The “Exploring a Subduction Zone Observatory” Town Hall meeting on December 14th at the 2015 American Geophysical Union Annual Meeting filled a large room at the Moscone Center. Six speakers gave brief overviews of topical or regional observatory-like projects and activities, and ways to get involved in building an SZO were described (see accompanying presentation file). The meeting concluded with an open discussion.

**Panel Presentations**

* Kerry Sieh described the Sunda Megathrust, highlighting the tremendous diversity and thus, opportunities to study subduction zone processes that occur along its 6000 km length. High rates of small to great earthquakes permit investigations at many phases of the earthquake cycle and the evolution of behaviors over multiple cycles. These increasingly include marine investigations.
* Suichi Kodiara presented an overview of Japan Agency for Marine-Earth Science and Technology (JAMSTEC) activities. JAMSTEC seeks to understand subduction zone processes for the purpose of mitigating the hazards they pose. Extensive data collection efforts are providing high-resolution views of key structures and processes. He noted that an SZO could provide an important framework for exchanging information and collaborative studies, with JAMSTEC’s principle interest in those focused on the western Pacific.
* Erik Hauri discussed the Reservoirs and Fluxes of Deep Carbon Observatory, which seeks to understand the balance of the deep carbon cycle, largely by monitoring gas fluxes at globally distributed sites and using satellite data. He noted that the largest source of uncertainty comes from fluxes at subduction zones. Studies also incorporate other types of observations, so that controlling phenomena may be identified and their roles quantified. Thus, any SZO should combine physical and chemical monitoring.
* Sergio Barrientos described the observational networks and activities underway in Chile. These are motivated by the high rates of earthquakes and tsunamis, made more urgent by the unprecedented occurrence of three M>=8 earthquakes in last 5 years. The Integrated Plate Boundary Observatory of Chile records broadband, strong motion, GPS data; the broadband data currently are publically available and others will be soon. Sergio noted that because most of the seismogenic rupture area lies offshore there are tremendous needs for offshore and coastal data and studies. While a JAMSTEC-scale observatory along all of South America would be ideal, progress on many unanswered questions could be made by facilitating greater international exchange of information and experience.
* Susan Schwartz gave an overview of the Nicoya Seismic Cycle Observatory in Costa Rica, which is comprised of GPS and seismic instruments. Studies benefit from the location of the Nicoya Peninsula directly over the seismogenic zone, although offshore observations have proven key when available. Since its installation nearly all types of subduction zone deformation processes have been observed, including the 2012 Nicoya megathrust earthquake. Experience to date indicates a need for an amphibious facility as a key component of an SZO. Susan noted that another Observatory is being installed presently in the Oso Peninsula.
* Jeff Freymueller emphasized the ubiquitous nature of most subduction zone processes, albeit many with local variations, and particularly those measurable geodetically. Thus, it is critical to look at multiple subduction zones to understand similarities and differences, and to observe different phases of seismic cycle. He also noted the importance of looking at deformation changes (i.e., transient deformation events), and what causes and controls them and their distributions. An SZO could provide a framework for cooperation and collaboration among geodetic networks; e.g. as is happening among regional and national networks in the USA, central and South America.

**Getting Involved!**

Terry Plank urged people to get involved in promoting and building an SZO. She announced an SZO Workshop planned for September 2016 in Boise Idaho, with most support from the NSF, and also from the USGS, EOSingapore, and possibly other institutions. NSF will support 100 participants, but the organizers hope to double this number. Workshop themes will include deformation and fault slip, landscape and climate feedbacks, volatiles from serpentinization to volcanism, and more. Topics relevant to the entire width of subduction zones would be discussed, from the outer-rise to back-arc regions. To keep abreast of news about the workshop and other SZO related topics, sign up on the email list at <http://www.iris.washington.edu/mailman/listinfo/szo> or look at the website http://www.iris.edu/hq/szo.

**Audience Discussion**

* A participant asked how an SZO would differ from the GeoPRISMs and Earthscope programs, expressing concern that it could be perceived as just a re-hash of them and thus, not very exciting. A panelist commented that the scope, structure and focus of an SZO still had not been determined; i.e., whether it would be strictly a facility, research program, or some combination of these, PI-driven or community-based, etc. Others noted that numerous questions remain to be answered, which could be addressed in new ways and that are so fundamental that addressing them alone could make a program exciting.
* A participant suggested that electro-magnetic signals should be considered, building on success using them to image subduction zone structure in Peru.
* The need for seafloor geodetic observations was raised, and also the question of how do we do provide them at an affordable cost. Panelists noted that efforts are under way to develop cheaper ways of monitoring offshore, but that much more needs to be done.
* A participant asked if an SZO could be a facility that moves to wherever the next megathrust earthquake occurred? A panelist responded saying the choice of location will depend on where the most compelling questions can be best addressed, so that such a facility would make sense if post-earthquake processes were considered most important. Another panelist said that such a facility could be a component of an SZO, but didn’t think it could be the entire program.
* A participant remarked that the most compelling times to collect data are right before and right after a megathrust earthquake, and that we should select three or four of the places where one is most likely and conduct focused experiments in them. A panelist commented that it would be useful to consider what kinds of deployments would be useful for this purpose.
* An audience member reminded us that some of the work proposed for an SZO is already happening, and that coordination and integration of this work is what is most lacking; i.e., that an SZO that served as an umbrella structure would make individual programs all more useful.
* A participant noted that it would be fantastic if an SZO included modeling and laboratory studies.
* The final comment was that an SZO should consider not only oceanic subduction zones, but also those involving continent-continent convergence (e.g., the Himalayas).