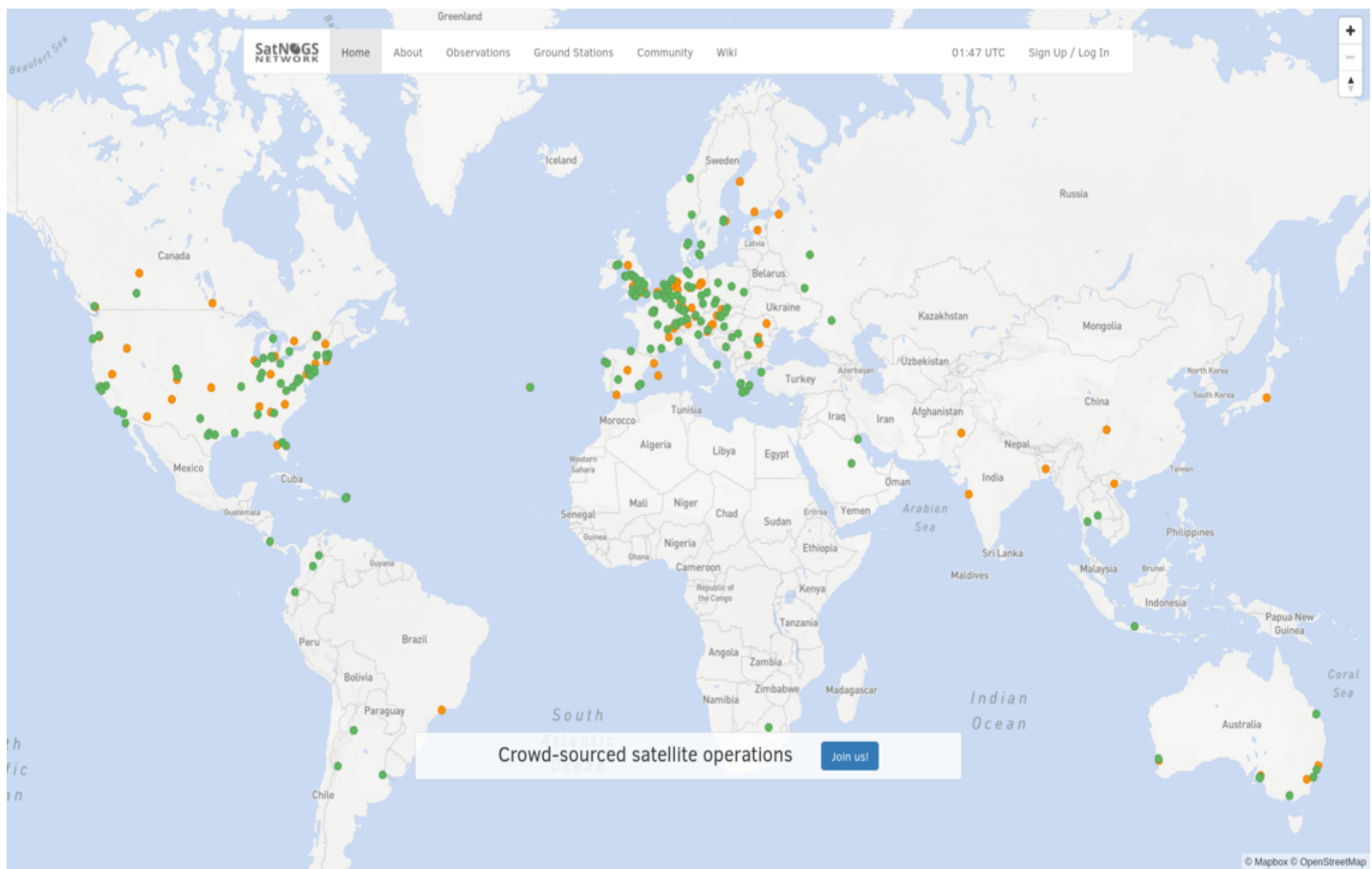# Operation

Contents

Scheduling your first test observation

Prerequisites

- You've set up your SatNOGS client successfully (/Raspberry_Pi)
- You've created an account on the Network (/Network), created a ground station, and it's showing up as "online"

If you've run into any problems with those steps, check out the Troubleshooting (/Troubleshooting) page or ask for help in the community forum (https://community.libre.space/c/satnogs), the Matrix room (https://riot.im/app/#/room/#satnogs:matrix.org), or on IRC at #satnogs on Freenode.

SatNOGS Network

(/File:Satnogs-network-cap.png)

- Navigate your ground station page in the Network Environment (https://network.satnogs.org) (user name -> "My Profile" -> click on the name of your ground station).
- Select the "Upcoming passes" tab.
- Look for a pass with a "schedule" button that isn't greyed out, and click it. Ensure it is a good (high) pass of an operational satellite (check the color bar on the satellite)
- In the "New Observation" page that comes up, click the "Calculate" button, then click "Schedule".
- You should now see a page for that observation; in the "Waterfall" tab, you should see "Waiting for waterfall".
- You can also schedule multiple observations at once for a single satellite via the "Observation new page" (http s://network.satnogs.org/observations/new/).

Ground Station

Now SSH to your ground station computer and run these steps:

- Follow the satnogs-client logs. Depending on your setup, this might be done with `journalctl -f -u satnogs-client.service`, or `tail -F /var/log/supervisor/satnogs.log`
- Before the observation is scheduled to start, you should see your client wake up once per minute to check for new jobs:

```
Oct 02 00:16:02 raspberrypi satnogs-client[10124]: 2017-10-02 00:16:02,477 - satnogsclient - DEBUG - Opening T
CP socket: 127.0.0.1:5011
Oct 02 00:16:02 raspberrypi satnogs-client[10124]: 2017-10-02 00:16:02,479 - satnogsclient - DEBUG - Sending m
essage: [{"origin": "network", "transmitter": "uXJ8NQNcH8b9osRc
Oct 02 00:16:02 raspberrypi satnogs-client[10124]: 2017-10-02 00:16:02,488 - apscheduler.executors.default - I
NFO - Job "get_jobs (trigger: interval[0:01:00], next run at: 2
Oct 02 00:16:59 raspberrypi satnogs-client[10124]: 2017-10-02 00:16:59,615 - apscheduler.executors.default - I
NFO - Running job "get_jobs (trigger: interval[0:01:00], next r
Oct 02 00:16:59 raspberrypi satnogs-client[10124]: 2017-10-02 00:16:59,661 - apscheduler.executors.default - I
NFO - Running job "post_data (trigger: interval[0:02:00], next
Oct 02 00:16:59 raspberrypi satnogs-client[10124]: 2017-10-02 00:16:59,668 - apscheduler.executors.default - I
NFO - Job "post_data (trigger: interval[0:02:00], next run at:
Oct 02 00:17:00 raspberrypi satnogs-client[10124]: 2017-10-02 00:17:00,906 - satnogsclient - DEBUG - Opening T
CP socket: 127.0.0.1:5011
Oct 02 00:17:00 raspberrypi satnogs-client[10124]: 2017-10-02 00:17:00,908 - satnogsclient - DEBUG - Sending m
essage: [{"origin": "network", "transmitter": "uXJ8NQNcH8b9osRc
Oct 02 00:17:00 raspberrypi satnogs-client[10124]: 2017-10-02 00:17:00,912 - apscheduler.executors.default - I
NFO - Job "get_jobs (trigger: interval[0:01:00], next run at: 2
```

- At the scheduled time for the observation, you should see the client kick off the observation:

```
Oct 02 00:18:00 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:00,774 - satnogsclient - DEBUG - Opening T
CP socket: 127.0.0.1:5011
Oct 02 00:18:00 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:00,776 - satnogsclient - DEBUG - Sending m
essage: [{"origin": "network", "transmitter": "uXJ8NQNcH8b9osRc
Oct 02 00:18:00 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:00,781 - apscheduler.executors.default - I
NFO - Job "get_jobs (trigger: interval[0:01:00], next run at: 2
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,022 - apscheduler.executors.default - I
NFO - Running job "spawn_observer (trigger: date[2017-10-02 00:
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,082 - satnogsclient - DEBUG - Opening T
CP socket: 127.0.0.1:4533
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,109 - satnogsclient - DEBUG - Sending m
essage: p
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,110 - satnogsclient - DEBUG - Received
message: 0.000000
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 0.000000
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,111 - satnogsclient - DEBUG - Opening T
CP socket: 127.0.0.1:4532
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,115 - satnogsclient - DEBUG - Sending m
essage: P 188.276951189 -0.0155264223734
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,119 - satnogsclient - DEBUG - Received
message: RPRT -1
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,143 - satnogsclient - DEBUG - Sending m
essage: F 436038107
Oct 02 00:18:22 raspberrypi satnogs-client[10124]: 2017-10-02 00:18:22,144 - satnogsclient - DEBUG - Received
message: RPRT 0
```

- After the observation is over, you should see the client submit the data to the SatNOGS network

In the SatNOGS Stage Environment, refresh the Observation page. You should now see a waterfall plot for your data.

If that all worked -- congratulations! You've just successfully completed your first SatNOGS observation.

If it didn't work, don't feel bad -- it can take a few attempts before you get it right. Have a look at the Troubleshooting (/Troubleshooting) page for tips, and don't forget to contact the community if you need help.

Rating observations

Once your observation results are posted back in the Network by your satnogs-client, you should go to Network to rate your observations. Any orange marked observations need vetting by users.

(/File:Idea.png)The main purpose of validating observations is to know if the satellite/transmitter is alive, if it transmits in the listed frequency/ies, and if the TLEs we have are accurate.

(/File:Idea.png)The functionality may change in the future, but for now even a faint sign on the waterfall is enough to make it valid.

Categories of observations:

- **Good**
  - You should mark observations as "Good" when it is clear from the waterfall and/or audio recording that a satellite is present. Keyboard Shortcut 'g'
- **Bad**
  - You should mark observations as "Bad" when by examining the waterfall and/or audio it is obvious that there was no satellite detected in this observation. Keyboard Shortcut 'b'
- **Failed**
  - You should mark observations as "Failed" when the station failed entirely: the waterfall and/or audio is empty or not present, or there's too much noise. Keyboard Shortcut 'f'

Below is a collection of waterfalls with possible results of observations:

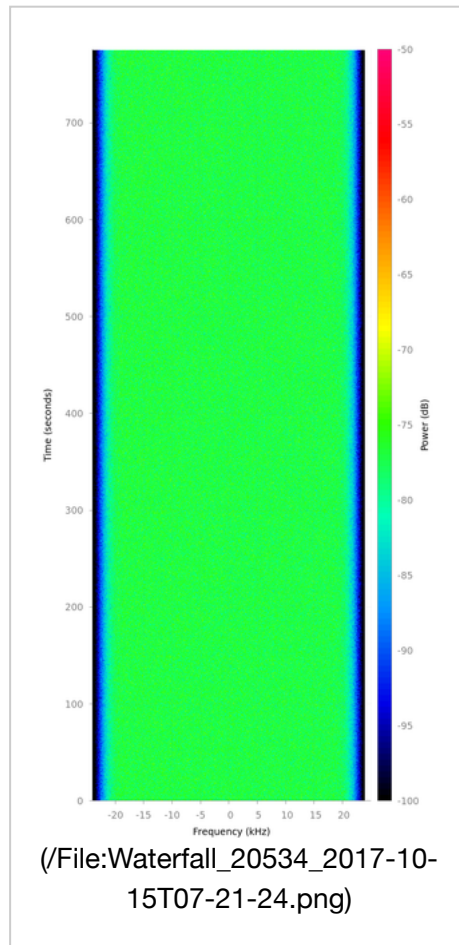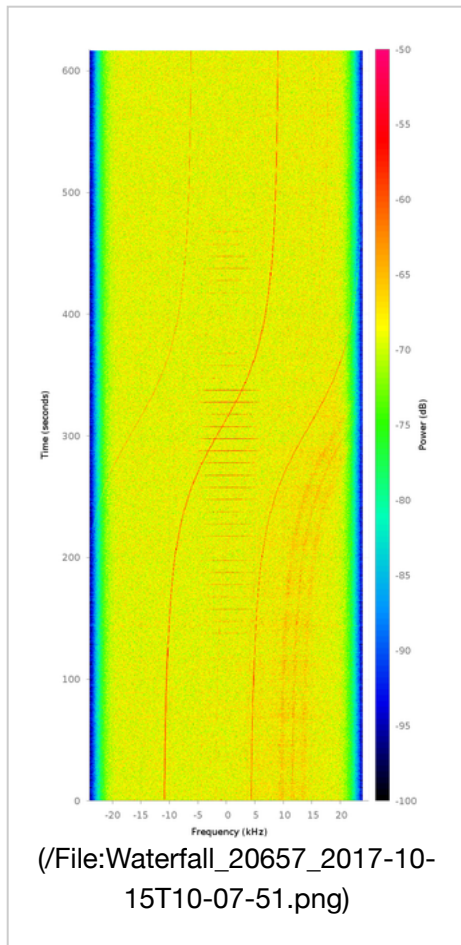| ID	Satellite
20657	ATLANTIS
20505	NOAA 19
20502	SWAYAM
20511	CUBESAT XI 5

(/File:Screenshot_from_2017-10-15_11-59-59.png)

Orange need your rating!

(/File:Waterfall_20657_2017-10-
15T10-07-51.png)

(/File:Waterfall_20534_2017-10-
15T07-21-24.png)

Good: Satellite is visible (bars-bursts of data in the middle). *Note that the tangent-shaped lines are local noise*

**Bad**: Typical empty waterfall with no visible signals.

(/File:Waterfall_20499_2017-10-

(/File:Waterfall_20506_2017-10-
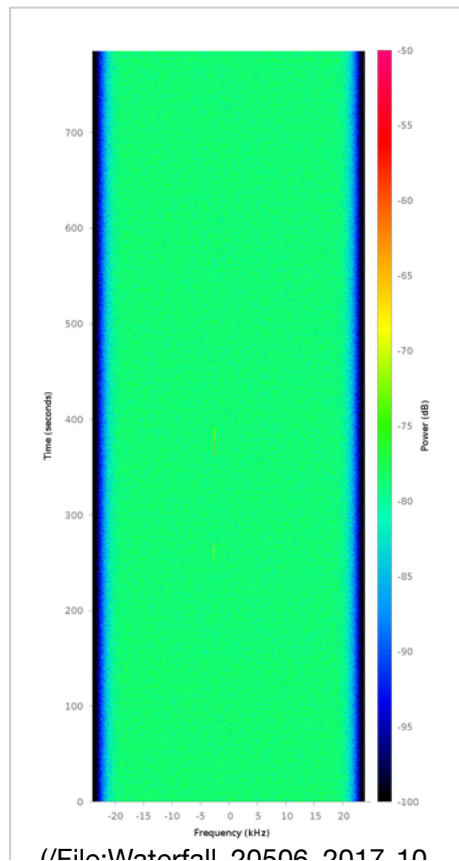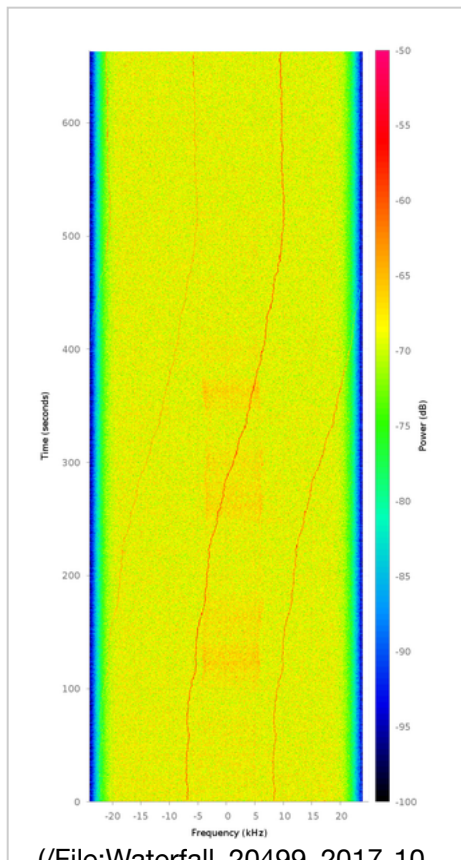
(/File.Waterfall_20499_2017-10-
15T07-17-32.png)

(/File.Waterfall_20506_2017-10-
15T06-47-36.png)

**Good**: Although drifting, satellite is clearly visible around the center.

Good: Faint CW signal around center-left. *Note you might have to expand image to notice it*

(/File:Waterfall_20571_2017-10-15T05-25-56.png)

(/File:Waterfall_20483_2017-10-15T05-12-49.png)
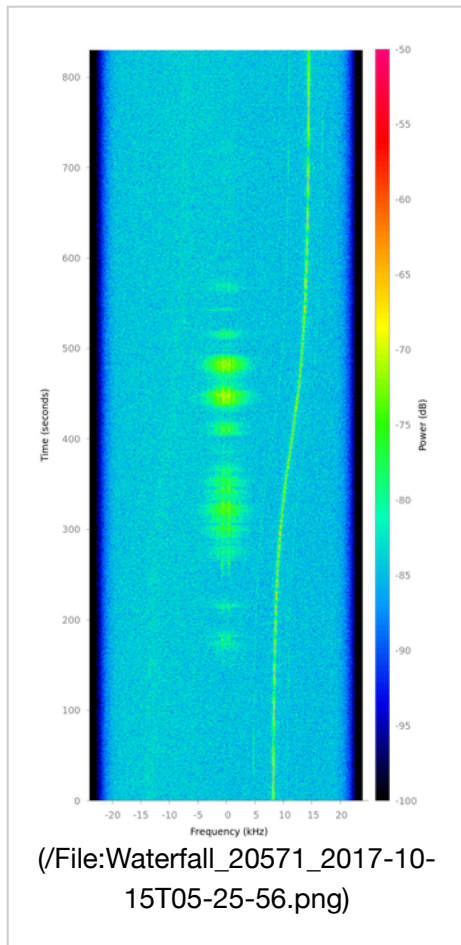
Good: Clearly visible FM transmission. *Note that the swinging lines are terrestrial noise*
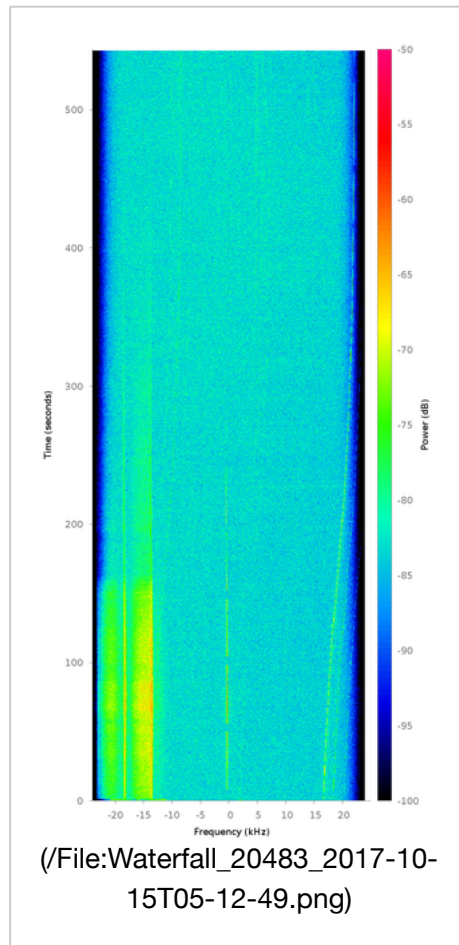
Good: Straight line in the center bottom is a satellite. *Note transmission on left bottom is the same satellite on a different frequency*

(/File:Waterfall_145037_2018-05-26T15-18-18.png)
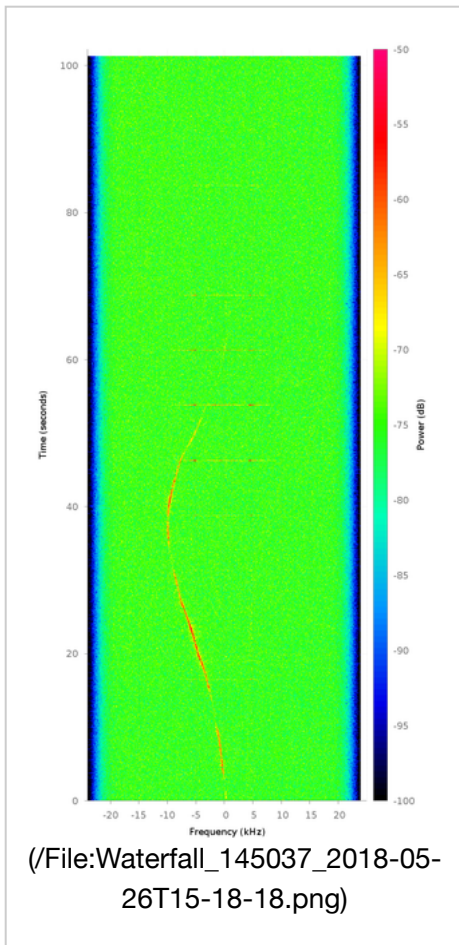
Good: Packets clearly seen in the middle of the observation. *Note transmission starting middle bottom then moving to left and back to right *is* a space object (satellite). It is not the one we are tracking though (different TLE, thus this type if curve).*

You can see more examples of observations and ratings (/Rating_Observations) and a Taxonomy_of_Observations (/Taxonomy_of_Observations).

Discuss

If you're still unsure about an observation, click the "Discuss" button, near the top right of the observation's page; that will post a link to it on the Observations forum (https://community.libre.space/c/observations), where you can ask for feedback.

(/File:Observation_with_discuss_button_highlighte

Click the "Discuss" button to post in our web forum. (Note: this will only appear in the SatNOGS network.)

Scheduling Observations in Standalone Mode

Scheduling a NOAA Observation in Standalone Mode

Instructions for scheduling a NOAA observation, including decoding of the APT images, can be found here (http://ixion.csd.uoc.gr/vardakis/index.php/satnogs-noaa-apt-decoder-walkthrough/).

Network Permissions Matrix

User	View and discuss observation	Vet observation	Delete future observation	Schedule observation
Non Authenticated	All	None	None	None
Authenticated	All	None	None	None
Station Owner (Future)	All	None	None	None
Station Owner (Offline)	All	Own(stations or observations)	Own(stations or observations)	None
Station Owner (Testing)	All	Own(stations or observations)	Own(stations or observations)	Own(stations)
Station Owner (Online)	All	All	Own(stations or observations)	All(online stations)
Moderator	All	All	All	All
Admin	All	All	All	All

Examples:

- Authenticated user can view and discuss on all the observation. User can not vet or delete an observation. User can not schedule observation in any station.
- Station Owner with at least one online station can view and discuss on all observations. Online station owner can vet or delete observations on stations that owns. Online station owner can vet or delete observation that has scheduled. Online station owner can schedule observations on all online stations.

This page was last edited on 20 January 2020, at 16:27.