

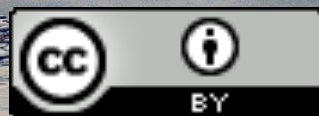
# Geospatial analysis and visualization with PyGMT

Max Jones, Wei Ji Leong, and Leonardo Uieda



EAR-1948603

OCE-1558403

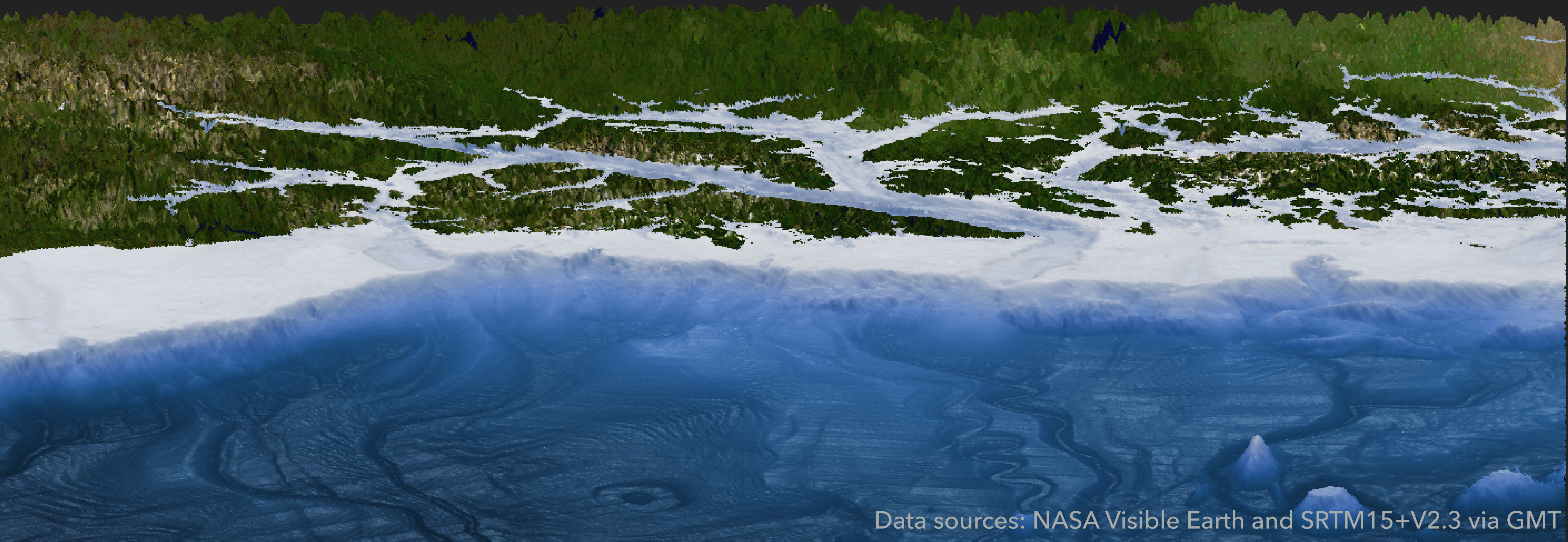


Data sources: NASA Visible Earth and Earth Observatory via GMT



PyGMT is a useful tool for working with geospatial data

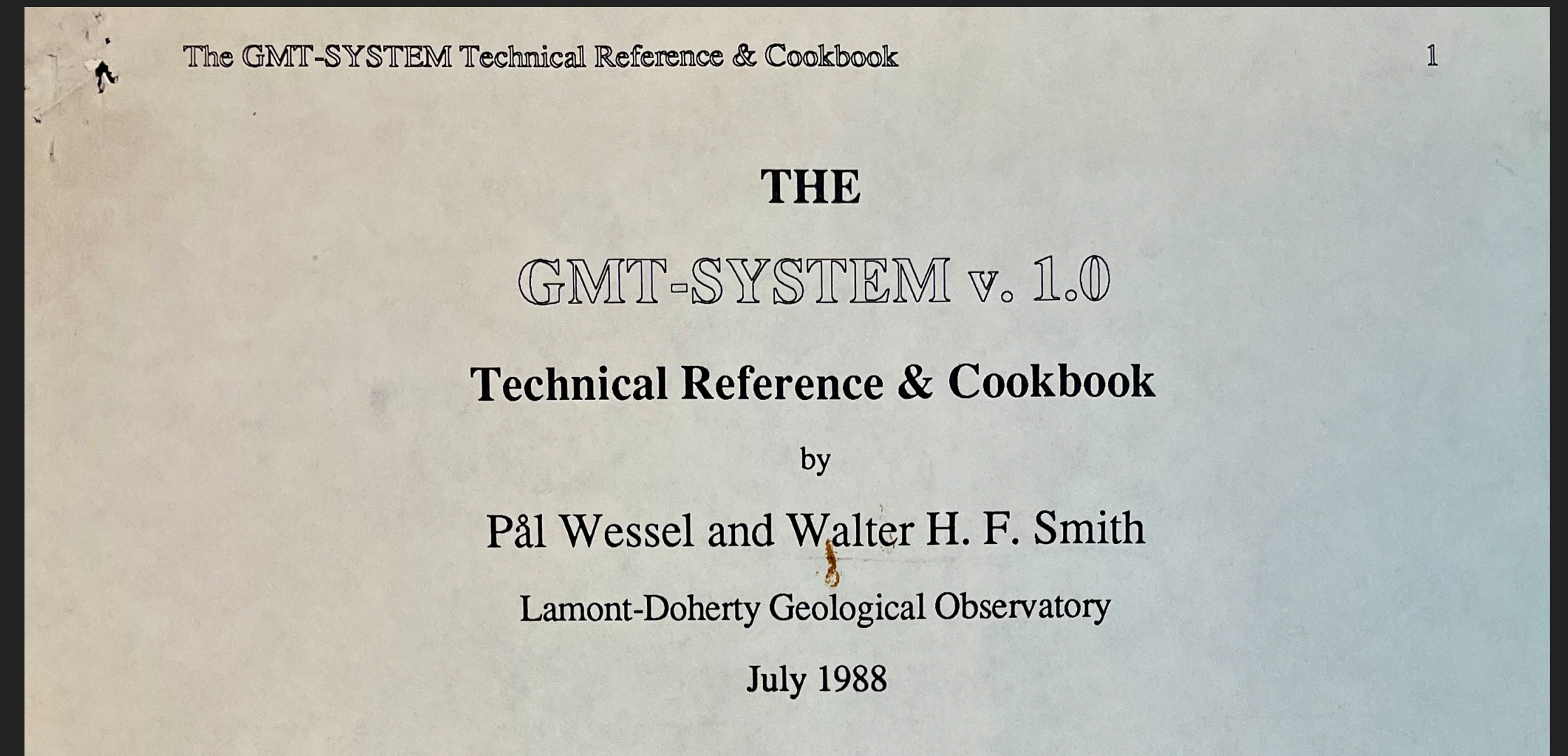
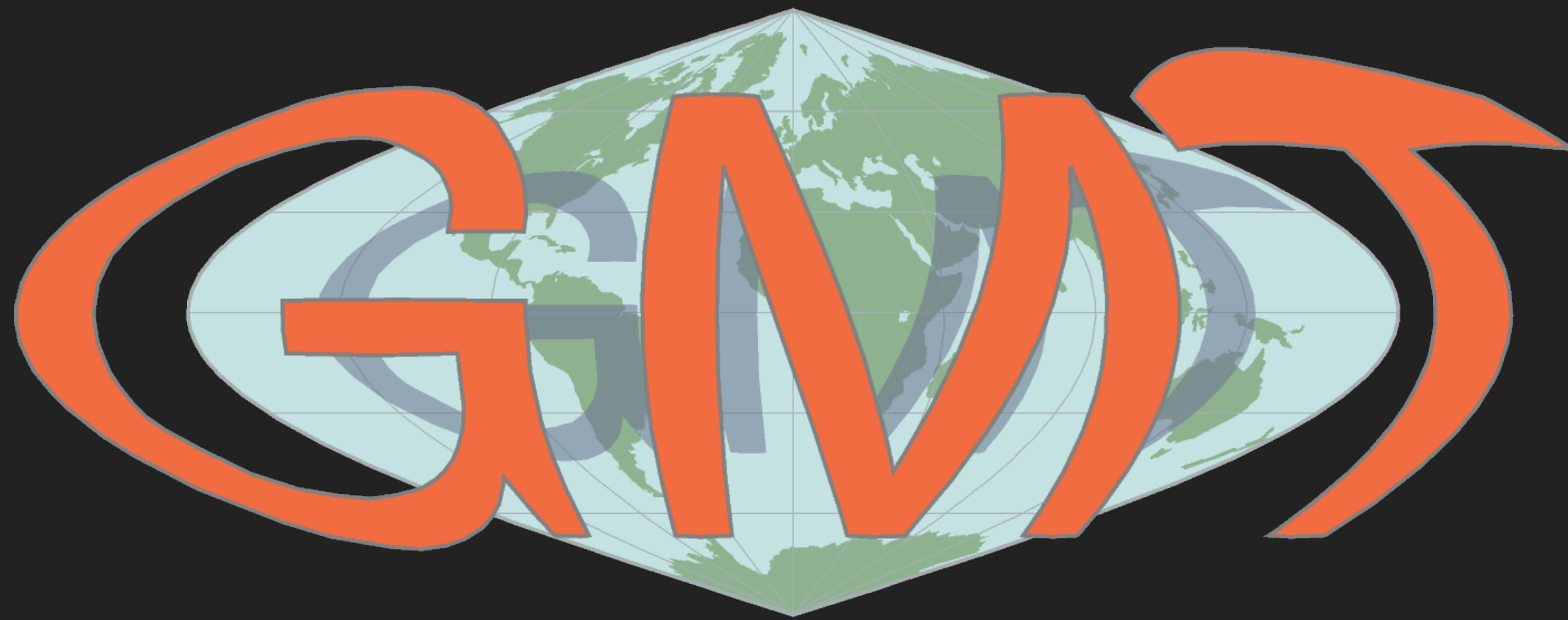
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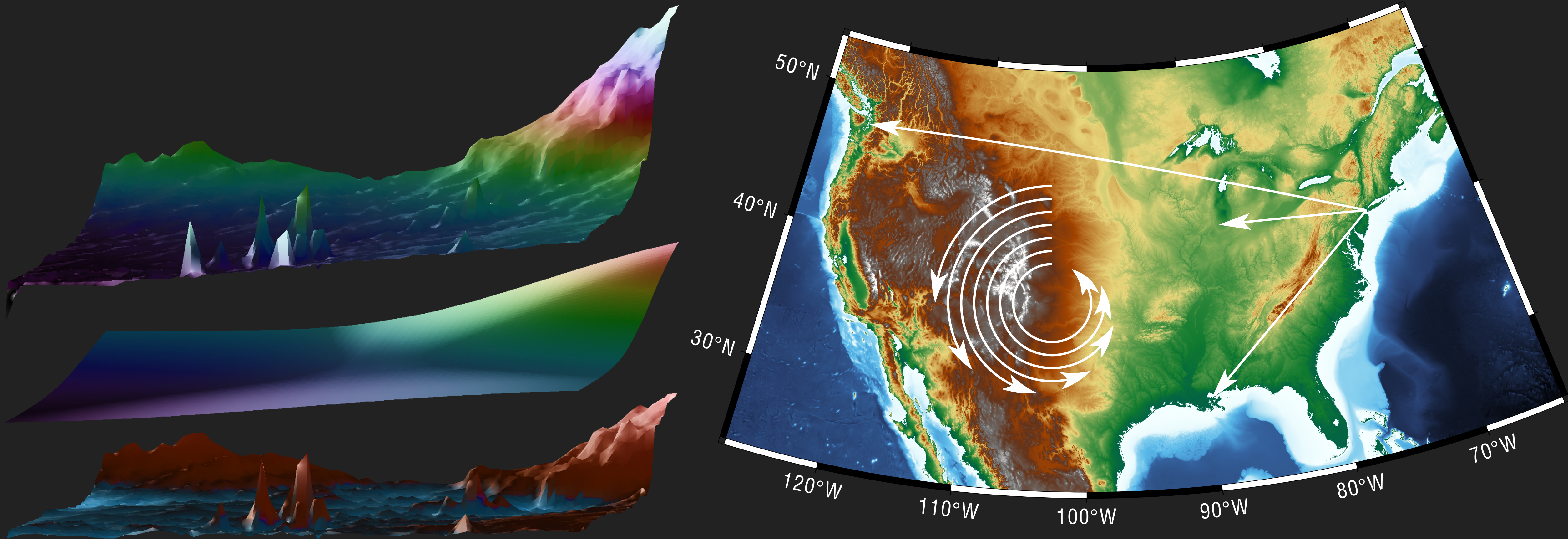


PyGMT provides a Pythonic interface to the Generic Mapping Tools (GMT)





# GMT excels at processing geospatial vector/tabular data and making maps





API documentation, gallery examples, tutorials, and more at [pygmt.org](https://pygmt.org)

PyGMT

latest (v0.7.0)

Search docs

GETTING STARTED

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PyGMT

A Python interface for the Generic Mapping Tools

Why PyGMT?

A beautiful map is worth a thousand words. To truly understand how powerful PyGMT is, play with it online on [Binder](#)! For a quicker introduction, check out our [3 minute overview](#)!

Afterwards, feel free to look at our [Tutorials](#), visit the [PyGMT Gallery](#), and check out some [external PyGMT examples](#)!

Quick Introduction to PyGMT - 2022

PyGMT

Open-source Python library  
Geospatial processing, analysis, and visualization

pygmt.org

github.com/GenericMappingTools/pygmt

EGU General Assembly 2022

Crafting beautiful maps with PyGMT

Search this book...

Crafting beautiful maps with PyGMT

DETAILS

EGU22 Homepage

Course materials on GitHub

TUTORIALS

Anatomy of a PyGMT figure

Integration with the scientific Python ecosystem

Making some Mars maps with pygmt

LiDAR Point clouds to 3D surfaces

Powered by Jupyter Book

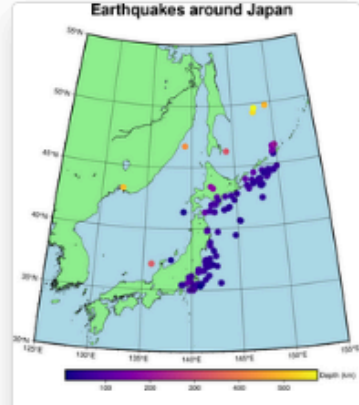
←

🌐 Crafting beautiful maps with PyGMT

Welcome to the EGU22 PyGMT short course 🤖

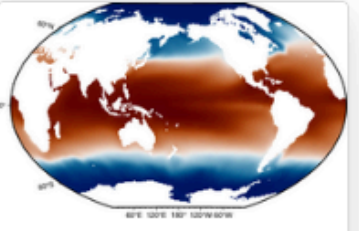
This Jupyter book 📖 contains [PyGMT](#) tutorials for producing maps 🗺️ and doing geospatial data processing 🌐

Earthquakes around Japan



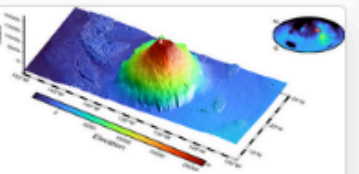
Anatomy of a PyGMT figure

by Leonardo Uieda



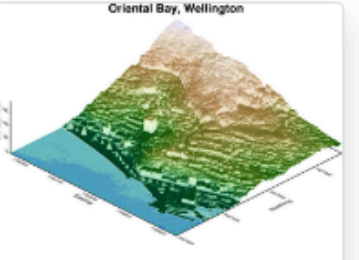
Integration with the scientific Python ecosystem 🐍

by Max Jones



Making some Mars maps with PyGMT

by André Belém




LiDAR Point clouds to 3D surfaces 🌟📖

by Wei Ji Leong

Each tutorial is rendered on this website for easy viewing 👁️, but they are all Jupyter notebooks designed to be ran interactively 🖱️. See the instructions below on how you can start running the tutorials in no time! 🚀

🌟 Quickstart

To run these notebooks in an interactive Jupyter session online,  click on the button below to launch on regular [Binder](#).



# Demo available on GitHub

maxrjones / **scipy2022** Public

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maxrjones

Update README.md

47ebd1c 22 seconds ago

15 commits

_data	gAdd demo	23 hours ago
README.md	Update README.md	22 seconds ago
environment.yml	Update dependencies	22 hours ago
pygmt_demo.ipynb	Update demo	22 hours ago

README.md

SciPy 2022 Talk Submission - Geospatial analysis and visualization with PyGMT

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binder

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Submission for a talk about PyGMT at SciPy2022

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# Community Forum

- ▶ PyGMT Q&A
- ▶ Example showcase
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<https://forum.generic-mapping-tools.org/>



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Welcome to the GMT Community Forum!

This is a place for GMT users and developers to interact with one another, share stories about their work, ask questions, and help others. If you're new here, feel free to [introduce yourself here](#)! Check out the channels below and join the conversation!





We strive to make the forum a welcoming and positive place. Please be **mindful of our Code of Conduct** and keep interactions respectful.

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Category	Topics	Latest
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<div><b>Q&amp;A</b></div> <div>This is a place to ask questions about using GMT and affiliated packages.</div> <div><div>PyGMT Q&amp;A</div><div>GMT.jl Q&amp;A</div></div>	64 / month	<div><div></div><div><input checked="" type="checkbox"/> GDAL Library - Deprecation of OGR_GMT driver planned for version 3.5</div><div>Q&amp;A</div><div>23h</div></div>
<div><b>Lounge</b></div> <div>A place for friendly conversation, ideas, discussion, and otherwise un-categorizable things in the forum.</div>	31	<div><div>J</div><div>Exponential slowdown when using gmt with Python subprocess and multiprocessing</div><div><div>Q&amp;A</div><div>gmt</div></div><div>05h</div></div>
<div><b>Showcase</b></div> <div>Show here your nice example script. This example might be a candidate to our next gallery.</div>	2 / month	<div><div>S</div><div>Annotating psrose beyond N,S,E,W</div><div>Q&amp;A</div><div>28h</div></div>
<div><b>Site Feedback</b></div> <div>Discussion about this site, its organization, how it works, and how we can improve it. Suggestions for improving the forum experience are more than welcome.</div>	2 / month	<div><div></div><div>GMT Community Zoom Meeting, December 16 (UTC 1900)</div><div>Governance</div><div>58h</div></div>
<div><b>Governance</b></div> <div>A place to discuss the running of the Generic Mapping Tools project as a whole.</div>	1 / month	<div><div></div><div>PSD and spectrogram plotting with GMT</div><div>Q&amp;A</div><div>123h</div></div> <div><div></div><div>Question about plot editing</div><div>PyGMT Q&amp;A</div><div>123h</div></div>



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<https://github.com/GenericMappingTools/pygmt>

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michaelgrund Update deprecated -g common option... <span style="float: right;">✖ 6 hours ago ⌚ 1,135</span>
📁 .dvc Initialize data version control for managing t... 9 months ago
📁 .github Set timeout limit for CI tests and docs (#166... 21 hours ago
📁 doc Add more sections to the API docs (#1643) 12 hours ago
📁 examples Update deprecated -JG syntax (#1659) 3 days ago
📁 pygmt Update deprecated -g common option synt... 6 hours ago
📄 .dvcignore Initialize data version control for managing t... 9 months ago
📄 .gitignore Initialize data version control for managing t... 9 months ago
📄 .pylintrc Disable pylint 2.7.0 duplicate-code warning ... 10 months ago
📄 AUTHORS.md Update Dongdong Tian's affiliation (#1640) 15 days ago
📄 AUTHORSHIP.md Add CITATION.cff file for PyGMT (#1592) 2 months ago
📄 CITATION.cff Update Dongdong Tian's affiliation (#1640) 15 days ago
📄 CODE_OF_CONDUCT... Refresh Code of Conduct from v1.4 to v2.0 (... 14 months ago
📄 CONTRIBUTING.md Move contributing guide details to website a... 6 months ago
📄 LICENSE.txt Update copyright year to 2021 (#793) 11 months ago
📄 MANIFEST.in Move MAINTENANCE.md to documentation ... 9 months ago
📄 Makefile Let Flake8 check examples and fix warnings... 4 months ago
📄 README.rst Add conda badge to README (#1661) 3 days ago
📄 environment.yml Bump the minimum required GMT version to... 4 days ago
📄 package.json Use pip install as workaround when make in... 2 months ago
📄 pyproject.toml Show test execution times in pytest (#835) 11 months ago
📄 requirements.txt NEP29: Set minimum required version to Nu... 4 months ago
📄 setup.cfg Switch from versioneer to setuptools-scm (... 13 months ago
📄 setup.py Support Python 3.10 (#1591) 2 months ago
📄 vercel.json Revert the migration from Vercel App to Ver... 10 months ago

☰ **README.rst**

## About

A Python interface for the Generic Mapping Tools.

[www.pygmt.org](#)

python
maps
geoscience

seismology
geophysics

earth-science
hacktoberfest

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---

## Releases 10

v0.5.0
Latest

on Oct 29

+ 9 releases

---

## Used by 24

+ 16

---

## Contributors 49

+ 38 contributors

---

## Languages

● Python 99.7%
● Makefile 0.3%



# Improve user experience by simplifying arguments (pinned issue #1082)

## GMT argument structure

```
import pygmt

fig = pygmt.Figure()
fig.colorbar(
    position="jTR+o0.3c/0.6c+w3c"
)
```

## Additional parameters

```
import pygmt

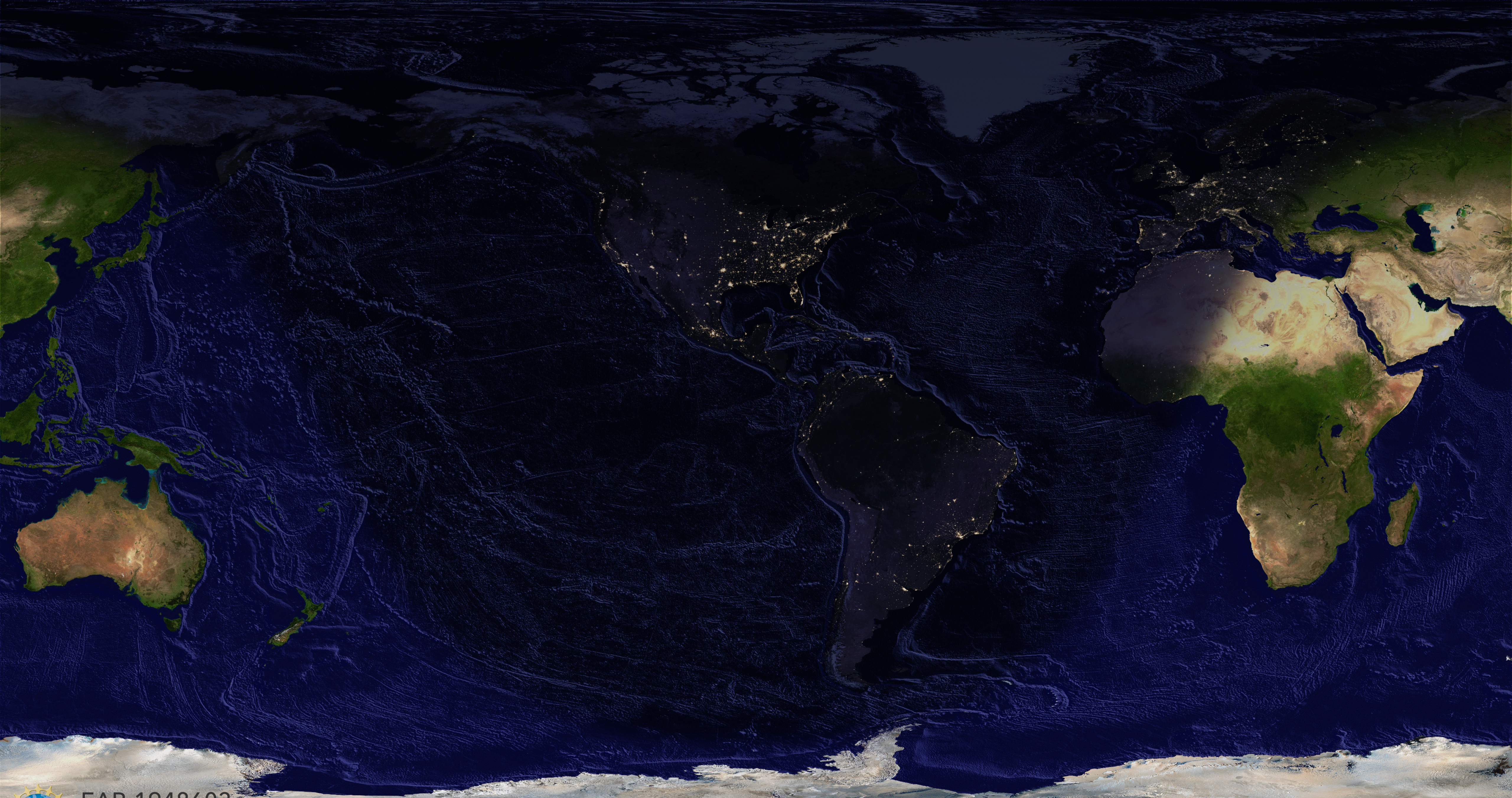
fig = pygmt.Figure()
fig.colorbar(
    location="TR"
    offset=[0.3, 0.6],
    width="3c",
    justify="default"
)
```

## Convenience classes

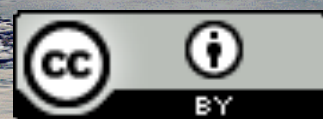
```
import pygmt

position = pygmt.param.Position(
    location="jTR",
    offset=[0.3, 0.6],
    width="3c"
)
fig = pygmt.Figure()
fig.colorbar(
    location=position
)
```





EAR-1948603  
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Data sources: NASA Visible Earth and Earth Observatory via GMT