A modern Python interface for the Generic Mapping Tools

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Introduction

The Generic Mapping Tools (GMT) are open-source programs for processing geospatial data and **making beautiful maps**. Python is one of the fastest growing languages for **scientific computing**. We are building a **bridge** to bring the power of GMT to the Python ecosystem.

Project goals

Be modern: Python 3.5+ and GMT6 only.
Provide a simple and Pythonic interface.
Use the GMT C API instead of system calls.

Readable aliases for GMT arguments.
Integrate with numpy, pandas, and xarray.
Support for the Jupyter notebook.

Development stage

Finished ~70% of the C API wrapper (LibGMT).
Jupyter integration through the Figure class.
Automated tests with > 90% code coverage.
Heavy use of decorators and context managers.

Only a few modules wrapped.
Working on: retrieving data from GMT modules.
pandas and xarray integration.
Windows support.

Contact and contribute

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We welcome contributions: code, ideas, bugs.
Anyone can contribute, regardless of skill level.
We have a Code of Conduct to keep you safe.
The project is open-source (BSD license).

The GMT/Python library

```
import gmt, numpy
lon, lat, magnitude = numpy.loadtxt("usgs_quakes.txt", unpack=True)
fig = gmt.Figure()
fig.coast(region=[-270, 90, -70, 70], projection="M10i", land="#aaaaaa",
          water="white", resolution="l")
fig.plot(lon, lat, sizes=0.02*1.5**magnitude, style="cc", cmap="ocean",
         color=magnitude/magnitude.max())
fig.savefig("poster_background_inception.png", dpi=1000, show=True)
fig.show()
```

Interacting with the GMT C API

```
@fmt_docstring
@use_alias(R="region", J="projection", B="frame", P="portrait", ...)
@kwargs_to_strings(R="sequence", i="sequence_comma")
def plot(self, x=None, y=None, sizes=None, **kwargs):
    "Plot lines, polygons, and symbols on maps."
    with LibGMT() as lib:
        with lib.vectors_to_vfile(x, y) as vfile:
            arg_str = " ".join([vfile, build_arg_string(kwargs)])
            lib.call_module("plot", arg_str)
```

Try an online demo!
github.com/leouieda/agu2017

Download the poster
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Feel free to photograph or share this poster.

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