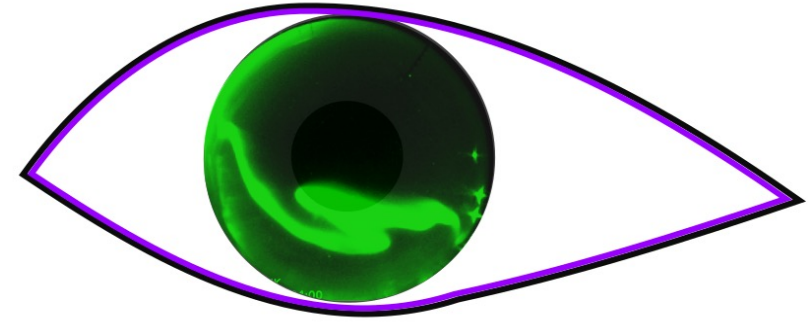


aurora-asi-lib

Aurora All-Sky Imager Library

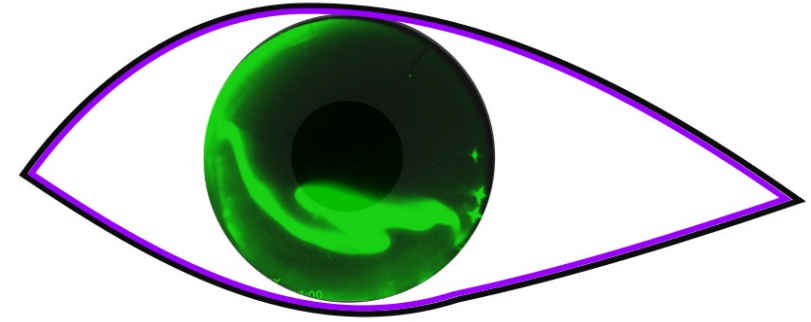


Easily download, plot, animate, and analyze auroral
all sky imager (ASI) data

Mykhaylo (Mike) Shumko, Bea Gallardo-Lacourt, Isaac Thompson, Alexa
Halford, and Kyle Murphy

aurora-asi-lib

Aurora All-Sky Imager Library



Follow along! Install with:

```
python3 -m pip install aurora-asi-lib
```

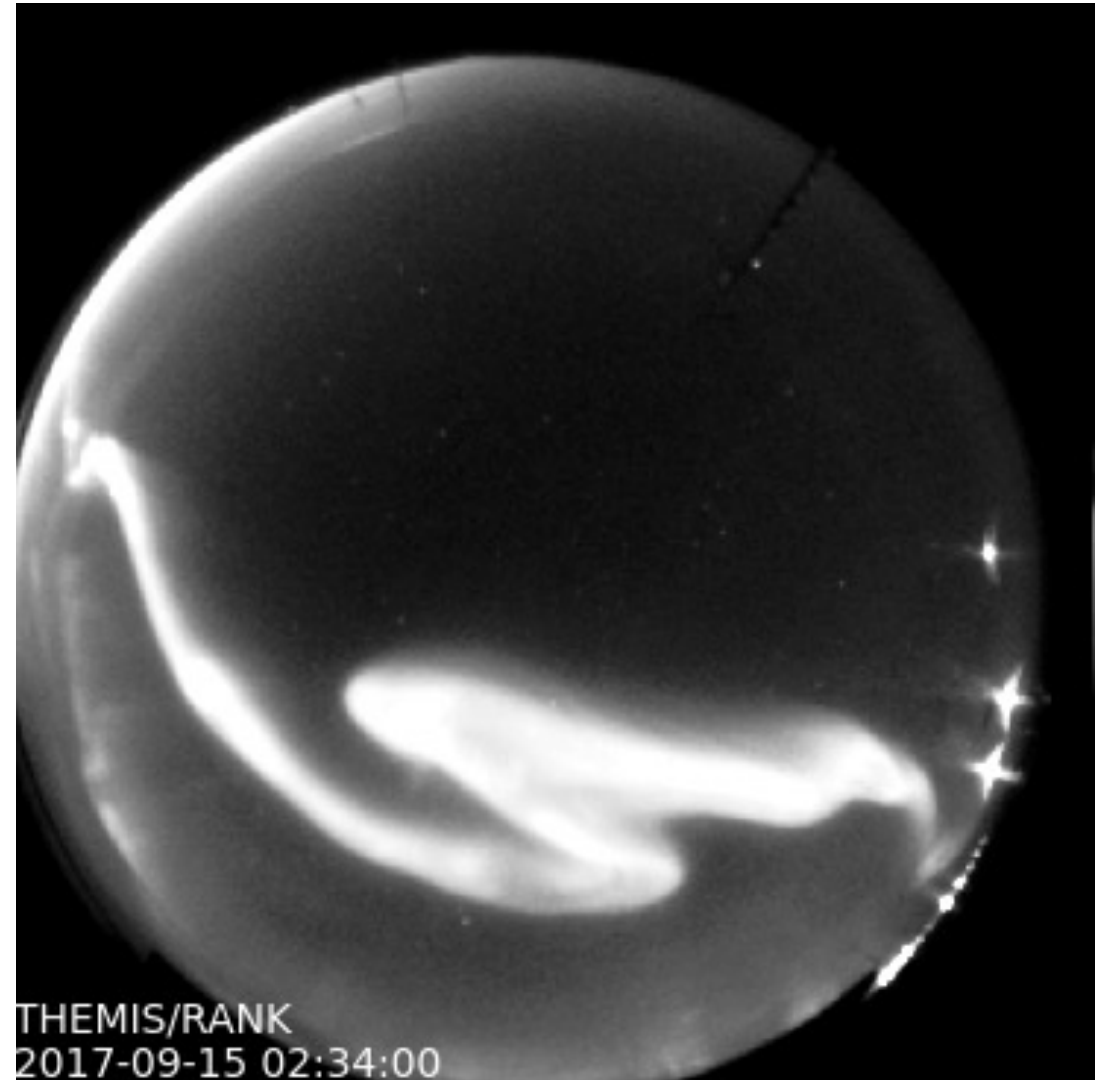
aurora-asi-lib overview

What?

A python package that enables seamless and painless handling and analysis of auroral images

Why?

Auroral researchers do similar analysis steps---our goal with asilib is to enable researchers to focus their time and energy on what matters: studying the aurora!



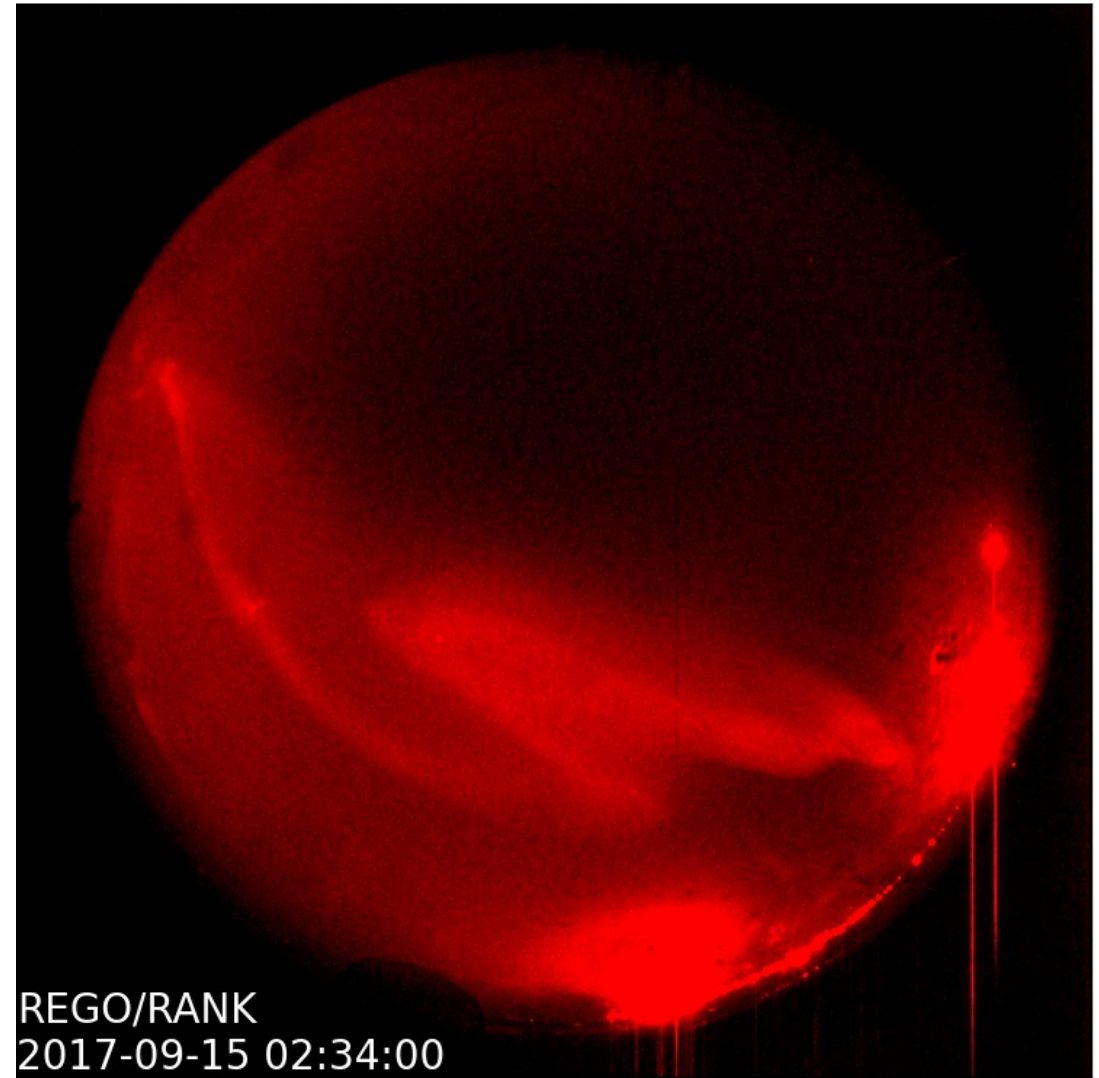
aurora-asi-lib overview

Supported camera arrays:

- **THEMIS**
- **REGO**

Once these two arrays are fully supported, we plan to add other camera arrays to asilib.

- **TREX**
- **ASI-derived models**

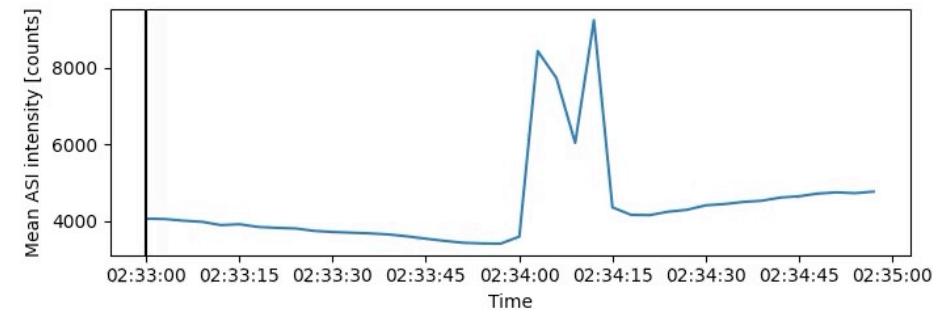
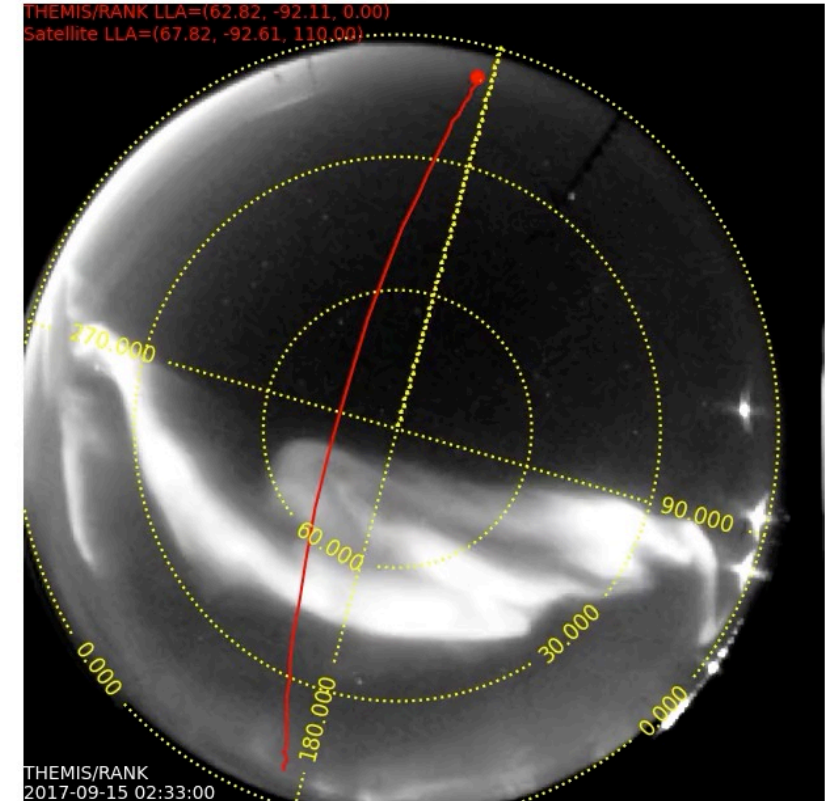


What can it do?

Plot one fisheye lens frame:
`asilib.plot_frame()`

Make a movie:
`asilib.plot_movie()*`
`asilib.plot_movie_generator()*`

* Requires ffmpeg



What can it do?

Map a satellite's location:

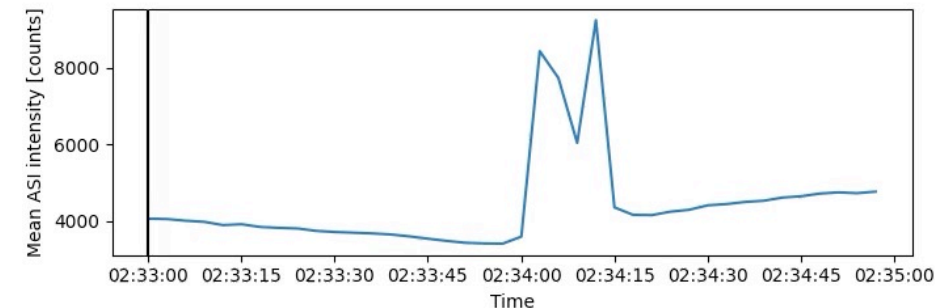
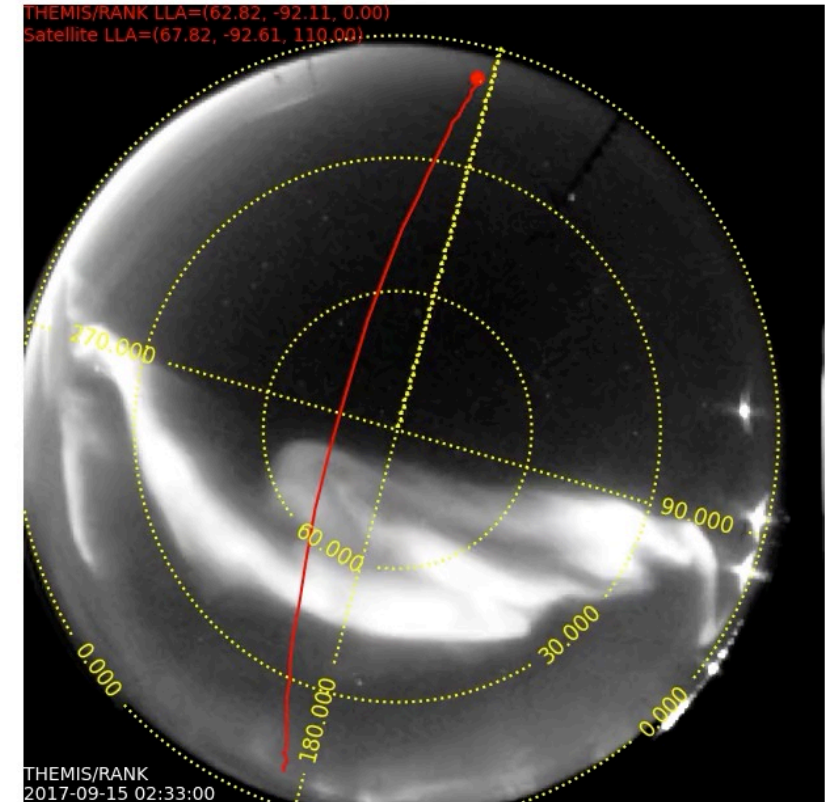
`asilib.lla2azel()`

`asilib.lla2footprint()*`

Calculate equal areas in the image:

`asilib.equal_area()`

* Requires [IRBEM](#)



What can it do?

Plot a keogram:

```
asilib.plot_keogram()
```

Load data

```
asilib.load_img()
```

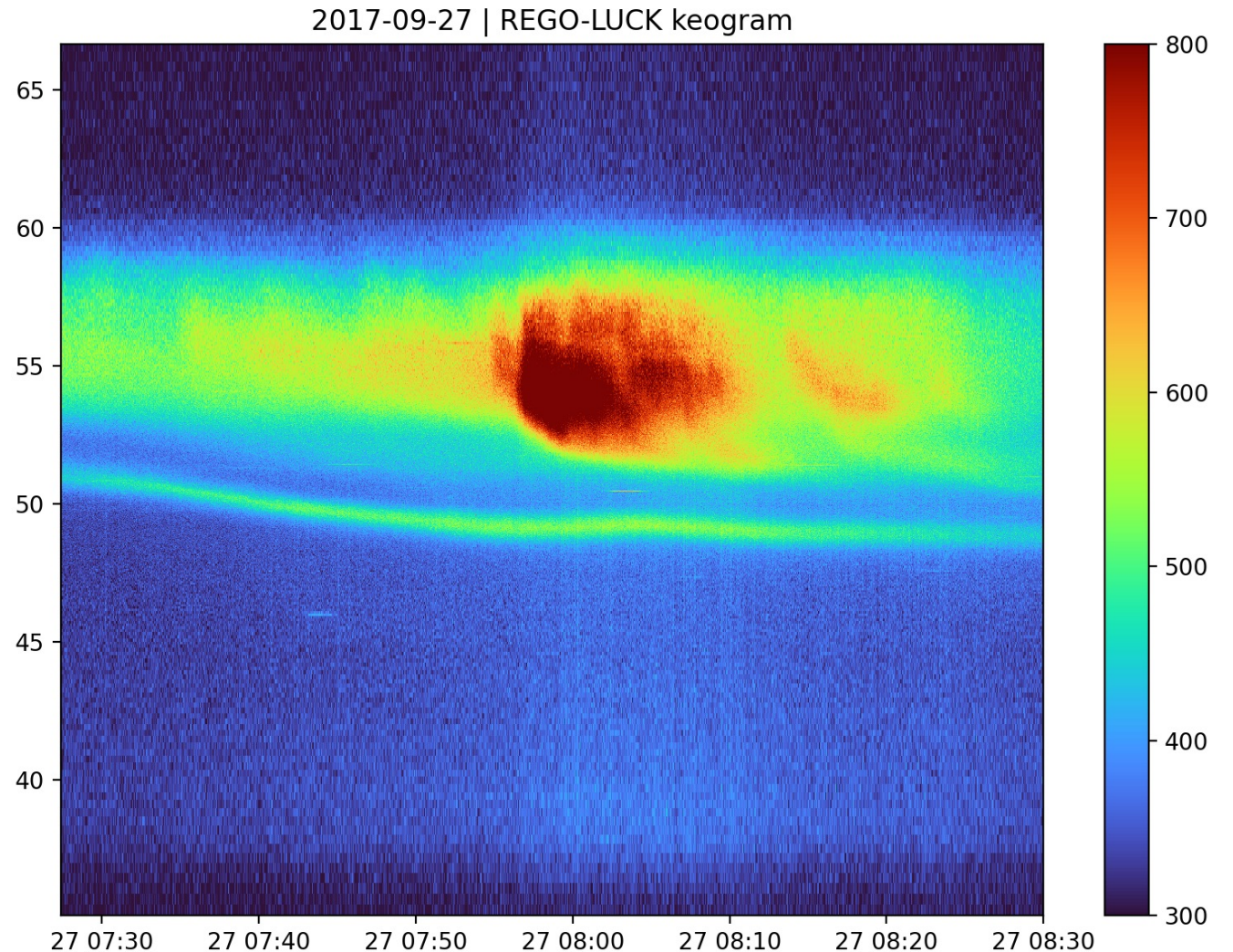
```
asilib.load_cal()
```

If a file is not found, one will be automatically downloaded!

Bulk download data

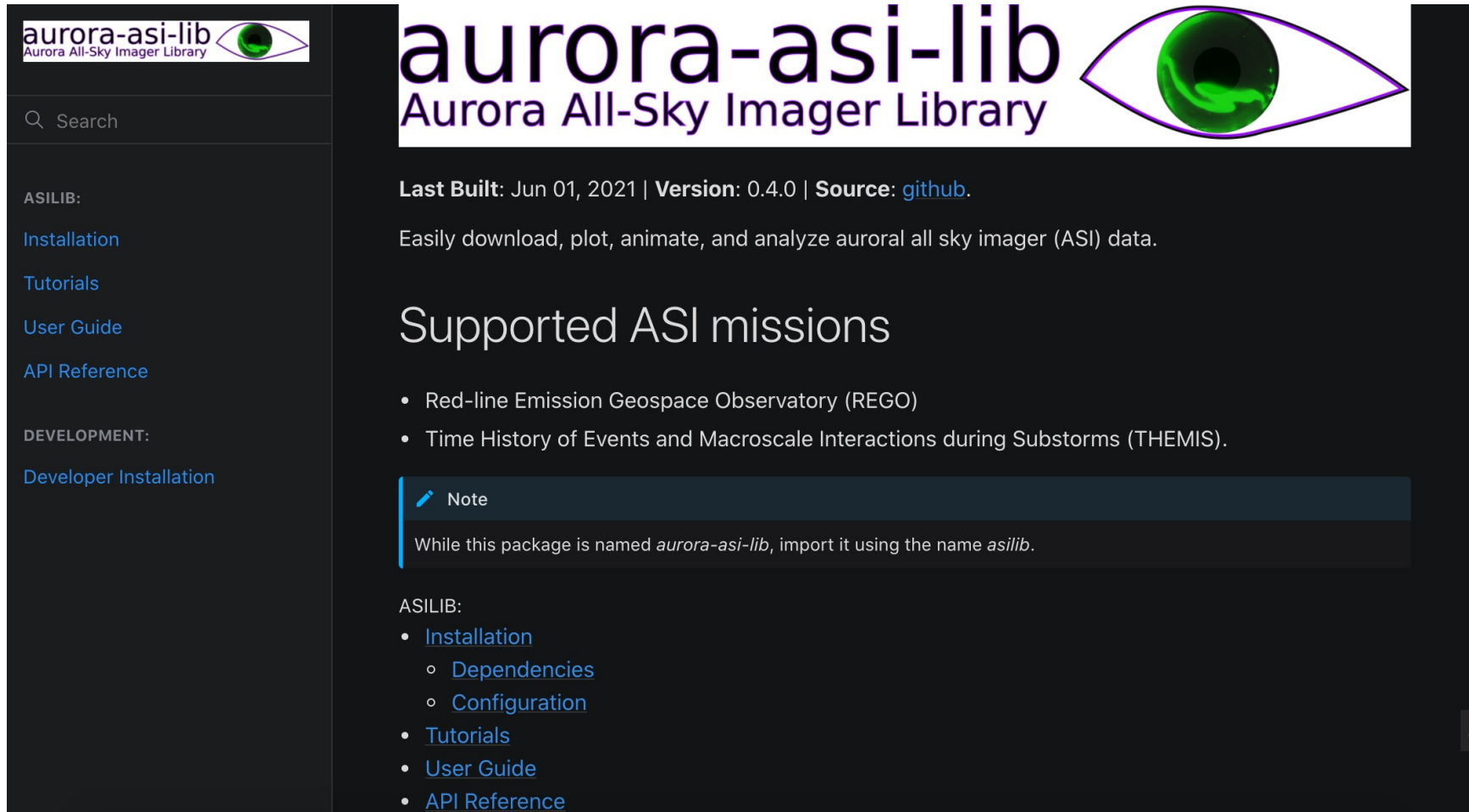
```
asilib.download_themis_cal()
```

```
asilib.download_themis_img()
```



Didn't memorize the commands?

Documentation: aurora-asi-lib.readthedocs.io



The screenshot shows the documentation page for aurora-asi-lib. The page has a dark theme. On the left is a sidebar with a search bar and navigation links. The main content area on the right features the library's logo, build/version/source information, a description, supported missions, a note about the package name, and a list of links for installation, dependencies, configuration, tutorials, user guide, and API reference.

aurora-asi-lib
Aurora All-Sky Imager Library

Search

ASILIB:

- [Installation](#)
- [Tutorials](#)
- [User Guide](#)
- [API Reference](#)

DEVELOPMENT:

- [Developer Installation](#)

Last Built: Jun 01, 2021 | **Version:** 0.4.0 | **Source:** [github](#).

Easily download, plot, animate, and analyze auroral all sky imager (ASI) data.

Supported ASI missions

- Red-line Emission Geospace Observatory (REGO)
- Time History of Events and Macroscale Interactions during Substorms (THEMIS).

Note

While this package is named *aurora-asi-lib*, import it using the name *asilib*.

ASILIB:

- [Installation](#)
 - [Dependencies](#)
 - [Configuration](#)
- [Tutorials](#)
- [User Guide](#)
- [API Reference](#)

One class to rule them all

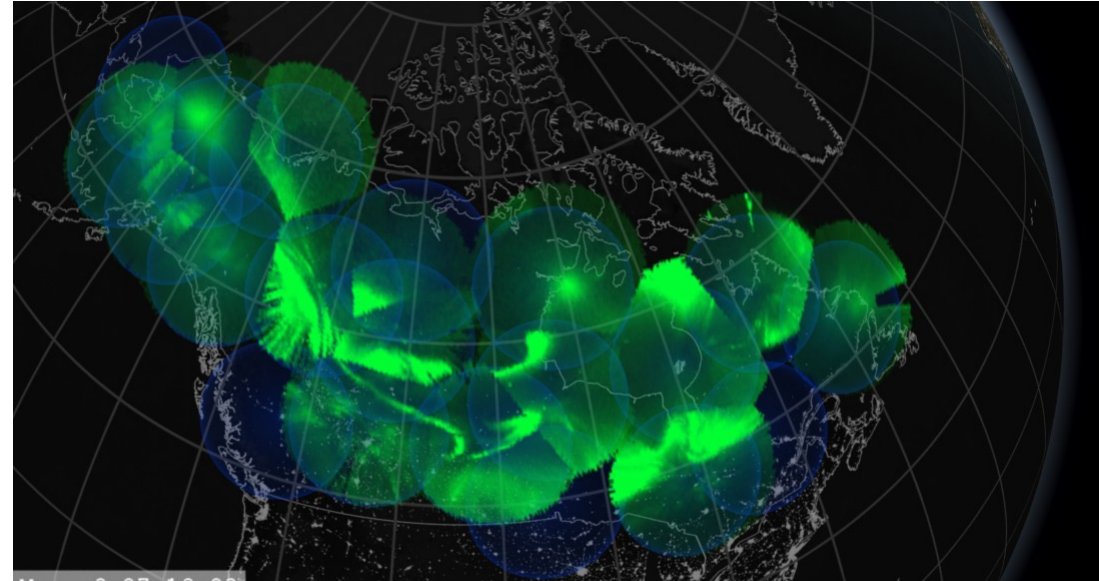
- The most usable (and fun!?) python libraries have a central class:
 - `numpy.array`
 - `pandas.DataFrame`
 - `xarray.DataArray`
 - `pysat.Instrument`
 - `bs4.BeautifulSoup`
 - ...

One class to rule them all

- The most usable (and fun!?) python libraries have a central class:
 - `numpy.array`
 - `pandas.DataFrame`
 - `xarray.DataArray`
 - `pysat.Instrument`
 - `bs4.BeautifulSoup`
 - ...
- And now:
 - `asilib.Imager`

Ongoing Development Topics

- Handle computer resources effectively
- Project the fisheye images to a map
- Unify the asilib functionality into an `asilib.Imager()` class
- Integrate with [Aurora X](#)
- Update the documentation with examples and tutorials
- And add other imager arrays as plugins.



We need your help! Please contact me, mykhaylo.shumko@nasa.gov if you'd like to contribute or have ideas (I am always interested in ways to improve this code)

How to get started

`python3 -m pip install aurora-asi-lib (import as asilib)`

Documentation: <https://aurora-asi-lib.readthedocs.io>

Source code: <https://github.com/mshumko/aurora-asi-lib>

Thank you for listening!