



SZ4D



www.sz4d.org



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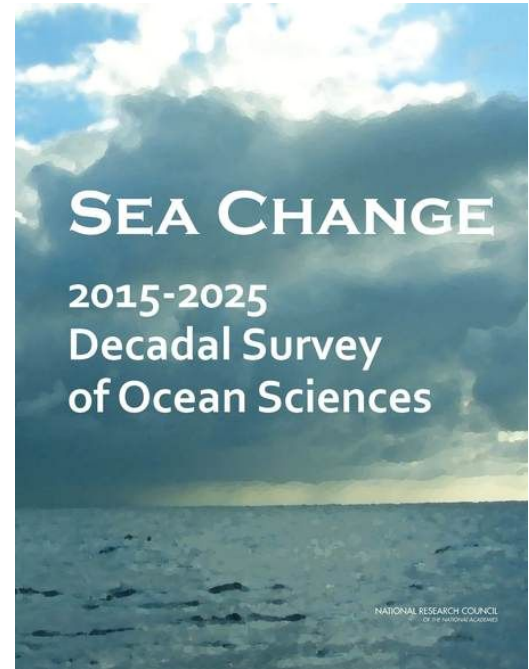


contact@sz4d.org

How can risk be better characterized and the ability to forecast geohazards like mega-earthquakes, tsunamis, undersea landslides, and volcanic eruptions be improved?

*In the 21st century >\$1 trillion damages
and half a million deaths*

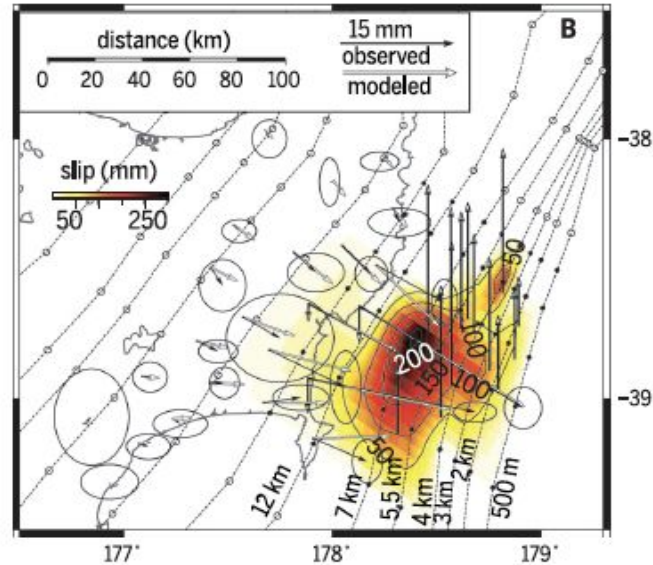
*National Academies of Sciences, Engineering, and Medicine. 2015.
Sea Change: 2015-2025 Decadal Survey of Ocean Sciences.
Washington, DC: The National Academies Press.
<https://doi.org/10.17226/21655>.*



Major scientific advances in understanding subduction zone hazards in the ensuing decade from ocean observations

Seafloor instrumentation has revealed a spectrum of slip behavior on the shallow megathrust

Provides a window into controls on megathrust behavior and tsunamigenesis



Wallace et al., Science, 2016

What do we need to do to make a real difference in understanding geohazards?



Tonga Geological Survey

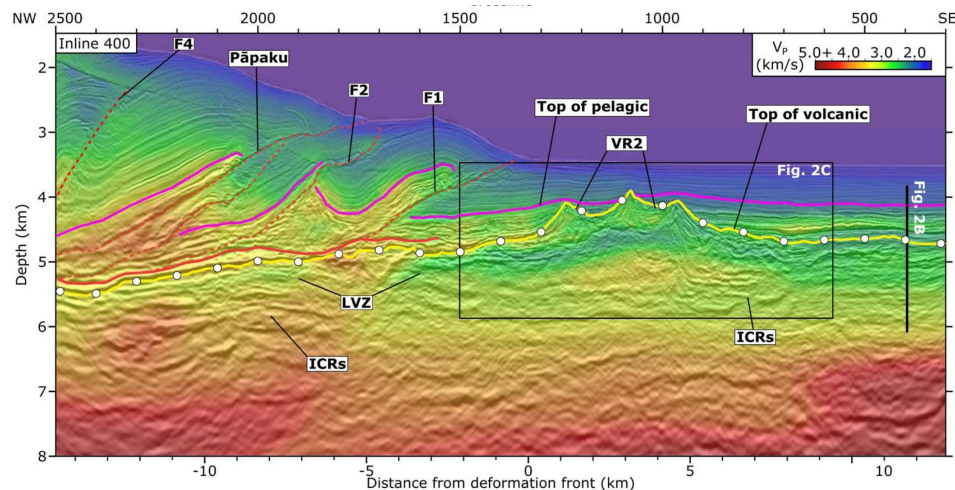
What do we need to do to make a real difference in understanding geohazards?

Capture events in context

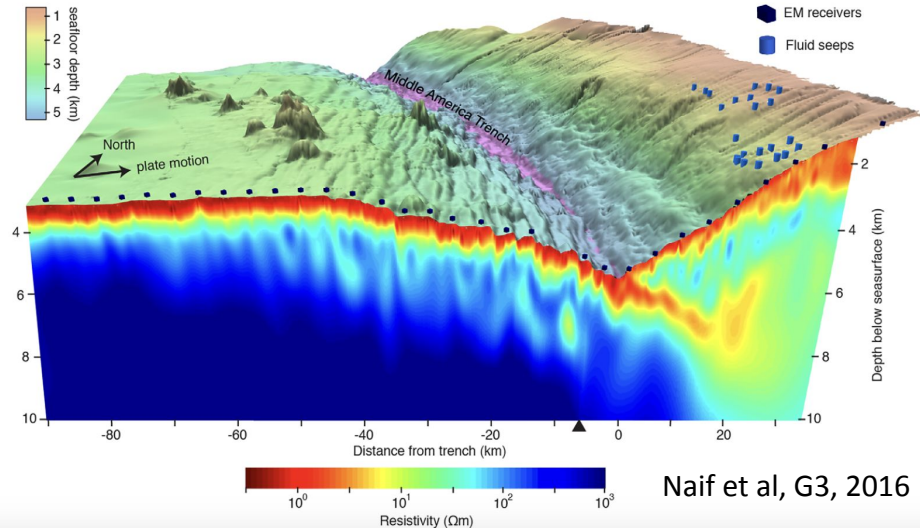
What do we need to do to make a real difference in understanding geohazards?

Capture events in context  Spatial
Temporal
Scientific

Major scientific advances
in understanding
subduction zone hazards
in the ensuing decade
from ocean observations



Gase et al, Sci Adv, 2023



Naif et al, G3, 2016

Subsurface geophysical imaging
providing unprecedented constraints
on subduction zone faults systems,
connections to landslides, and fluid
exchange between the oceans and
solid earth

What do we need to do to make a real difference in understanding geohazards?

Capture events in context  Spatial
Temporal
Scientific

What do we need to do to make a real difference in understanding geohazards?

Capture **events** in context

Requires long-term, systematic
instrumentation

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Capture **events** in **context**

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AND

collaborative, interdisciplinary regional focus

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What do we need to do to make a real difference in understanding geohazards?

interacting
Capture □ events in context

Requires long-term, systematic
instrumentation

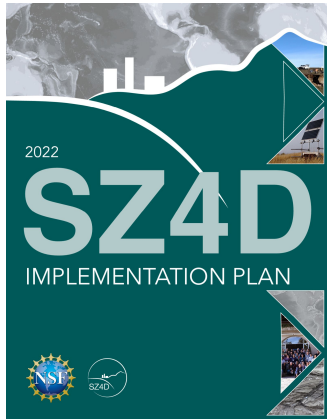
AND

collaborative, interdisciplinary regional focus
to use as natural experiments

SZ4D Implementation Plan

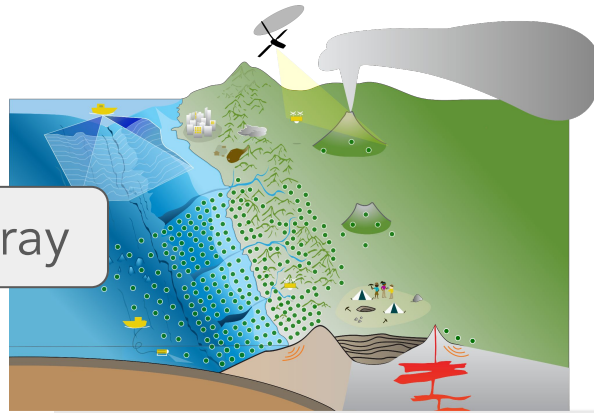
Hilley et al. (2022)

Community Document: 87 co-authors; >1500 contributors through townhalls & workshops 2016-2022
Science questions (Task 3) traced systematically through data, site and research infrastructure needs (Task 4).



The Chile + Cascadia + Alaska strategy

MultiArray





SZ4D strategies for training the next generation of diverse ocean scientists (Task 2)

- Early Career Sustained Networking
- Bilingual equitable partnership with AndesNet
- Collective Impact including Matchmaking



The Road Ahead

