

SAGE Faculty meeting
10/27/21

Agenda

Active seismic 2022 – Lu
 No vibe – NS only
 David – 2 weeks
 Pieter – 2 weeks, see <https://pshare.weebly.com/>
 Ad for a post doc attached
NPS permit – Paul
New time for monthly
Other/New business

Akram: meeting conflict
David: standing meeting, might move to compensate soon

John: back from 2 weeks in North Carolina

First topic: Seismic

Talked with David Lumley, 2 weeks at SAGE commitment

RE: Pieter Share - offered a visit, but no expectation; Pieter offered 2 weeks himself. some lack of clarity, but still interested. Hasn't communicated with David yet.

Jared: known Pieter 6-8 years, worked on Salton Sea on profile across San Andreas, bright on seismic and MT; Alan Jones' student. Energetic, entertaining. Did undergrad with Sue at Vitz, PhD at UCSD. Make tentative offer, as adjunct; bring on as full faculty in the next couple of years. Wants to be onboarded as soon as possible, considering the new direction; wants to be involved with design of the future. Got a Strataview from PASSCAL.

Not going to have vibe truck this summer, but plan on bringing it back. SAGE is only opportunity for early exposure to non-oil people.

What problems in 5-year plan are appropriate for near-surface only this year?

emailed with Paul Vincent at Chevron, wants phone call to catch up. Going to have big seismic discussion with John, Akram, David, Pieter, Alex Martinez, Joe and Paul Vincent; future of seismic, role of SAGE

Next topic: Job ad

hire a post-doc, maybe just a summer hire or maybe ongoing; Chris couldn't make it this year.

Need to put together something to send out to a specific list of people; Kamini mentioned Colorado School of Mines seismologists.

KU has also come up; Sarah Mortensen? But just took a job.

Brainstorm: any issues with ad?

Paul: idea of ad is to plug hole this year, pull SAGE off. Since then, have gotten Pieter and decided against vibe. Is it possible that our need has been filled?

Lu: Logistically, will have David Lumley first two weeks and Pieter second half. Ideally, want someone full time. EM has 2 full-time faculty; need the coverage.

Darcy: Pieter hasn't defined his role yet; he's a passive seismic guy too, so can we count on him for active? Need high-level TA at least, but if everyone else is against it but can re-examine. Really want someone with new ideas, long term commitment.

Paul: just wanted to explore; person might determine exactly what we do at SAGE for seismic next year.

John: need depth on the bench, Pieter has broad expertise. Was looking forward to Chris, but unfortunate. John, Darcy and Sean all had potential field involvement in the past.

Darcy: definitely should get third person on seismic then

Paul: So: clearly no vibe, doing active maybe with Strataview; are we doing a new passive experiment?

Lu: talking to Akram ASAP, but yes.

Paul: okay; then Akram will need to help do design and get instruments reserved.

Darcy: can Pieter help with Active seismic?

Lu: yes, that's the plan

Darcy: okay, just wanted to make sure he's aware

Paul: why? He is only now getting active seismic experience. Do we need him for that?

John: need someone in transition; he has capability.

Paul: worried about pigeonholing

Lu: operationally, this summer, we need someone run the active seismic. Pieter is a seismologist, need him to be doing active and have Akram stay on passive, get more experience in to do work on it as a finely-honed topic at SAGE.

Paul: still missing understanding something; operationally for the active person, we have David for first two weeks and then Postdoc who hopefully will have software ability. Not to say Pieter can't have a role in processing; why peg Pieter for active seismic when David will be on the field work?

Darcy: still need lecturer/processor; not to say he has to be active forever, but we just need the coverage this year and can figure out more in the future. Will have to figure it out; need overlap, might have time where it's just the postdoc

Paul: hoping all four can hash it out, handle the two experiments among themselves.

Lu: right; we just need bodies, want Akram to focus on passive. Lumley pushing MADAGASCAR software; Pieter doesn't know what he'd use, post-doc in the mix adds more complication. Just want fourth person, have seismic talking by thanksgiving. Will have a lot of people who aren't used to SAGE, might be bumpy this time around.

John: will help. Also need science meeting.

Next topic: NPS permit proposal

no vibe will help, but were supposed to have by midsummer, then late October; would like draft ASAP

Paul: right; as Lu said, not NSF research proposal. Letting know a little about science purposes, but need proposal coverage for 5 years, not just next year. Talking on Friday for science, didn't get any feedback re: science plan. Want a Round Robin of what we want over the next 5 years; what you want, where you want to look.

Start from EM side, ERT/TEM/MT:

Paul: followup on Pleistocene lake-beds, hydrological side; have done some TEM and MT in Valle Grande, and ERT in north side, want to look in Toledo and San Antonio. Would be interesting to continue looking at constrictions; might want to see if DTS might be helpful too.

Jared: adding onto EM, want to see how near surface is connected to deep; regional view from MT connected to near surface; fluid pathways, heat transport?

Perhaps focusing on south, southwest where heat is; old EGS site, Fenton Hill

John: should be an important part of what we put forward, geothermal system was studied in 70s, deep heat source was located but no good confirmation with seismic or MT that aware of; located it with heat flow data. Gravity also has input on regional picture.

Paul: John: source where?

John: southwest; deeper in crust for geothermal system. GRC publication that can be distributed to faculty. more regional than near-surface work, trying to get fluid pathways, get confirmation of that heat source data. Shari and I believe is rift boundary on that side, little appreciated. Western side is topographically challenging though

Paul: also difficult to access

John: can access from south, but yes. Still, interesting

Shari: would also involve being on Forest Service land, not NPS

John: does mean lots of roads, which is a consideration positive and negative

Paul: should be easier than NPS, expect vibe

Danny: might be shallower signs, e.g. smectite clay for 200C isotherm, though not shallow enough for near surface alone. Could connect near and deep perhaps

Shari: drill holes are also a good tie to geology in that area that confirmed smectite.

Paul: can you dig up that drill hole report? If clay cap is in reach of TEM that would be a good spot.

Danny: if electrical anomalies, e.g. fault, could connect that to gravity data etc

Paul: discussed in the past, John re: local mapping of structures e.g. El Cajete vent; fairly small, can talk about it. Most youthful feature, associated with western activity. also wondered about thermal features on west side; passive instruments along Sulfur Springs road, looking at data for temporal changes, see if cyclicity in data. Talking in Strategic Visions about temporal monitoring

Shari: certainly with DTS, can look at constrictions, and deploy year after year. Might also want to check Sulfur springs area. Last SAGE, ran into trouble with stream; significant snowfall washes out geothermal signal. Monitor winter precipitation before deciding where to deploy. Redondo creek e.g. Tie planning to previous mapping; in 2019 found ground steaming, fault there.

Paul: Where? Up the graben right through Redondo peak?

Shari: yes; should've had geothermal signal there but didn't work. Could try laying it on ground, but would have to be careful, and wind might affect measurements. Also want San Antonio creek, looking at constrictions and groundwater flow.

Paul: seems like graben hasn't had a lot of coverage other than the DTS

Shari: got some gravity in El Cajete meadow

John: also want to do gravity on foot, east-west across graben feature

Paul: so circling back to broader topics, talked about geothermal heat-source, looking for clay cap pathways, interaction on large scale between rift and caldera, Pleistocene lake-beds and volcanic constrictions... anything about more geotechnical or archaeological things? At one point talked about tracking down old fort; is that less feasible?

John: seems unfeasible; not much to be found, might've only been a few holes and some logs. More of an encampment. Definitely shallow groundwater and the fens should see effort. Groundwater circulating in older basins; even mapping one fully would be a useful illustration. e.g. last time's constriction is a good focus, maybe a quarter mile out on each side. ERT, radar and seismic was all quite good last time.

Shari: vibe data was intriguing re structure, tracing north to caldera wall. In science plan for future, would want vibe along east-west road, continue mapping structures as you go off east-west

John: laid line almost to T-intersection but didn't shoot as far; could also tie to a line that goes south, although traffic issues. Should do in future though.

Paul: limited to where roads area, but sounds like continuing East through San Antonio and South from T-intersection sounds good

John: gravity and geology are guide to overall structures

Paul: once you turn south, following Brandon's line, although they went over redoindo

Johnm: integrate efforts with that north-south profile

Paul: can do gravity transects, assume no vibe?

John: steep, many switchbacks in 2016, but was very passable; may have eroded since then

Paul: any more in agenda we need to touch on?

Darcy: 1 thing re seismic ad: if you have thoughts, please send an email to Lu/Darcy in the next week or so. Also, is it too ambition to say "produce 3d geologic map of study area" in proposal?

Paul: would throw that one to Shari/John. Don't know if would have that much data.

John: barring acts of god, will have data, more data than we had before; we'll be able to do better than anyone there before

Darcy: so more "model" than "map"

Shari: forming model will have implications for water policy decision making and development

Darcy: as well as big ideas re structure, rift interaction and history

Paul: like "working towards a" model.

Paul: Haven't talked about large scale structure; previous years, talked about nature of Toledo Embayment, ring fractures; talked more about heat source today.

Shari: still think ring fractures are a valuable target, e.g. in original proposals

John: SE., older features; West, rift structures

Darcy: Megan, Shari, John and Darcy talked about recent seismicity; related to caldera? Rift? Figuring out could be good problem

John: run into problem; Nacimientos is big feature, Laramide; earthquakes have more to do with that probably, than rift. Rift seismicity is still interesting, given scale; might expect more, so interesting problems

Paul: seismicity hits on monitoring side as well as hazards, but passive component recurring should help. 30 day deployment once isn't much, but if we have longer and repeated, could really expand catalog. Also David has been working on existing data, looking at various interfaces, e.g. Moho; initial results are considerably different from literature, additional reflectors/interfaces; passive can play a big role

John: yup; can have big coverage

Darcy: Lu lost connection; two more things.

1. Are folks in agreement with bringing Pieter on as an adjunct?

ALL: in agreement

2. Possibly changing time of meetings for David Lumley's availability, mentioned Fridays. Get back to Lu ASAP.

Want to squeeze 1-2 meetings in before end of year!