

Tephra Fusion 2022

Feb. 18, 2022

Session 2 - Field Data - StraboSpot Example

Questions and Answers (Q&A) and Links from Zoom Chat

Question: What is a graph based database?

- A graph database uses a graph structure rather than a traditional table layout. It has content nodes and relationships between nodes. Here is some more information: <https://neo4j.com/developer/graph-database/>

Question: Has Stabo been integrated with geological survey data (e.g., the British Geological Survey app iGeology)? Or would you have to download basemaps separately and upload them?

- There are currently no built-in integrations with survey data, but any basemap in GeoTIFF format can be uploaded for use with the field app.

Question: When downloading base maps, does it only download the level of detail in the current view, or does it also download more detailed (zoomed-in) versions too?

- The GeoTiff is downloaded in full-resolution, and tiles are created for a user-defined set of zoom levels.

Question: Can you use Strabo to georeference custom maps produced offline, or do they have to be georeferenced in advance by some other tool?

- Strabo currently does not have the ability to georeference images, so they must be georeferenced by another method beforehand.

Question: For sketches, can you use sketches from procreate or other apps or is it just by pictures?

- Yes, this is a common use-case. Users often create sketches in other applications and import them into the Strabo field app.

Question: Are there plans to also produce a desktop version of the app so you could open up the same projects on your desktop?

- Yes, there is currently a browser-based app that has the same functionality as Strabo1. This app is available in the “my data” section at StraboSpot.org.

Question: Can you add fields, or can the options shown in existing fields be customized? Also, what about setting “default” options so that it defaults to say “tephra” unless selected otherwise?

- Yes, you can add custom fields using the “tags” feature. There is currently no way to set “default” values.

Question: For data entry, are we limited to what is listed? Are the entries such as what is listed under “lithology”, or things like “glass”, “cryptotephra,” etc. customizable, or are we restricted to what has already been entered?

- There is always an “other” field where you can put anything else that you wish. The Strabo vocabulary can also be expanded if needed.

Question: Can you add tephra data from sediment, peat and ice cores?

- There are several ways in which this could be done. You could create a stratigraphic section or an image basemap, for example, and note sample locations and observations using a core scan image.

Question: Is Strabo 2 now equipped with the export to csv option from the ipad that Strabo 1 had?

- The developers are still working on adding the export to CSV option that exists in Strabo1, but this will definitely be included in the Strabo2 app.
- The best way to export your data is to first upload your project from the app to the database. Once there, there are several different export options available. You can export to csv and to other formats on the web at StraboSpot.org.

Question: Would it be possible to generate a custom CSV export format?

- Yes, the Strabo team has been discussing customized import and export formats, and these custom templates could be saved in your StraboSpot account.

Question: I study contaminant hydrogeology related to U mining around the Grand Canyon NP. The uraniferous breccia pipes that are mined have been determined to be “solution-collapse”—due to a roof collapse in the Redwall Limestone. For a myriad of reasons, I think these breccia pipes are actually phreatomagmatic maar-diatremes and not just giant sinkholes. There are too many for myself to ever map. Is it possible for me to upload images/maps with annotations to StraboSpot and make them public so if anyone in the future wishes to investigate these structures they have some starting information?

- Yes, this would be an excellent use case. If you uploaded a project with said images and annotated them, these could serve as a starting point for future users to expand upon.

Question: Can polygons be created in Strabo Spot in map view to correlate stratigraphic units from the image as basemap feature. (I'm super impressed/excited by image from basemap option - very cool!)

- Yes, a polygon can be created on the map, and then a basemap can be assigned to this polygon.

Question: For tephra studies in the field, if you have an iPad which StraboSpot is better to use, the 1 or 2?

- Currently, not all Strabo 1 features exist in Strabo 2, but they are being added. Eventually, Strabo 1 will be discontinued, but all of the data will transfer.
- Strat Section mapping is not yet available in Strabo 2, but otherwise Strabo 2 would be preferable.

Question: Can the stratigraphic units be turned into a fence diagram?

- No, not yet.

Question: Is Strabo spot available in multiple languages? Thinking specifically about terms relating to eruption response (e.g., in Spanish terminology for pyroclasts is very varied).

- Not yet, but this is something that we have been discussing recently. It will likely be available in multiple languages in the future.
- This is a good point. The best practice guidance that we have been working on should still apply to your work. You may use different words, but most of the concepts should be the same. I wonder if you can visit the best practice documents on Zenodo ([10.5281/zenodo.3866266](https://doi.org/10.5281/zenodo.3866266)) and look over the spreadsheets. Comments and feedback to (kwallace@usgs.gov) would be helpful as we want to be comprehensive! Thank you.

Question: Is it possible to work as a group? If you have several field teams in an eruption response or a mapping project that all need access at the same time to the same project?

- Currently this is usually done by creating a Strabo account for a project and then have everyone log into that same account. Each person would then create a separate dataset within the project.

Question: This looks like a it could be a very valuable tool that could have a “public” version that people with no geology/tephra knowledge could be asked to download following an eruption. This would allow for a citizen science approach to data collection. What sort of modifications do we think as a community the app would need for this kind of application/use? I would advocate for asking people to collect photos, thickness, and a sample as a minimum. These would be associated with GPS, time and date, etc. And of course it would need in-app

language considerations and the creation of a big collaborative “project” in StraboSpot.

- I love this concept for eruption response and citizen science purposes. Maybe one of the StraboSpot folks can address the reality of this being an option for citizen science as there could be 100's of people responding at a time.
- Yes, this is great. There might also need to be a different user access model for this. There would be lots of contributors, but one contributor probably shouldn't be able to edit information contributed by another.
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Question: For StraboMicro, can you export your annotated images into usable files for figures (posters, manuscripts, etc)?

- This isn't an option yet, but could be easily added.

Question: For strabo micro, can these images and samples be exported in a way that makes them friendly to upload to a relational database?

- We haven't developed any database-specific export options, but this is something that we could easily add.

Question: What are the export options if you want to add this data to something like Sparrow? (<https://sparrow-data.org>)

- A convenient way to do this is through the CSV export. Importers to put this information into the appropriate fields in Sparrow are being developed. Specific additions to capture tephra laboratory work flows are also being developed for Sparrow.

Question: This is really an incredible tool. This sort of thing has been needed by the in-situ analytical community for a long time. This applies not just to tephra data, but mineral analyses, really any EPMA, LA-ICP-MS, SIMS, or FTIR type analyses. Can this be run offline, since many instruments are not networked?

- Yes, instruments are not required to be networked to use StraboMicro.

Question: Using StraboMicro while live on an instrument like a petrographic microscope, SEM, or EPMA looks like a really great way to keep track of observations while collecting them. Could any of this be integrated with instrument software in a more direct way, e.g. capturing the instrument coordinates and image size information so that the image placement in StraboMicro could be automated?

- We have discussed adding the ability to automatically import instrument coordinates, etc. The problem we have run into is that many (most) device manufacturers have proprietary export formats, and it is very difficult to get the underlying raw data. We will continue to discuss this approach.

Question: The Polar Rock Repository has a pretty cool interface where this type of data could be utilized.

- live answered

Question: All these images are stored in the project. Can you view them in a folder structure then? Or can you add images to the project from an existing folder structure as a link without duplicating?

- Right now, all of the images are stored in their own project folder. There is no way to reference via link. The image has to be copied.

Question: What is the timeline to use Strabo2 on Android?

- We are putting finishing touches on some of the modules (like the compass) to make sure it is working consistently on android, but it should hopefully be released in the next couple of months.

Question: How long does the battery of an offline iPad (let's say not a brand new one either), last while out using StraboSpot in the field?

- I recently used a 4 year old ipad in the field, and it lasted all day, but was at ~10% at the end. I usually take a little battery pack in the field with me to top it off

Question: Is the Allmendinger software also linked to StraboMicro (crystal orientations, EBSD data, etc)?

- No, not yet, but this is something we will talk about.

Additional comments from participants:

- This introduction is my first time knowing StraboSpot exists and i'm blown away. You all have done an AMAZING job. I'm really excited to start using StraboSpot and to see your future developments. The field to micro scale is incredibly powerful. The ease of workflow is inspiring and energizing. Thank you so much for all you've done and all you plan to continue developing. Response: Thank you! Yes this team is remarkable and super easy to work with! We thank them for their willingness to work with us to add tephra-specific fields and beyond!
- This is insane. This can definitely streamline workflow for many people. It also seems to condense multiple things into two or three apps. This was an amazing idea and something that I would definitely utilize to its full extent. I'm looking forward to using it in the future.

- From an ECR perspective, this is so great. One of the main obstacles when moving institutions is bringing your data with you between loss of licenses, software and database access etc. So this is absolutely wonderful! Thank you so much for this!!!

Links Shared in the Chat

Tephra Fusion 2022 website: <https://tephrochronology.org/cot/Tephra2022/>

StraboSpot website: <https://www.strabospot.org>

Walker et al., 2019, StraboSpot data system for structural geology, Geosphere (open access)
<https://doi.org/10.1130/GES02039.1> or
<https://pubs.geoscienceworld.org/gsa/geosphere/article/15/2/533/569211/StraboSpot-data-system-for-structural-geology>

StraboSpot for tephra document: <https://www.strabospot.org/files/StraboSpotTephraHelp.pdf>

Contact the StraboSpot team: strabospot@gmail.com

StraboSpot stand alone guide (server software):
<https://www.strabospot.org/whatisstrabospotoffline>