### The Subduction Zone Observatory Workshop

September 29–October 1,2016

350 Applicants & 242 Total Attendees
67 Early Career Scientists & Students
45 from 21 Non-US Countries
32 Break-out Groups

>60 White Papers

Key Themes Emerged from the Boise Workshop:

- Focus on the Fundamental Processes that Underlie GeoHazards
- 4D Datasets Time-Evolving Phenomena
- International Coordination/Opportunities
- Modeling Collaboratories
- Sampling over Geologic Time

#### **The SZ4D Initiative**

Understanding the Processes that Underlie Subduction Zone Hazards in 4D

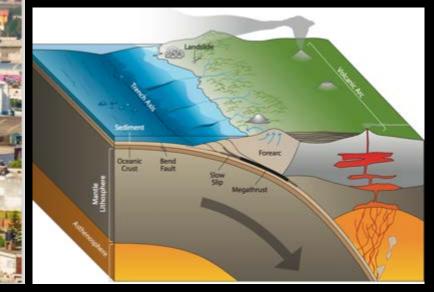
A Vision Document Submitted to the National Science Foundation

## SZ4D Initiative Vision Document

Lead Authors: Jeff McGuire WHOI Terry Plank, LDEO

*with 21 others & contributions from many more* 

https://www.iris.edu/sz/sz4d.pdf



Increase our predictive understanding of Eruptions, Tsunamis, Earthquakes, and Landslides by:

• capturing and modeling emergent phenomena

#### • collecting datasets 4D – in real time and through geological time



3/08 02:00

Volcano Deformation: 1992 – 2000 Seguam, AK Foreshock (and SSE) sequence preceding 2011 M9.1 Tohoku Earthquake (copyright NHK & A. Kato)

## Implementation

ceots:

60\*

30"

0

-30\*

-60

Indian Ocean

90"

Asia

120"

150"

<u>Strategy</u>: Long-term, continuous instrumentation

Before, during and after events Pacific

<u>Concepts</u>: Dense Arrays on Seafloor, on Volcanoes, and in Forearcs

North

America

Early days – design just beginning!

-120"

-90"

• Circum-Pacific Experiment?

-150"

180\*

South America

-60'

# Proposed SZ4D Timeline for Development and Implementation

2016	2017	2018	2019	2020
Integration	SZ4D Working Group/ Steering Committee			<b>&gt;</b>
Science Program Morkshob	SZ4D Initiative Vision Document	Thematic Workshops on Science Questions (e.g., Where Large EQ? Melt Production, Run-up to Hazardous Events, Erosion and Landslides) Community Experiments (e.g., Seafloor geodesy, Laboratory volcano, Fore- arc faults to surface)	Start of SZ4D Interdisciplinary Science Program	
	RCN/PREEVENTS Proposals			
	Rapid Response Planning Group			
Community Modeling Collaboratory		Modeling Collaboratory Proposal Planning RCN/PREEVENTS Proposals	Modeling Collaboratory Proposal	Modeling Collaboratory Begins
Large-Scale Infrastructure		Planning Workshops for Mid-Scale Infrastructure/MRI Proposals	Design Workshops for Mid-Scale Infrastructure/MRI Proposals	SZ4D Infrastructure Proposal

## NSF Research Coordination Network: *RCN for SZ4D*

#### Steering Committee:

Emily Brodsky, Melodie French, Terry Plank, Diana Roman, Matt Haney, Diego Melgar, Doug Wiens, Sarah Penniston-Dorland, Harold *Tobin (Pl for RCN proposal & office)*...and several more TBD.

### RCN Proposal to be submitted early 2018

- SZ4D RCN Planned Activities:
  - Communication (web, news, etc.)
  - In Reach (research community) and Out Reach (broader science community, agencies, stakeholders, and public)
  - Sponsor and facilitate Working Groups to develop SZ4D program

