# The current state of SZ4D

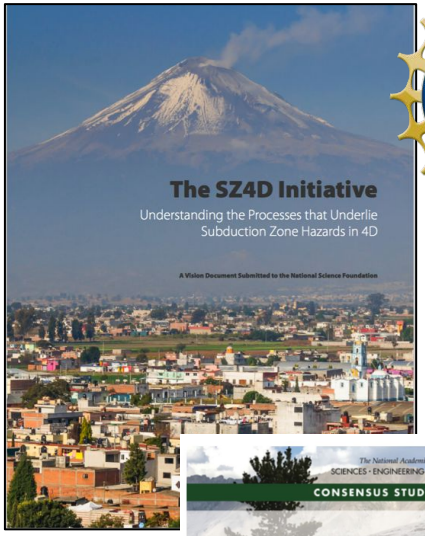
November 14-16, 2022 | Houston, Texas

www.sz4d.org

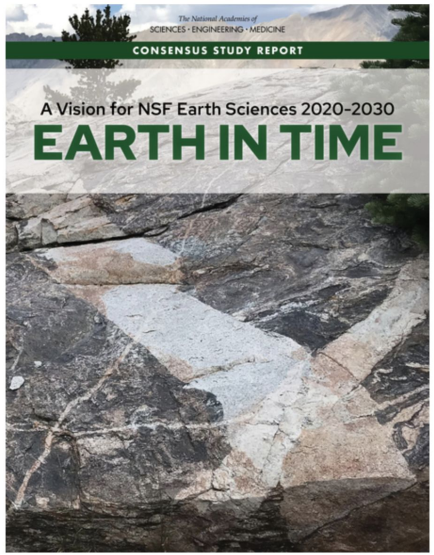
@SZ4D1

contact @sz4d.org

# SZ4D (Subduction Zones in Four Dimensions): Where did we begin?




McGuire et al., 2017




An NSF-funded **Research Coordination Network** focused on the basic science underlying geohazards in subduction zones including earthquakes, volcanoes and landslides

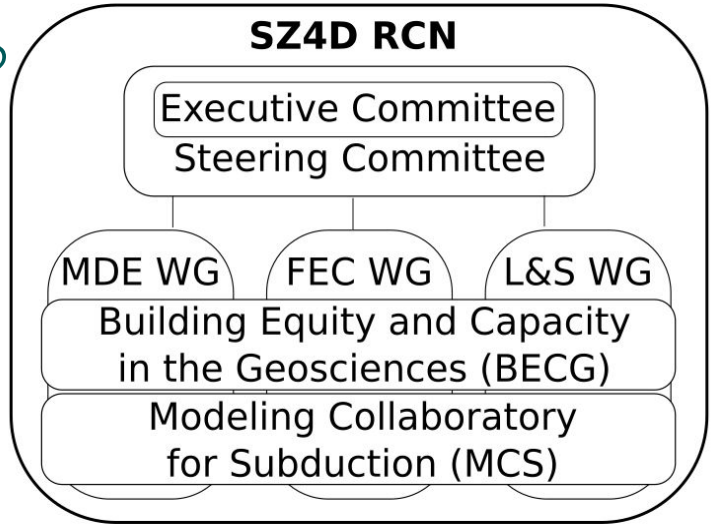
A priority in the National Academies *Earth in Time* Decadal Report 2020 - 2030

# Who has been involved in SZ4D?

Research Coordination Network (RCN)

74 US-based scientists on committees from 55 universities and research institutes representing and reaching out to the scientific community

3400+ scientists engaged




RCN Steering Committee

# SZ4D RCN Accomplishments

Working Groups defined science goals and strategies

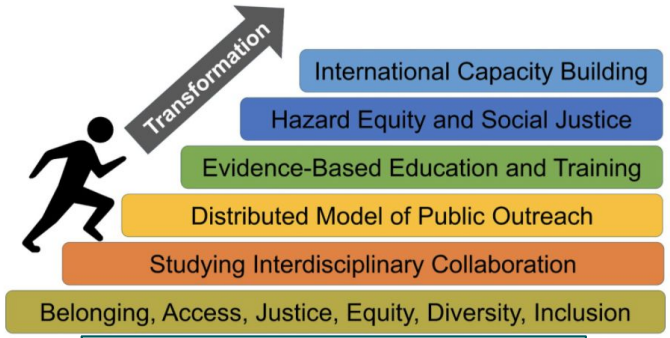

Faulting & Earthquake Cycles Working Group (FEC)

Magmatic Drivers of Eruption Working Group (MDE)

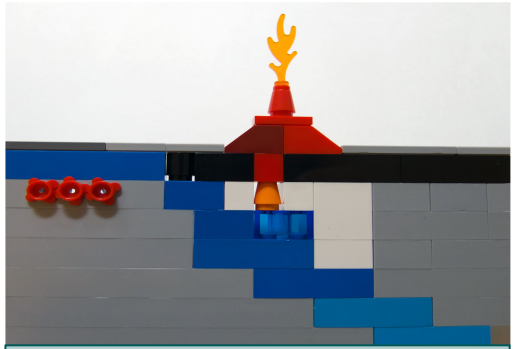
Landscapes & Seascapes Working Group (L&S)

# SZ4D RCN Accomplishments

Integrative Groups formed to plan infrastructure and activities that reach across the system




Building Equity and Capacity in Geoscience (BECG)



Modeling Collaboratory for Subduction (MCS)

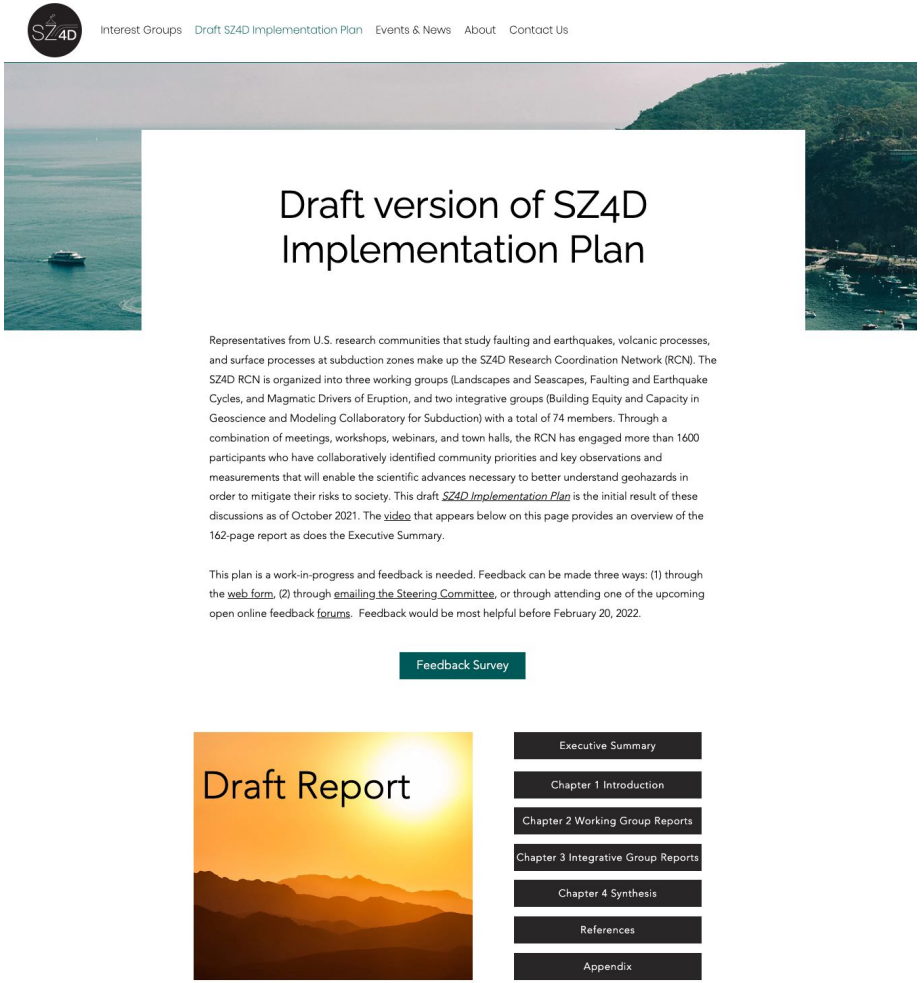
# During the Virtual Era

- Biweekly Steering Committee and Working Group Meetings
- Ad hoc Committees e.g., geology, experimental needs
- 4 Virtual, Multi-Day All-Hands Meetings + (2 in-person)
- 13 International Webinars
- 8 virtual Public Forum & Town Halls (+ 2 in-person at AGU 2019 & 2021)
- Engaged 3400+ Participants

# October 2021 released the Draft Report

to provide a concrete starting place for discussions with agencies and potential partners

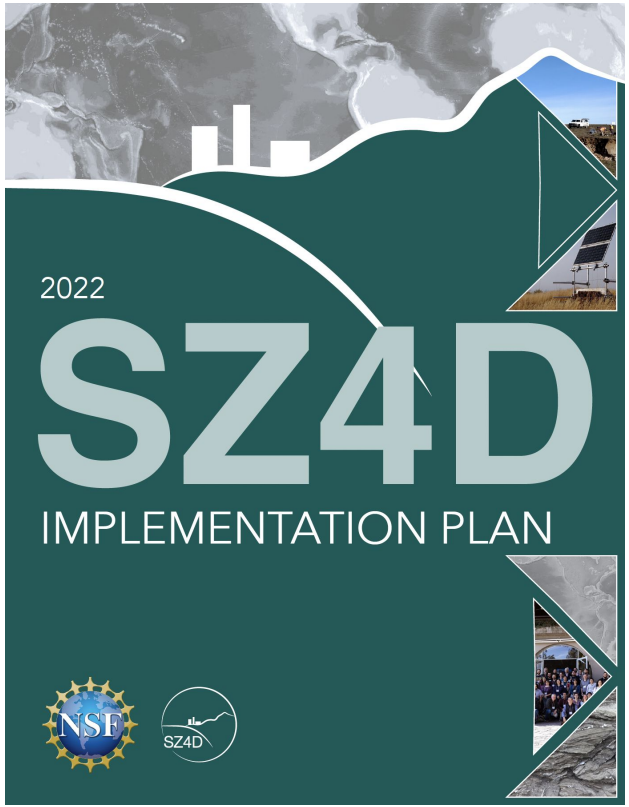
https://www.sz4d.org/projects-3



# Since the Draft Released… In-person resumes

- More townhalls
- Surveys
- Chile Workshop
- Potsdam Workshop
- CIG/CSDMS/MCS Joint Workshop
- Launched e-newsletter


# Implementation Report Released November 2022




## CONTENTS



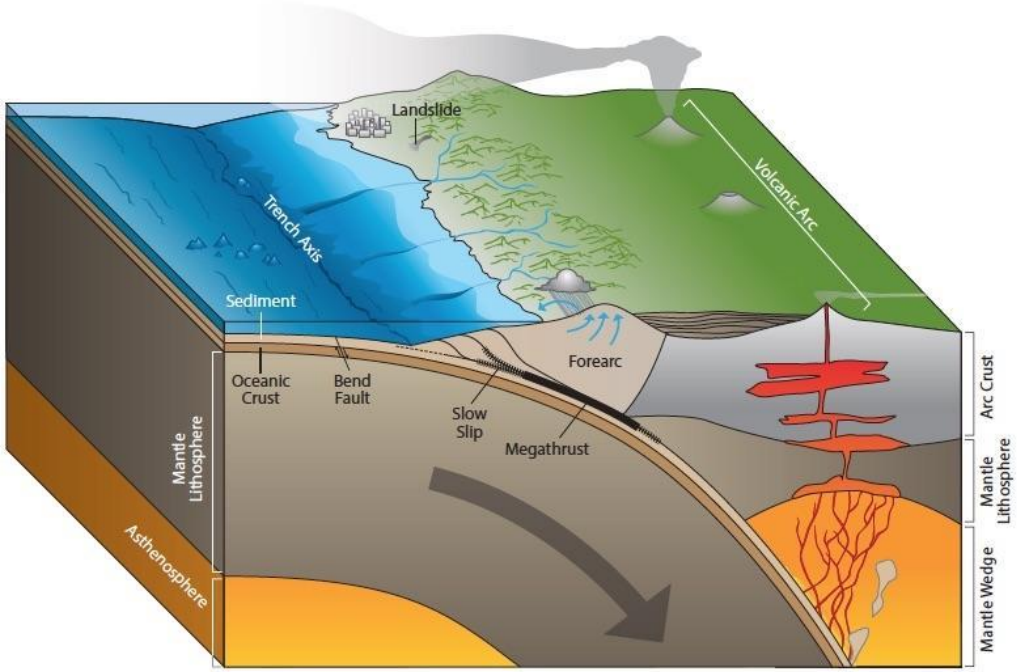
*Hilley, G. E. (ed.), Brodsky, E.E., Roman, D., Shillington, D. J., Brudzinski, M., Behn, M., Tobin, H. and the SZ4D RCN (2022). SZ4D Implementation Plan. Stanford Digital Repository. Available at https://purl.stanford.edu/hy589fc7561. https://doi.org/10.25740/hy589fc7561*

# What's in the report?

## The Importance of Studying Geohazards in Subduction Zones

**Societally**: The world's largest hazards converge

**Scientifically**: Natural laboratories need controlled conditions and systematic variables; Subduction zones have them along-strike




*SZ4D Implementation Report Fig S1-1*

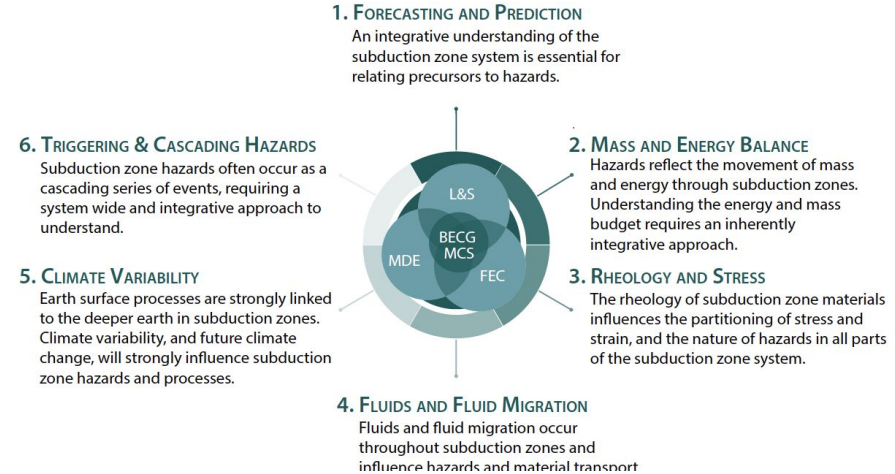
# A lot more on this later!

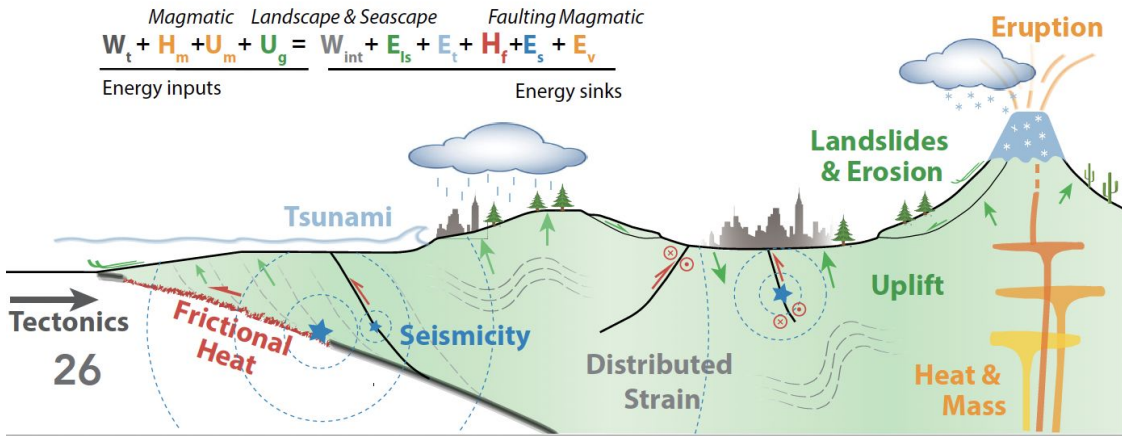
## The Science: Driving Questions

- When and where do large damaging earthquakes happen?
- How do trans-crustal processes initiate eruptions at arc volcanoes?
- How do events within Earth's atmosphere, hydrosphere, and solid Earth generate and transport sediment across subduction zone landscapes and seascapes?
- What fraction of a subduction zone's energy budget goes into building and shaping subduction zone land- and seascapes?
- How can we transform the mindset of our geoscience community to embrace education, outreach, accessibility, capacity building, diversity, equity, inclusion, and social justice as critical components for the success of the SZ4D and future scientific endeavors by the geosciences community?

# The power of an integrated geohazards approach

- ➔ Scientifically overlapping goals
- ➔ Practical overlapping needs



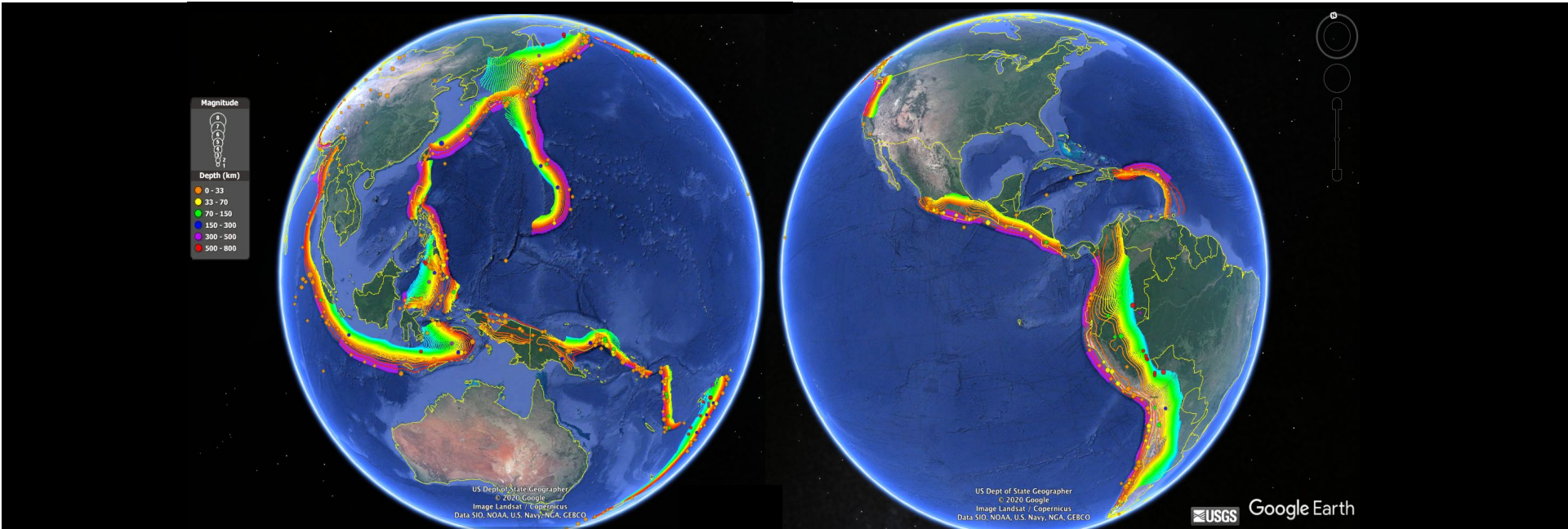




*SZ4D Implementation Report*
*Figs CST-1 & 2*

# Solving the Science Problems

What needs to be done?

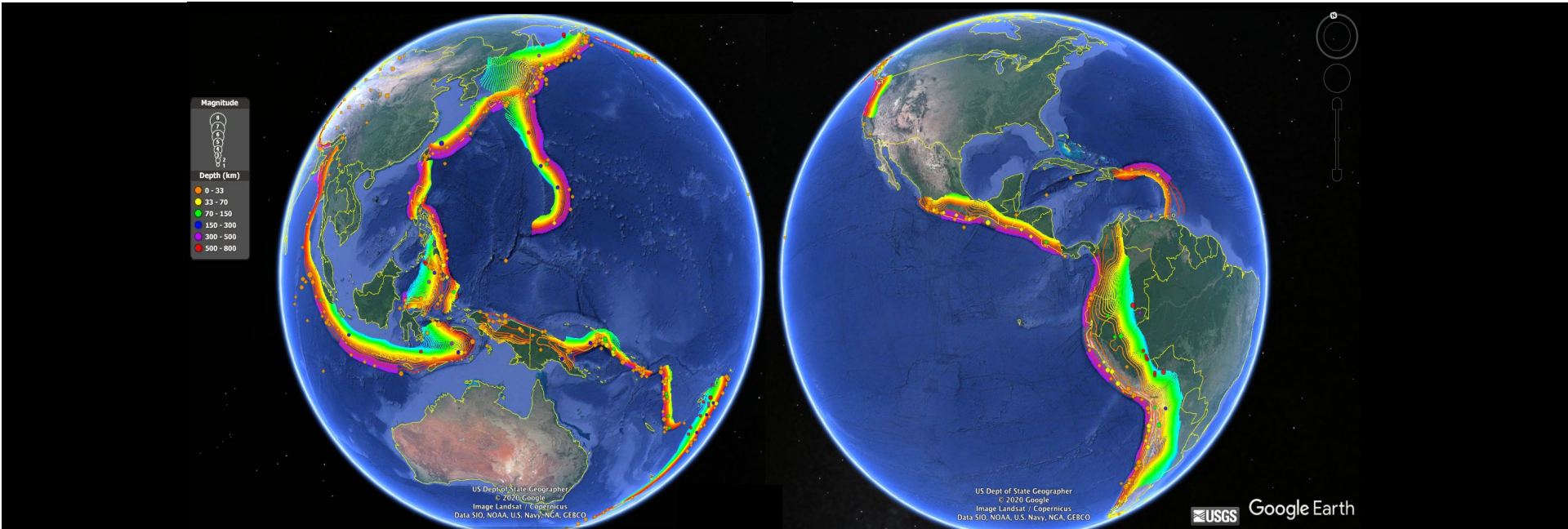
- Traceability Matrices



# Solving the Science Problems

What needs to be done?

- ➔ Traceability Matrices
- ➔ Notional Experiments



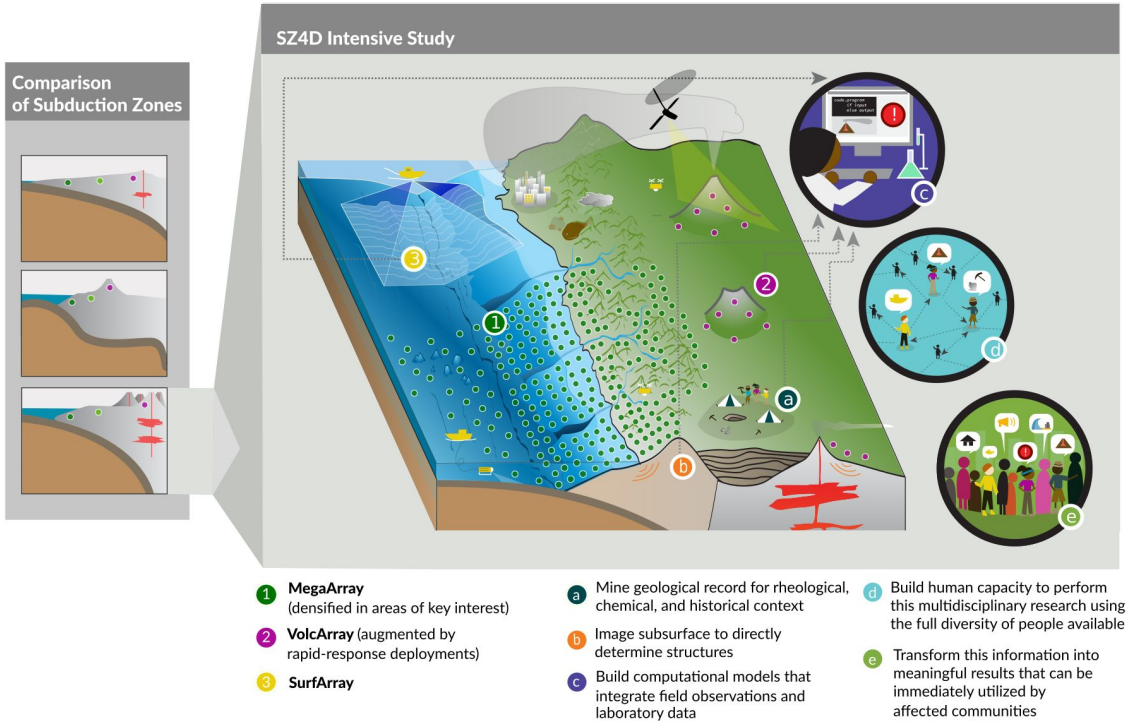
# Instrumentation and Activities

## Observational arrays

- MegaArray
- VolcArray
- SurfArray

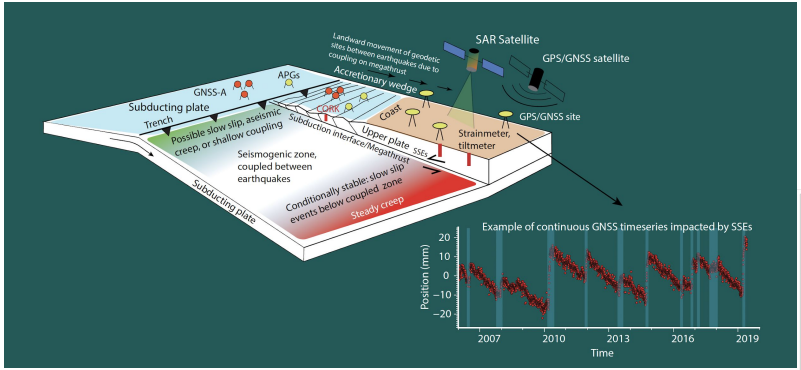
## Activities

- Analysis of data from arrays
- Other observations:
  - Field geology
  - Geophysical imaging
- Numerical modeling
- Lab experiments
- Training and outreach

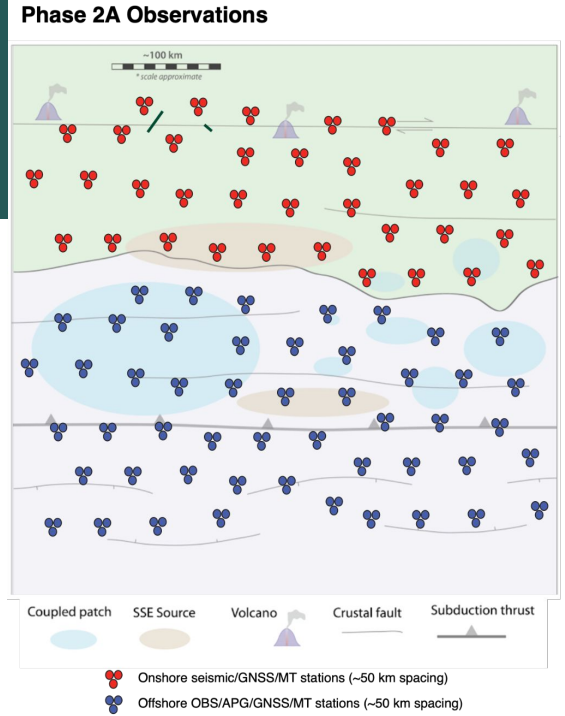


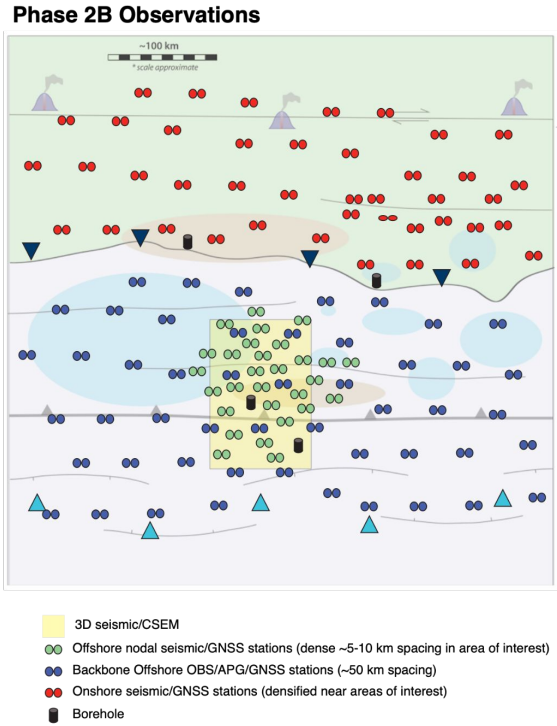

*SZ4D Implementation Report Fig. ES-1*

# MegaArray Schematically



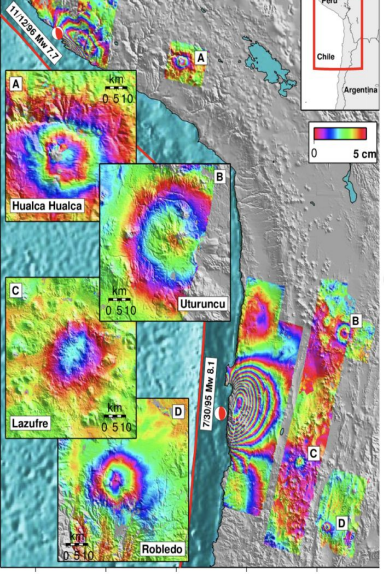

- Backbone imaging and characterization of subduction zone behavior
- Detailed, *long-term* characterization of areas of interest
  - Variations in coupling behavior




*Adaptation of SZ4D Implementation Report Fig. FEC-10*

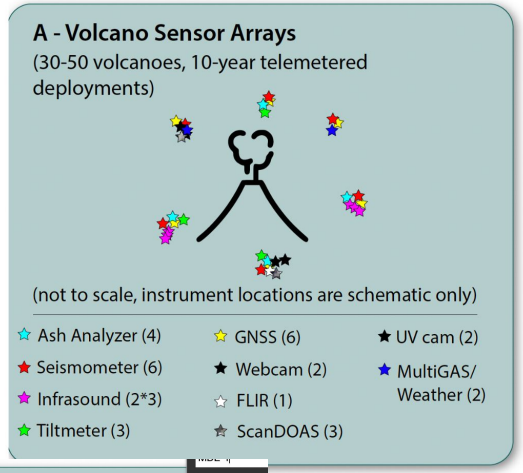
# VolcArray Schematically




Pritchard & Simons, 2002

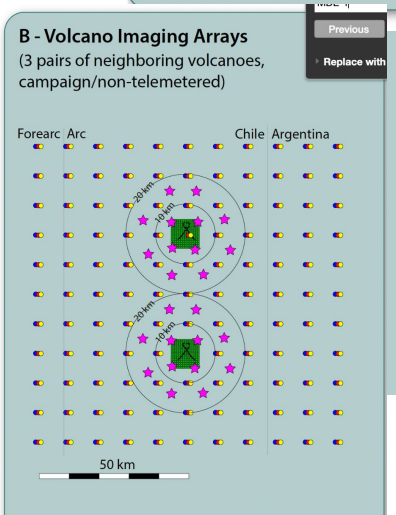
## Volcano Sensor Arrays

**Goal:** Observe evolution of monitored parameters in near-real time from background state through eruption




## Volcano Imaging Arrays

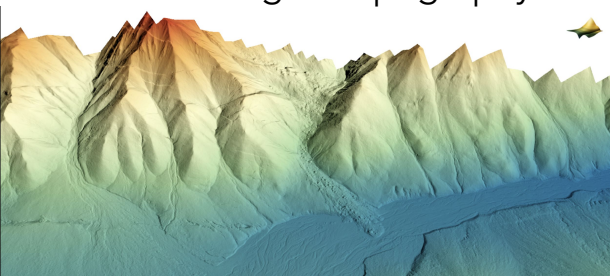
Goal: Quantify magma supply rate from the mantle, the geometry of the trans-crustal magmatic system, and eruptive histories



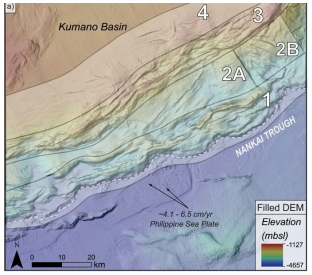

*SZ4D Implementation Report Fig. MDE-4*

# SurfArray: Topography, Bathymetry and Environmental Sensing

Remote sensing of topography



EarthScope Alaska Denali Totschunda LiDAR Project



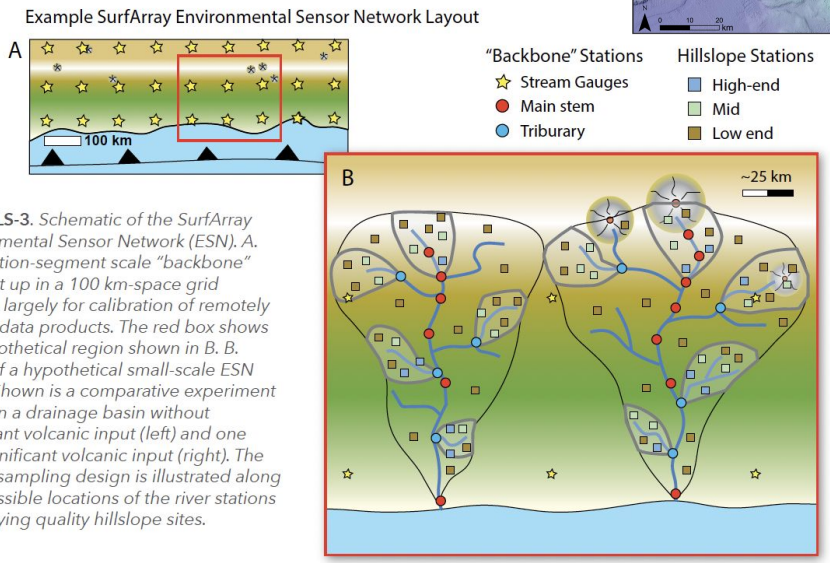
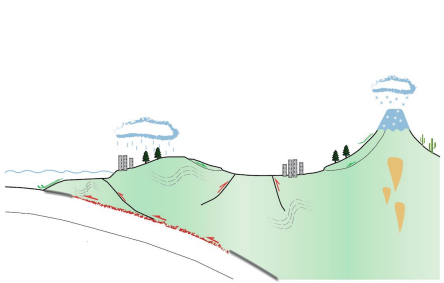




**Figure LS-3.** *Schematic of the SurfArray Environmental Sensor Network (ESN). A. Subduction-segment scale "backbone" array set up in a 100 km-space grid pattern, largely for calibration of remotely sensed data products. The red box shows the hypothetical region shown in B. B. Zoom of a hypothetical small-scale ESN setup. Shown is a comparative experiment between a drainage basin without significant volcanic input (left) and one with significant volcanic input (right). The nested sampling design is illustrated along with possible locations of the river stations and varying quality hillslope sites.*

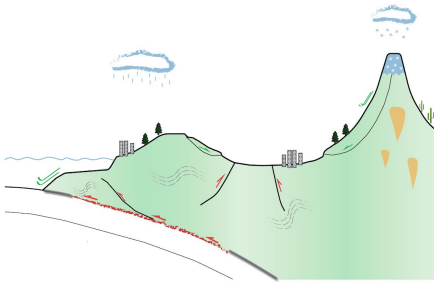
## Notional Experiment

Select **paired** subduction-zone segments that control for (as best as possible) non-targeted factor, while letting single factor vary.

Given domestic sites (Cascadia and Alaska), most plausible comparison would be between segments in Chile with similar climates but differing tectonic rates:



Slow Subduction
(e.g., Cascadia)



Fast Subduction
(e.g., central Chile)

*SZ4D Implementation Report Fig. LS-3*

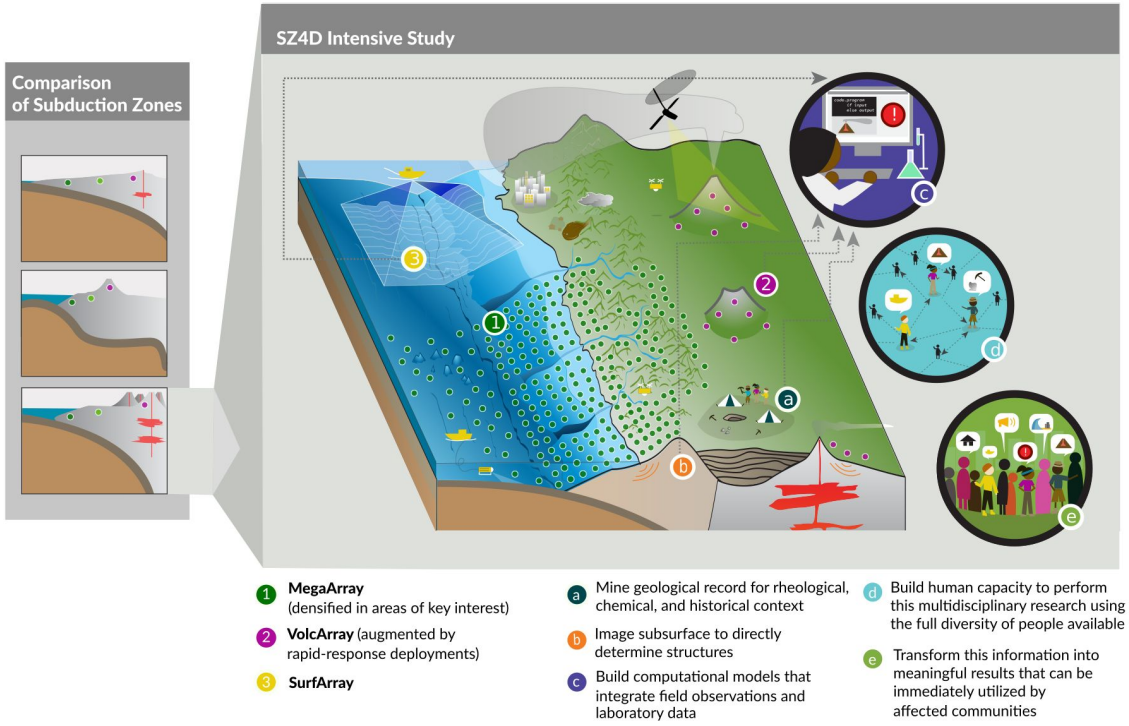
# Instrumentation and Activities

## Observational arrays

- MegaArray
- VolcArray
- SurfArray

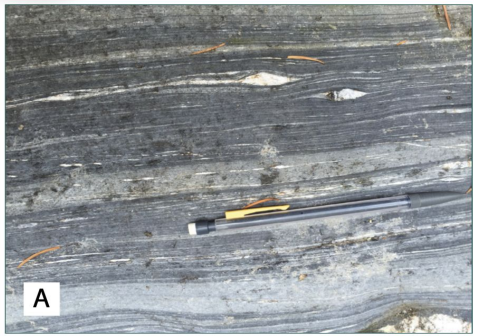
## Activities

- Analysis of data from arrays
- Other observations:
  - Field geology
  - Geophysical imaging
- Numerical modeling
- Lab experiments
- Training and outreach

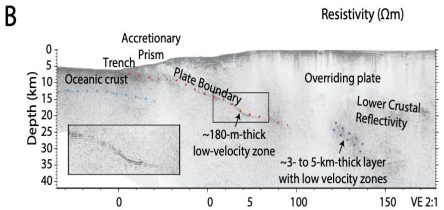



*SZ4D Implementation Report Fig. ES-1*

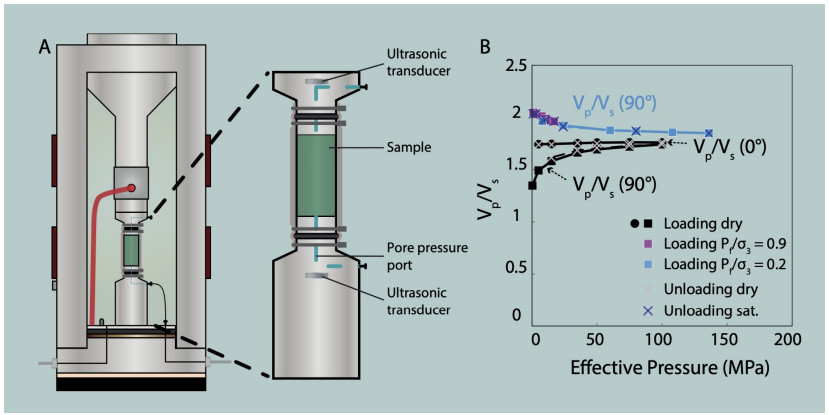
# Activities: Field geology, geophysical imaging, experiments and modelling



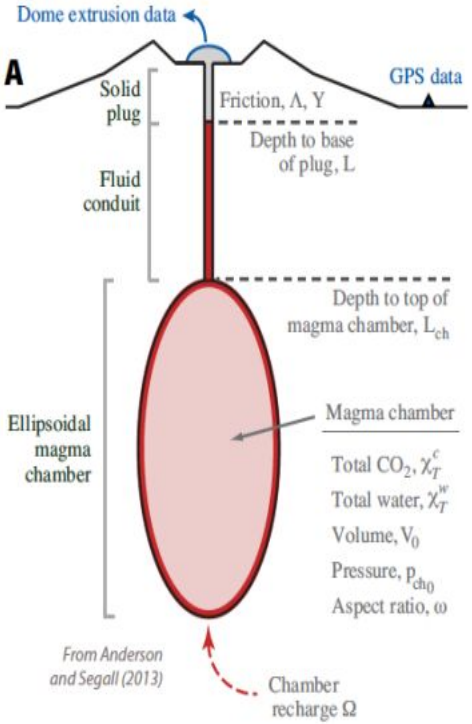

Kirkpatrick et al., 2021




Li et al., 2015




Fliedner & French, 2021




Anderson and Segall, 2013

*SZ4D Implementation Report Fig. FEC-6,7,8*

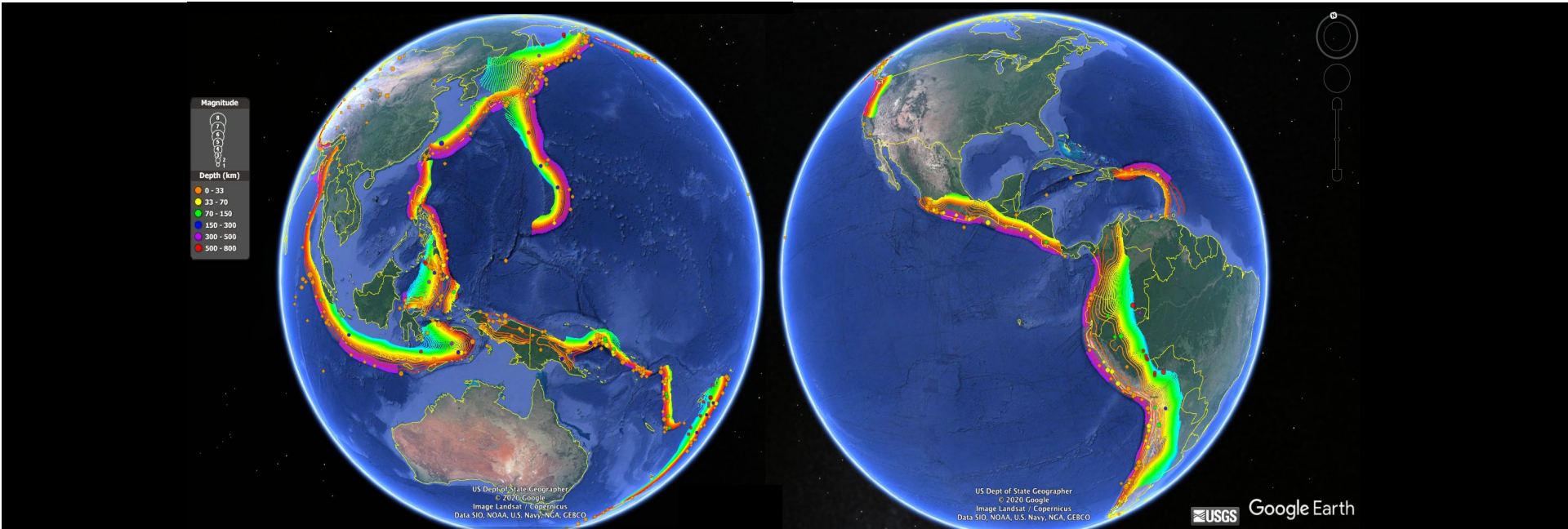
# Solving the Science Problems

What needs to be done?

- ➔ Traceability Matrices
- ➔ Notional Experiments

Where should it be done?

- ➔ Key requirements
- ➔ Subduction zone inventory



# Locations for study

Recommend:

- Complementary domestic and international sites

Regions of Special Interest:

- Chile

70% Instrumentation; 50% Activities

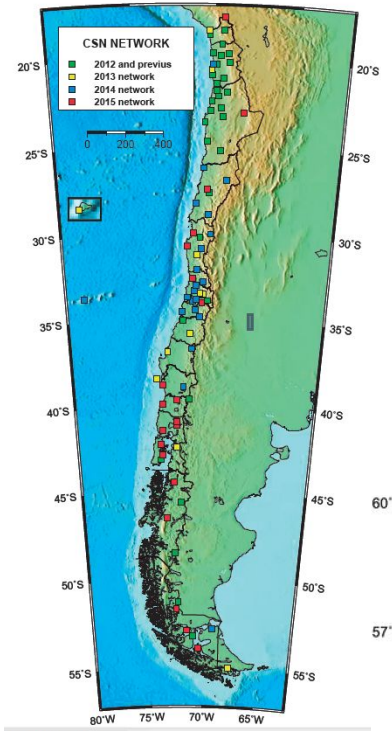
- Cascadia

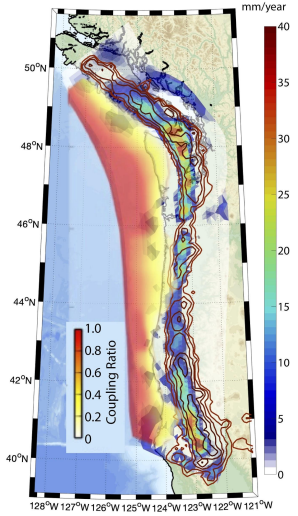
20% Instrumentation; 40% Activities

- Alaska

10% Instrumentation; 10% Activities

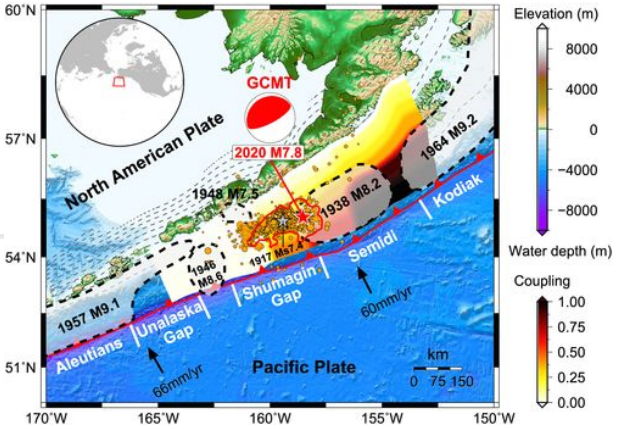
*SZ4D Implementation Report Table G-1*




Bartlow (2020)

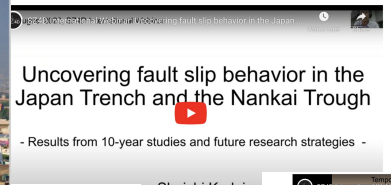
Liu et al. (2020)

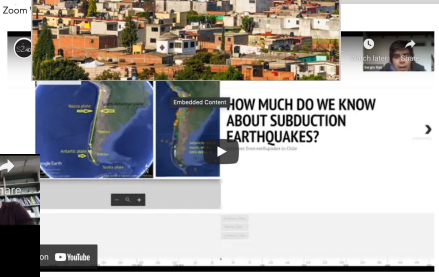


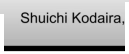
# What is the purpose of the effort?

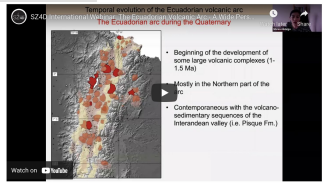
To instigate a large-scale program



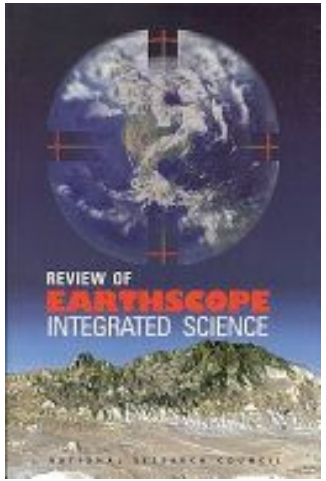



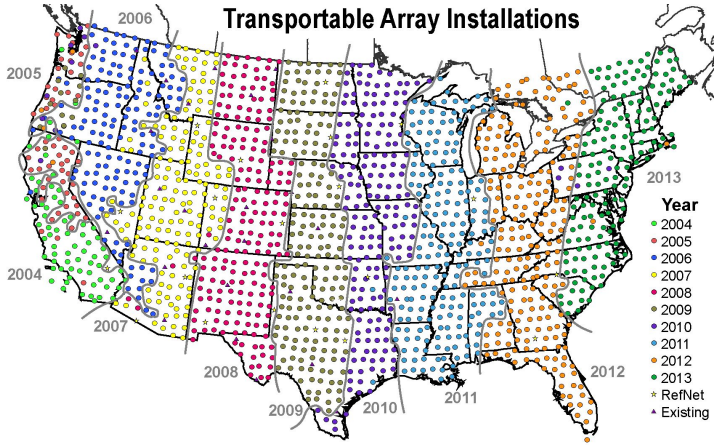

# How do large-scale programs in the US happen?

- Organize
- Write Reports
- Apply For Opportunities
- Coalesce within and across agencies

LTER NETWORK



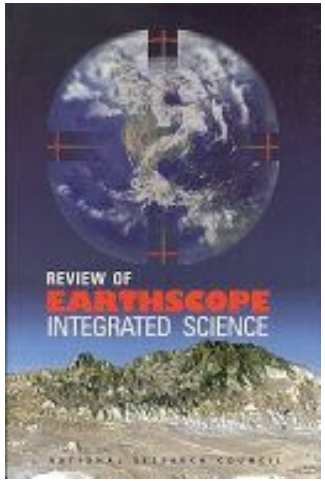

earth scope



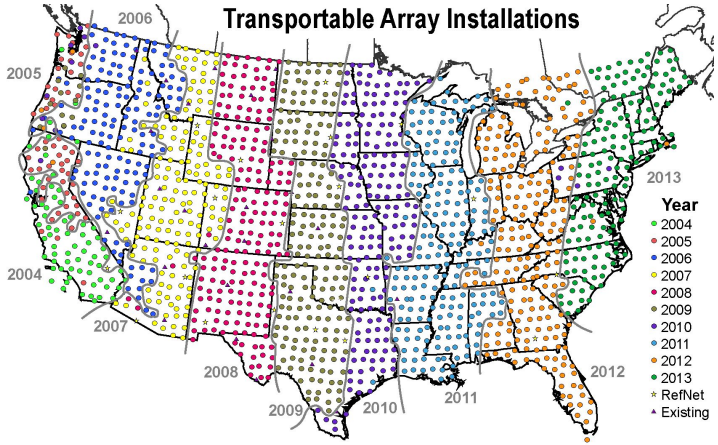

IRIS Incorporat

# How do large-scale programs in the US happen?

- Organize
- Write Reports
- ~~Apply For Opportunities~~ We are here
- Coalesce within and across agencies


earthscope




IRIS Incorporat

# The Collective Impact Conundrum

**Mechanisms to fund infrastructure**

MRI (Major Research Infrastructure)

MSRI (Mid-Scale Research Infrastructure)

MREFC (Major Research Equipment and Facility Construction)

**Mechanisms to fund science**

Core programs
Centers
- Geohazards
- STC (Science & Technology Centers)

Dedicated Science Program

**Mechanisms to fund collaboration**

RCN

Catalyst

Accelnet

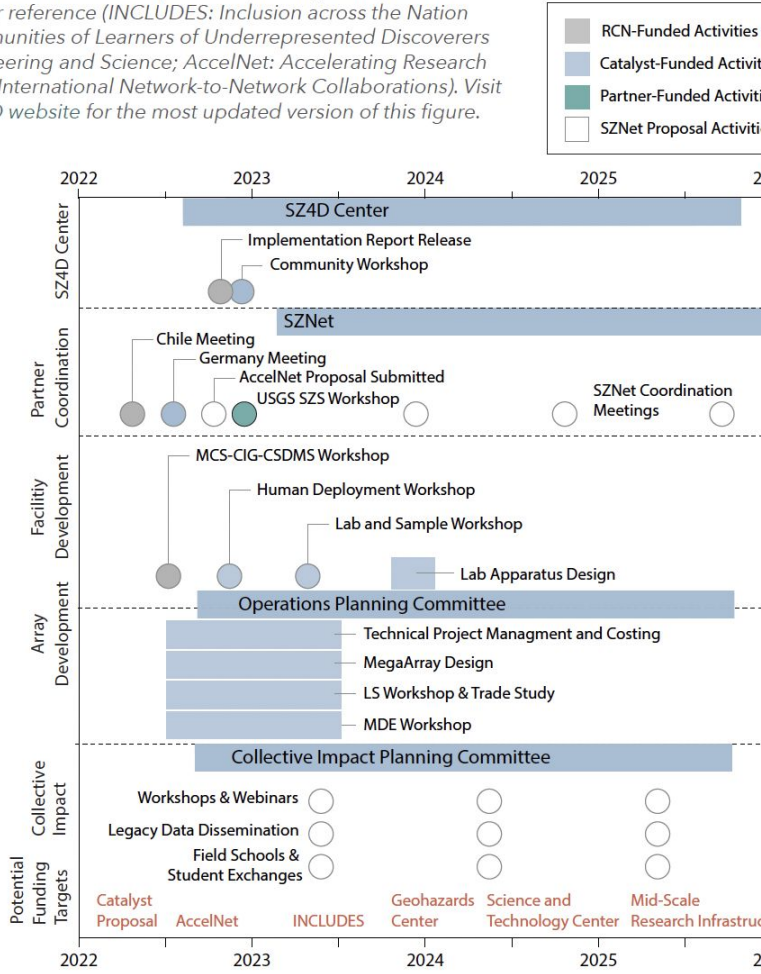
# The Catalyst Proposal: What SZ4D is currently funded to do

1) A staffed center that will organize the work and build equity and capacity in the Geosciences (BECG) following a Collective Impact model.

2) Technical project management to realistically evaluate costs and trade-offs of the instrumentation options.

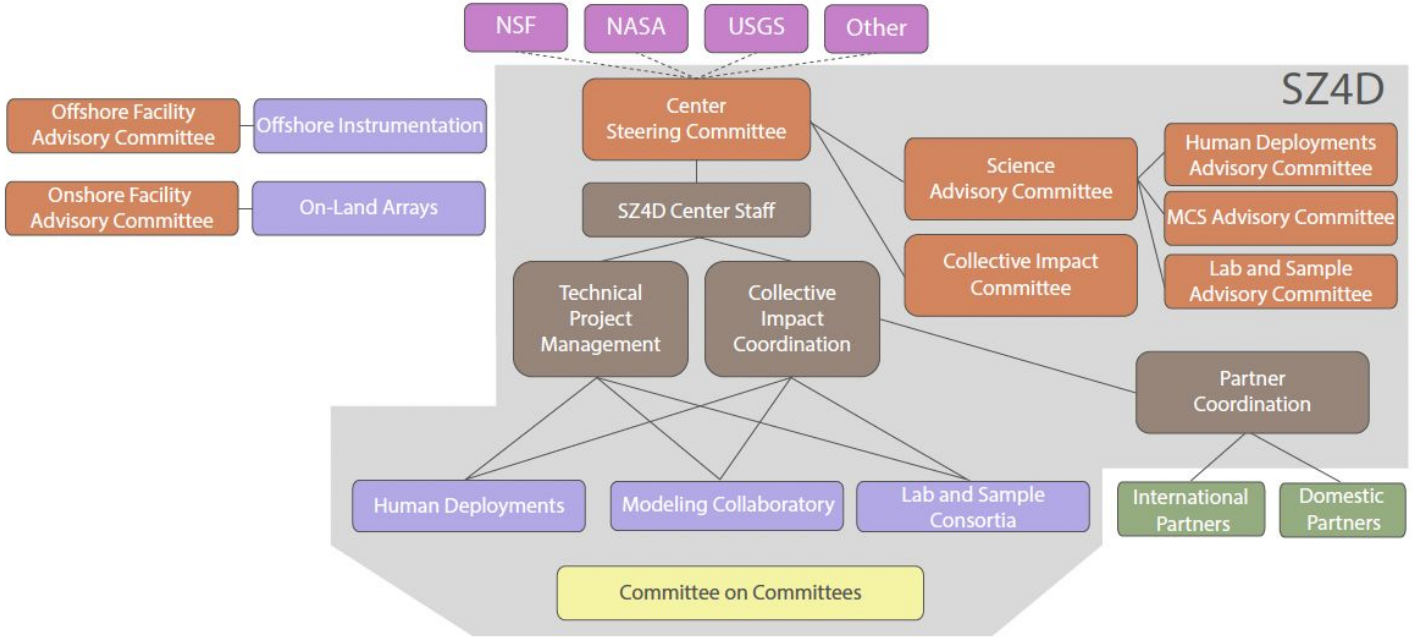
3) Preparatory work for the geological, modeling and laboratory facilities which include workshops and modest engineering design work.

**Figure P-1.** *Timeline of Phase 0 and 1 activities for SZ4D Implementation. Potentially relevant funding solicitations noted for reference (INCLUDES: Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science; AccelNet: Accelerating Research through International Network-to-Network Collaborations). Visit the SZ4D website for the most updated version of this figure.*



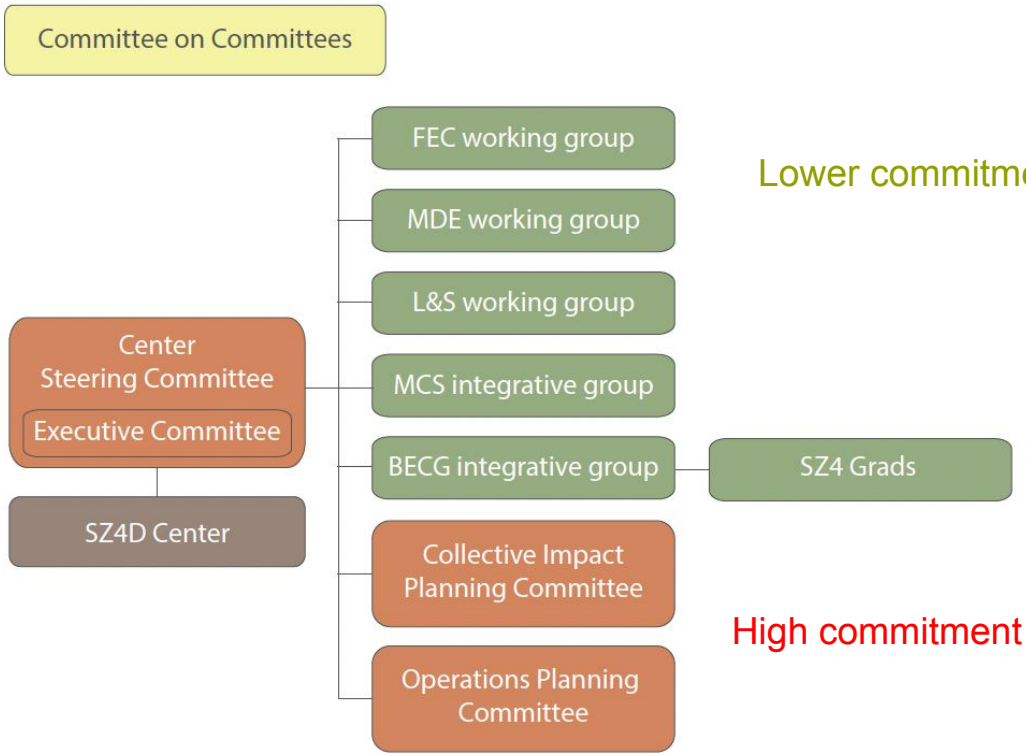

*SZ4D Implementation Report*
*Fig. P-1*

# Future SZ4D Structure




*SZ4D Implementation Report*
*Fig. SG-2*

# SZ4D Now: Transition Structure




Announced May 2022

>200 Volunteers

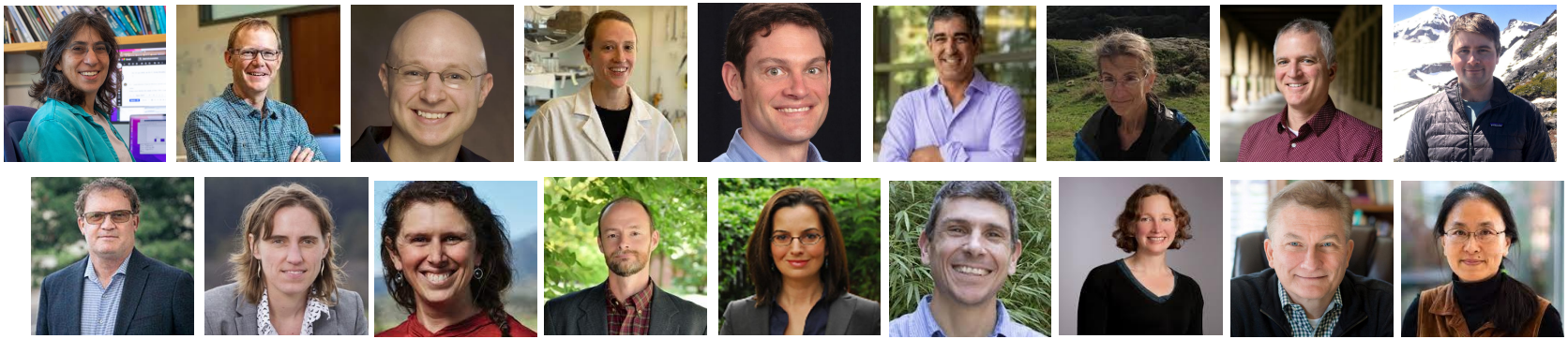
Launched new committees Fall 2022

*SZ4D Implementation Report*
*Figs SG-1*

# Current Steering Committee Members

Goal: 3 year staggered terms

KEEP YOUR EYES OUT FOR CALL IN THE SPRING



# Proposal Pending: SZNet

| PLANNED ACTIVITIES | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 |
|---|---|---|---|---|
| **Overall Coordination** | | | | |
| In Person Coordination Meetings | X | | X | |
| Quarterly Virtual Coordination Meetings | X | X | X | X |
| **Mission 1: Compare Observations of Subduction Zones** | | | | |
| Topical In Person Workshops | Legacy Data | | Geohazard Predictability and Prediction | |
| International Virtual Webinars | X | X | X | X |
| Legacy Data Ingenstion & Data Portal | X | X | X | X |
| **Mission 2: Cooperation to Consistently Instrument Critical Subduction Zones** | | | | |
| Mission 2 Topical In Person Workshops | | Ocean Floor<br>Lab Capabilities | | Geological Field Data |
| **Mission 3: Develop & Nurture International & Diverse Early Career Scientists** | | | | |
| Chilean Field School | X | | | |
| Cascadia Field School | | X | | |
| Chillean Pilot Project | | | X | |
| Cascadia Pilot Project | | | | X |
| Student Exchanges | X | X | X | X |
| **Milestones** | | | | |
| | Launch of Coordinating Committee & Initiation of Activities | Launch of Data Portal | Execution of Major in-person Workshop that aligns plans | Submission of coordinated deployment proposals |

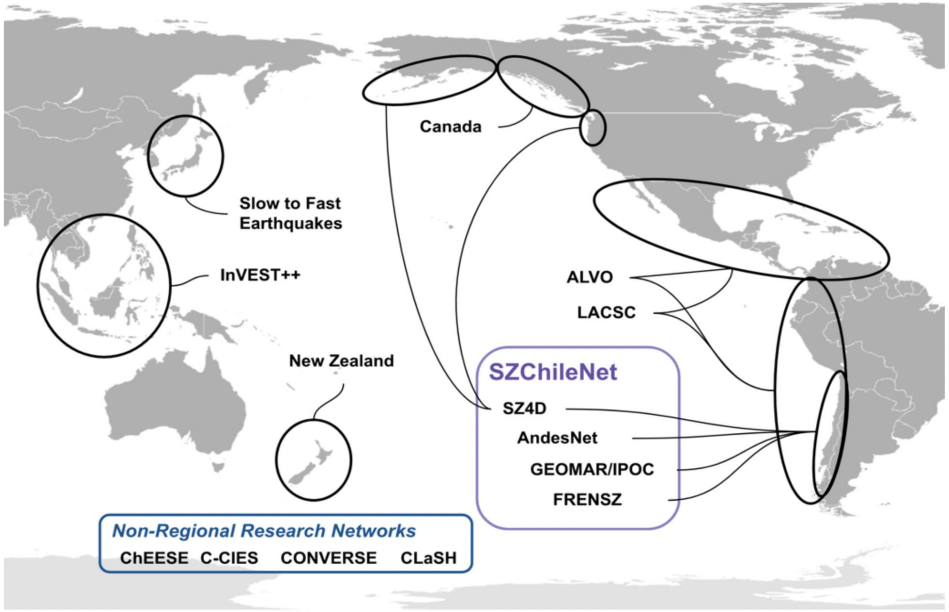



*Figure 4. Geographic distribution of focus areas of partner networks. Some networks, such as ChEESE, C-CIES, CONVERSE and CLaSH, do not have a geographic focus.*

# The Road Ahead

Phase 0

Done!

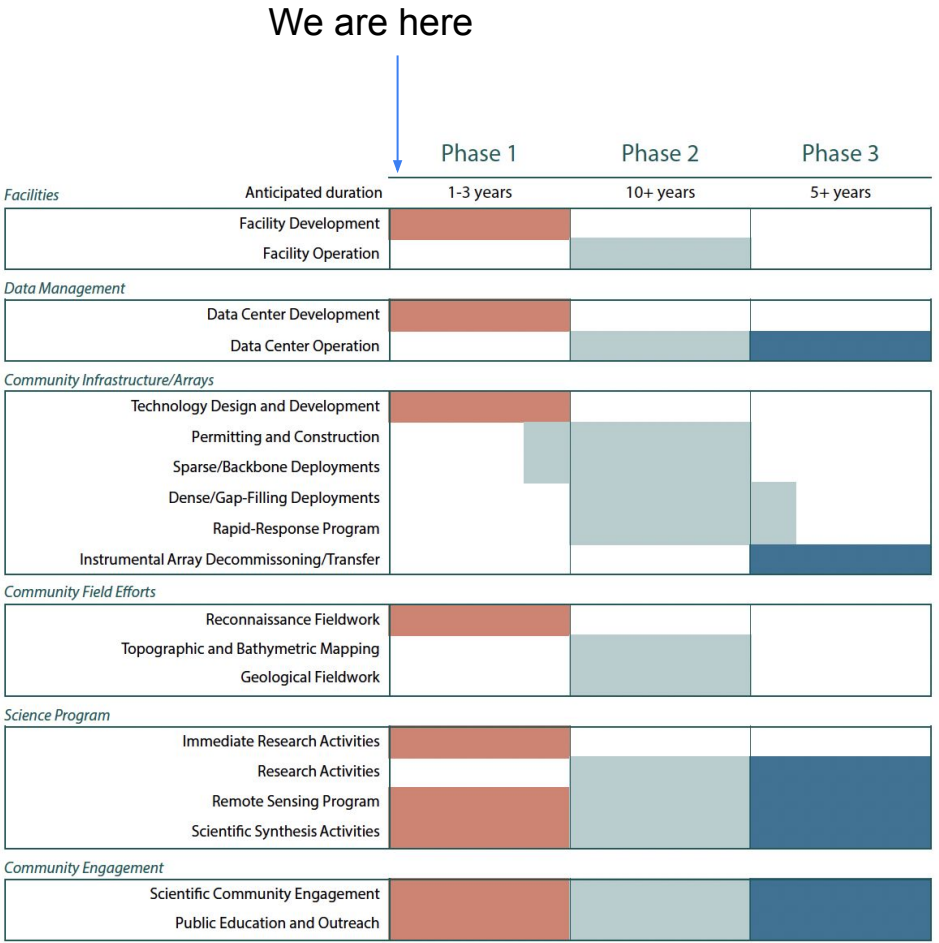



**Figure P-2.** *Timeline of major activities in SZ4D Phases 1-3. See this chapter and chapters 3 and 4 for additional details.*

*SZ4D Implementation Report*
*Fig. P-2*

# Goals for this meeting

- Share subduction zone science, networking with other subduction zone scientists
- Inform the community about SZ4D efforts so far
- Community feedback on how to move forward building SZ4D

# Meeting Agenda Overview

## Day 1

### Intro to SZ4D Science Plan, Sites, and Activities

BREAKOUT 1: SZ4D priorities for observations, models, and experiments

## Day 2

### Crosscutting and Translational Science, Emerging Methodologies and Technology

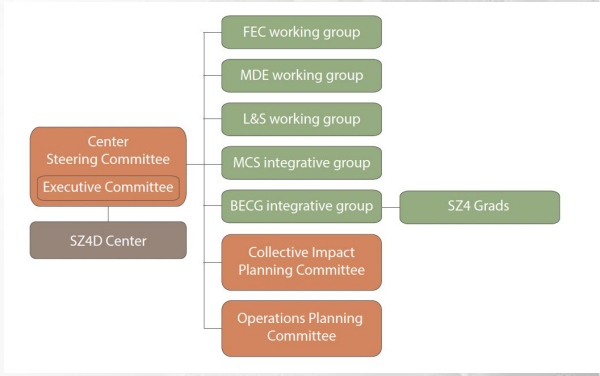
BREAKOUT 2: Crosscutting and translational science

## Day 3

### Collaboration and Funding Strategies

BREAKOUT 3: Next steps:  planning activities, future proposals, and community engagement

# Meeting Agenda Overview




## Day 1

### Intro to SZ4D Science Plan, Sites, and Activities

BREAKOUT 1: SZ4D priorities for observations, models, and experiments

## Day 2

### Crosscutting and Translational Science, Emerging Methodologies and Technology

BREAKOUT 2: Crosscutting and translational science

## Day 3

### Collaboration and Funding Strategies

BREAKOUT 3: Next steps:  planning activities, future proposals, and community engagement

# Meeting Agenda Overview


## Day 1

### Intro to SZ4D Science Plan, Sites, and Activities

BREAKOUT 1: SZ4D priorities for observations, models, and experimen

**Working Groups**

## Day 2

### Crosscutting and Translational Science, Emerging Methodologies and Technology

BREAKOUT 2: Crosscutting and translational science

## Day 3

### Collaboration and Funding Strategies

BREAKOUT 3: Next steps:  planning activities, future proposals, and community engagement

# Meeting Agenda Overview


## Day 1

### Intro to SZ4D Science Plan, Sites, and Activities

BREAKOUT 1: SZ4D priorities for observations, models, and experiments → **Working Groups**

## Day 2

### Crosscutting and Translational Science, Emerging Methodologies and Technology

BREAKOUT 2: Crosscutting and translational science → **Collective Impact Committee**

## Day 3

### Collaboration and Funding Strategies

BREAKOUT 3: Next steps:  planning activities, future proposals, and community engagement

# Meeting Agenda Overview


## Day 1

### Intro to SZ4D Science Plan, Sites, and Activities

BREAKOUT 1: SZ4D priorities for observations, models, and experiments → **Working Groups**

## Day 2

### Crosscutting and Translational Science, Emerging Methodologies and Technology

BREAKOUT 2: Crosscutting and translational science → **Collective Impact Committee**

## Day 3

### Collaboration and Funding Strategies → **Operational Planning Committee**

BREAKOUT 3: Next steps:  planning activities, future proposals, and community engagement

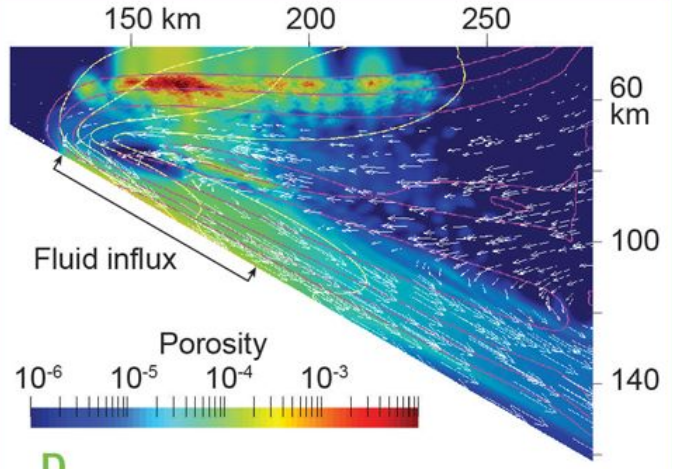
# END

# EXTRA STUFF

# Experiments and Numerical Modeling

Fliedner & French, 2021

Anderson and Segall




Cerpa et al. (2017)

# MegaArray Geographic Needs

When and where do large damaging earthquakes happen?

Question 1: How are subduction system evolution and structure regulated by the upper plate, outer rise, and slab faulting and associated deformation?

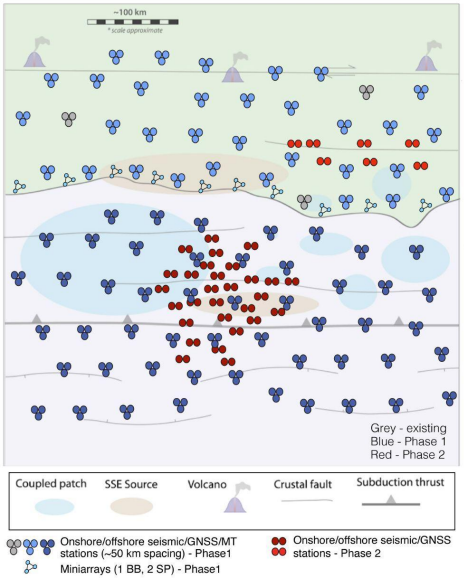
Question 2: What controls the speed and mode of slip in space and time?

Question 3: Does distinctive precursory slip or distinctive foreshocks exist before earthquakes?
What causes either foreshocks or precursory slip?

Question 4: Under what physical conditions and by what processes will rapid slip during an earthquake displace tthe seafloor and increase the likelihood of generating a significant tsunami?

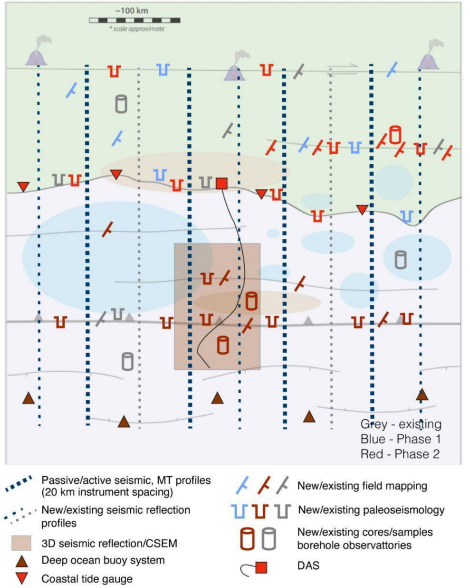
- Known seismogenic zone spanning event
- Known large and active faults in overriding/downgoing plate
- High rate of seismicity
- High convergence rate
- Slow slip events
- Areas of high and low coupling
- Late in seismic cycle
- Known tsunamigenic event
- Preservation of fault slip/tsunami history
- Generalizable

**MegaArray**




+

**Geological & Geophysical Studies**



# VolcArray Geographic Needs

**Q1**: Eruption initiation

## Sparse Sensor Arrays

**Scope:**

- 30 Restless Volcanoes
- probability of ≧0.8 for capturing 10 eruptions in a 10-year period

**Ideal Locations:**

- Full range of magma type, degassing and deformation modes, unrest and eruptive style, and subduction and upper plate parameters
- Restless

**Q2**: Magma supply
**Q3**: Depth & distribution

## Dense Imaging Arrays

**Scope:**

- 3 different arcs:
  *slow, medium, fast convergence*
- 10 volcanoes, pair in each arc

**Ideal Locations:**

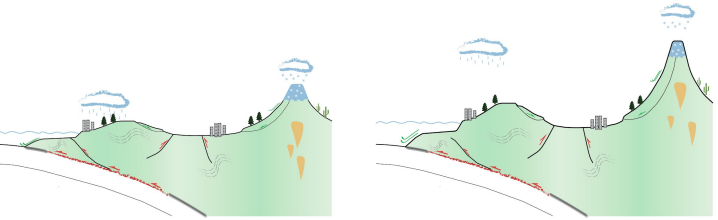
- Range of Convergence Rates
- Simple crustal tectonics/structure (representative)
- Excellent Exposures/Access

# SurfArray Geographic Needs

## Notional Experiment

Select **paired** subduction-zone segments that control for (as best as possible) non-targeted factor, while letting single factor vary.

Given domestic sites (Cascadia and Alaska), most plausible comparison would be between segments in Chile with similar climates but differing tectonic rates:



**Slow Subduction (e.g., Cascadia)**

**Fast Subduction (e.g., central Chile)**

## Basic Data Needs

- High-resolution topography and bathymetry
- Geochronology
  - Cosmogenic radionuclides
  - Low-temperature thermochronology
- High quality geological maps
- Repeat optical and topographic surveys.
- Geodetic and paleo-geodetic measurements
- Environmental sensor networks (e.g. precipitation, soil moisture, discharge).
- Sediment sourcing and flux

# The Road Ahead

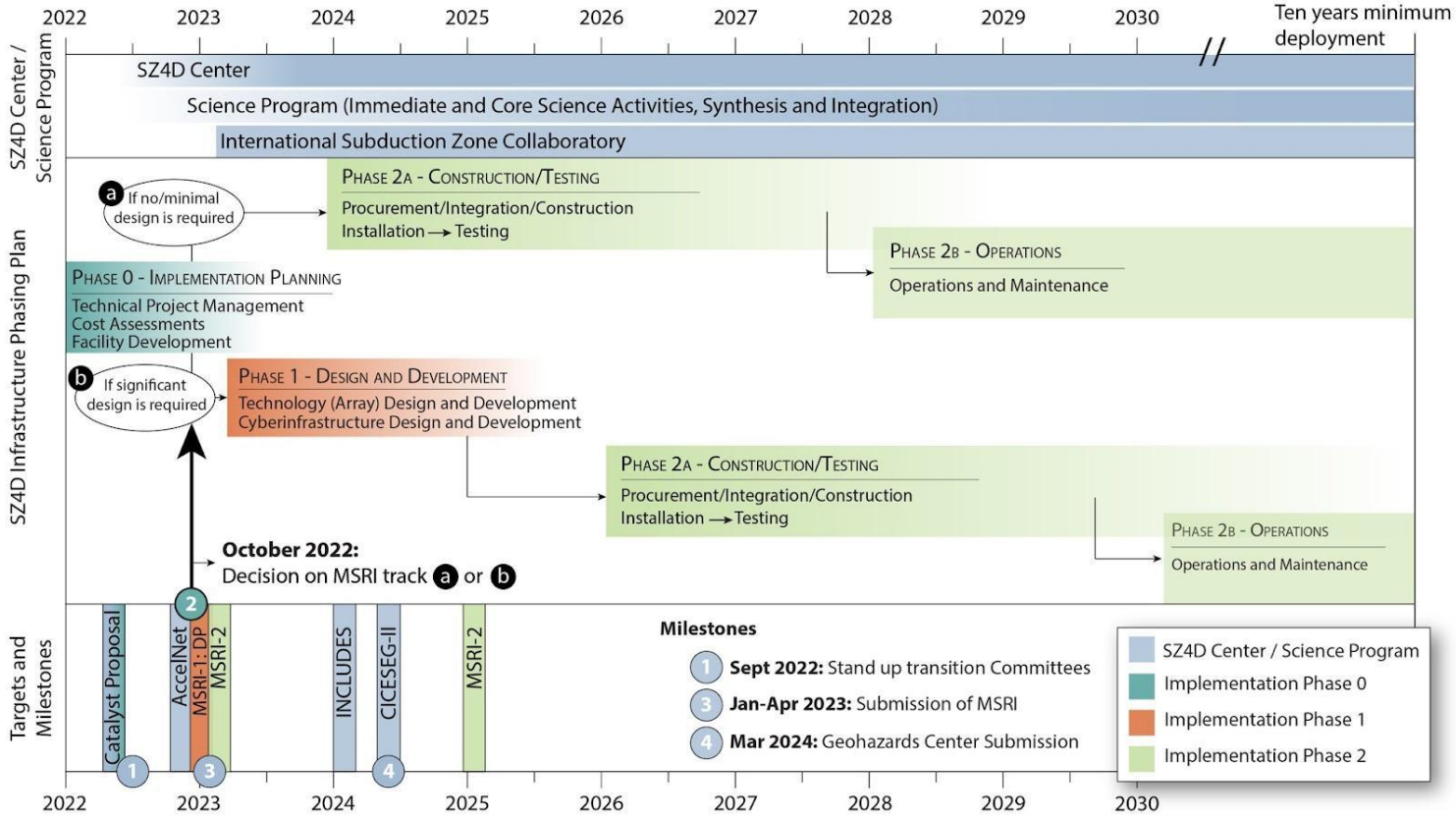
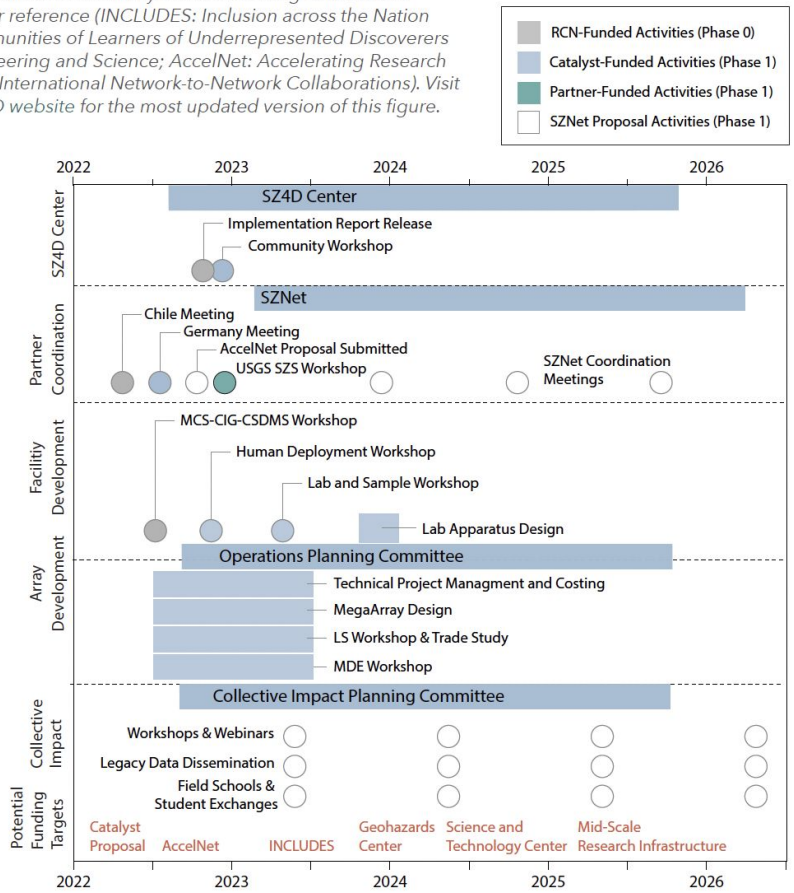


**Figure P-1.** *Timeline of Phase 0 and 1 activities for SZ4D Implementation. Potentially relevant funding solicitations noted for reference (INCLUDES: Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science; AccelNet: Accelerating Research through International Network-to-Network Collaborations). Visit the SZ4D website for the most updated version of this figure.*



# Members rotating off from Steering Committee

Roland Burgmann
Andy Frassetto
Melodie French
Sean Gallen
Matt Haney
Chris Huber
Christy Till
Harold Tobin

## Off to another SZ4D Commitment
## THANK YOU!

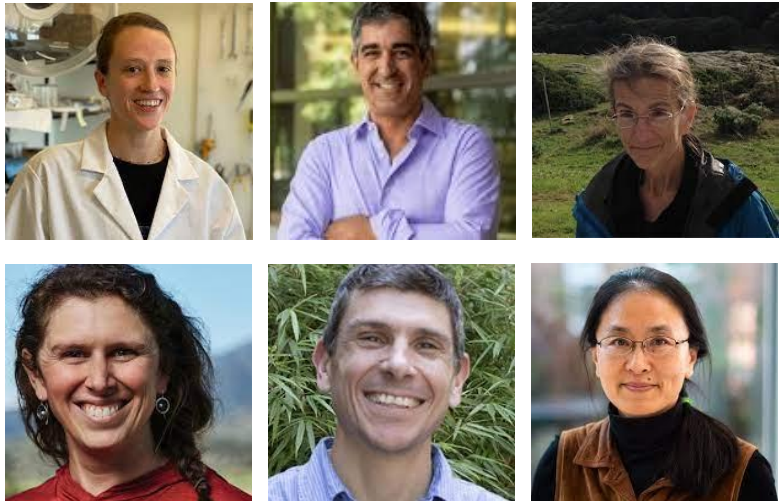
# Members rotating off from Steering Committee

Roland Burgmann
Andy Frassetto
Melodie French
Sean Gallen
Matt Haney
Chris Huber
Christy Till
Harold Tobin

## Off to another SZ4D Commitment
## THANK YOU!

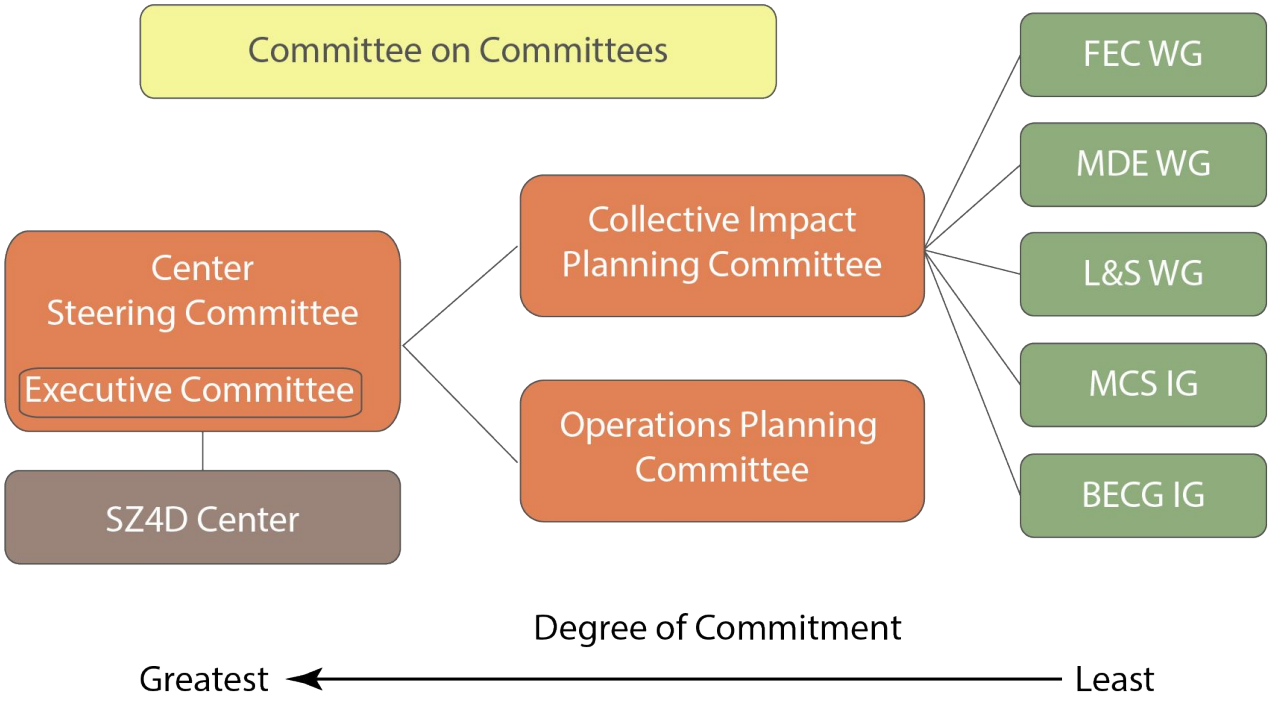
# New Members on Center Steering Committee

Cailey Condit
Noah Finnegan
Joan Gomberg
Madison Myers
Demian Saffer
Wenlu Zhu



WELCOME!

# Who will we be soon?



# New Collective Impact Committee Roster

Mike Brudzinski (Chair)

Harold Tobin

William Frank

Helen Janiszwekski

Philipp Ruprecht

Ikukuo Wada

Joe Dufek

Magali Billen

Michele Cooke

Danielle Sumy

Jeff Rubin

Anne-Marie Nunez

Maria Contreras

Liz Westby

Vernon Morris

# New Operational Planning Committee Rosters

Doug Wiens (Chair)

Harold Tobin

Juan-Carlos Baez

Lindsay Worthington

Alice Gabriel

Paul Bodin

Christine Regalla

Melodie French

Thorsten Becker

Stella Moreiras

Andy Newman

Martin Reich

Daniel Melnick

Loreta Cordova

Zack Spica

Chad Trabant

Dave Mencin

Chris Crosby

## Day 1 Focus: The SZ4D Report

---

12:00 | Lunch

1:00 | Introduction, discussion of meeting goals, current status of SZ4D (*Brodsky)*
Zoom opens for this session only (1-3 PM)
https://ucsc.zoom.us/j/97990331439?pwd=MC96cStUaHZ5QVBjOTlFalRMemtqUT09
Meeting ID: 979 9033 1439
Passcode: SZ4D

1:30 | Agency comments (NSF/USGS)

2:00 | State-of-the Report overview and discussion
Presentation of chapters with major revisions:

- Intro (*Brodsky*)
- BECG (*Brudzinski*)
- Cross-cutting (*Kent*)
- Geography (*Shillington*)
- Governance (*Hilley*)

—------ Zoom closes —-------

3:00 | Coffee break

3:30 | Breakout 1 discussion:
(1) Does the report accurately represent our work and recommendations?
(2) What remains to be done after the report is finalized?

4:30 | Breakout report back and discussion - *Donna Shillington moderates*

*Provisional vote on report acceptance (pending any final changes from discussion)*

5:30 | Letters to future Committees

6:30 | Dinner - Seymour Marine Discovery Center

## Day 2 Moving Forward

---

8:30 | Collective Impact Committee Charge and Discussion (*Brudzinski*)

9:00 | BECG and SZ4Grads Updates

9:30 | Operational Committee Charge and Discussion
- Human Deployment update (*Regalla and Kent*)
- Experimental update (*French*)
- Modeling update (*Dunham*)

10:30 | Coffee break

11:00 | Chile
*The SZ4D report anticipates ~70% of instrumentation and ~50% of activities in Chile. With this guidance, we will discuss ideas for implementation.*
- Overview Presentation (Science Questions and Geographic Opportunities) [Lay, Yanites, Haney]
- Inventory of existing instrumentation [Aderhold]
- Activity Concepts [Morell,Karlstrom]
- MultiArray & Offshore Concepts [Hilley, Shillington, Barry]

Discussion

12:30 | Lunch
(New and Old Steering Committees lunch together)

1:30 | Breakout: Chile Concepts:
- Is Collocation Possible or Desirable?
- List design needs and sketch implementation plans

3:00 | Coffee break

3:30 | Report Back

4:15 | Domestic Efforts
*The SZ4D report anticipates ~20% of instrumentation and ~40% of activities in Cascadia as well as ~10% instrumentation and 10% activities in Alaska. With this guidance, we will discuss ideas for implementation.*
- Cascadia Overview and Current Initiatives [Newman, Tobin,Kent]
- Alaska Overview and Current Initiatives [Haney]
- Activity Concepts [Gomberg, Velasco]
- Instrumentation Concepts [Abers, Gallen]

Discussion: What can SZ4D contribute?

## Day 3 Focus: The future

---

8:30 | Report back

9:30 | Other international and domestic partners

10:00 | Coffee break

10:30 | Self-assigned proposal groups for input on opportunities and needs.
Known Opportunities: Accelnet, MSRI
Needs: Modeling, Experiment, Human Deployment
Other?

12:00 | Lunch

1:00 | Report back and proposal planning

2:00 | Engaging the community

- Community meeting key agenda items
- Newsletter ideas
- Webinars ideas
- Other means of engagement

# SZ4D Code of conduct

***The SZ4D leadership team is committed to fostering the exchange of ideas and is dedicated to maintaining a safe, productive, and welcoming environment for all participants, no matter their function or their background.***

This meeting is sponsored under a grant from NSF to the University of Washington. University policy prohibits discrimination because of race, color, creed, religion, national origin, citizenship, sex, pregnancy, age, marital status, sexual orientation, gender identity or expression, genetic information, disability, or veteran status. Any violation of this anti-discrimation policy is necessarily reported to the university for investigation.

All participants are required to abide by the SZ4D Code of Conduct. Reports of any potential violation of the Code of Conduct should be made to the SZ4D Program Manager Anaïs Férot (aferot@ucsc.edu) and will be routed to authorities as appropriate including legal authorities, home universities, and the National Science Foundation.

# SZ4D Code of conduct

**EXPECTED BEHAVIOR**

- Treat all participants with respect, valuing a diversity of views and opinions.
- Be considerate, respectful, and collaborative.
- Acknowledge the contributions of others.
- Do not make audio/visual recordings of presentations unless permission is specifically approved

**UNACCEPTABLE BEHAVIOR** in all environments includes but is not limited to:

- Bullying, harassment, intimidation, or discrimination in in any form.
- Physical or verbal abuse by anyone to anyone.
- Sexual attention or advances, or inappropriate sexual references.
- Other conduct which could reasonably be considered inappropriate in a professional setting.

**CONSEQUENCES**

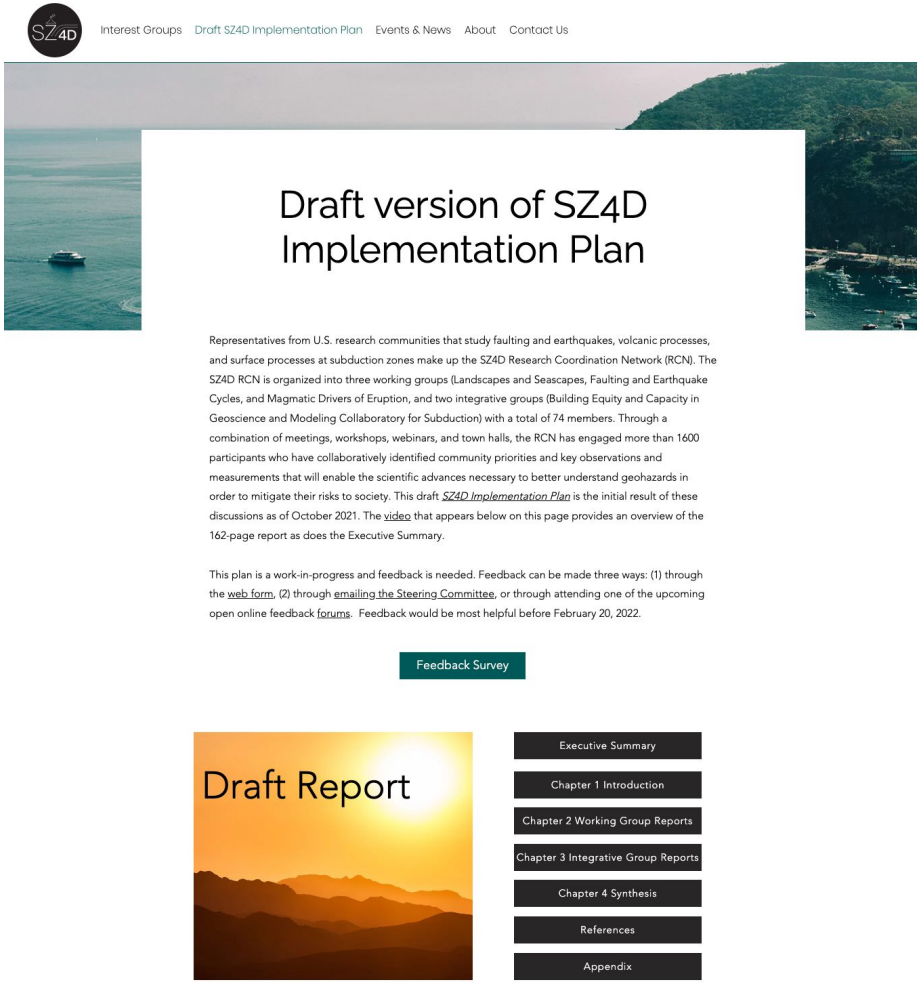
- Anyone requested to stop unacceptable behavior is expected to comply immediately.
- SZ4D leadership (or their designee) or security/local police may take action deemed necessary and appropriate, including:
    - immediate removal from the event,
    - prohibit attendance at a future event, online gathering, conference, workshop or field project.
    - send notification of an infraction to a Home Institution or Employer and/or NSF.

# SZ4D Report Intro

# The Draft Report

Released Oct. 2021 to provide a concrete starting place for discussions with agencies and potential partners

https://www.sz4d.org/projects-3



# The Draft Report

What does it say?

**TABLE OF CONTENTS**

# Phased Implementation

- **Phase 0**

RCN

- **Phase 1**

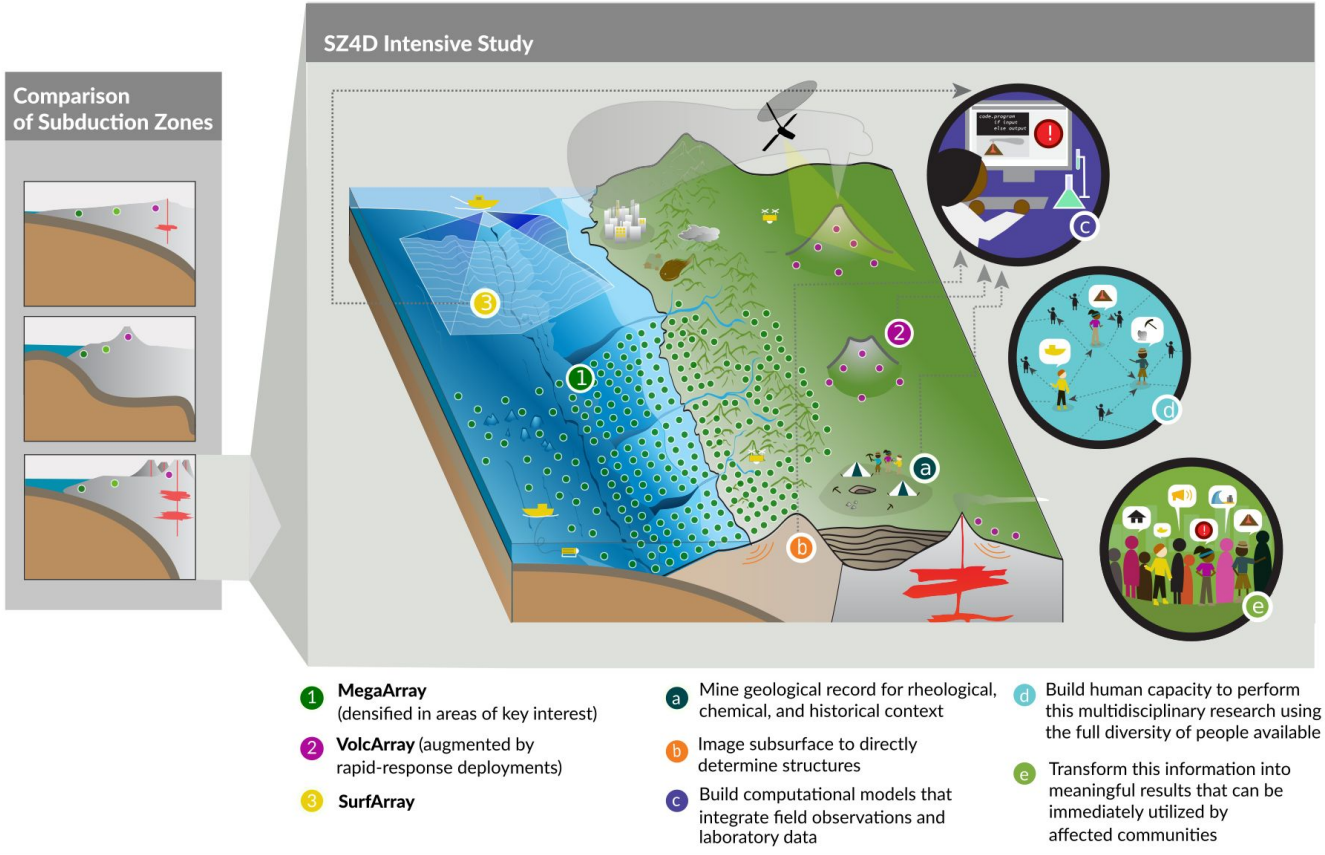
Pilot Activities and Experiments

- **Phase 2**

Full Field Experiments

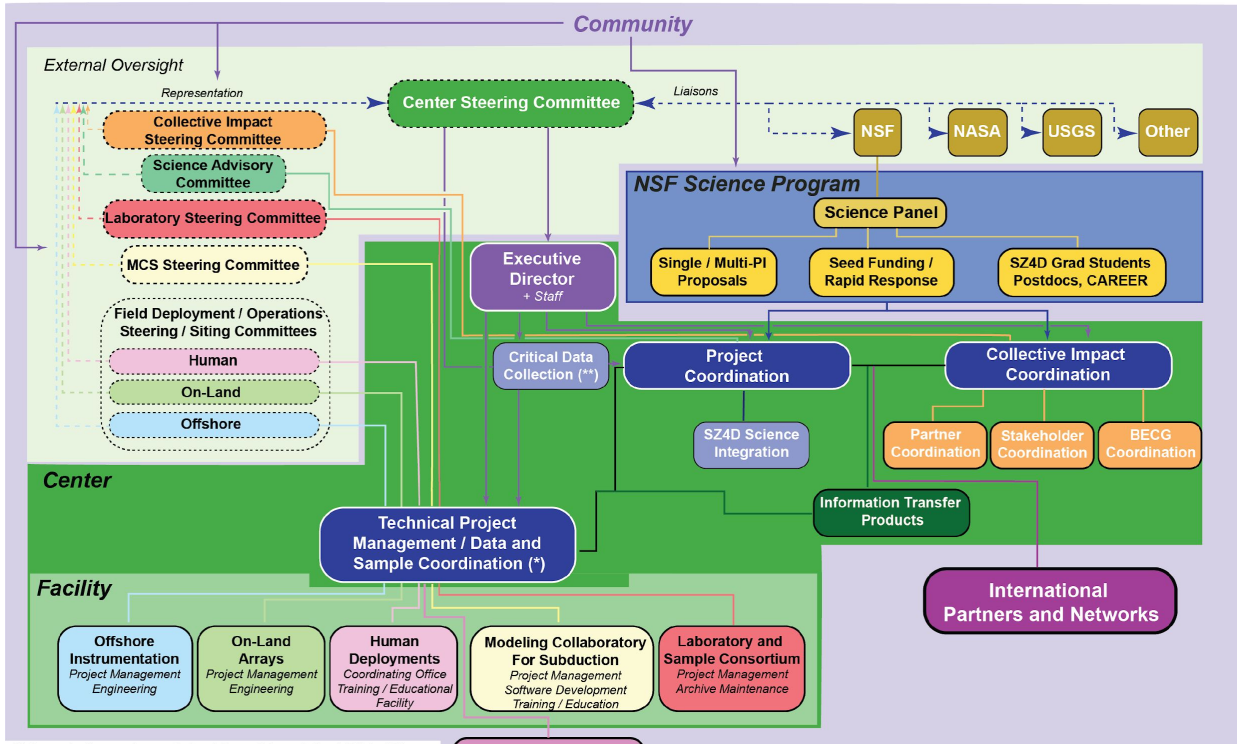
- **Phase 3**

Synthesis and Integration



# SZ4D Catalyst Proposal Components

- SZ4D Center including Collective Impact and BECG activities
- Array Design
  - Technical project management and technical design activities
- Facilities in Support of Field, Modelling and Laboratory Science

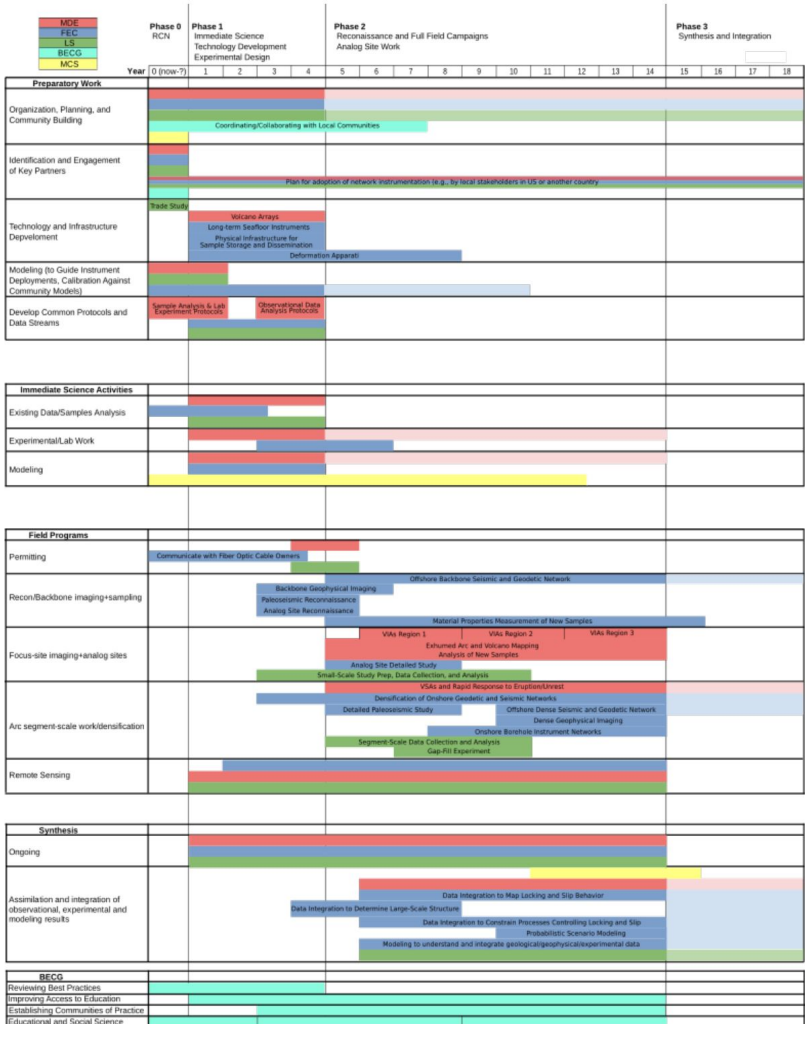



*(*) Some tasks may be carried out (in part) by existing NSF facilities. All data collected as part of the SZ4D will be openly available to the entire scientific community.*

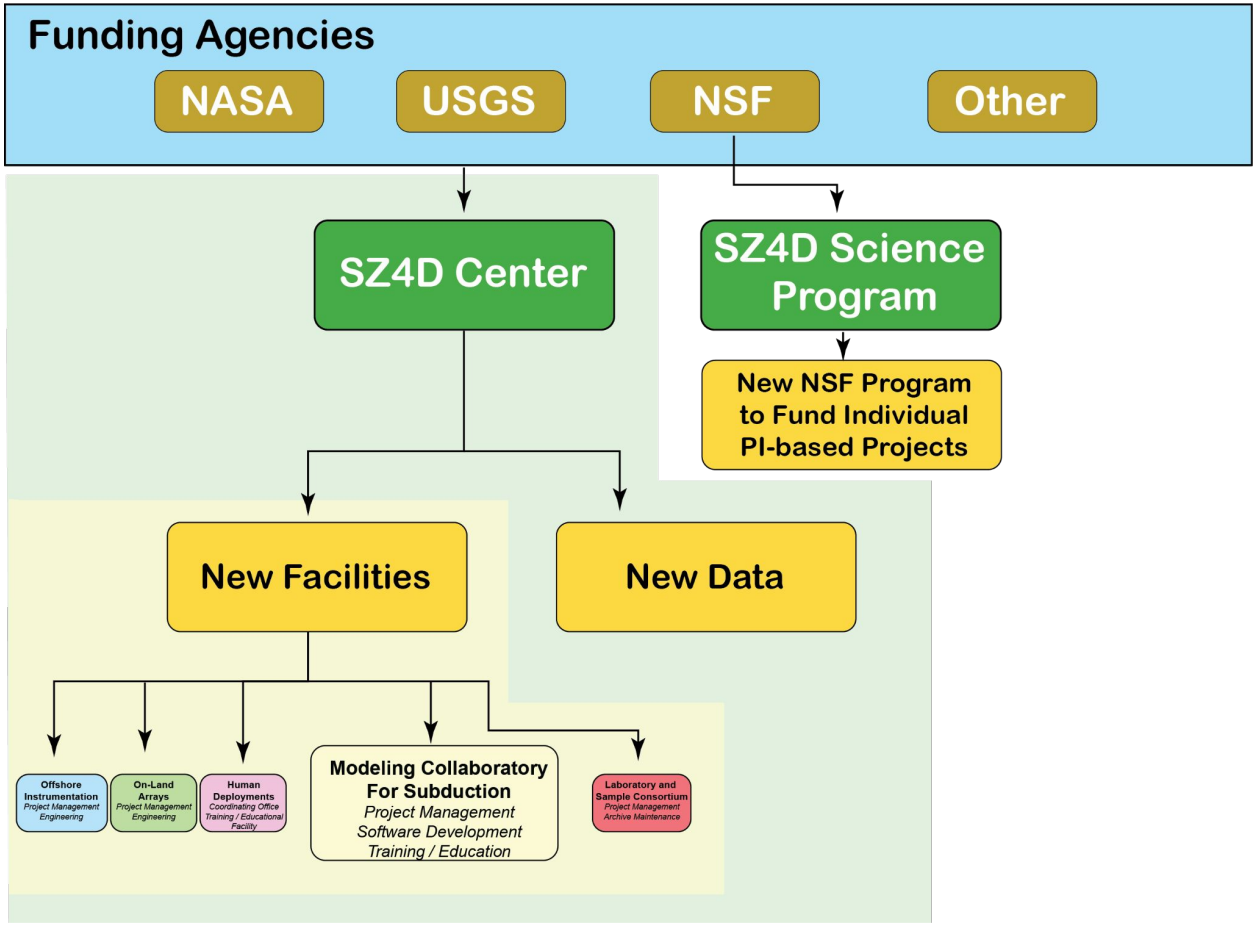
*(**) Critical Data Collection needs must be identified by the Center Steering Committee. Collection of Critical Data is then managed by the Executive Director, who identifies the appropriate facilities / entities that are the best means of collecting these data.*

# Phased Implementation

- **Phase 0**: RCN
- **Phase 1**: Pilot Activities and Experiment
- **Phase 2**: Full Field Experiments
- **Phase 3**: Synthesis and Integration



# Organization



# Oversight Governance Organizational Chart


Each member will serve a 3 year rotation, staggered to cycle a third of the committee each year

# Report Outlines

- Executive Summary
- Chapter 1. Introduction: Rationale for an SZ4D Initiative
  1.0 Intro: Explain SZ4D and Process
- Chapter 2A.
  2A.1 Cross-cutting Themes (Sean, Adam, Andy N, Chris) - review done
  Introduce Collective Impact ?
- Chapter 2B. Working Group Reports
  2.1. FEC - FINAL
  2.2. L&S - back to L&S group for final revisions
  2.3. MDE - back to MDE group for final revisions

# Report Outlines

- Chapter 3. Integrative Group Reports
  3.1 BECG - back to BECG group for final revisions
  3.2 MCS - FINAL

- Chapter 4. Synthesis Chapters
  4.1. Geography - FINAL
  4.2. Data and Technical Synergies - *back to group for final revisions*
    4.2.1.Phasing - *back to group for final revisions*
  4.3 Program Structure and Governance

- References

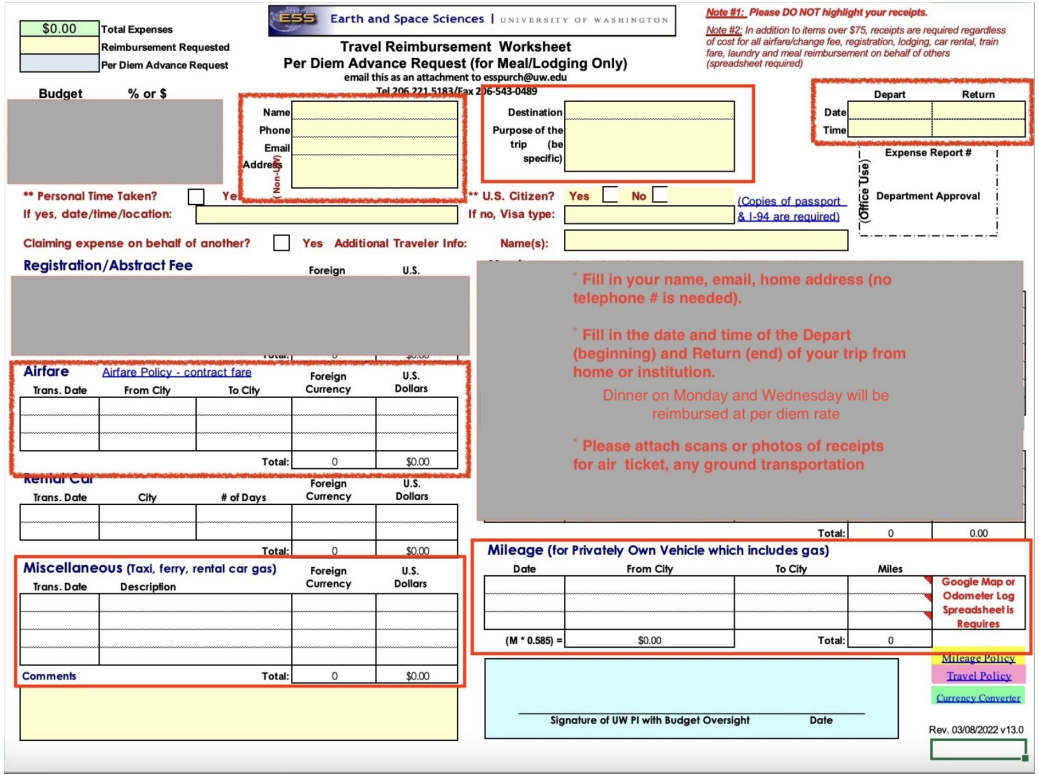
- Appendix 1. SZ4D RCNs Members

# Reimbursements

Submit at reimbursements@sz4d.org

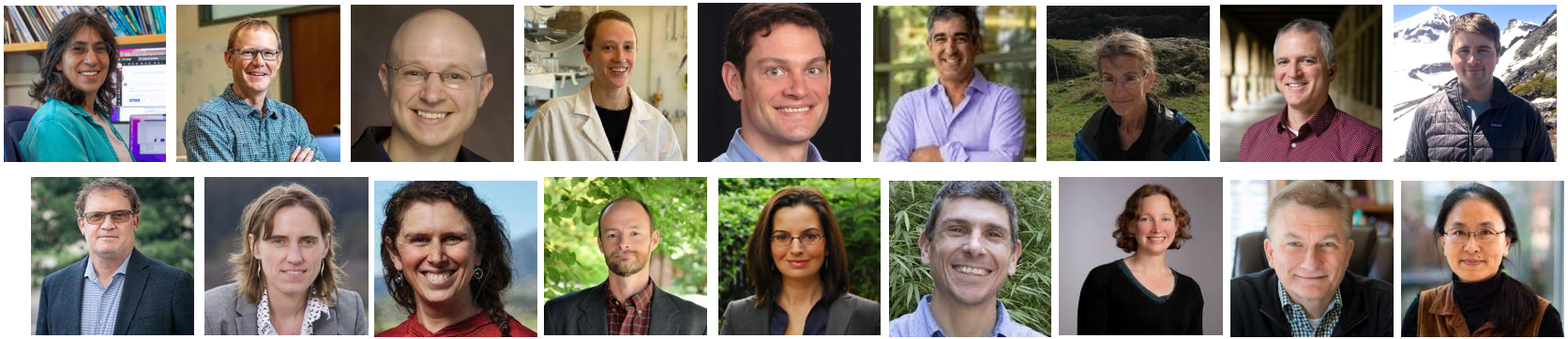
See email from Anaïs for detailed instructions

**PLEASE** tell us if you do not receive reimbursement within 1 month of submittal



# Who has SZ4D been?

New SC 2022



Current Steering Committee and Executive Committee