Horizontal to Vertical Spectra Ratio Measurements Using Atom-3C and Mobile Devices

1/30/2023

Geometrics/OYO Corporation

Outline

Data acquisition

1. Set 3C geophone at quiet place.
2. Push power button 2 seconds to turn on Atom. Atom beeps short.
3. Confirm GPS LED brinks more than once a second.
4. Record ambient noise 20 to 30 minutes.
5. Push power button momentum to stop. Atom beeps long.

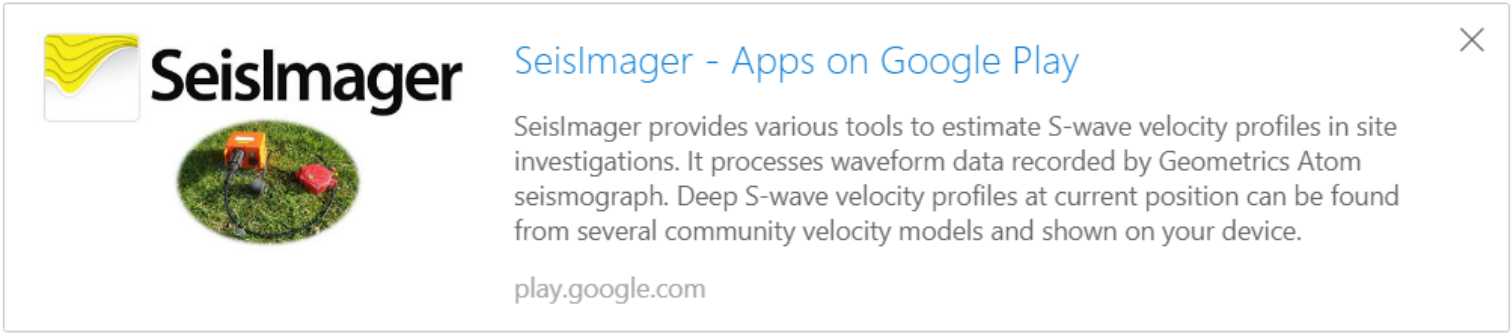
Download and Install Mobile Apps

SeisImager.com

Apps for downloading and processing are available at Google Play.

https://play.google.com/store/apps/details?id=com.Geometrics.AtomDownloader.Android&hl=en_US

https://play.google.com/store/apps/details?id=com.seisimager.waveviewer&hl=en_US

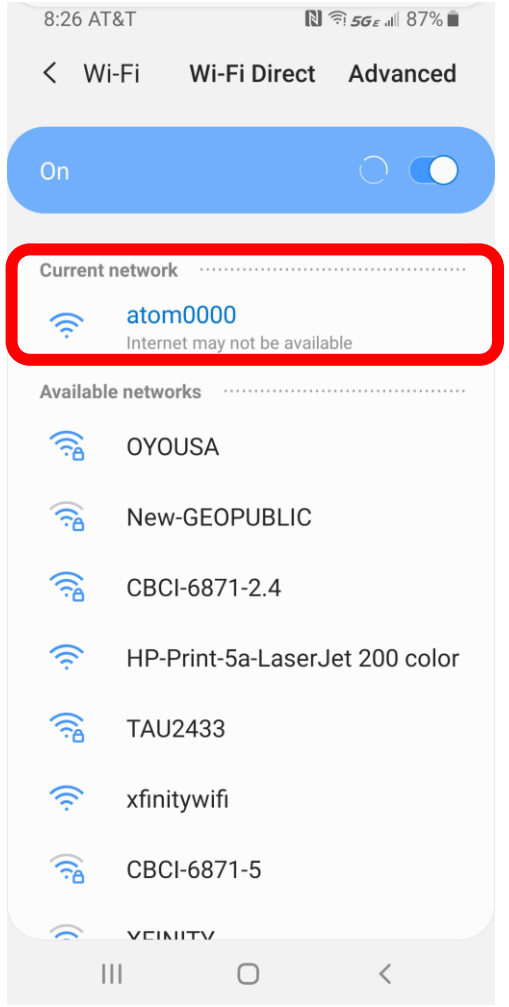


Apps for iPhone/iPad are also available. Contact to your sales agent if you want to use apps on iPhone/iPad.

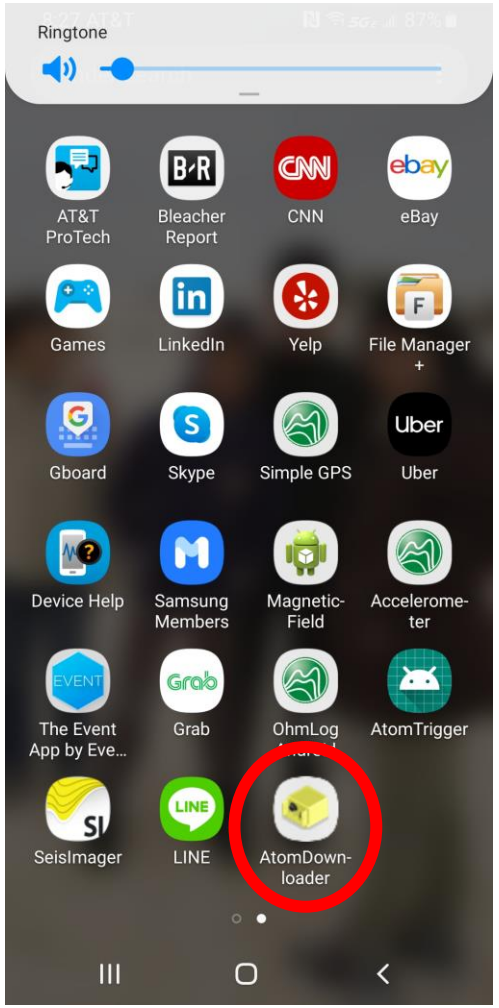
Data download (1)

Press power button 3 seconds to turn on access point. Blue LED comes to stay on and ready to download.

Connect to “atom0000”



Launch AtomDownloader

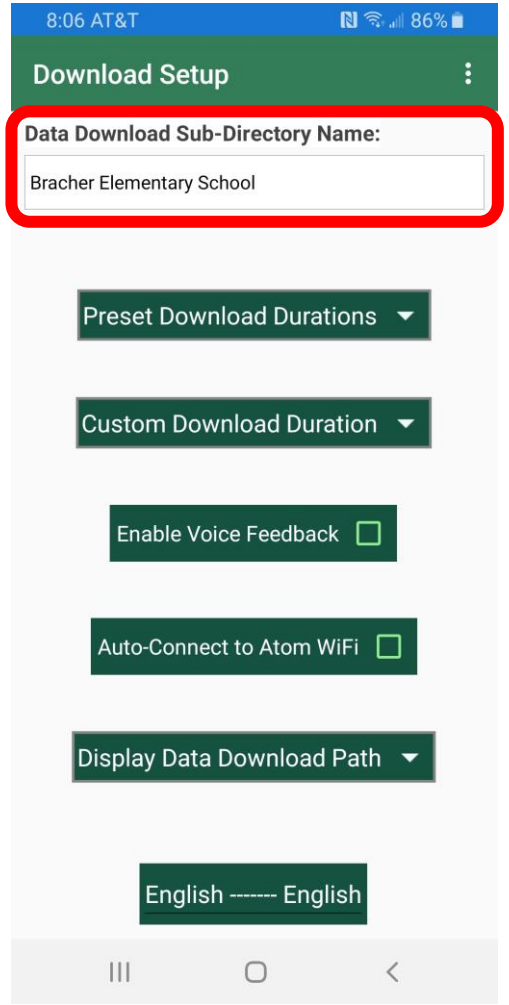


Data download (2)

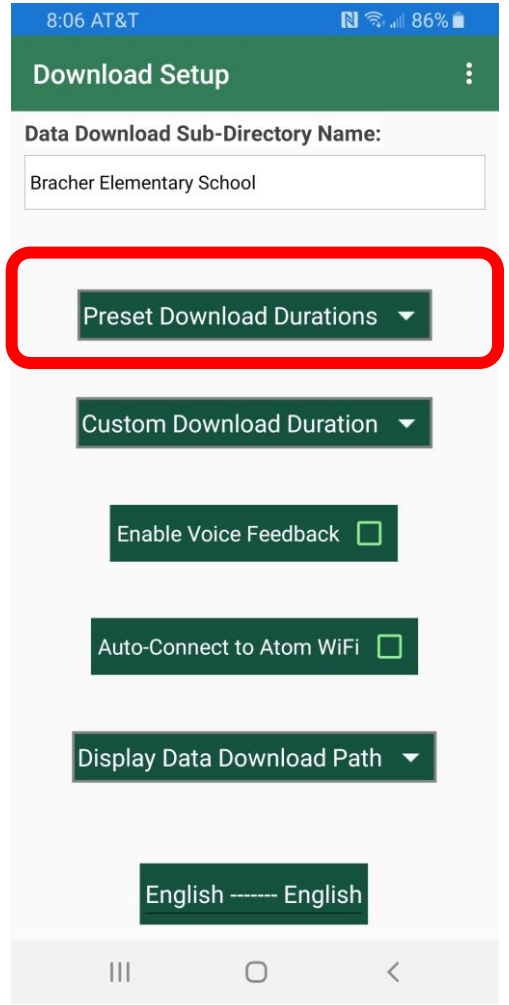
SeisImager.com

Initial screen

Set site name (folder name)

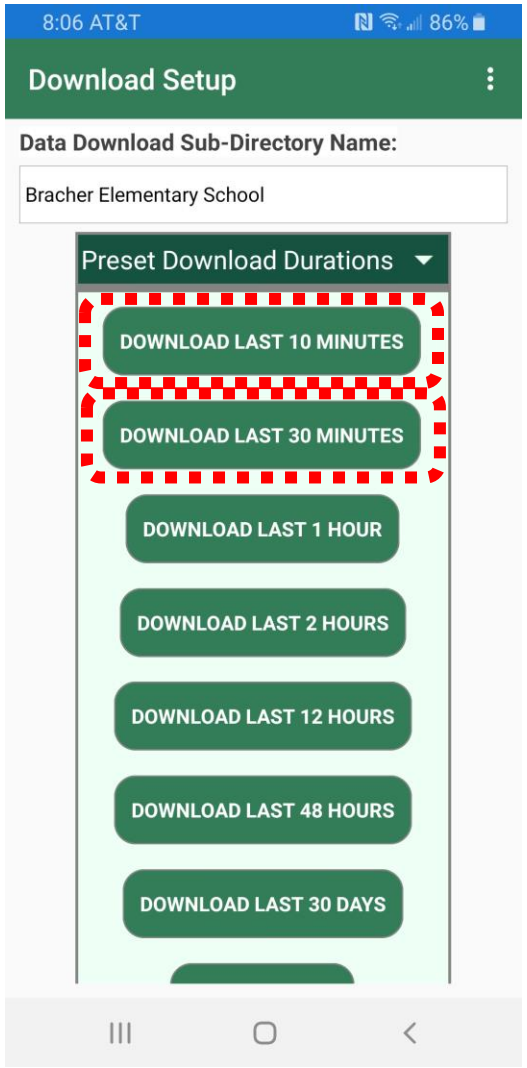


Tap “Preset Download Durations”

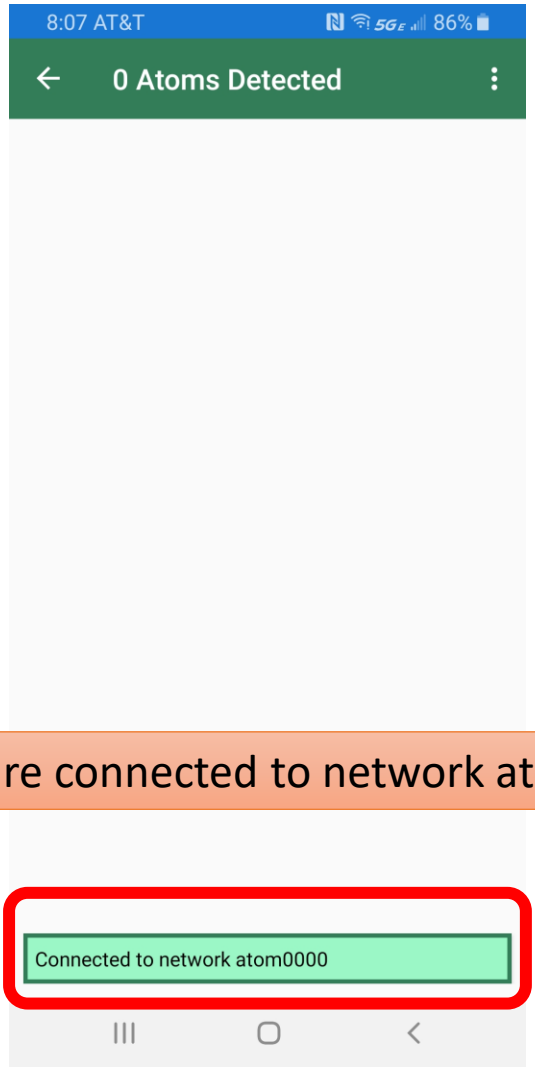


Data download (3)

Set data length to be downloaded



Ready to download data



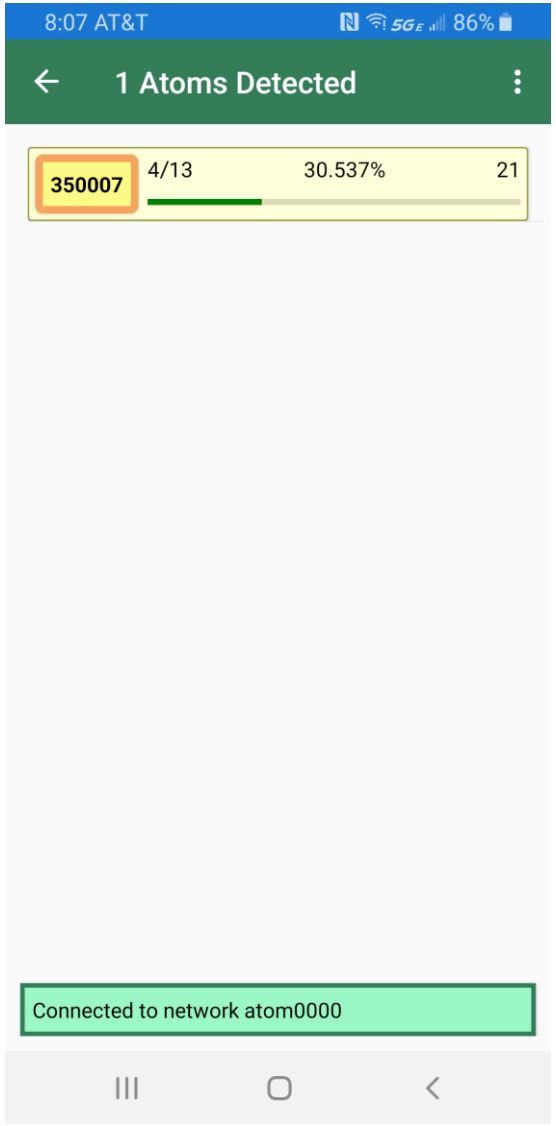
Make sure connected to network atom0000

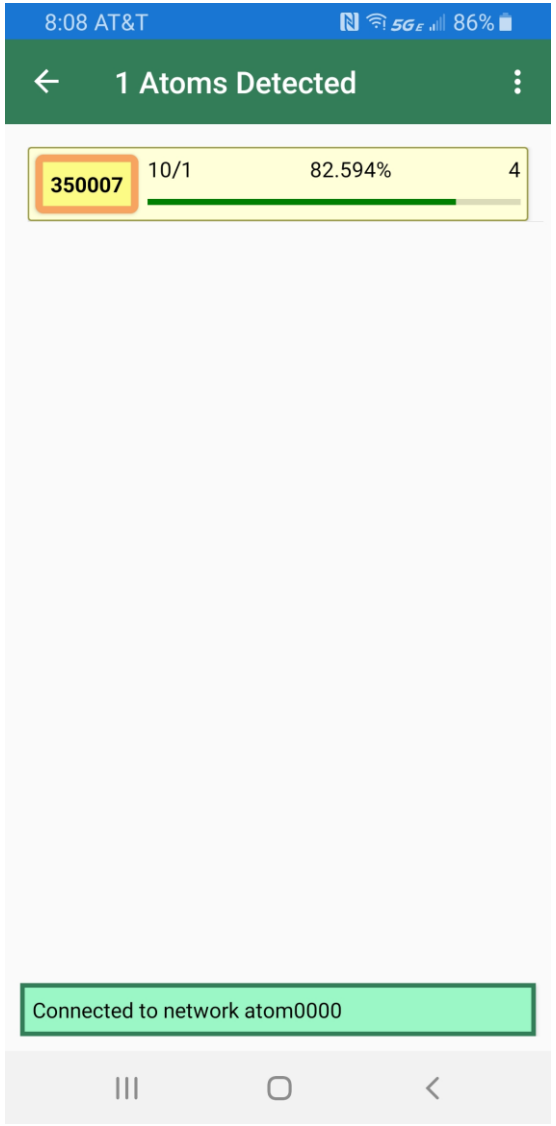
Push power button 5 seconds to turn on Atom with download mode.

Data download (4)

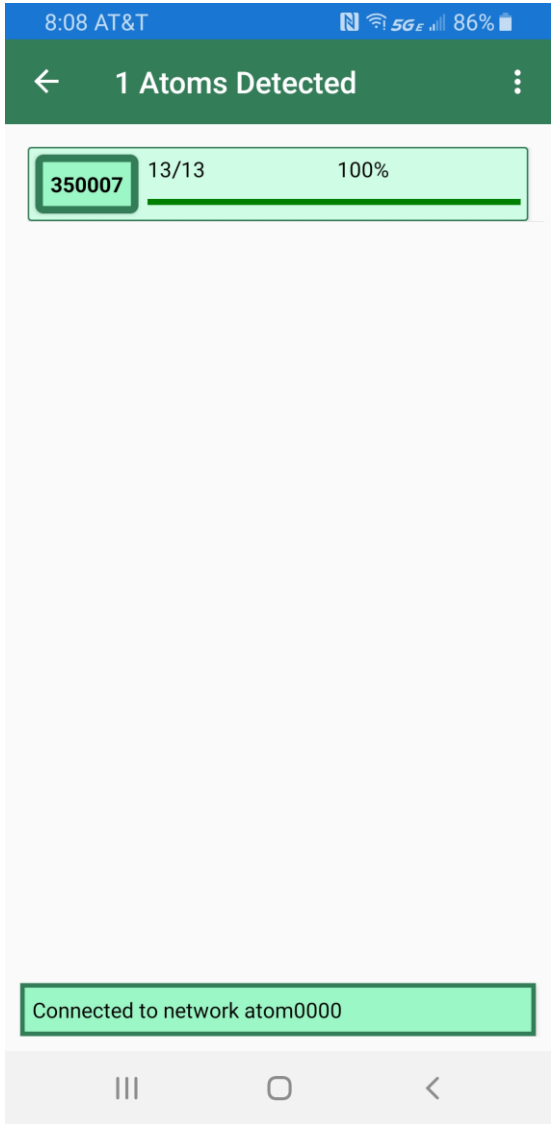
SeisImager.com

Automatically detect Atom and start download





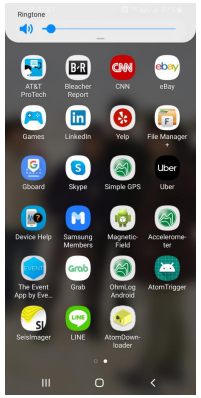
Download completed



H/V data processing (1)

SeisImager.com

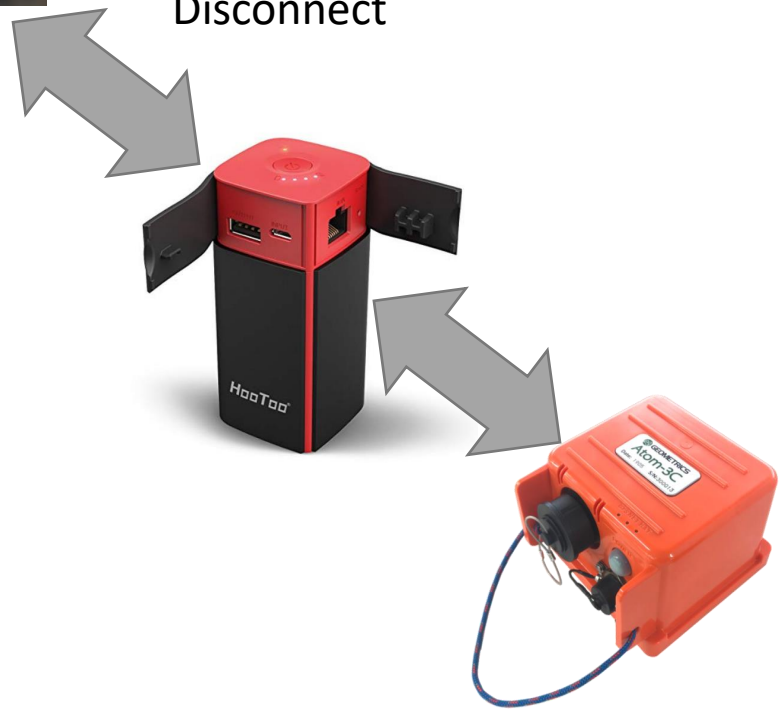
You need to connect internet if you want to upload processing result to database.
Disconnect “atom0000” and connect internet.



Connect

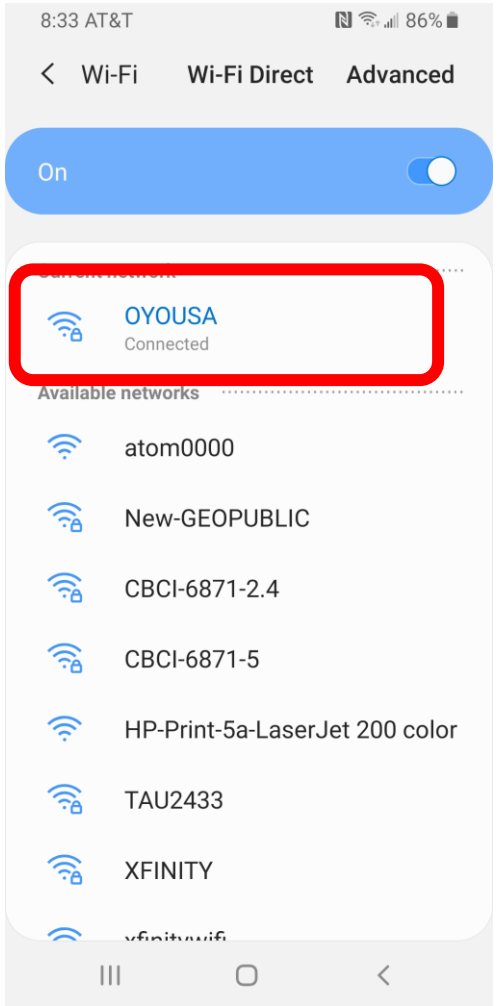
Internet

Disconnect



Press power button 3 seconds to turn off access point.

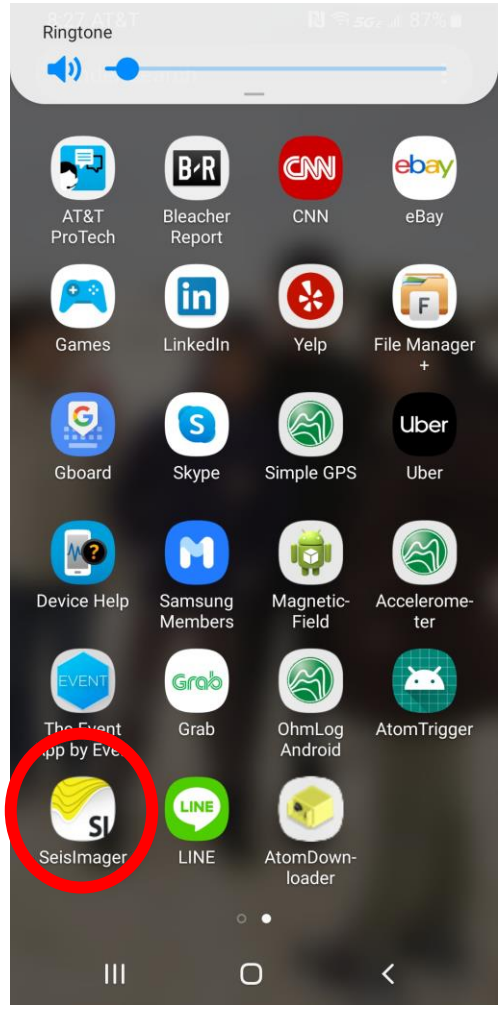
Disconnect “atom0000” and connect other available network



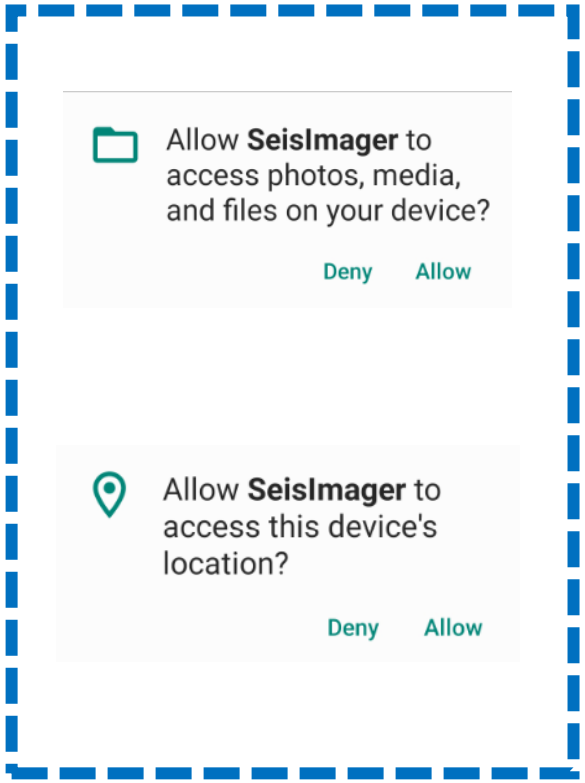
H/V data processing (2)

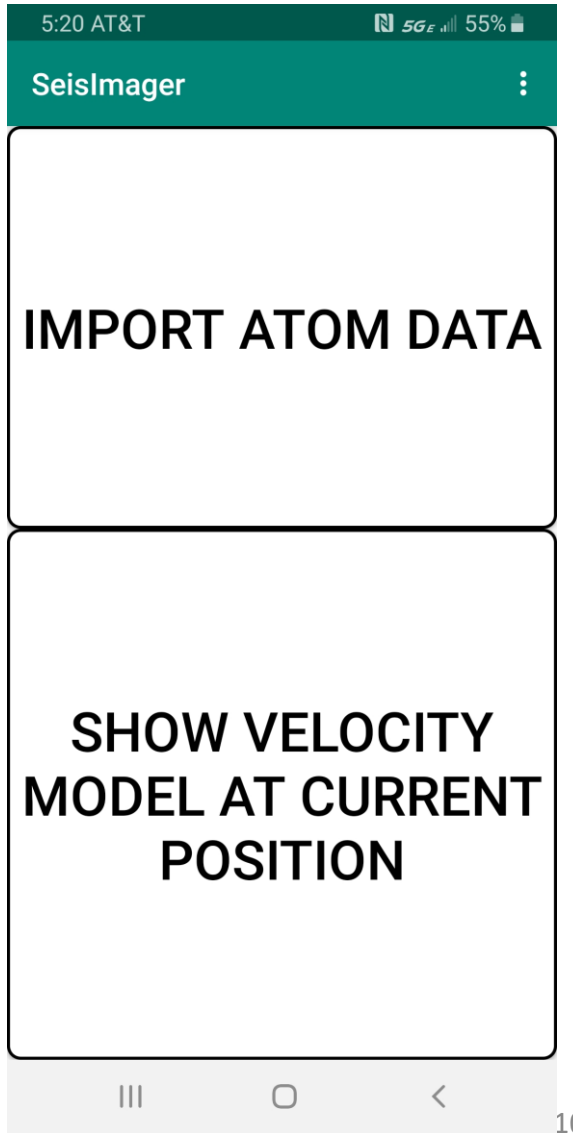
SeisImager.com

Launch SeisImager



Accept permission request (only first time)

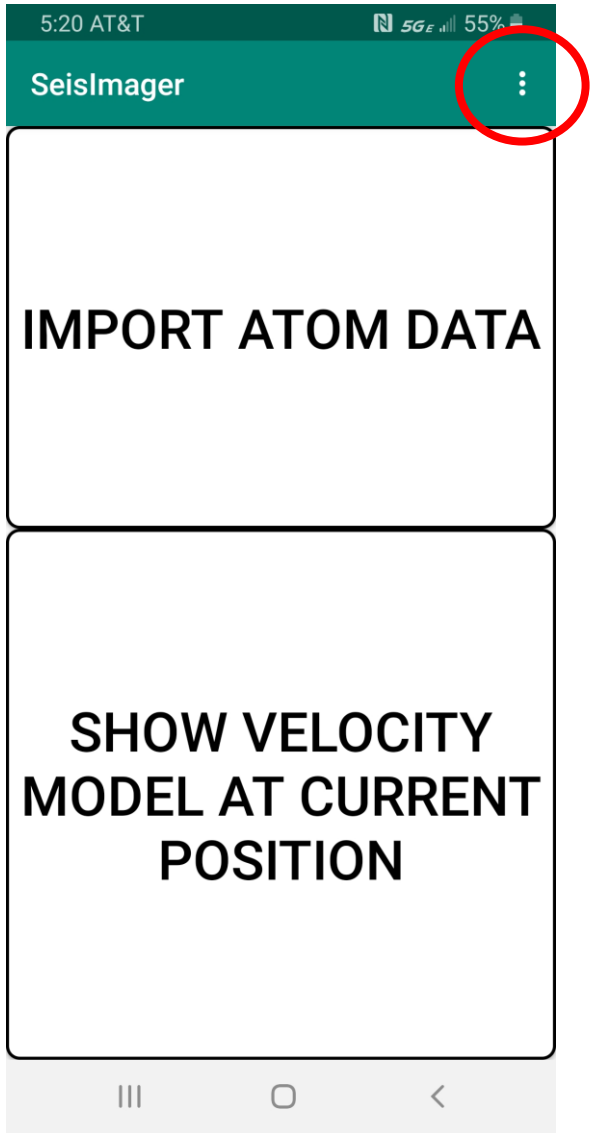




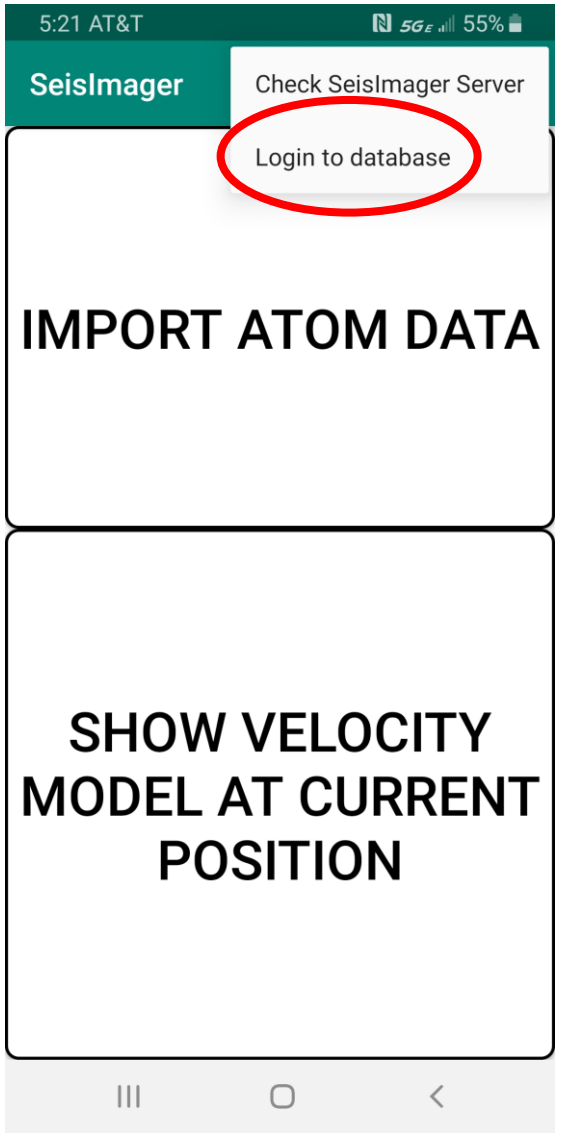
SeisImager.com

H/V data processing (3) : set up database (only first time)

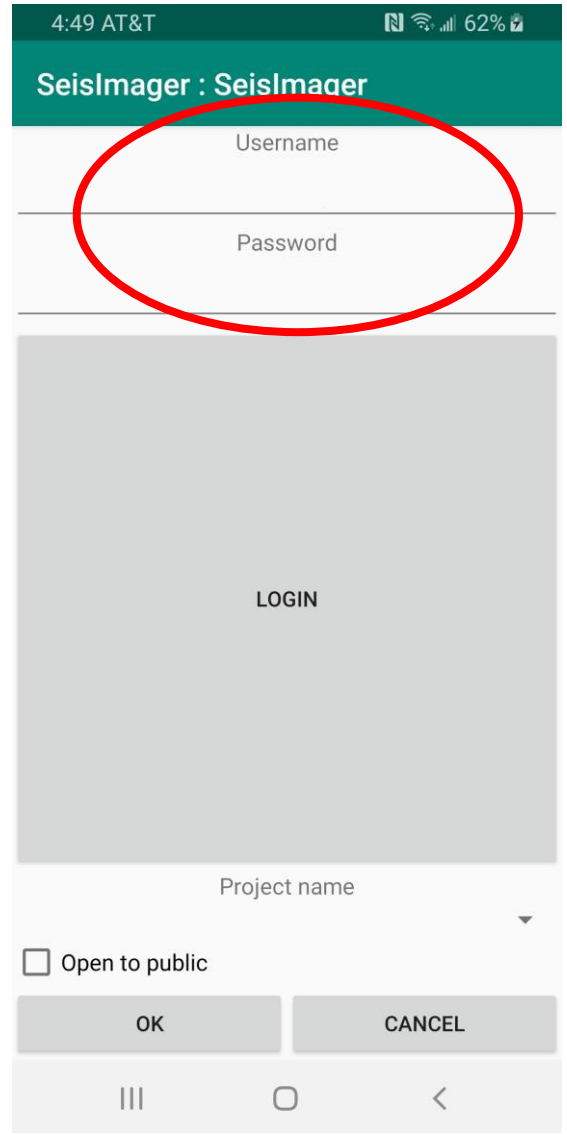
Tap option menu



Select “Login to database”



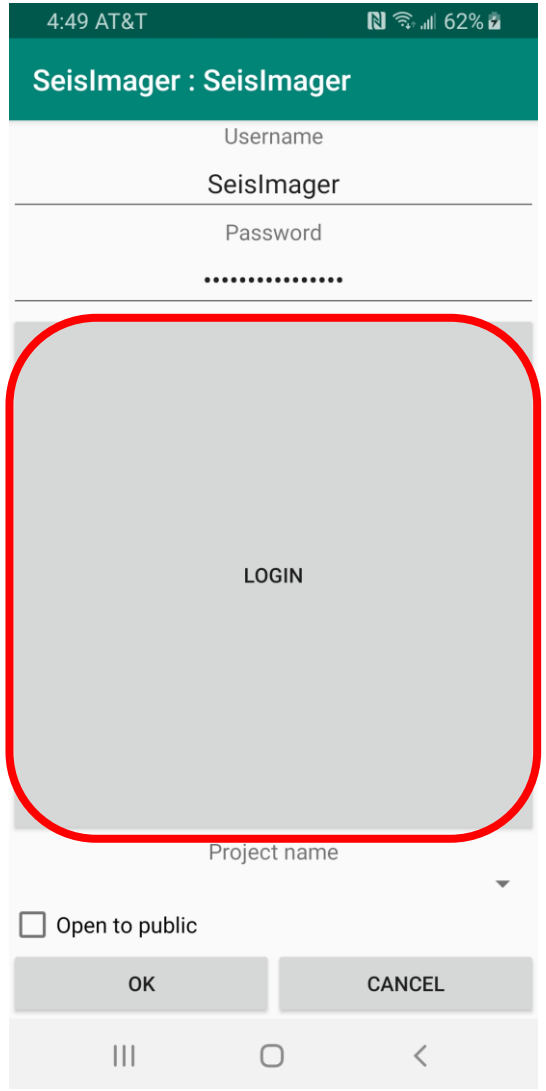
Enter username and password



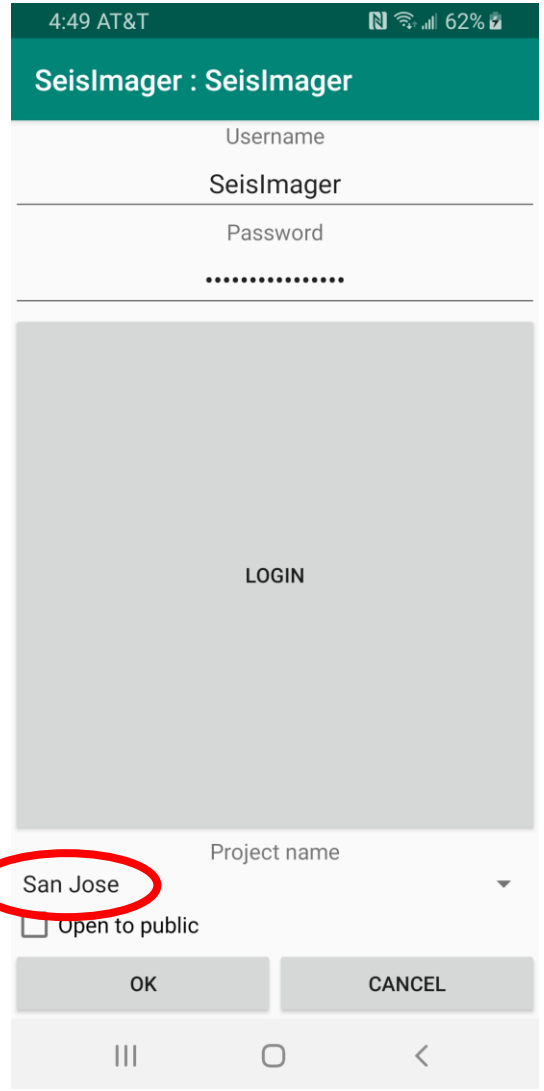
SeisImager.com

H/V data processing (4) : set up database (only first time)

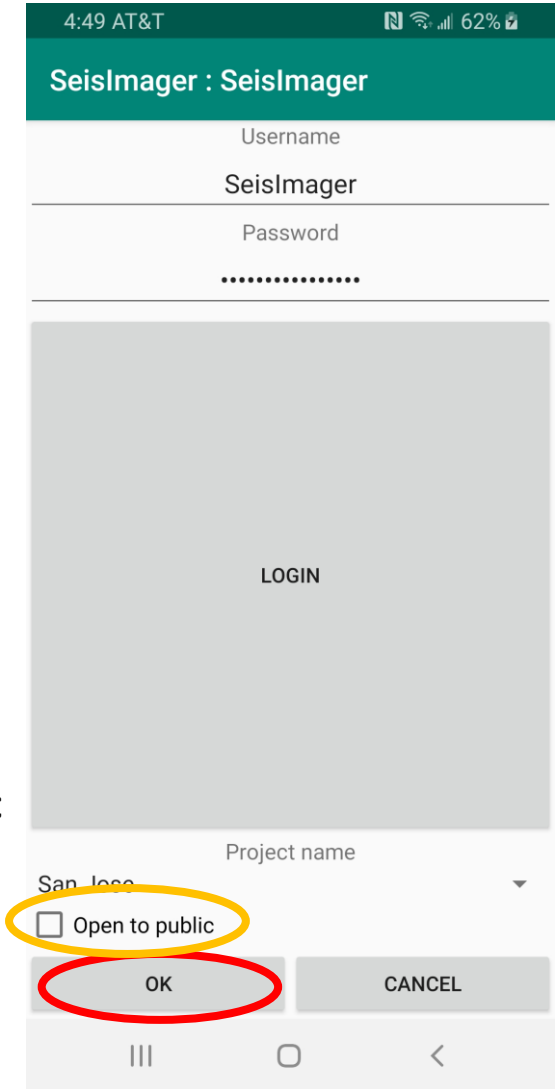
Tap “LOGIN”



Select a project



TAP “OK”



Check if you want to open data to public

H/V data processing (5)

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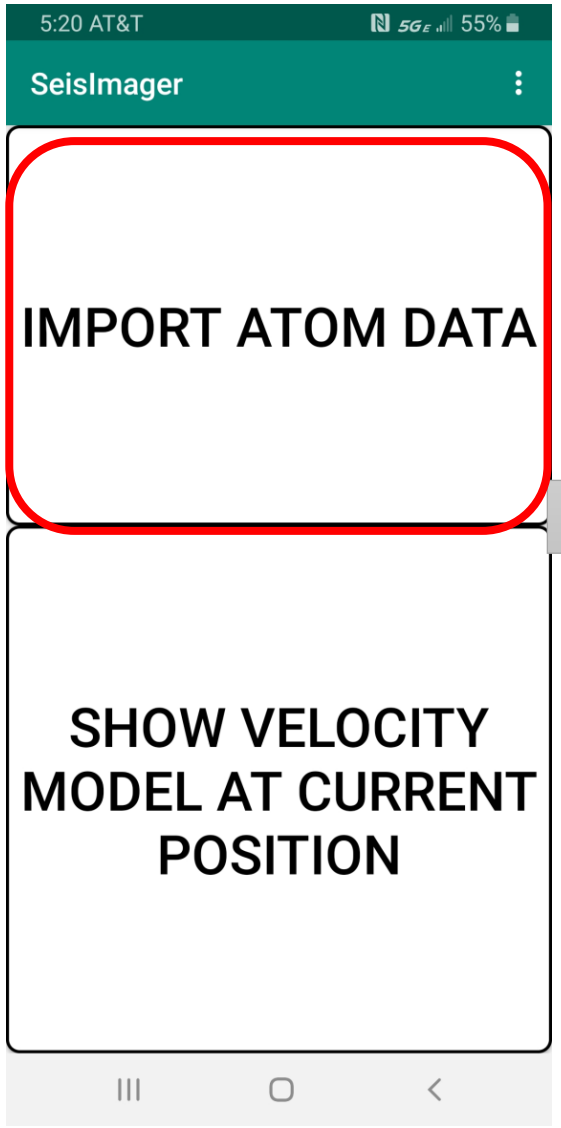
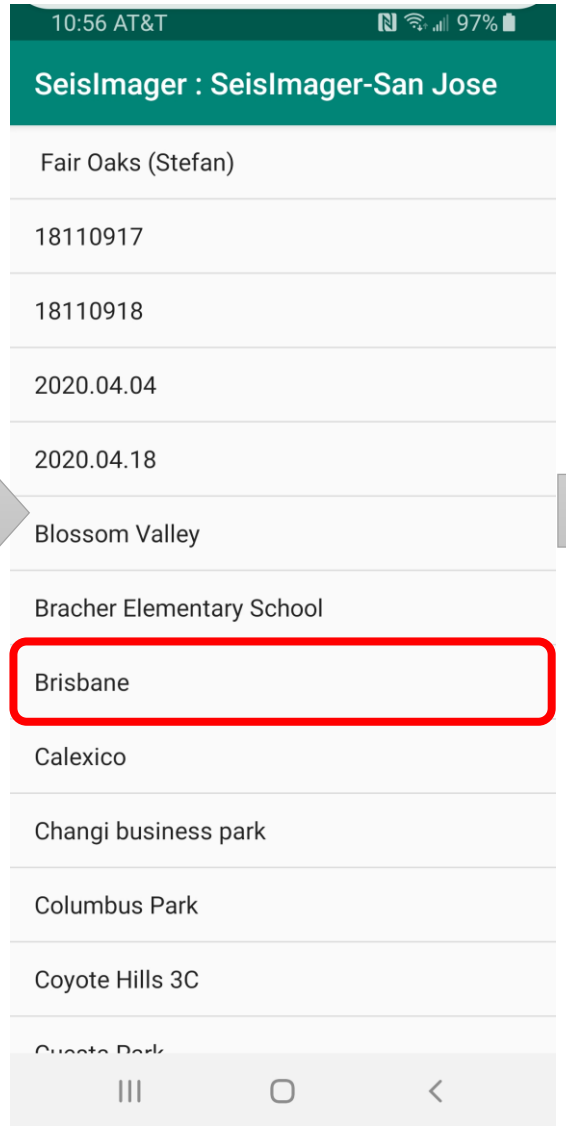
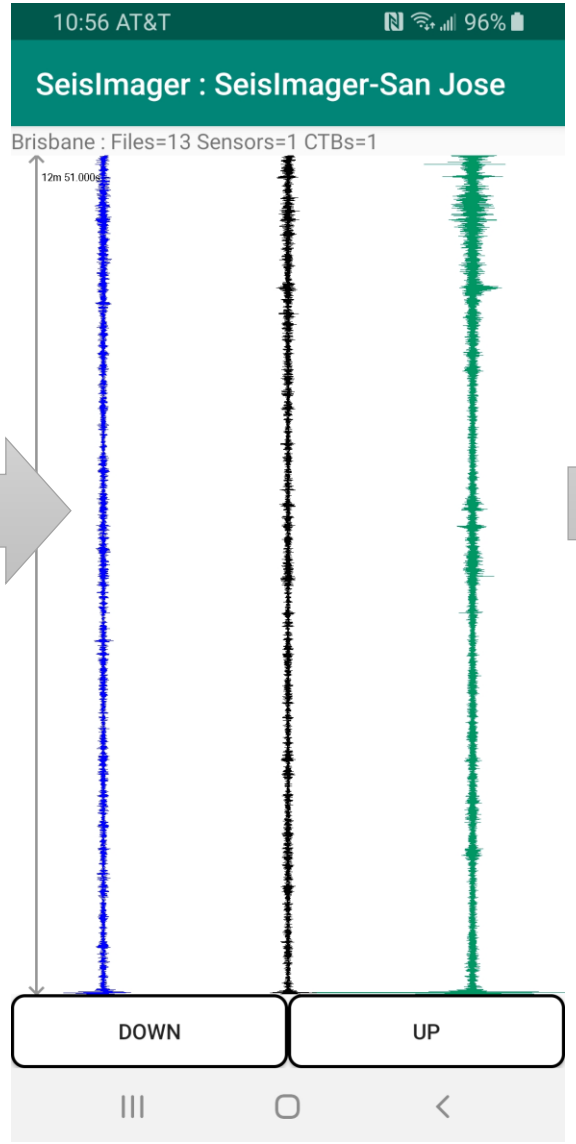
Tap “IMPORT ATOM DATA”



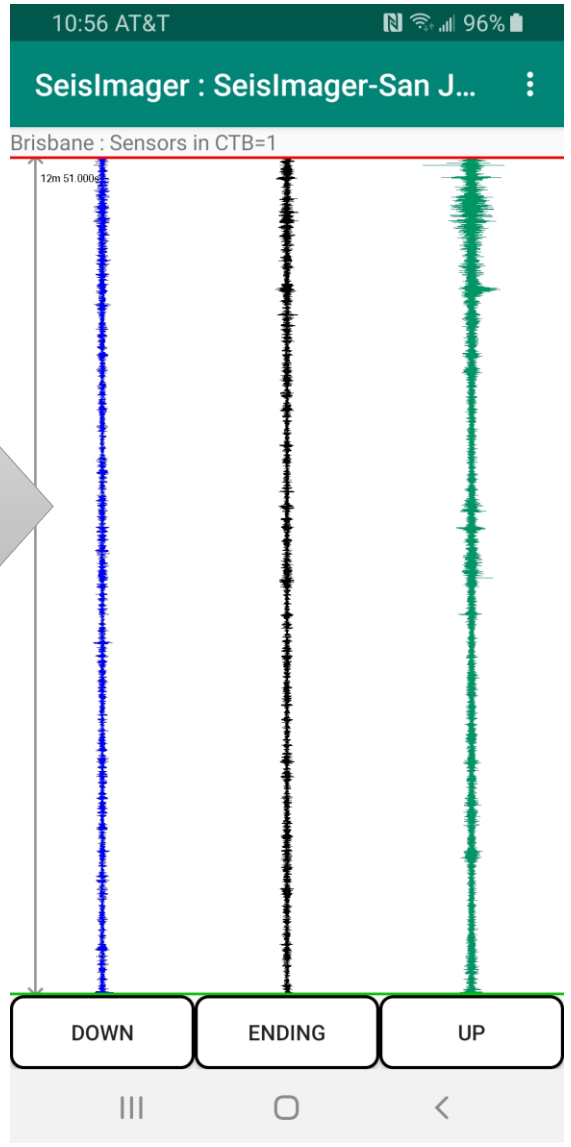
Select folder to be processed



3C ambient noise data appears. Tap screen to select “CTB” to be processed.



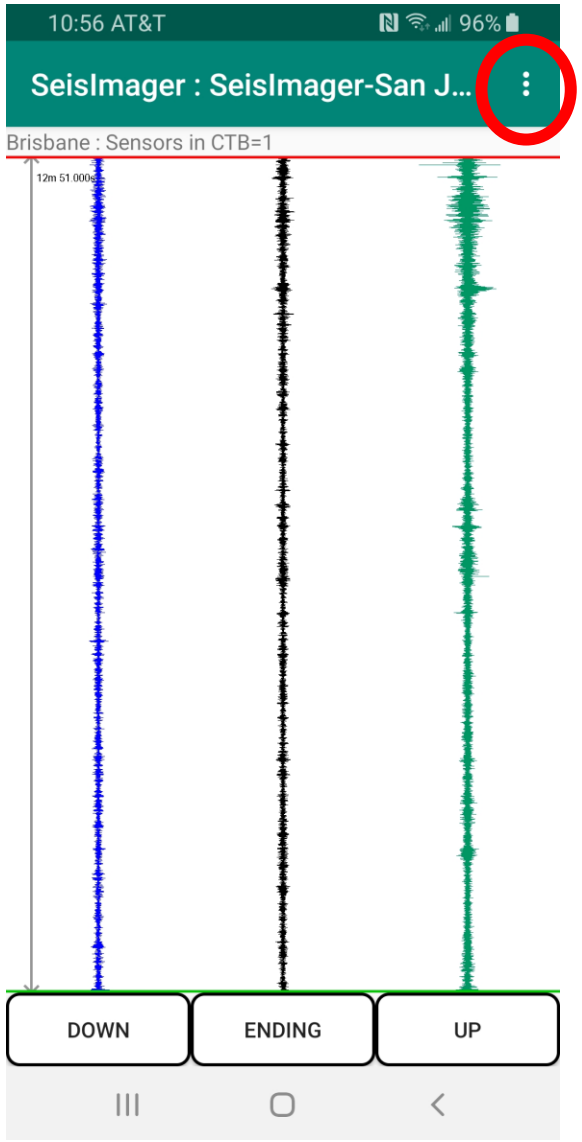
A “CTB” appears. You can set a gate and truncate data at beginning or ending if necessary.



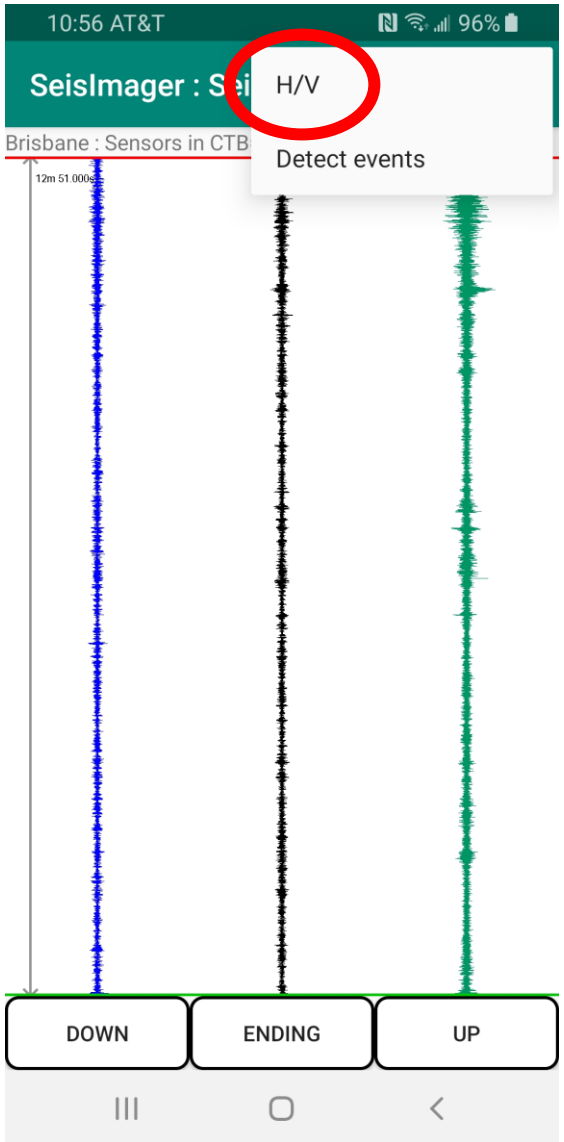
H/V data processing (6)

SeisImager.com

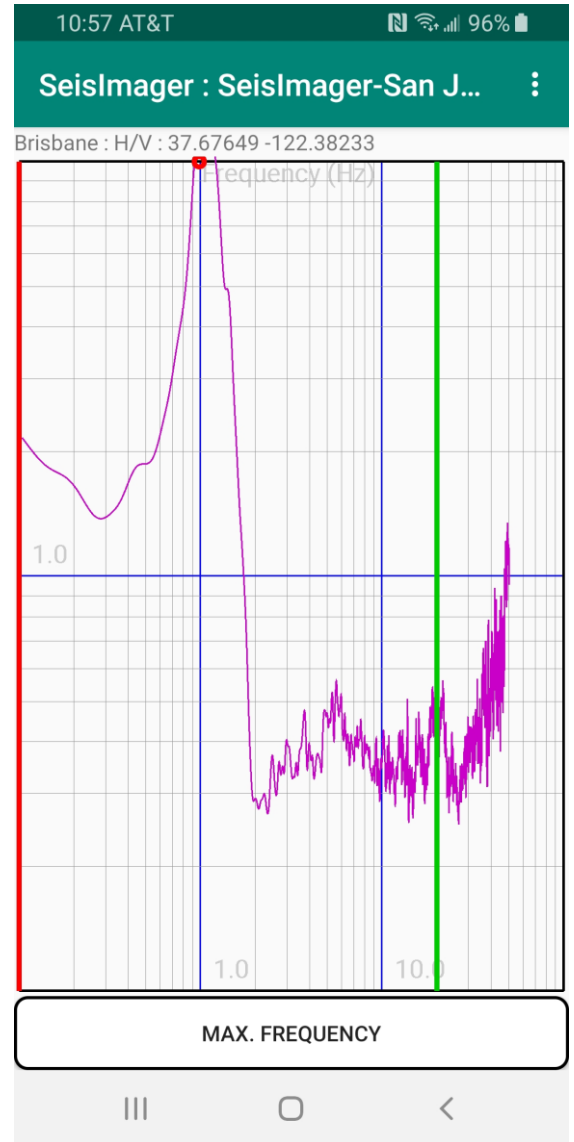
Tap option menu



Select “H/V”

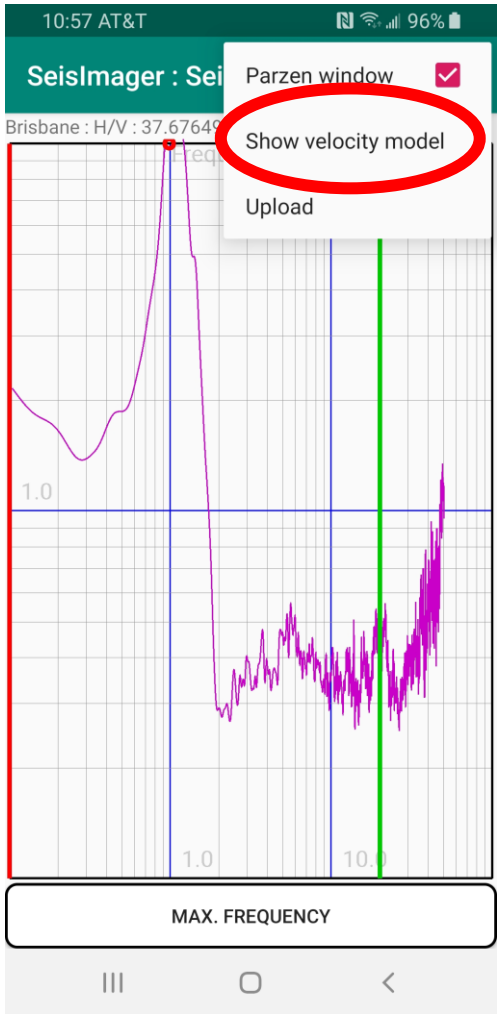


H/V spectrum appears

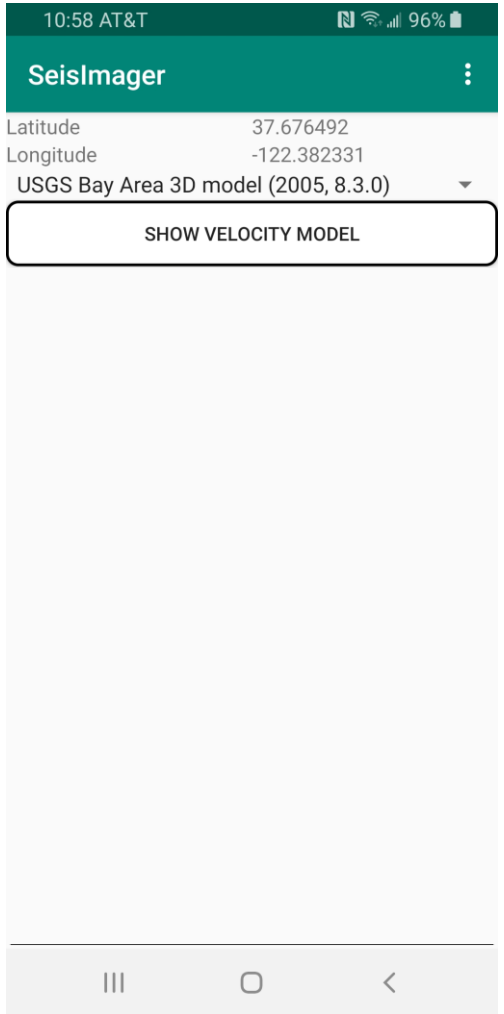


Compare observed data with theoretical data (optional) (only available at Japan and California (Bay Area and Los Angels))

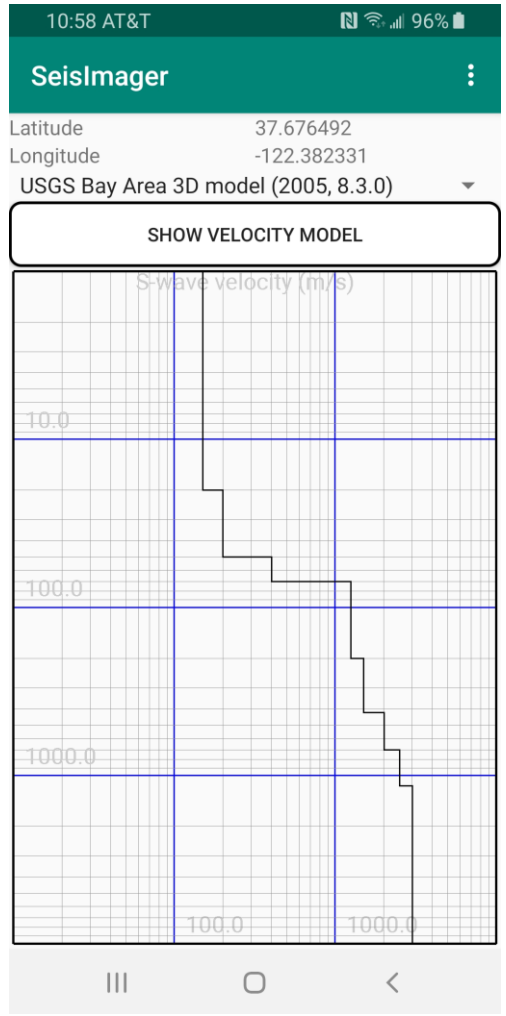
Show option menu and tap "Show velocity model"



Select a model and tap "SHOW VELOCITY MODEL"

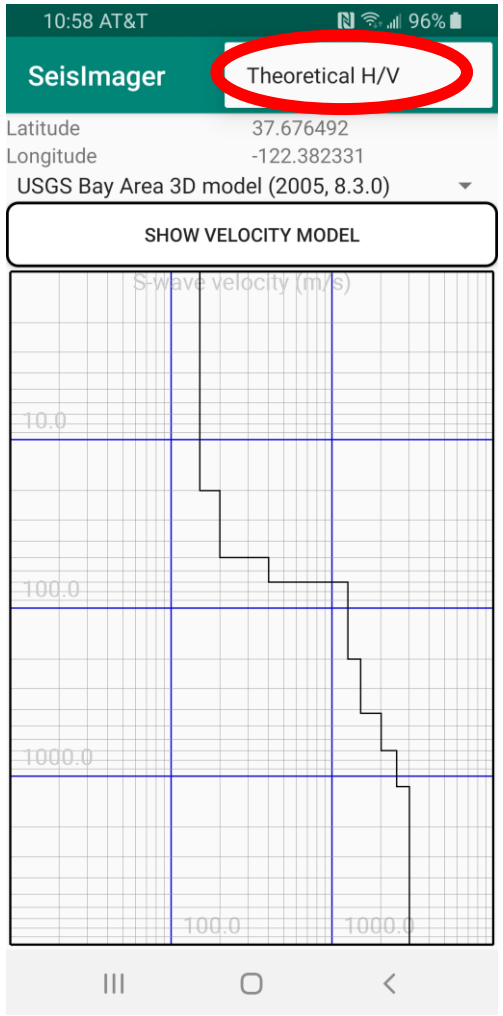


S-wave velocity model at the site appears



Compare observed data with theoretical data (optional)

Show option menu and tap “Theoretical H/V”



Theoretical H/V appears with observed data

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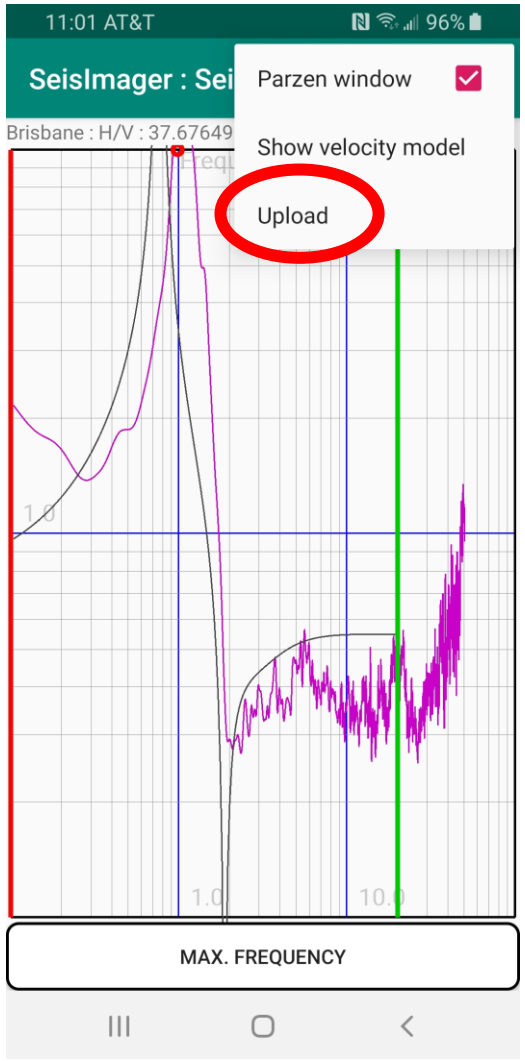
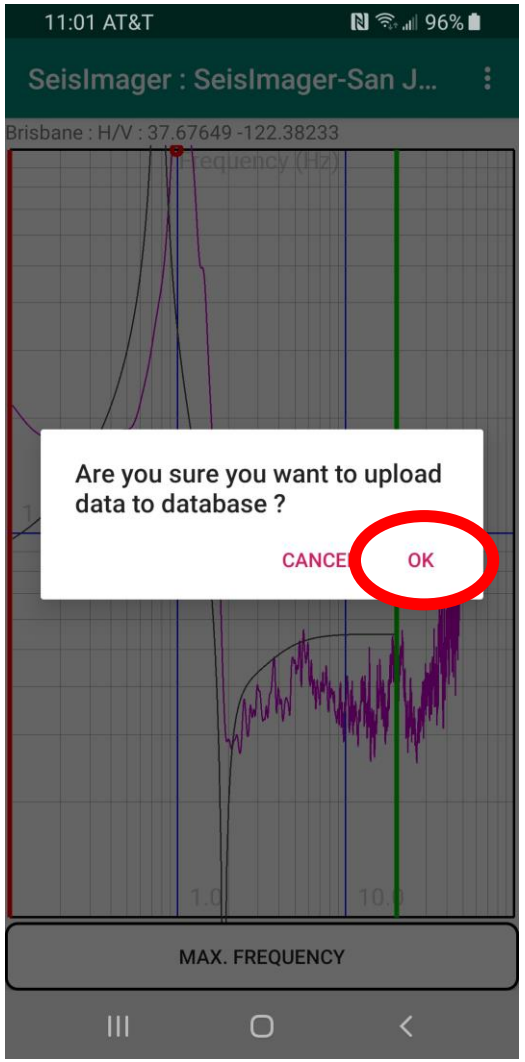
Upload processing result to SeisImager server

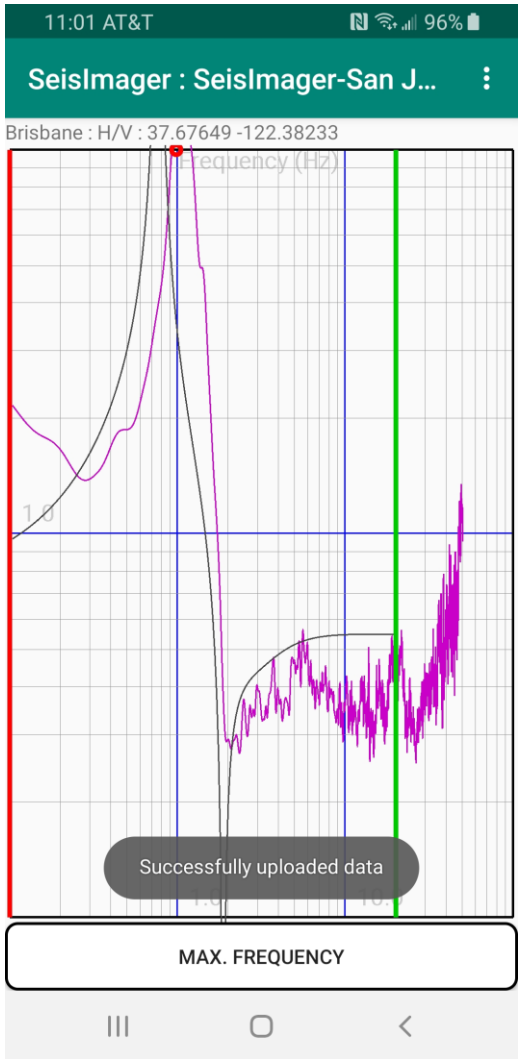
Select “Upload” in option menu



Tap “OK” to upload data to server



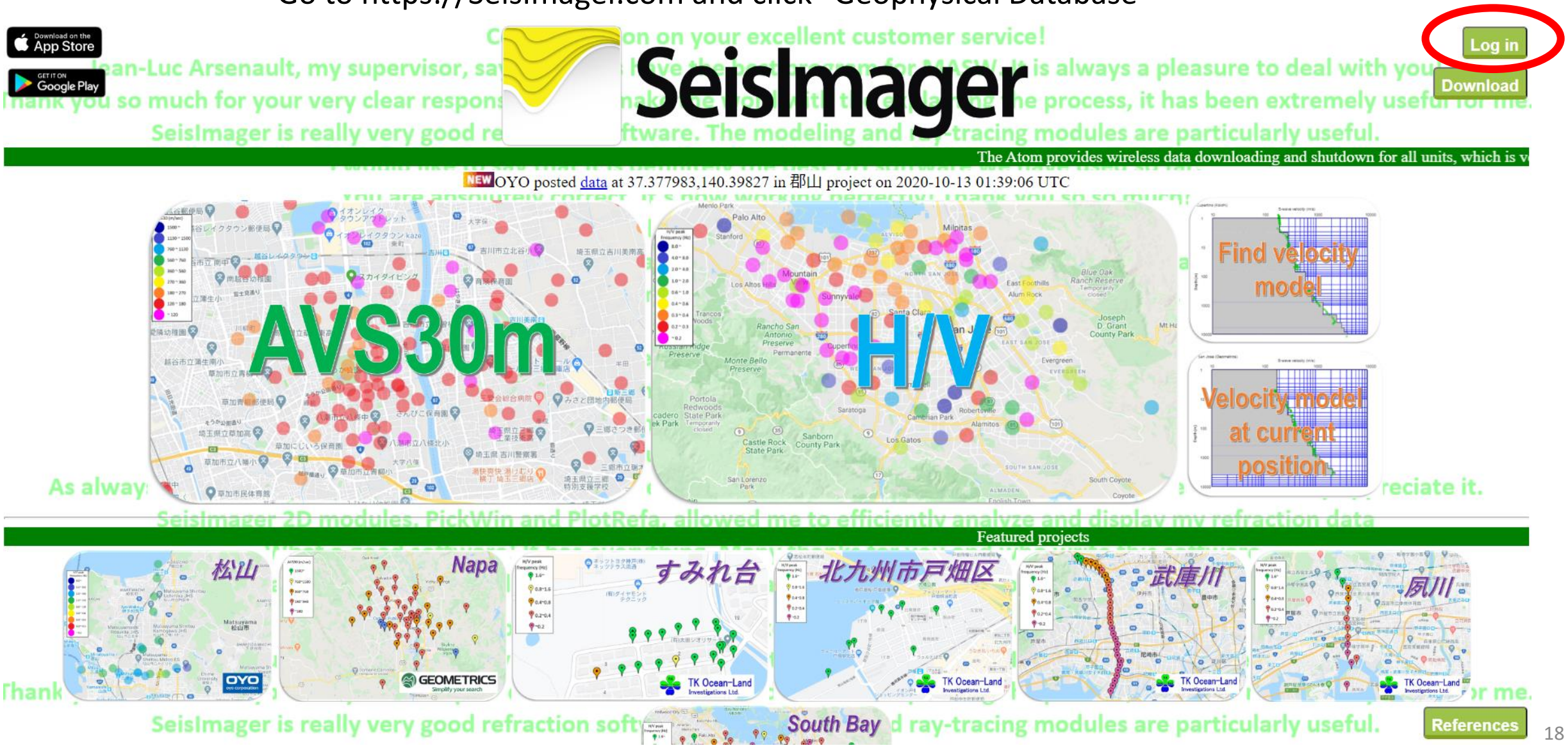
Processing result was uploaded to server



SeisImager.com

Browse your measurement results through internet (1)

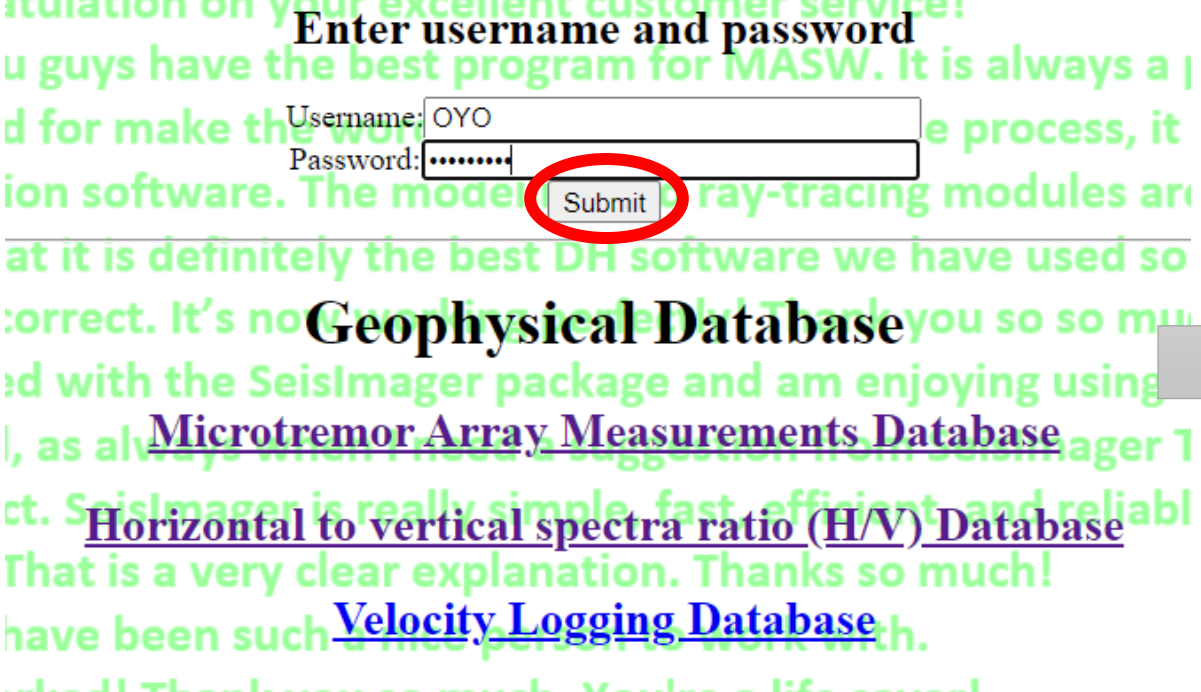
Go to https://SeisImager.com and click “Geophysical Database”



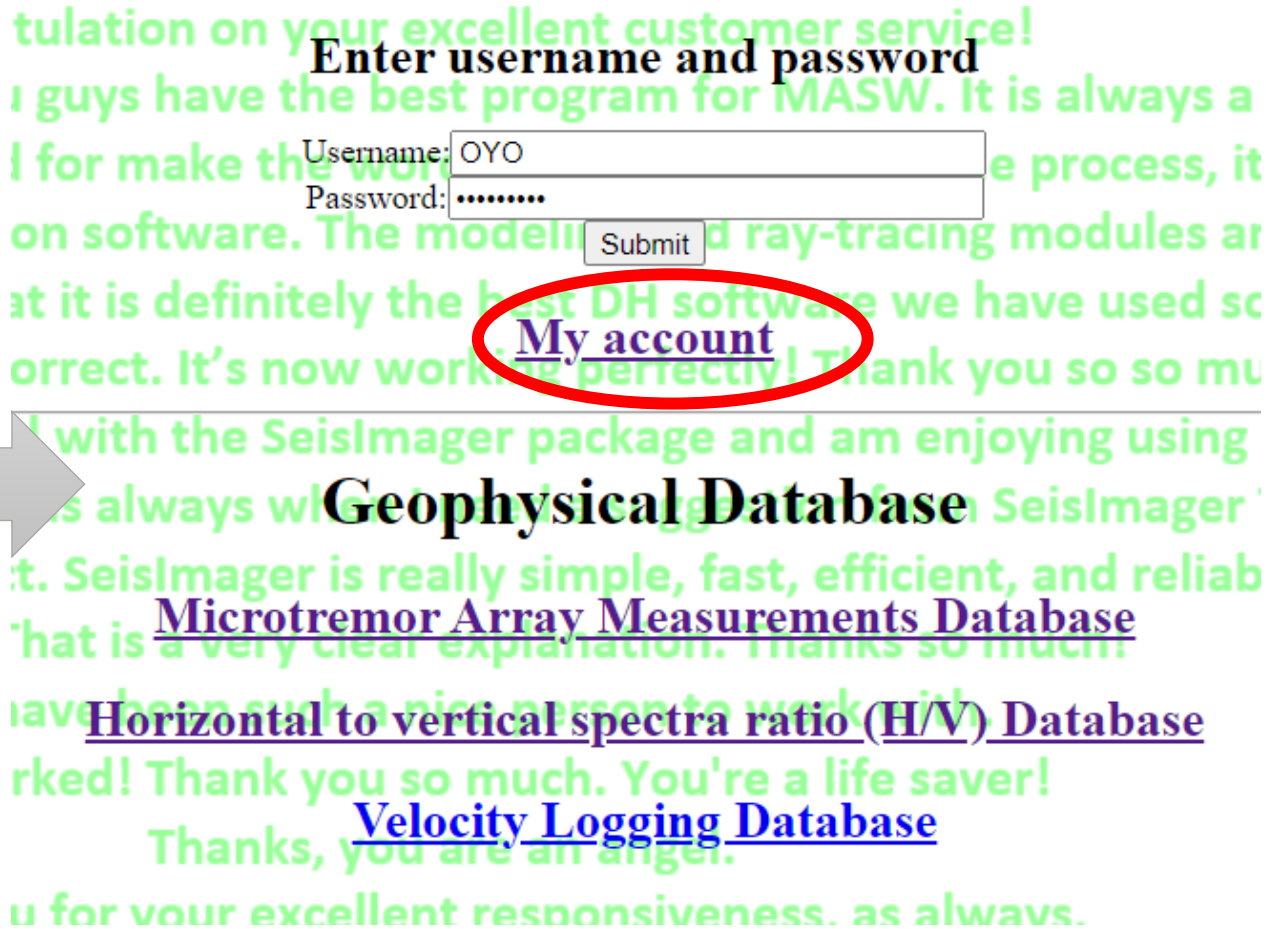
SeisImager.com

Browse your measurement results through internet (2)

Enter username and password then click “Submit”



Click “My account”



Browse your measurement results through internet (3)

My Account

My Map (AVS30m)

My Map (H/V)

Show all H/V sites in your account on Google Map.

Latitude	35.933773
Longitude	139.617549
Zoom level	10

Update

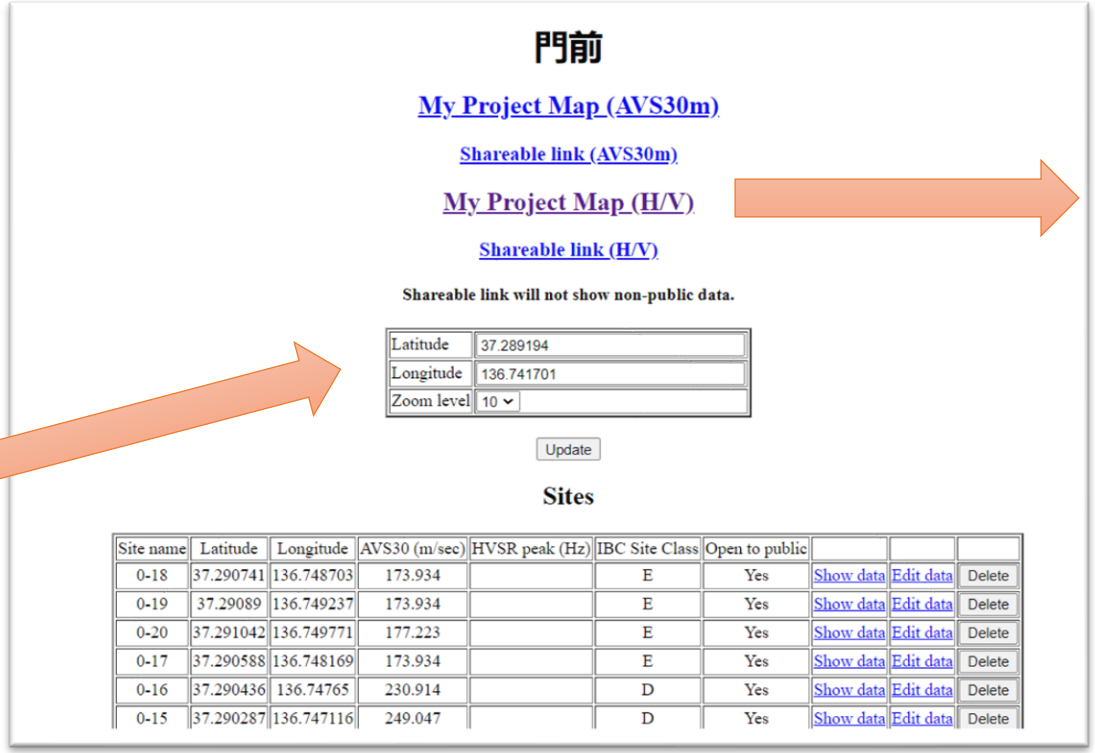
My projects

Project name	Number of data
OYO Corporation General	73
中津川	21
松山	35
つくば	24
門前	25
みどりの	90
蓮田	29
郡山	321

New project

Create a new project

Project page

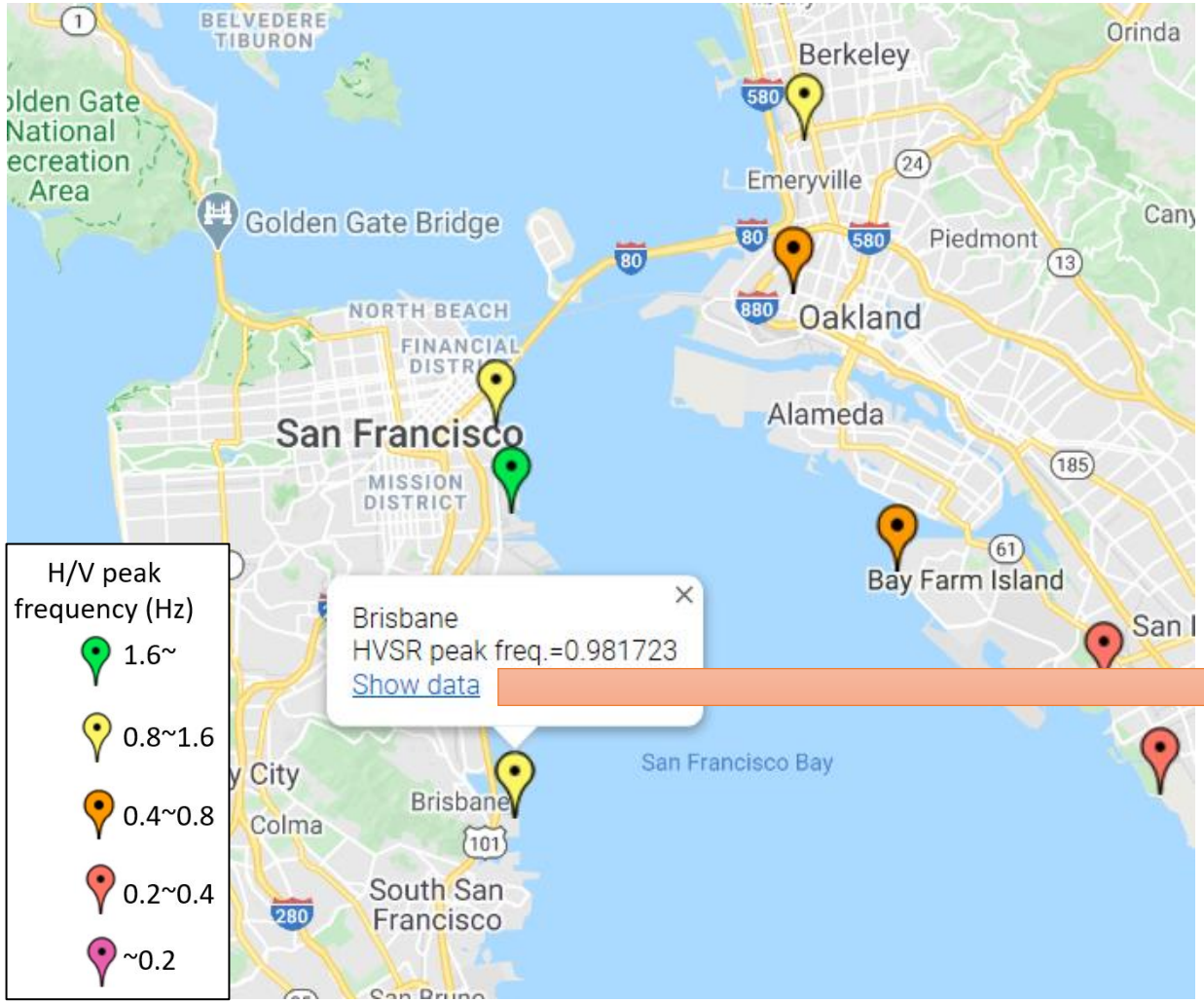


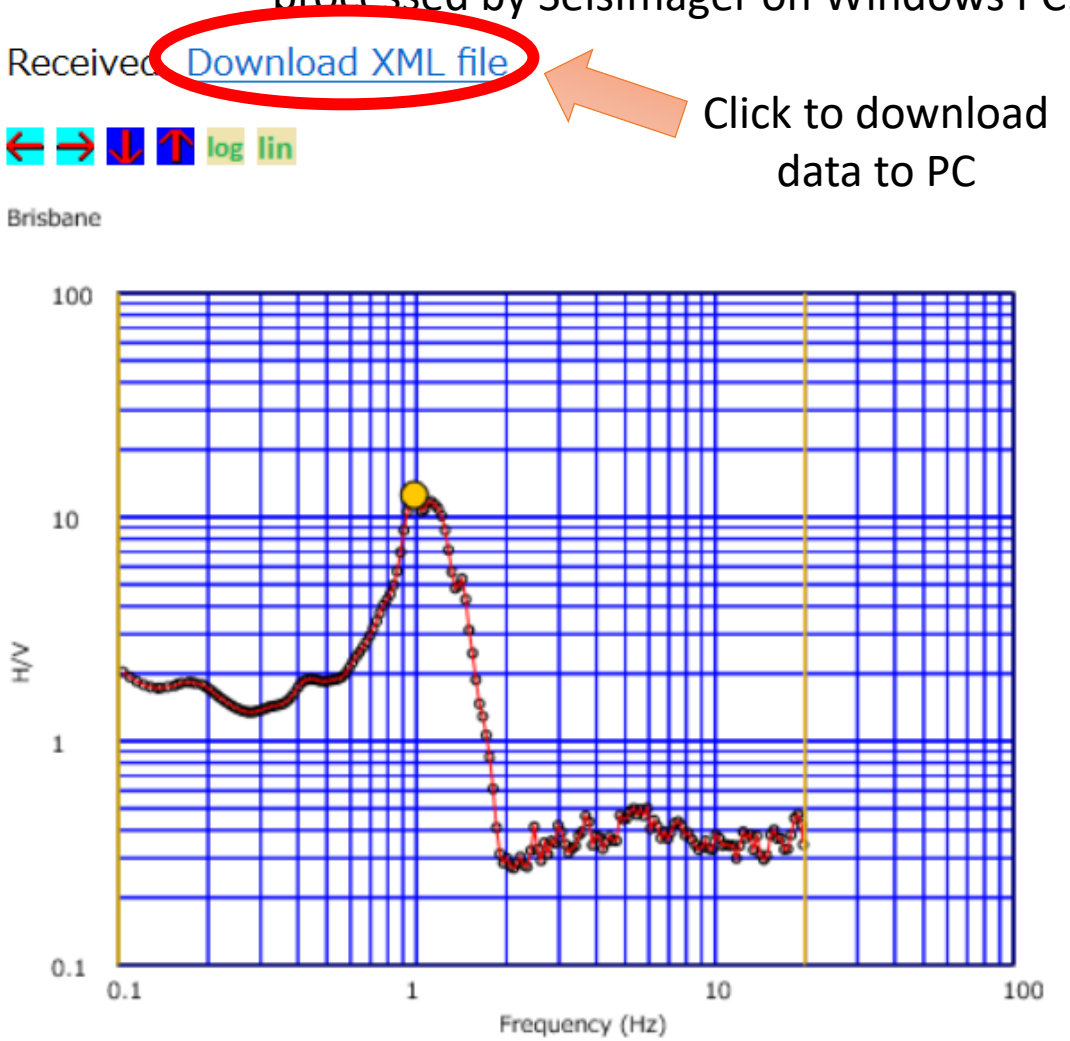
Show H/V sites in a project on Google Map.

Browse your measurement results through internet (4)

Measurement results are shown on Google Map.
Color indicate peak frequency of H/V.

Click a pin to show a measurement result.
Data can be downloaded as an XML file and processed by SeisImager on Windows PC.





Click to download data to PC

SeisImager.com

Browse measurement results through internet (5)

Uploaded data are automatically registered in the database and users can browse, edit, download and delete the data.

San Jose

Site name	Latitude	Longitude	AVS30 (m/sec)	HVSR peak (Hz)	IBC Site Class	Open to public			
001 : San Jose (Geometrics)	37.400398	-121.889471	234.024	0.15143	D	Yes	Show data	Edit data	Delete
2:Cupertino (Koichi)	37.318584	-122.017955	323.772	0.164795	D	Yes	Show data	Edit data	Delete
3:San Jose (AlvisoPark)	37.425003	-121.968952	206.749	0.407642	D	Yes	Show data	Edit data	Delete
4:Palo Alto (Rob)	37.417859	-122.126204	256.731	0.408936	D	Yes	Show data	Edit data	Delete
5:Stanford	37.427551	-122.172165	256.731	17.2908	D	Yes	Show data	Edit data	Delete
6:San Jose (WilliamsPark)	37.335335	-121.868805	202.474	1.23901	D	Yes	Show data	Edit data	Delete
7:San Jose (NCSN CCOB)	37.258991	-121.673166	202.474	2.82246	D	Yes	Show data	Edit data	Delete
8:Saratoga (NCSN JSGB)	37.284103	-122.050034		0.037462		Yes	Show data	Edit data	Delete
9:Redwood City	37.505504	-122.212064	159.683	1.69352	E	Yes	Show data	Edit data	Delete
10:San Jose(Ko)	37.407501	-121.938004		0.287908		Yes	Show data	Edit data	Delete
SERC Chennai	12.9867	80.245781	217.894		D	Yes	Show data	Edit data	Delete
San Jose (Luna Park)	37.361401	-121.889511		0.778124		Yes	Show data	Edit data	Delete
Sterling Barnhart Park	37.31553	-121.996649		0.10376		Yes	Show data	Edit data	Delete
Heritage Oaks Park	37.35762	-122.086238		0.195702		Yes	Show data	Edit data	Delete
Cuesta Park	37.372589	-122.082706		0.10376		Yes	Show data	Edit data	Delete
Blossom Valley	37.37193	-122.088022		0.10376		Yes	Show data	Edit data	Delete
De Anza Shopping Center	37.304794	-122.034005		0.10376		Yes	Show data	Edit data	Delete
Brisbane	37.676492	-122.382331		0.981723		Yes	Show data	Edit data	Delete

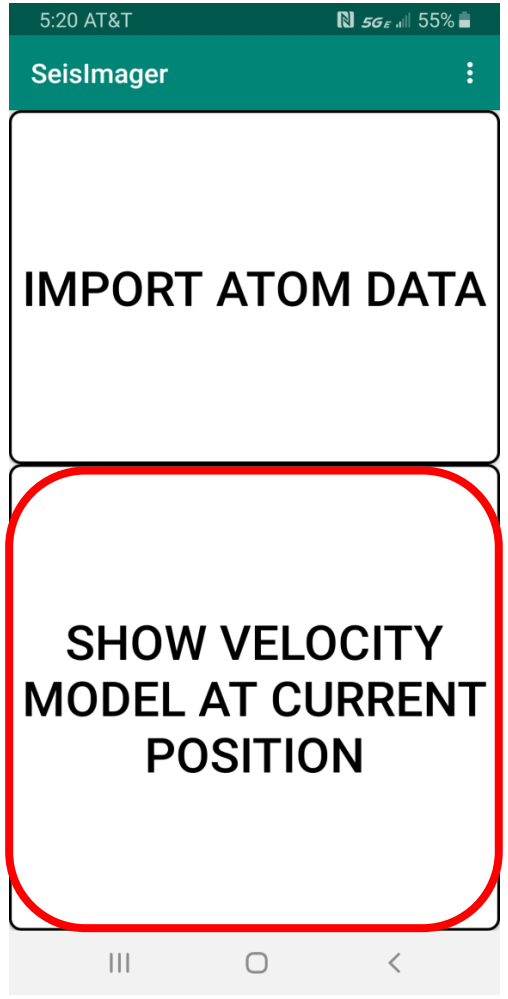
Uploaded data

SeisImager.com

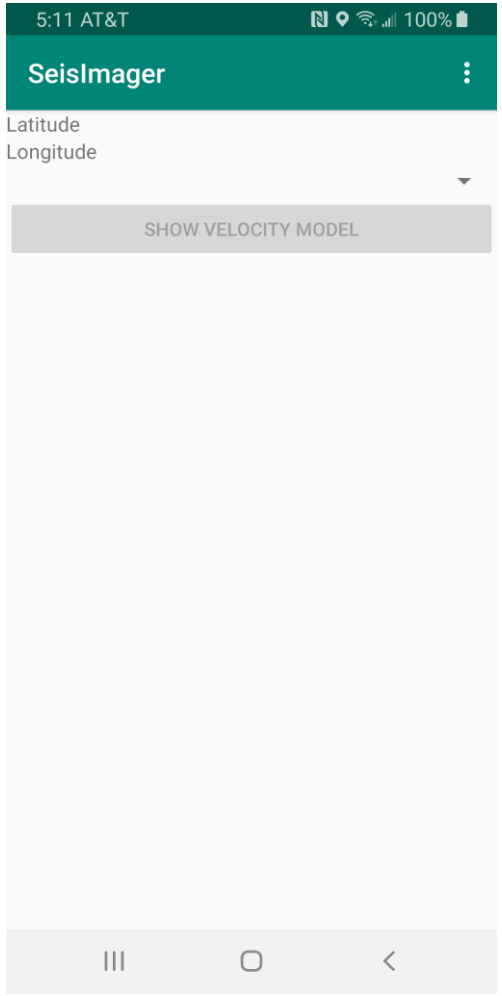
Show community velocity model at current position (1)

(only available at Japan and California (Bay Area and Los Angels))

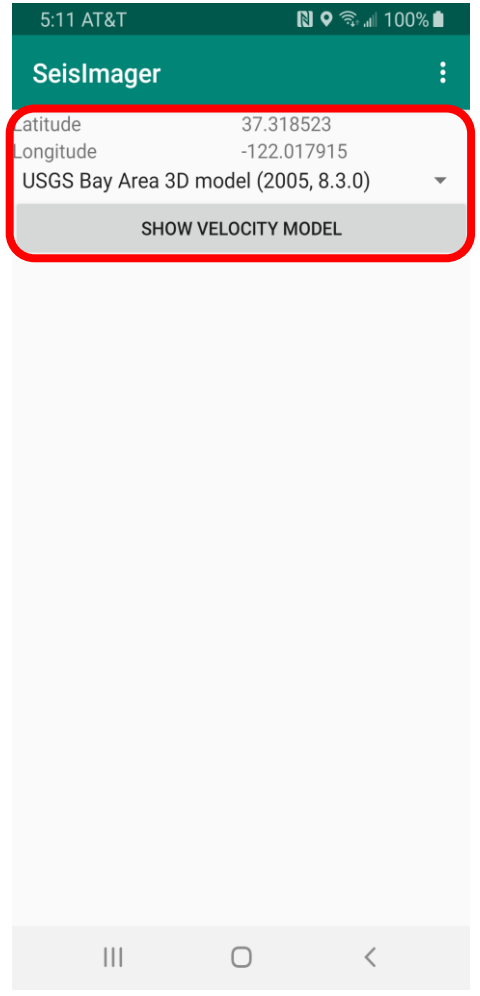
Tap “SHOW VELOCITY MODEL AT CURRENT POSITION ”



Trying to lock GPS

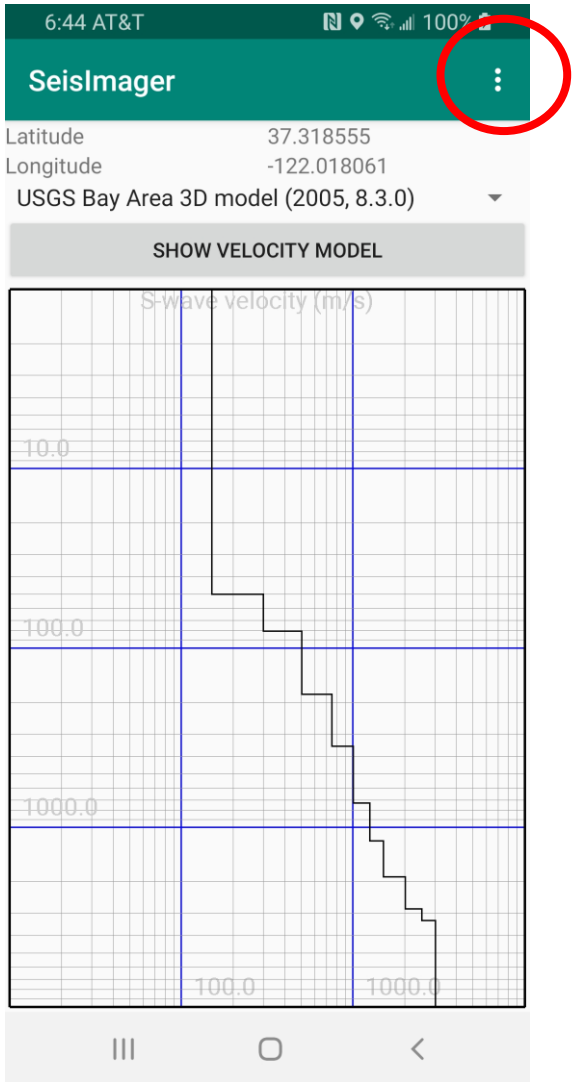


Locking GPS shows available community velocity models. Select model and tap “SHOW VELOCITY MODEL”

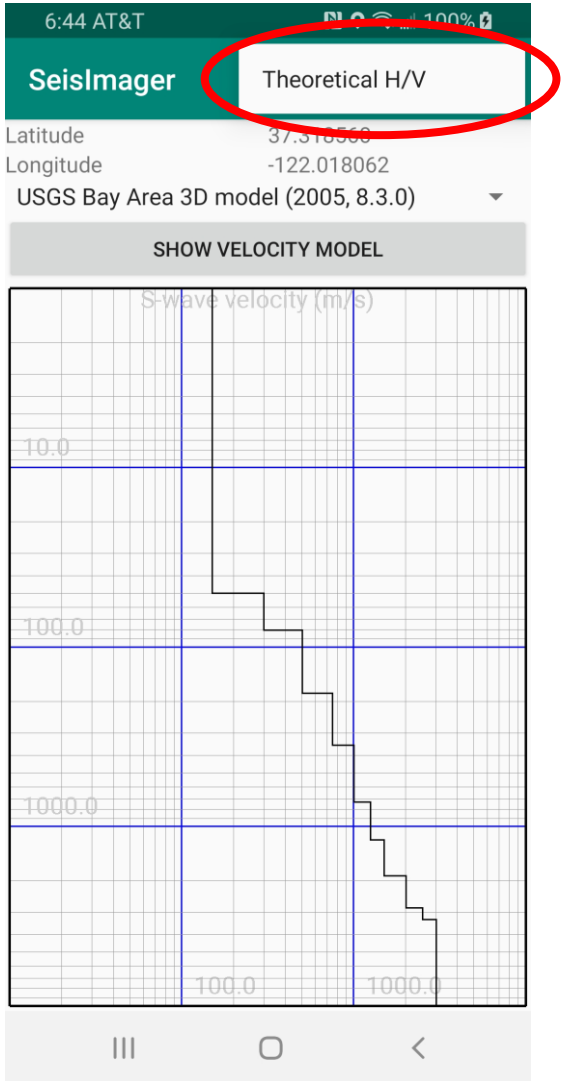


Show community velocity model at current position (2)

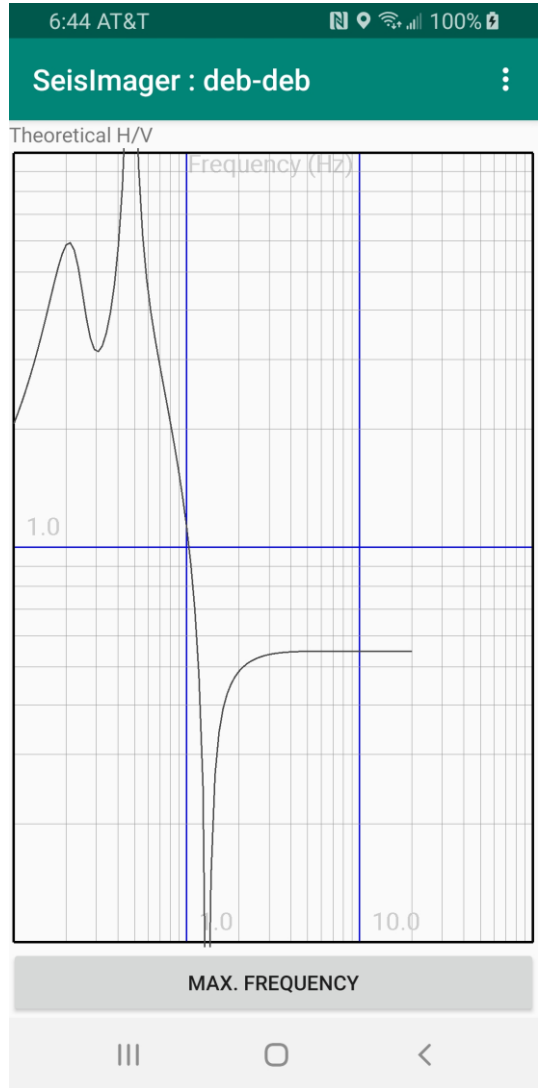
Velocity model appears



Select “Theoretical H/V” in option menu



Theoretical H/V appears



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Show community velocity model at current position (if site is in Japan : 日本国内の場合)