

The Cascadia Region Earthquake Science Center

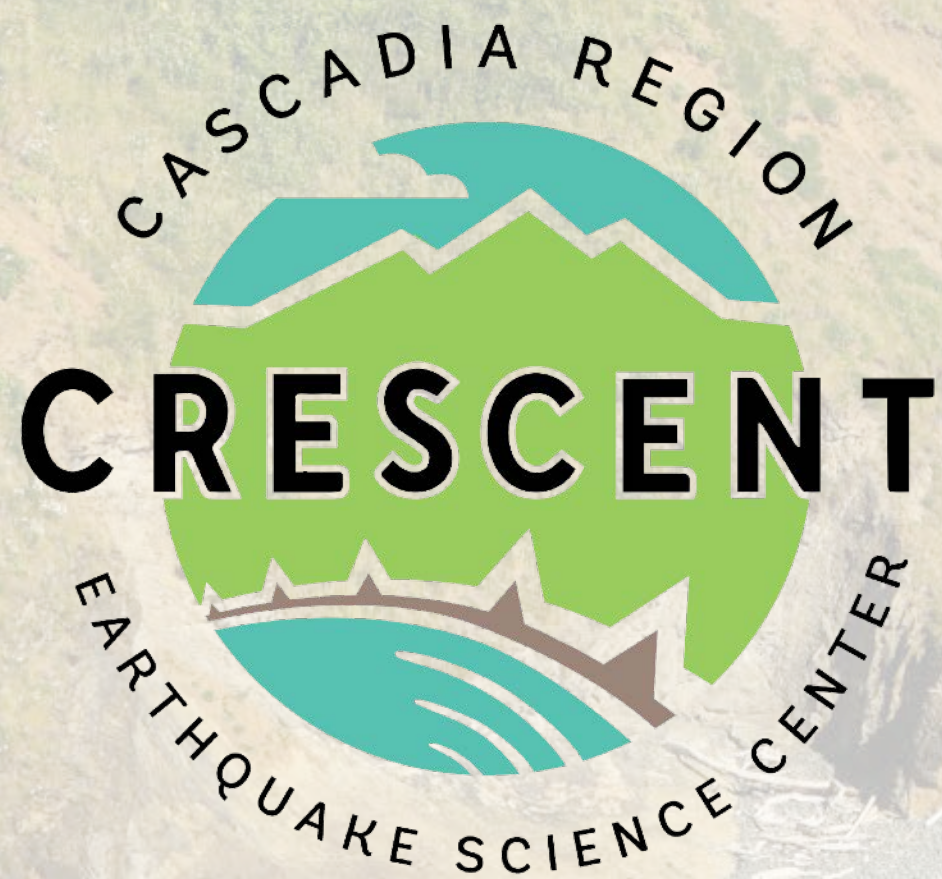
Diego Melgar¹, Amanda Thomas¹, Harold Tobin², Pieter-Ewald Share³ & Tim Melbourne⁴ on behalf of the CRESCENT team

¹University of Oregon

²University of Washington

³Oregon State University

⁴Central Washington

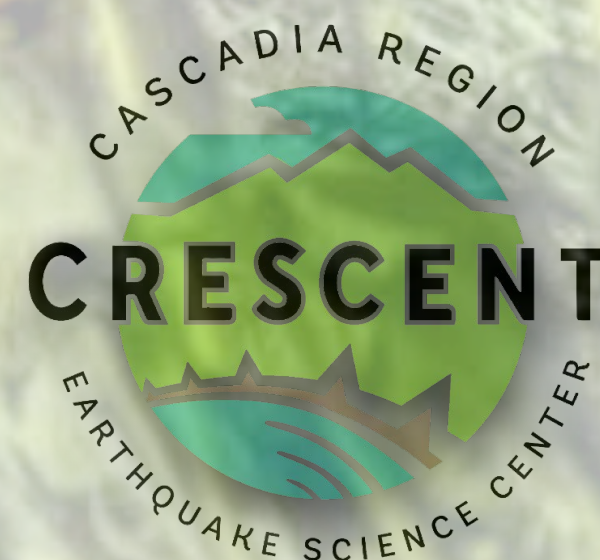


A working mission statement

- The **scientific** and **societal** problems associated with earthquakes in the CSZ are many and complex
- **CRESCENT** is a grassroots, aspirational effort to build a center that focuses on shoreline-crossing earthquake science and hazards on the CSZ

It has **three pillars**:

- The **science** that underpins earthquake hazards on the CSZ and the **technology** that allows researchers to carry it out
- Using **education and workforce development** to solve (or at least make headway with) the diversity gap in the geosciences and providing cutting edge training for the workforce of the future
- **Community engagement** to connect the research and education goals to tribal, local, federal government, utilities, the private sector, and any stakeholder in the region



The RFP

For the first time NSF held an **open recompetition**

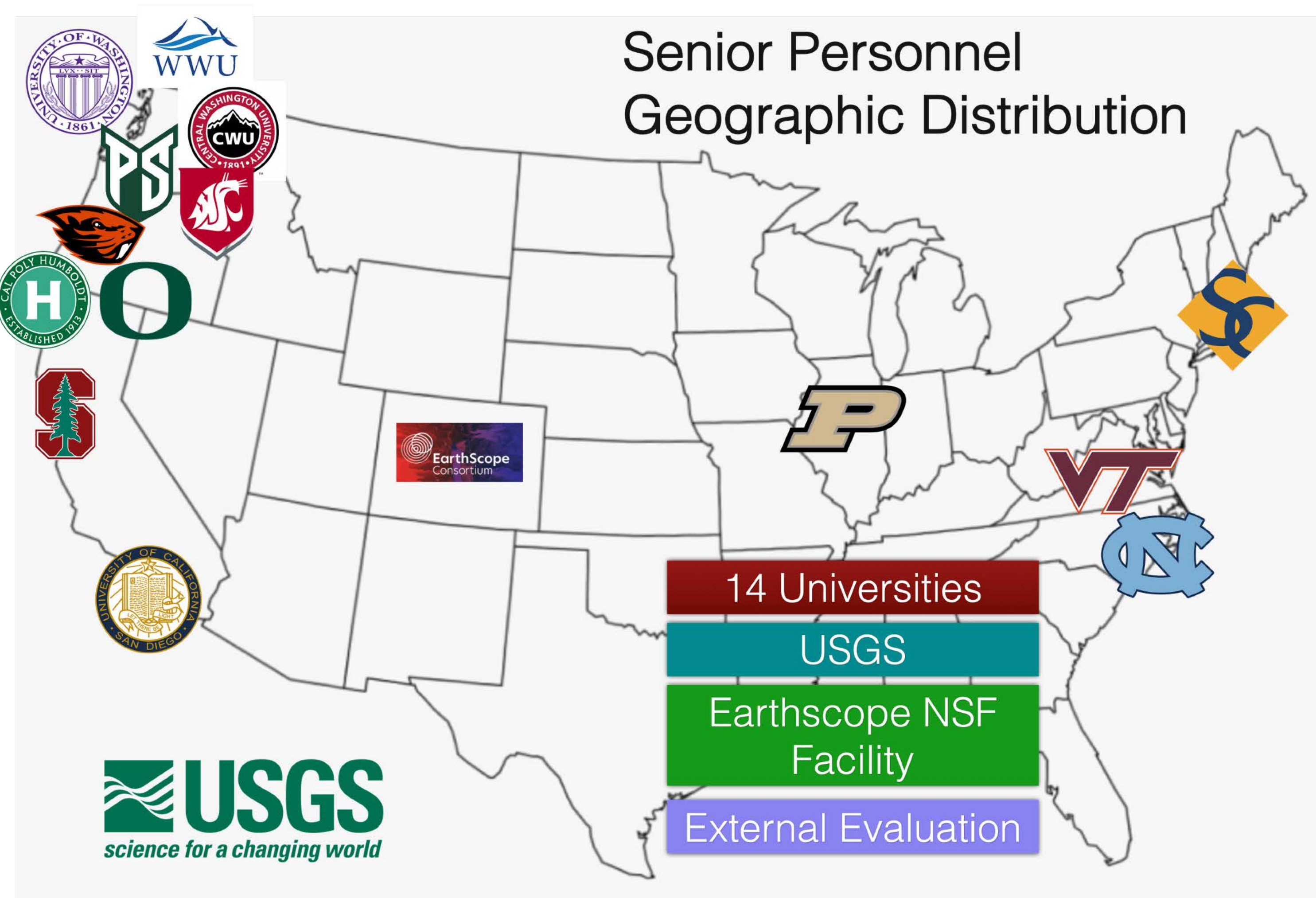
Two tracks

- Track I is a planning grant of \$500k/2yrs
- Track II is a full center (**\$15M/5yrs**)

The **CRESCENT** group submitted a full track II center proposal



The CRESCENT community

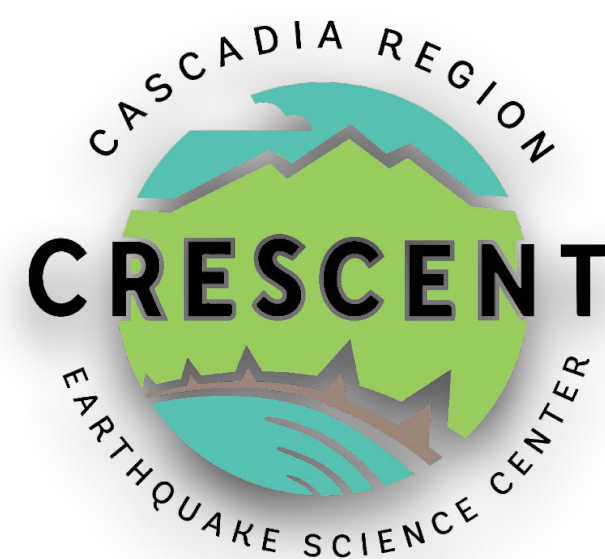


Funds to senior personnel

- 9 graduate students
- 10 postdocs
- 29 Faculty

Funded through CRESCENT Programs

- 36 undergraduates
- 14 grad students
- 26 seed grants to PIs



The proposal team: writing committee (WC) + working groups (WGs)

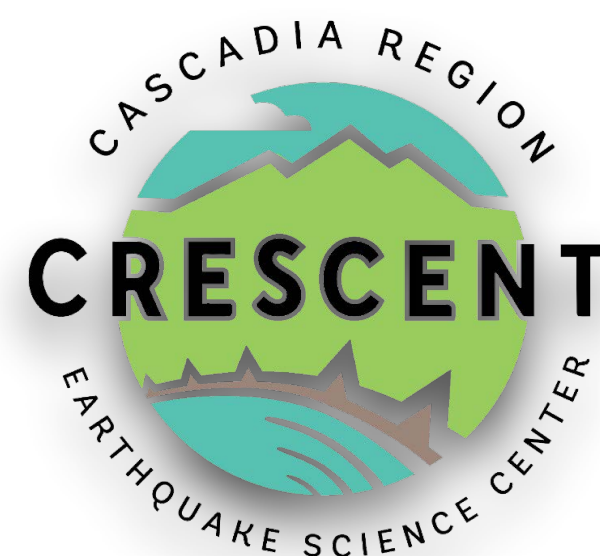
- Colin Amos, WWU (WGs)
- Donna Charlevoix, UNAVCO (WGs)
- Cailey Condit, UW (WGs)
- Michael Coe, Evaluator
- Brendan Crowell, UW (WC, WGs)
- Jon Delph, Pur, (WGs)
- Eric Dunham, Stan (WGs)
- Tina Dura, VT, (WC, WGs)
- Brittany Erickson, UO (WGs)
- Alice Gabriel, UCSD (WGs)
- Alex Grant, USGS (WC, WGs)
- Joan Gomberg, (USGS, WC)
- Andrea Hawkes, UNC (WGs)
- Jessica Hawthorne, Oxf (WGs)
- Eileen Hemphill-Haley, HSU (WGs)
- Emilie Hooft, UO (WC, WGs)
- Stephany RunningHawk Johnson, WSU (WC, WGs)
- Harvey Kelsey, HSU (WGs)
- Ben Leshchinsky, OSU (WGs)
- Jack Loveless, Smith (WGs)
- Andrew Meigs, OSU, (WC, WGs)
- Tim Melbourne, CWU (Co-I, WC, WGs)
- Diego Melgar, UO (PI, WC)
- Michael Olsen, OSU (WGs)
- Beth Pratt-Sitaula, UNAVCO (WGs)
- Emily Roland, WWU (WGs)
- Pieter Share, OSU (Co-I, WC, WGs)
- Valerie Sahakian, UO (WC, WGs)
- David Schmidt, UW (WC)
- Lydia Staisch, USGS (WC, WGs)
- William Stephenson, USGS (WGs)
- Ashely Streig, PSU (WGs)
- Amanda Thomas, UO (Co-I, WC, WGs)
- Harold Tobin, UW (Co-I, WC, WGs)
- Doug Toomey, UO, (WC, WGs)
- Anne Trehu, OSU (WC)
- Janet Watt, USGS (WC, WGs)
- Will Wilcock, UW (WC)
- Rob Witter, USGS (WC, WGs)
- Erin Wirth, USGS (WC, WGs)

14 Universities

USGS

Earthscope NSF
Facility

External Evaluation



The CRESCENT community



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U. S. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration OAR Laboratories



California Department of Conservation California Geological Survey

ImageCat, Inc.



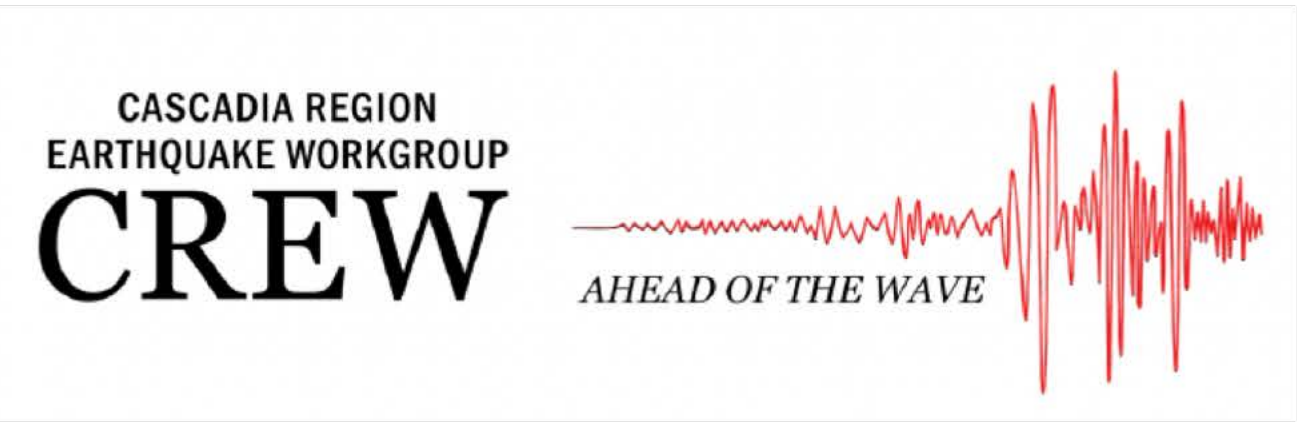
STATE OF WASHINGTON MILITARY DEPARTMENT



Seattle Office of Emergency Management



SC/EC



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The center's major activities (MAs)

MA1 Community models, working groups & special interest groups

- WG1 Community velocity model (onshore/offshore)
- WG2 Community fault model (onshore/offshore)
- WG3 Dynamic ruptures / earthquake cycle / tsunami inundation
- WG4 Strain accumulation slow slip and seismicity
- WG5 Cascadia paleoseismology
- Each WG has dedicated developer and cyberinfrastructure support
- The SIGs – 4 “mini WGs”

MA2: Biennial meetings (yrs 1,3,5)

MA3: Topical workshops (experts discussing science)

- Community models
- Fluids in the CSZ
- Enhancing offshore observations
- Shallow rupture behavior and tsunami genesis
- Etc...

MA4: Cyberinfrastructure

- Dedicated developers
- Cloud computing infrastructure
- Flexible funds for contract work

MA5: Seed grants

- ~30k/grant, should respond to center science plan and broader impacts plan

MA6: High-school STEM pathways

- Short visits to research schools for students from tribal schools

MA7: Undergraduate research

- Year-long twinning program (9 months @ home + summer @ partner institution)
- Cores2code summer school
- Is aimed at minority serving institutions

MA8: Graduate summer fellows and postdoc mentoring

- Research at other institutions different from the home institution
- NAGT travel grants

MA9: Technical short courses (training for next gen. scientists)

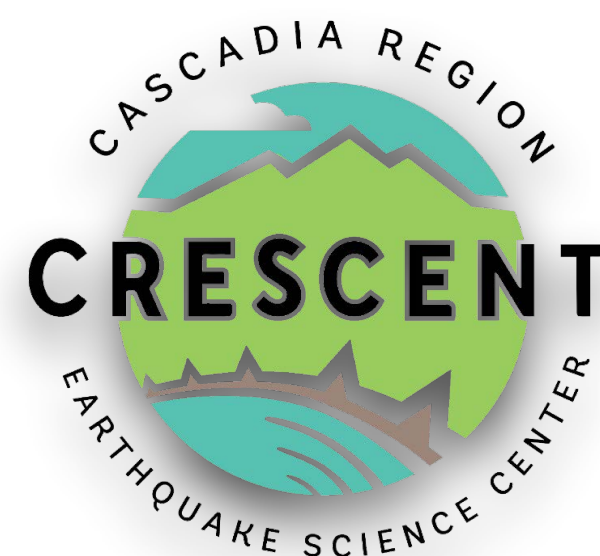
- ML/AI/Data science
- Dynamic rupture/Earthquake cycle/tsunami modeling
- Tectonic geodesy: SSEs, coupling, seafloor sensors
- Paleoeearthquake perspectives on slip behavior
- Etc...

MA10: Community collaborations

- Dedicated "relationship manager" staff that publicizes/builds connections
- Social media
- Yearly stakeholder keynote events
- Practitioner webinars (with CLiP, CREW, etc)

MA11: Target of opportunity funds

- Flexible funds for exciting new opportunities



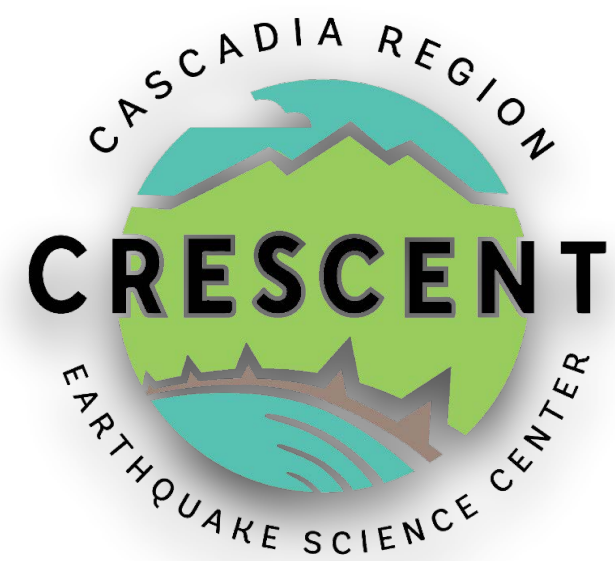
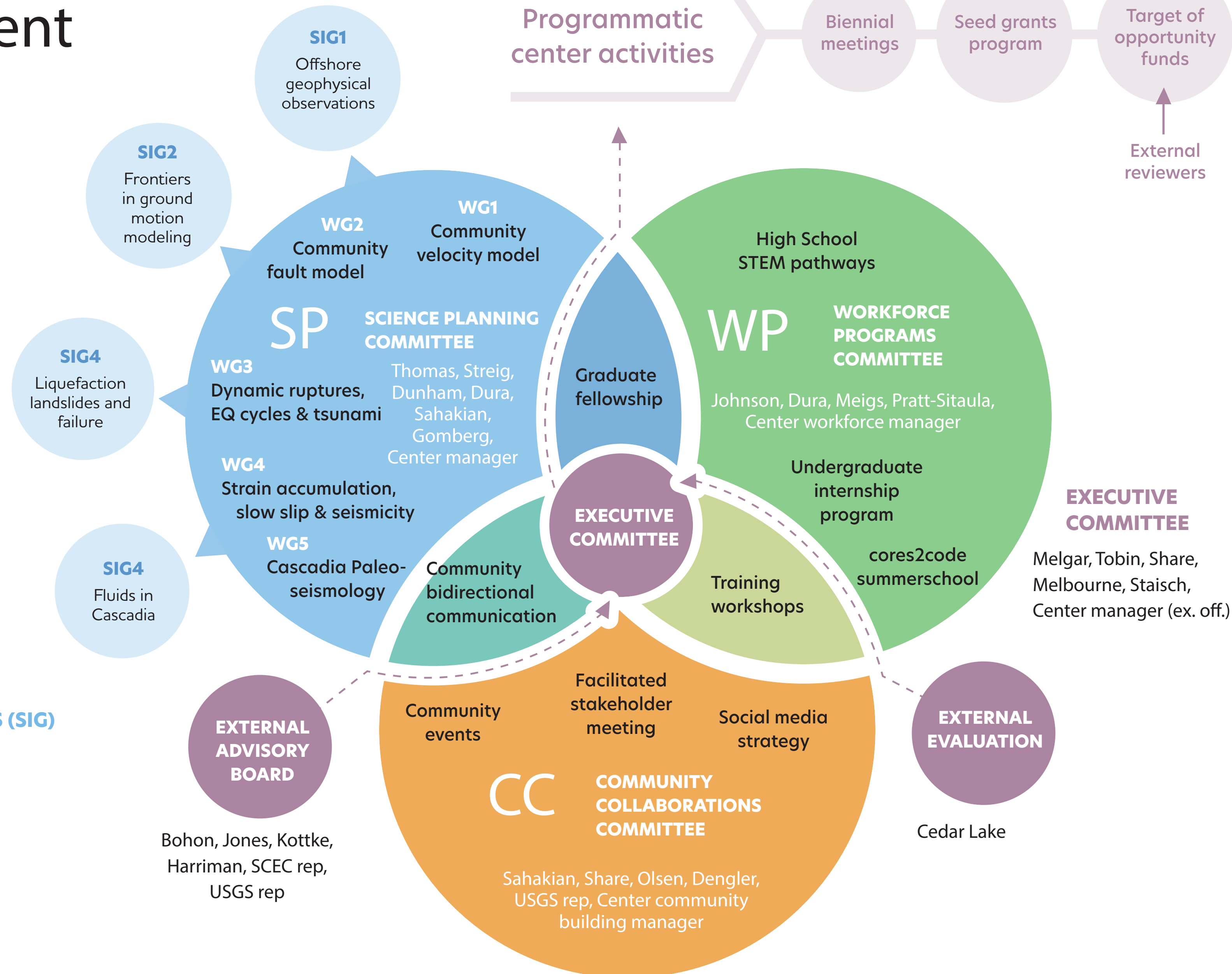
Project Management Plan

SCIENCE PLANNING WORK GROUPS (WG)

- 1 Sahakian, Delph, Wirth, Grant, Share, Toomey, Hooft
- 2 Streig, Amos, Watt, Tobin, Meigs, Roland
- 3 Dunham, Gabriel, Erickson + USGS rep + NOAA rep
- 4 Thomas, Crowell, Loveless, Melbourne, Hawthorne + USGS rep
- 5 Dura, Hawkes, Kelsey, Witter, Staisch

SCIENCE PLANNING SPECIAL INTEREST GROUPS (SIG)

- 1 Wilcock, Toomey,
- 2 Sahakian, Wirth, Grant
- 3 Leschinsky, Olsen, USGS
- 4 Condit, Tobin, Thomas,



Where is the effort at? How do I get Involved?

- ⚡ A final funding decision from NSF is expected **Q1 2023**
- ⚡ We've been in holding mode since proposal submission
- ⚡ Slack workspace is waiting with bated breath
- ⚡ **Reach out** to anyone who is involved in the effort
- ⚡ **Participate in the working groups** if (when?) we get funded
- ⚡ Don't worry, **we'll find you!**



Thanks!



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