Date: June 9, 2011

From: CIET

Subject: Modification of Cascadia Deployment Plan

The purpose of this memo is to seek advice regarding a change in the Year 1 Cascadia Initiative deployment plan.

CIET was informed on May 23, 2011 that the OBSIP IIC at LDEO are unlikely to have 20 trawl resistant mounted (TRM) OBSs ready for the first Cascadia Initiative deployment cruise, which is scheduled for July 23 - August 2, 2011 on the R/V Wecoma. At present it is anticipated that LDEO will have 10 instruments ready for July deployment. The other 10 instruments may become available in 2011, however, that likelihood and the chances of finding a ship to deploy them at a later date in 2011 are not to be counted on.

This change in instrument availability requires a change in the deployment plan as discussed at the Portland meeting in 2010 and presented in the workshop report[1]. The TRM OBSs are only suitable for deployment in water depths less than 1000 m. Fig. 1 shows the Year 1 deployment plan from the Portland workshop. Removal of 10 OBSs from the Year 1 deployment plan by necessity impacts either the Northern Focused Array (FA) off of Grays Harbor (yellow squares, Fig. 1) or the along-strike coverage and monitoring of the forearc.

Some issues relevant to making a decision regarding a revised deployment plan are:

- The Year 1 and Year 3 deployment plans from the Portland workshop are effectively identical, thus sites not occupied in Year 1 can be occupied in Year 3.
- It is anticipated that during fall of 2011 there will be an ETS event along northern Cascadia.
- There is some concern that the shallow water noise environment (including reverberations) on the shelf will adversely affect OBS data and thus impact the analysis of receiver functions. A principal goal of the Northern FA is to use the receiver function method to constrain physical properties of the megathrust.
- Ongoing discussions with community members who are experts at the receiver function method suggests that occupation of a staggered line of OBSs in the Northern FA and a tight instrument spacing is preferable to a single line of OBSs.

In view of the above, the CIET proposes the following modification to the Year 1 deployment plan. A total of 10 instruments from the Northern Focused Array will be assigned a lower priority for deployment in 2011 (i.e., unless we get lucky, these 10 OBS will not be deployed this year). Figure 2 shows a revised deployment plan in the vicinity

---

[1] http://www.oceanleadership.org/wp-content/uploads/2010/05/CI_Workshop-Report_Final.pdf

of the Northern FA under the assumption that 10 TRM OBSs are available and that 2 of these 10 instruments are targeted for monitoring along the shelf (see Fig. 3) A staggered configuration has been maintained in the Northern Focused Array and sites closer to the shoreline (where the thrust interface is deeper) are retained. If this general plan is approved, minor adjustments to site location will be made to achieve uniformity of spacing along the forearc and to take into consideration bathymetry, trawling activity and geo/bio-hazards. The proposed changes do not adversely affect the monitoring of the forearc and the data to be collected by the Northern FA will provide a good opportunity to evaluate the potential of the receiver function method in shallow water environments.

CIET will use the following procedure for making changes to the workshop-defined deployment plan:

1. When circumstances, e.g. instrument availability, demand a change to the CI deployment plan, the CIET develops a new plan that remains as close to the original community plan as possible but accommodates the new circumstances.
2. This plan is made available to community members with specific knowledge or interest relevant to the change for comment and suggestions.
3. The CIET revises the plan accordingly and presents it to AASC (Amphibious Array Steering Committee).
4. The AASC reviews the plan, makes suggestions/changes, and approves the modified plan.
5. The modified plan is posted on the CIET website, at which point community wide input is welcome, within a time frame that is practical for reconsidering the design.

This procedure was discussed by AASC on May 26, 2011 and approved.

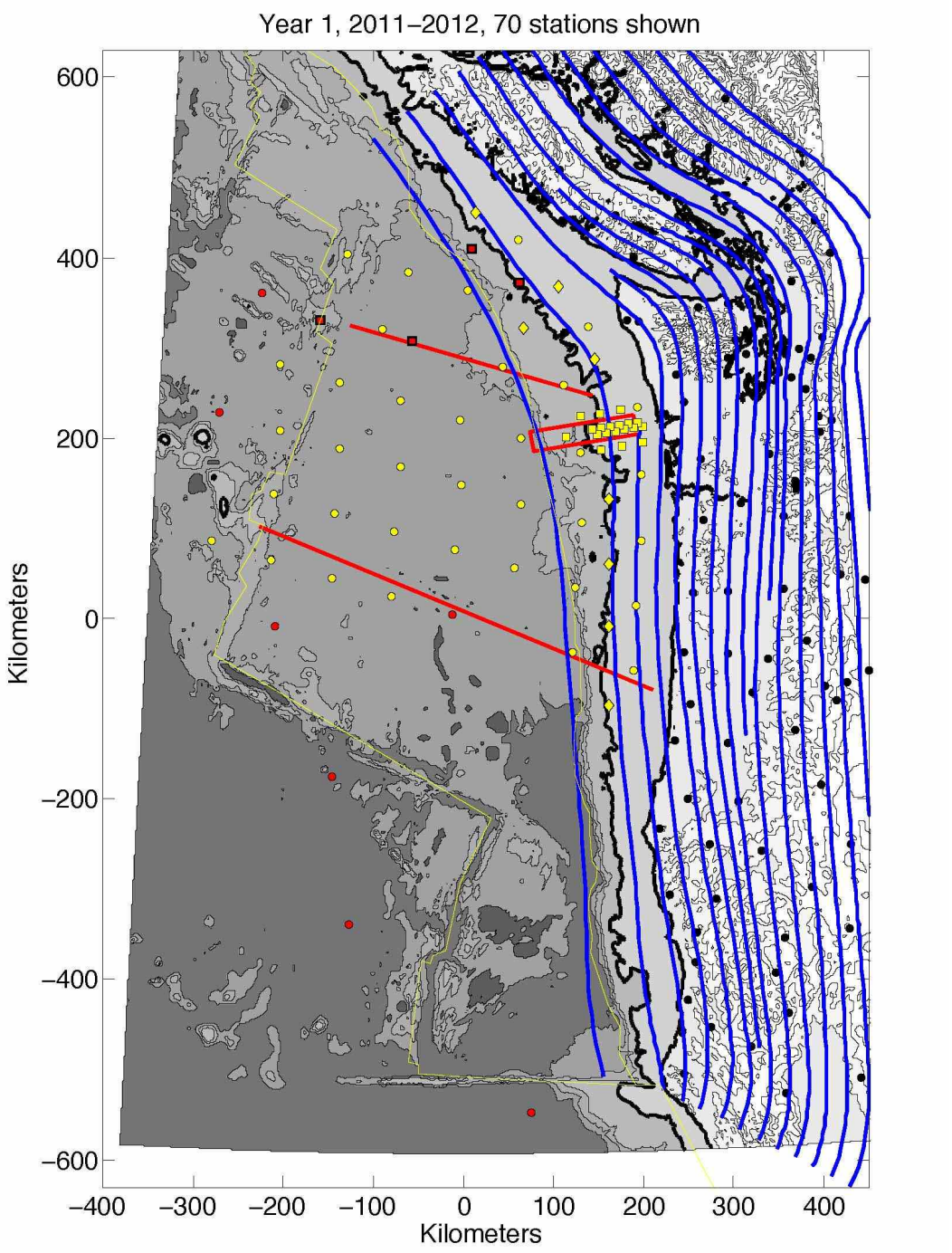

Figure 1. Year 1 Deployment Plan. Red circles denote the reference array. Yellow circles denote the Regional Array. Yellow squares denote the Focused Array. Yellow diamonds denote the densified coverage of the forearc enabled by requesting 10 additional instruments from the OBSIP pool. Black circles denote on land broadband seismometers. Red squares denote the NEPTUNE Canada seismometers. Blue lines denote slap depth contours (every 10 km). The coastline and the1000 m bathymetry contour are shown in bold. See 2010 CI Workshop Report for further descriptions.

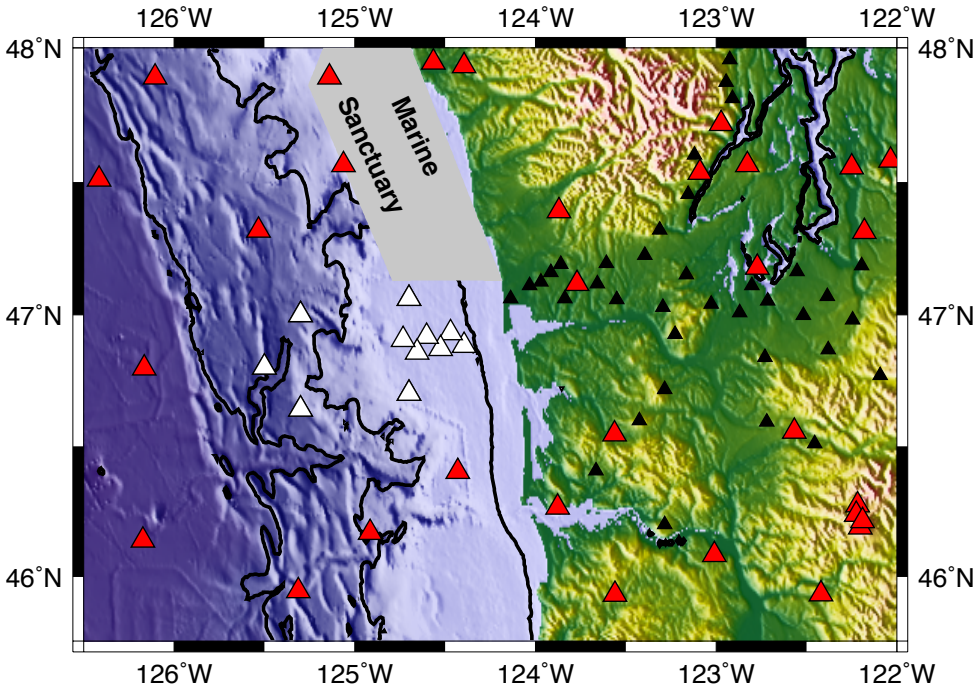

Figure 2. Proposed modification of the Northern FA. 10 sites have been removed at water depths less than 1000 m, which is the maximum water depth for a TRM OBS deployment. Second bold contour line out from coast is 1000 m.

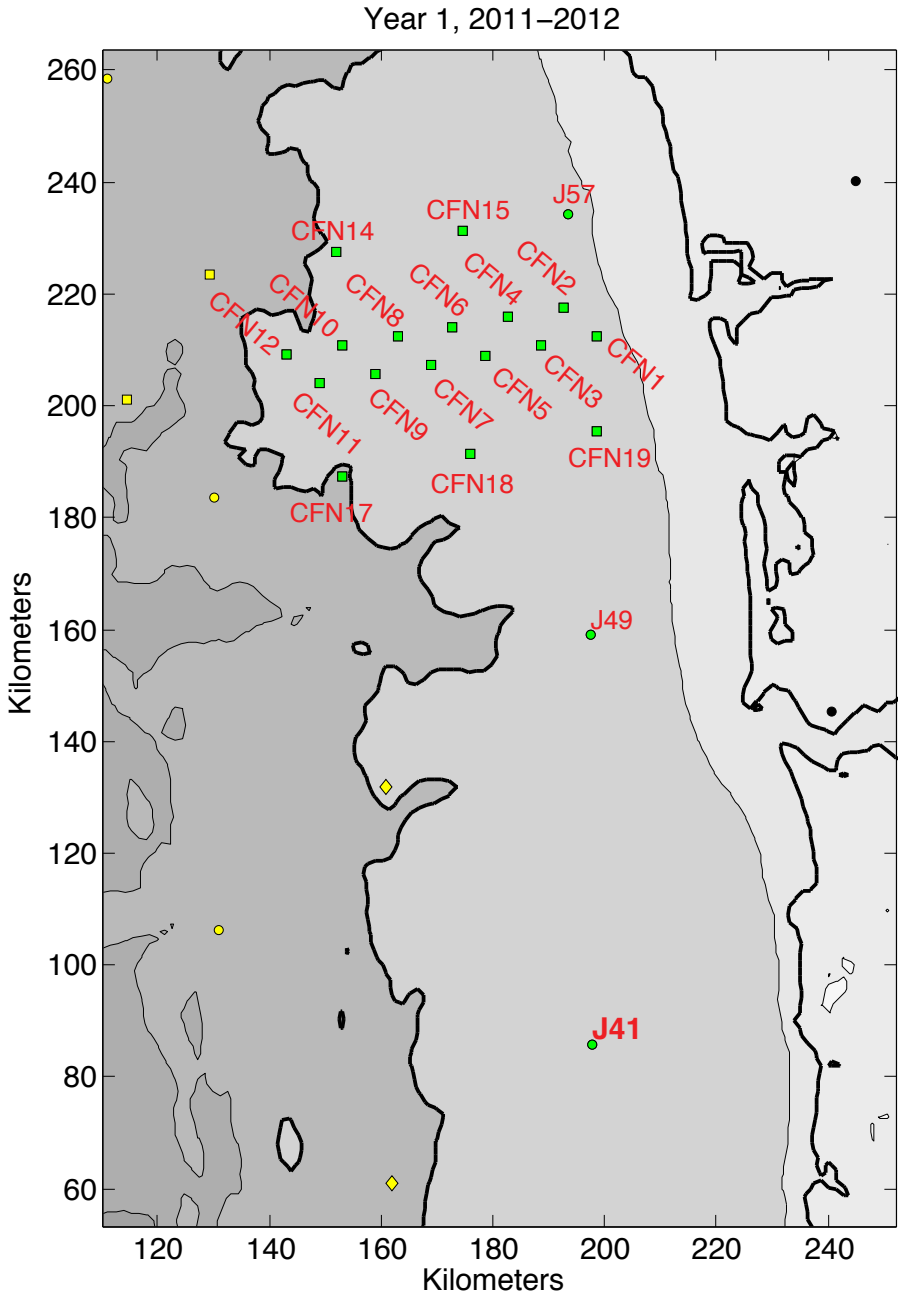

Figure 3. Bathymetric map showing 20 sites (green circles and squares) targeted for deployment of LDEO TRM OBSs. Table 3 provides a prioritized deployment order.

Table 1

Priority	Site Name
1	J41
2	J49
3	CFN18
4	CFN15
5	CFN1
6	CFN2
7	CFN3
8	CFN4
9	CFN5
10	CFN6
11	J57
12	CFN19
13	CFN7
14	CFN8
15	CFN9
16	CFN10
17	CFN11
18	CFN12
19	CFN14
20	CFN17