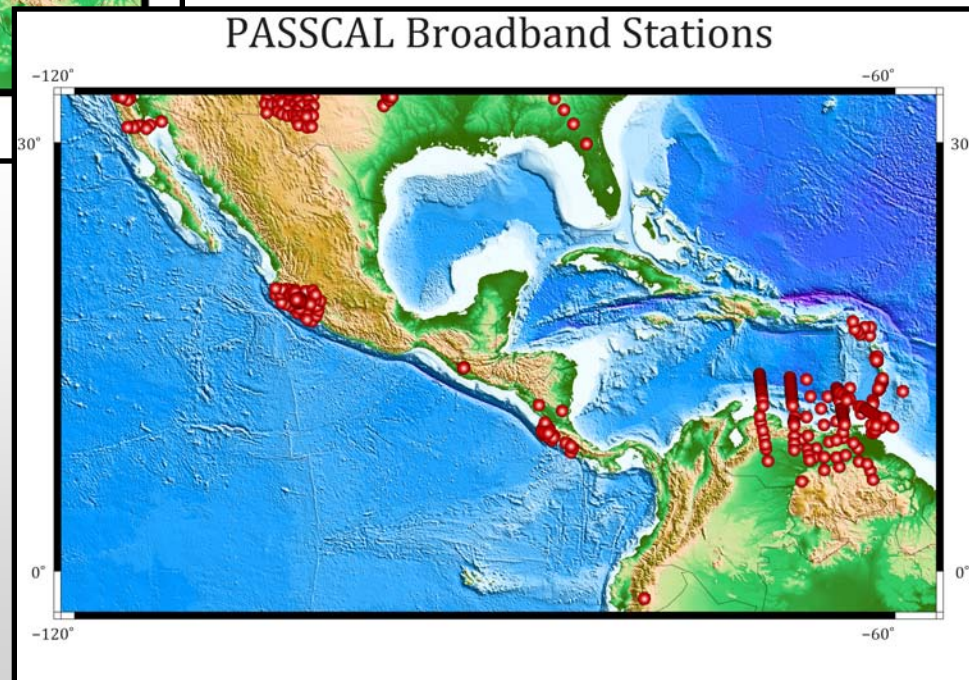
Each region comes with its own set of unique challenges in providing sensing systems.

PASSCAL Experiments



Investigators are already conducting NSF funded research in the region.

PASSCAL Broadband Stations



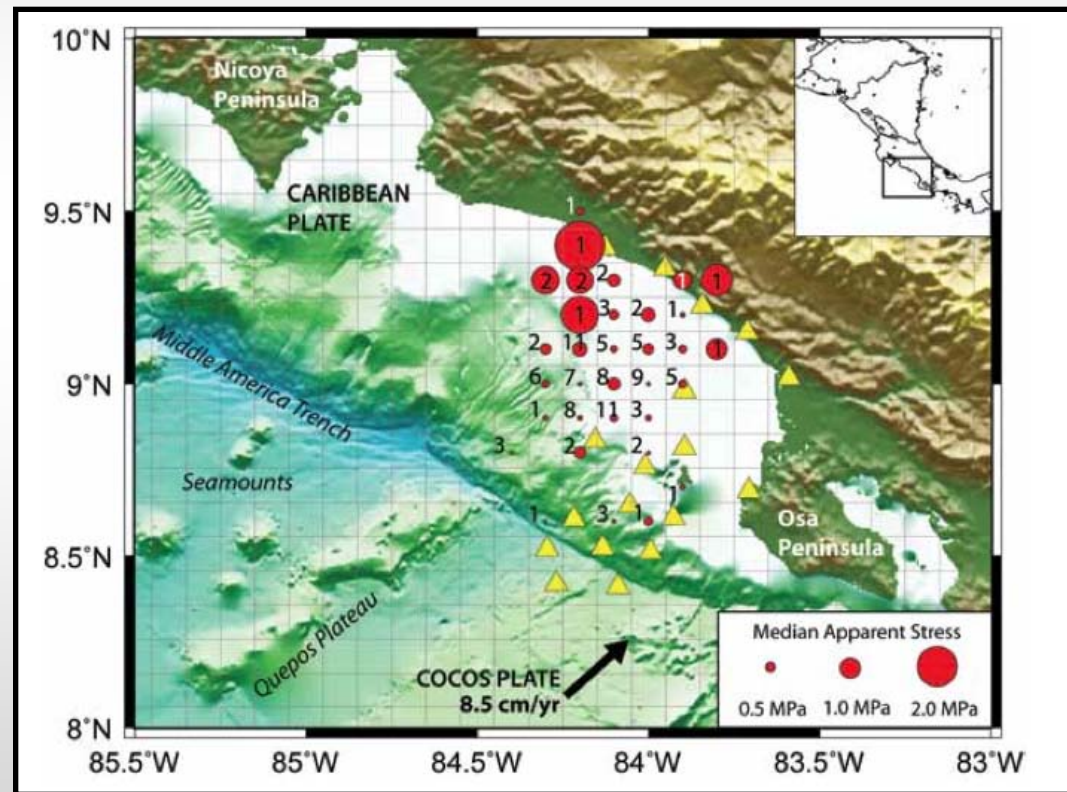
PASSCAL has already supported various types of seismological studies.

Apparent Stress Variations at the Osa Peninsula, Costa Rica, Influenced by Subducted Bathymetric Features

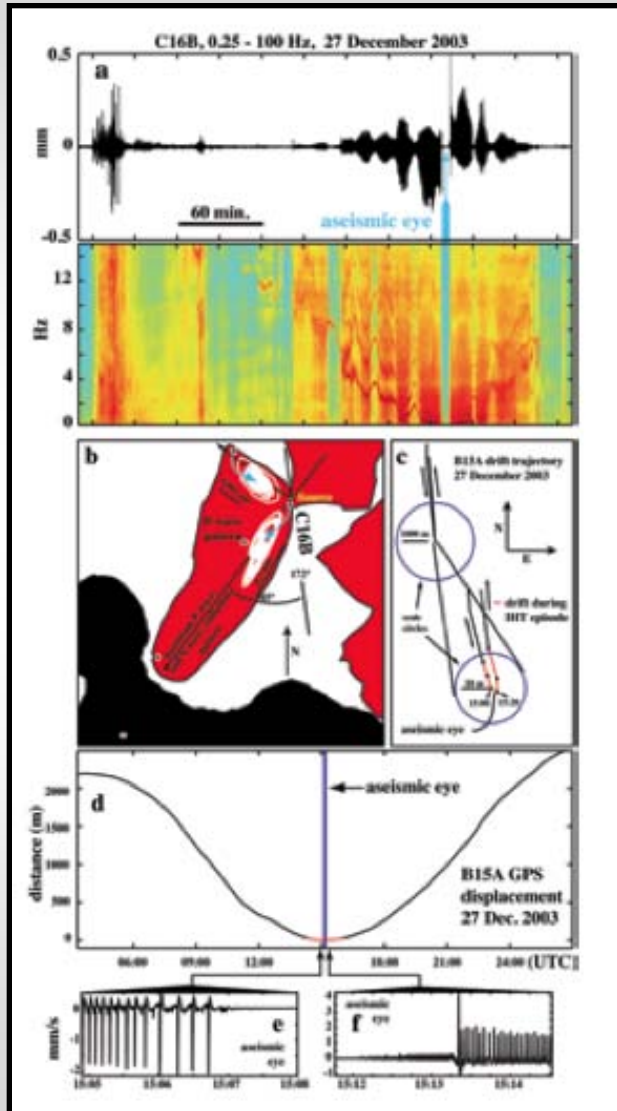
Pamela A. Moyer (Earth and Environ. Science Dept., New Mexico Tech), Susan L. Bilek (Earth and Environ. Science Dept., New Mexico Tech), W. Scott Phillips (Earth and Environ. Sciences Div., Los Alamos Natl. Lab.)

Impact:

Understanding nature of subduction, seismicity, and seismic risk in the area.



Example of a “Typical” Sensor Loan



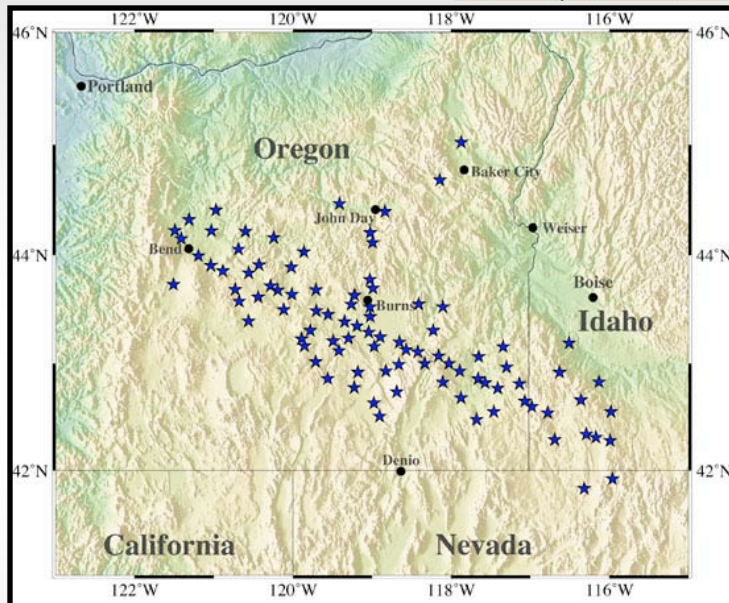
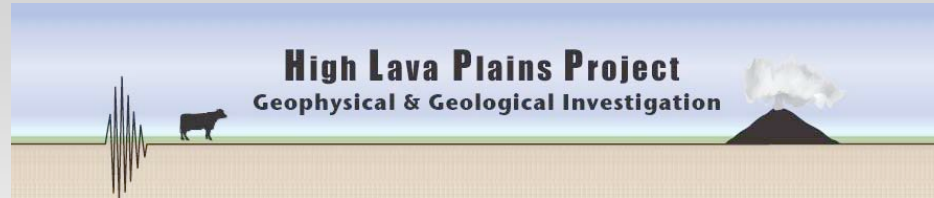
Iceberg Tremor and Ocean Signals Observed with Floating Seismographs

Richard Aster (New Mexico Institute of Mining and Technology), Douglas MacAyeal (University of Chicago), Peter Bromirski (Integrative Oceanography Division, Scripps Institution of Oceanography, UC San Diego), Emile Okal (Northwestern University)

Impact:

Sometimes the engineering, science and technology is just exciting.

Example of a Challenging Sensor Loan (Engineering, Logistics)



Highly collaborative investigation

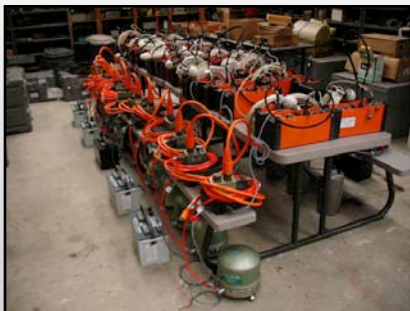
Multiple Institutions

Multiple Disciplines

>60 Scientists

>100 Sensing Systems

Active and Passive Sources



***Could not have been possible
with the PASSCAL sensor pool,
training, and support.***

Providing a PASSCAL sensor pool requires:

- Supportive and Open Policies
- Established Procedures/Standards
- Funding
- Expertise (People)
- Facility
- Community Input
- Cooperation/Collaboration
- Common Goals
- Venue for Data
- Time to Develop and Build the Capabilities

Think about:

- Human Capacity
- Collaboration
- Sustainability

**Potential issues to address during the Breakout Session III
5-6 P.M. Regent**