Cascadia Facility Meeting
Overview

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Cascadia Facility Overview

- ARRA investment in MARGINS and EarthScope scientific objectives: amphibious studies at Cascadia
- $5M onshore
  - U.S. Array (broadband) + PBO (GPS) enhancements
- $5m offshore
  - Broad-band OBS, including shallow-water (OBSIP)
- Initial 3-4 years, then long-term amphibious facility
- Open, rapidly-provided data
Planning Meeting 6/30-7/1 2009

• **Charge:**
  – Identify critical scientific targets of facility
  – Develop nominal implementation plan

• **The Meeting**
  – Rapidly assembled after ARRA reached NSF
  – EarthScope, MARGINS Chairs organized
  – 24 participants from 19 institutions, + NSF & Facilities rep’s
Planning Meeting  6/30-7/1 2009

• **Workshop report:**
  – [www.nsf-margins.org/Cascadia/09meeting](http://www.nsf-margins.org/Cascadia/09meeting) OR
  – [www.earthscope.org](http://www.earthscope.org)

• **Science addresses both deformation and plate structure**

• **Broad Implementation Recommendations**
  – ~4 year development/deployment
  – Need for open community input in present & future deployments
  – Importance of continued facility coordination group

• **Coordinated onshore, offshore effort**
  – This committee
  – Encourage/motivate other activities (FlexArray, other geophys,...)
Detailed Recommendations: On Land Portion

• Deploy as proposed by facilities
• Encourage additional deployments
  – Flexible Array (USArray FA) & similar
  – Particularly complement dense OBS deployments
• Encourage GPS routine data products
  – routine analysis of high-rate real-time data
  – community access to real-time data products
• Strong Motion Sensors
GPS Plans (see UNAVCO Presentation)

Upgrade 232 PBO sites to realtime, high sample rate
USArray Plans

TA-style grid enhancing existing facilities
Detailed Recommendations: OBS Instrumentation

• Broadband Seismometers
  – ~ 1/3 with shallow water design

• Other Elements
  – Abs. pressure gages at deforming sites
  – Accelerometers where strong motions possible
Detailed Recommendations: OBS Deployment Phasing

- Three Notional Experiments
  - Plate-crossing of Juan de Fuca
  - Synoptic sampling of entire trench
  - Focused thrust zone deployment
    - high priority, but follow analysis of initial data

- Timing
  - Initial/trial, 50% stations Summer 2010
  - Phase 2 (full), Summer 2011 - Fall 2012
  - Phase 3 (full), Spring 2013 - Fall 2014

- Ordering TBA
Seismic Plans as of July 2009

USArray: 23-27 TA-like sites
OBS: 60-ish stations, 1/3 shallow water, 2-3 potential deployments
Detailed Recommendations: Overarching

• Timing & Data
  – Open data access
  – Integrate OBS & land data, including earthquake catalog
  – Operate until mid-2014, then can move

• Management: small steering committee
  – OBS deployment plan & other technical aspects
  – plan for optimize scientific value
  – develop process for planning future deployments