



An Integrated Platform for Geoscience and
Experimental Data

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Why StraboSpot?

Geological data are becoming increasingly connected

Field Observations → Samples → Microstructures → Laboratory Experiments → Public Datasets

Traditional Workflow:

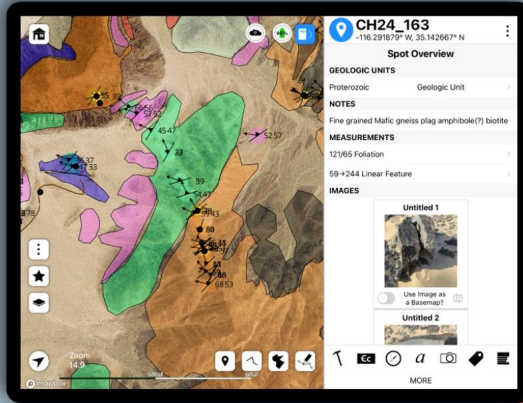
- Spreadsheets
- Notebooks
- Instrument files
- Images on various devices
- Metadata for each instrument and component
- Difficult to reproduce years later

StraboSpot aims to connect the entire workflow:

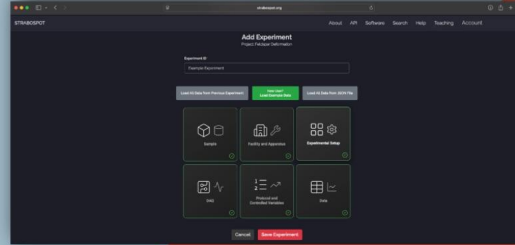
Field Data → Samples → Thin Sections → Experiments → Datasets → Publication

What is StraboSpot?

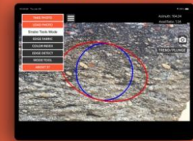
STRABOFIELD



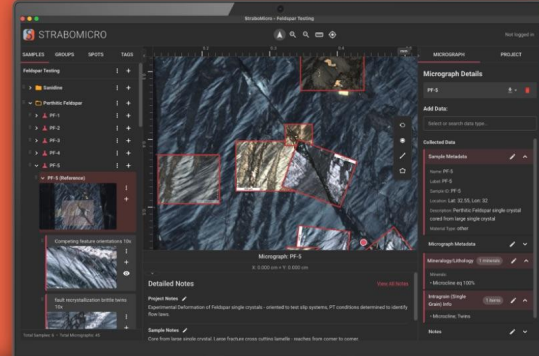
STRABOEXPERIMENTAL



STRABOTOOLS



STRABOMICRO



StraboSpot.org is the home of the StraboSpot ecosystem, uniting a suite of geology collection and data management applications through a central database that can store, share, and publish data.

Everything begins with a Spot

A Spot is a georeferenced or context-aware observation

Depending on scale, a Spot can represent:

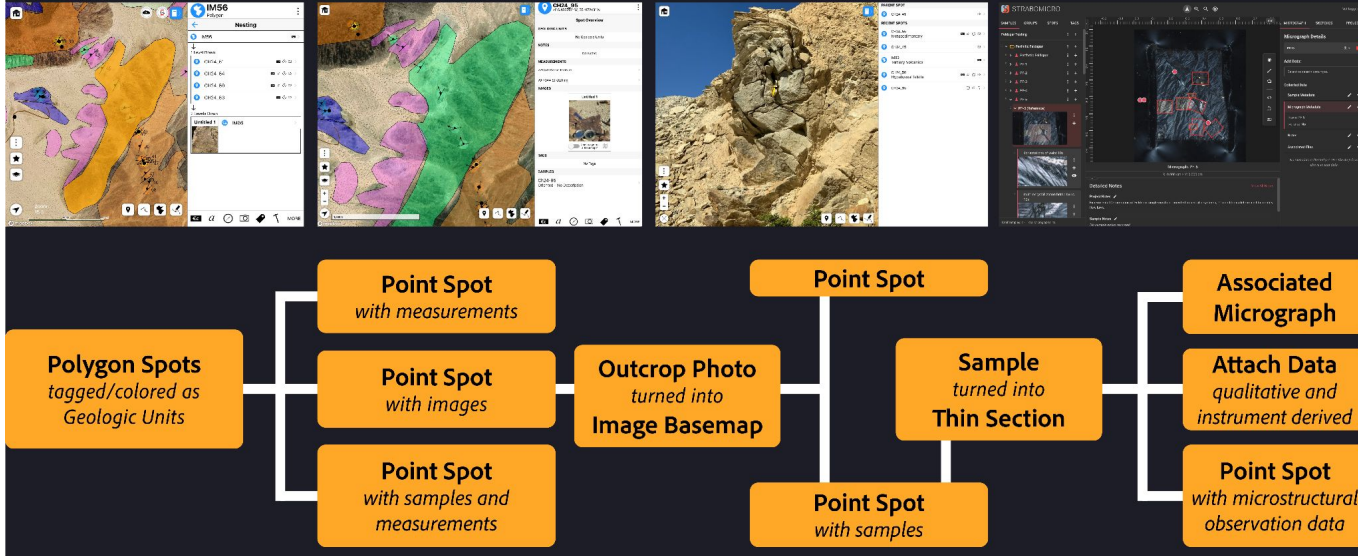
- An outcrop
- A hand sample
- A core
- A thin section
- An SEM image
- An experimental sample
- A deformation experiment

The spot abstraction allows StraboSpot to work across many spatial scales without changing the data model.

Everything begins with a Spot

Hierarchical Data from the Field to the Lab & *back*!

Spot track hierarchical and spatial relations at all scales. Link map scale, mesoscale and laboratory scale data and retain spatial orientation and data.



keep detailed
metadata connected
to experimental data

find and connect using
the apparatus repository

create new
projects

Add Experiment
Project: Feldspar Deformation

Experiment ID*

Enter experiment identifier...

Load All Data from Previous Experiment

New User?
Load Example Data

Load All Data from JSON File



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data

Cancel

Save Experiment

SAMPLE INFO

Load Data: from Previous Experiment From JSON File Clear

SAMPLE INFO

Sample Name * IGSN
Parent Sample Name Parent IGSN

MATERIAL

Material Type * Name *

MINERALOGY

Add Phase
No items yet. Click 'Add Phase' to add one.

PROVENANCE

Formation Name Member Name Sub Member Name Source

add detailed
sample metadata

FACILITY & APPARATUS

Load Data: from Previous Experiment From JSON File Clear

FACILITY INFO

Facility Name * Brown University
Rock Deformation Laboratory at Brown University, DEEPS View

Institute Name * Apparatus Name
Custom Designed/Built Deadweight Creep Apparatus View

Custom Designed/Built Torsion Attenuation Apparatus View

Facility Address
Street * Number Instron 1332/8500 View

State Instron 3100/8500 View

Tullis Large Volume, High Pressure Gas Medium, Rotary Shear View

Griggs Apparatus x 3 View

Paterson # View

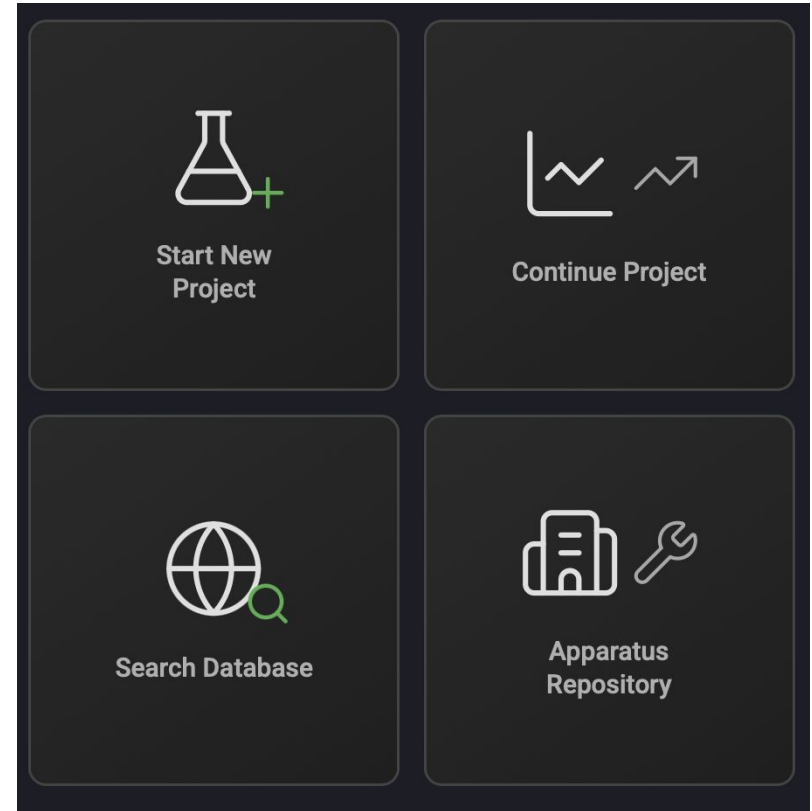
Facility Contact
First Name Columbia University
Lamont-Doherty Earth Observatory, Rock and Ice Mechanics Lab View

Phone Apparatus Information
Apparatus Name Apparatus *
Legacy Blax (under renovation) Blaxial

StraboExperimental

Preserves:

- Experiment metadata
- Apparatus Information
- Calibrations
- DAQ equipment and channels
- Sample information
- Protocols
- Raw data
- Processed data
- Images





**Start New
Project**



Continue Project



Search Database



**Apparatus
Repository**



**Start New
Project**



Search Database

**Apparatus
Repository**

Project Name *

Enter project name

Description

Project description (optional)



Cancel

Create Project



**Start New
Project**



Continue Project



Search Database



**Apparatus
Repository**



Start New
Project



Continue Project

My StraboExperimental Data

(Add Project)

Feldspar Deformation

Last Modified: March 18, 2026, 12:50:54 pm EDT

Options...

Public? ☐

	Experiment ID	Apparatus Type	Test Features	Data Entered	Last Modified
Options...	PF-7	Triaxial (conventional)	Loading, Unloading, Heating, High Temperature, High Pressure, Elasticity, Yield Strength, Triaxial Stress/Strain	Facility, Apparatus, DAQ, Sample, Experiment, Data	June 11, 2024, 11:58:08 am EDT
Options...	PF-6	Triaxial (conventional)	Loading, Unloading, Heating, High	Facility, Apparatus,	June 11, 2024, 11:55:39 am EDT



**Start New
Project**



Continue Project



Search Database



**Apparatus
Repository**

StraboSpot Search Results

Filter

Enter Keywords Here.

Applied Filters:

quartz ✕

- ☐ StraboField (123)
- ☐ StraboMicro (4)
- ☒ StraboExperimental (2)



List View

Map View

Date Created



Utah Forge Project

Ulrich Mok

Last Updated 03/19/2026

5 Experiment(s)

[VIEW](#)

We examine the seismic behavior of thermally fractured Barre Granite undergoing mechanical damage and/or rupture. Thermally cracked Barre granite cores (1.5" diameter, 3" length) are pre-stressed by increased deviatoric axial (sigma 1) load about 80% to failure. Subsequently we increase pore pressure which will lead to successive failure. We record the seismic events during this process and categorize their characteristics using machine learning algorithms. Tests are conducted within a range of conditions (pp: 30MPa+ and cp: 40-90MPa) at 80C.



Energy Budget of Labquakes

Daniel Ortega-Arroyo

Last Updated 01/31/2025

11 Experiment(s)

[VIEW](#)



Search Database



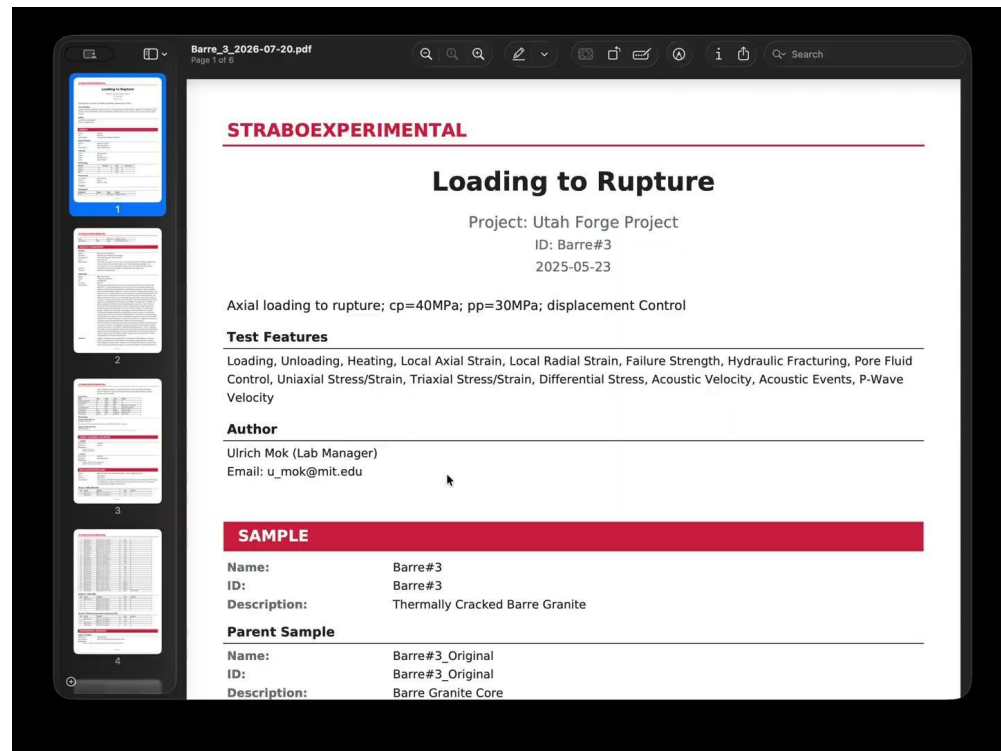
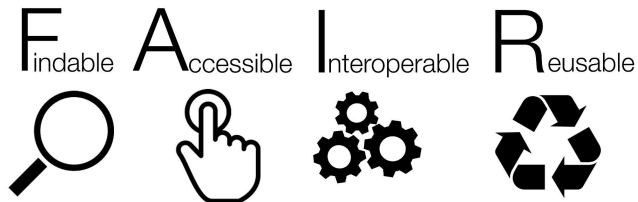
Apparatus
Repository



Searching and Reviewing Data

Users can:

- Discover datasets
- Inspect metadata
- Review experimental details
- Access shared files





**Start New
Project**



Continue Project



Search Database



**Apparatus
Repository**

STRABOEXPERIMENTAL

← Back

Apparatus Repository

Browse facilities and equipment

+ Add Facility

Rock Deformation Laboratory at Brown University, DEEPS

Brown University — Earth Sciences

7 apparatuses ▶

Lamont-Doherty Earth Observatory, Rock and Ice Mechanics Lab

Columbia University — Lamont-Doherty Earth Observatory

6 apparatuses ▶

Rock Physics and Mechanics Laboratory

ETH Zürich

0 apparatuses ▶



Search Database



Apparatus
Repository



**Start New
Project**



Continue Project



Search Database



**Apparatus
Repository**

STRABOEXPERIMENTAL

Add Experiment

Project: Feldspar Deformation

Experiment ID*

Load All Data from Previous Experiment

New User?
Load Example Data

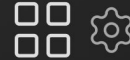
Load All Data from JSON File



Sample



Facility and Apparatus



Experimental Setup



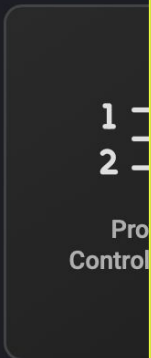
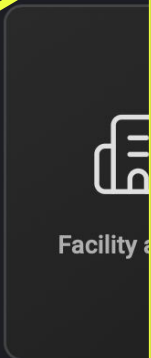
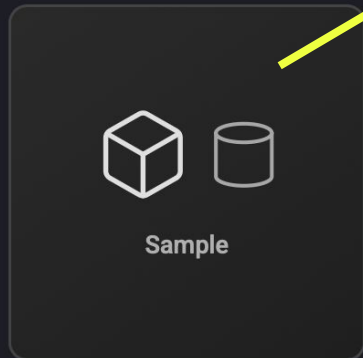
DAQ



Protocol and
Controlled Variables



Data



SAMPLE INFO

Load Data:

from Previous Experiment

From JSON File

Clear Interface

SAMPLE INFO

Sample Name *

IGSN

Sample ID *

Description

Parent Sample Name

Parent IGSN

Parent Sample ID

Parent Description

MATERIAL

Material Type *

Name *

State

Note

Select...

Select...

MINERALOGY

Add Phase

No items yet. Click 'Add Phase' to add one.

PROVENANCE

Formation Name

Member Name

Sub Member Name

Source

Select...

LOCATION

Street + Number

Building - Apt

Postal Code

City



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data



Sample





Facility and Apparatus



DAQ

1 —

2 —

Protocol Controlled

FACILITY & APPARATUS

Load Data:

from Previous Experiment

From JSON File

From Apparatus Repository

Clear Interface

FACILITY INFO

Facility Name *

Facility Type *

Select...

Facility ID

Website

https://...

Institute Name *

Department

Description

FACILITY ADDRESS

Street + Number

Building - Apt

Postal Code

City

State

Country

Latitude

Decimal degrees

Longitude

Decimal degrees

FACILITY CONTACT

First Name

Last Name

Affiliation

Select...

Email

Phone

Website

https://...

ORCID ID

0000-0000-0000-0000

APPARATUS INFO

Apparatus Name *

Apparatus Type *

Location

Apparatus ID

21



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data

EXPERIMENTAL SETUP



Load Data:

from Previous Experiment

From JSON File

Clear Interface

EXPERIMENT INFO

Title *

Experiment ID

IEDA ID

Start Date/Time

Select date/time...



End Date/Time

Select date/time...



Experimental Description

TEST FEATURES

Select experimental test capabilities:

▼ Type of Experiment

Loading

Unloading

Uniaxial Stress/Strain

Biaxial Stress/Strain

Triaxial Stress/Strain

True Triaxial Stress/Strain

Pure Shear

Simple Shear

General Shear

Rotary Shear

Indentation

Hydraulic Fracturing

Hydrothermal Fracturing

Stepping

Cyclic

Slide-Hold-Slide

Dynamic Deformation (Tests)

Shock Deformation (shockwave)

▶ Mechanical Behavior

▶ Mechanical Measurements

▶ Sample / Starting Material

▶ Sample / Starting Material Characterization



Sample



Facility



DAQ

1
2

P
Cont



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data



Sample



DAQ

DATA ACQUISITION



Load Data:

from Previous Experiment

From JSON File

Clear Interface

DAQ INFO

DAQ Group Name *

e.g., Main Data Acquisition System

DAQ Type *

Select type...

Location

e.g., Room 101

Description

Describe the DAQ system...

Add Device

Device Name *

e.g., National Instrument PCI-MIO-16XE-10



DEVICE (DAQ) CHANNELS

Add Channel

0 - undefined

Channel Header *

Header Type *

Select...

Specifier A *

Enter specifier...

Specifier B

Enter specifier...

Other Specifier

Other specifier...

Unit *

Enter unit...

Channel Information



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data



Sample



DAQ

PROTOCOL & CONTROLLED VARIABLES



Load Data:

from Previous Experiment

From JSON File

Clear Interface

Protocol

Add Step

Step 1

Step

Objective

Select step type...



Enter the objective for this step...

Description

Enter a description for this step...

Parameters

Add Parameter

No parameters added. Click 'Add Parameter' to add one.



Cancel

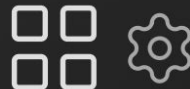
Save Protocol



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data



Sample



DAQ

DATA



Load Data:

from Previous Experiment

From JSON File

Clear Interface

Datasets

Add Dataset

Dataset 1

Data*

Select...



Data Type*

Select...



Choose File*

Choose File

no file selected



Data ID

File Format

Data Quality

Select...



Select...



Description



Cancel

Save

Add Experiment

Project: Feldspar Deformation

Experiment ID*

Example Experiment

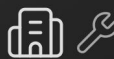
Load All Data from Previous Experiment

New User?
Load Example Data

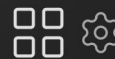
Load All Data from JSON File



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data



Cancel

Save Experiment

STRABOEXPERIMENTAL

Add Experiment

Project: Feldspar Deformation

Load All Data from Previous Experiment

New User?
Load Example Data

Load All Data from JSON File



Sample



Facility and Apparatus



Experimental Setup



DAQ



Protocol and
Controlled Variables



Data



Cancel

Save Experiment

Sample Interconnectivity

The same physical sample can connect multiple projects.

Field Sample ↔ Experimental Sample ↔ Microstructural Analysis ↔ Publication

↔ Link Sample From StraboField

Interoperability

Interoperability with LAPS (<https://doi.org/10.1002/essoar.10505991.1>)

- Interoperable with schema
- Standardized metadata
- Future data exchange
- Easier repository integration

The experimental package

- Metadata
- Raw data
- Processed data
- Sample information
- Apparatus attribution
- Facility attribution
- Protocols
- Images
- Experimental conditions
- DOI

Everything needed to understand and reuse an experiment

One continuous record

- Field relationships
- Pre- & post-experiment microscopy
- Image annotation
- Sample history

StraboSpot

A unified framework spanning field, laboratory, and microscopy.

StraboExperimental

Captures the complete experimental package, not just data files.

Connected Science

Linked samples, interoperable metadata, searchable public datasets, and long-term reproducibility.

Questions?

StraboExperimental Landing Page:

https://strabospot.org/straboexperimental_landing

Help Resources:

<https://strabospot.org/help>

- Register for a 1:1 Help Session
- Email us at strabospot@gmail.com
- Check out the manual:

<https://strabospot.org/manual/experimental>



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