bgcArgoDMQC: A python package for performing Biogeochemical Argo quality control

Christopher Gordon

Fisheries and Oceans Canada

chris.gordon@dfo-mpo.gc.ca

biogeochemical Argo

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bgcArgoDMQC

- A python package for performing DMQC on biogeochemical Argo oxygen data (calculating oxygen gain)

- An open source implementation of the SAGE-O2 matlab code – has been partially verified against SAGE output to ensure agreement between the two code sets (though more validation is still required)

- Long term, plan to implement QC methods for all BGC Argo variables, but only currently does oxygen

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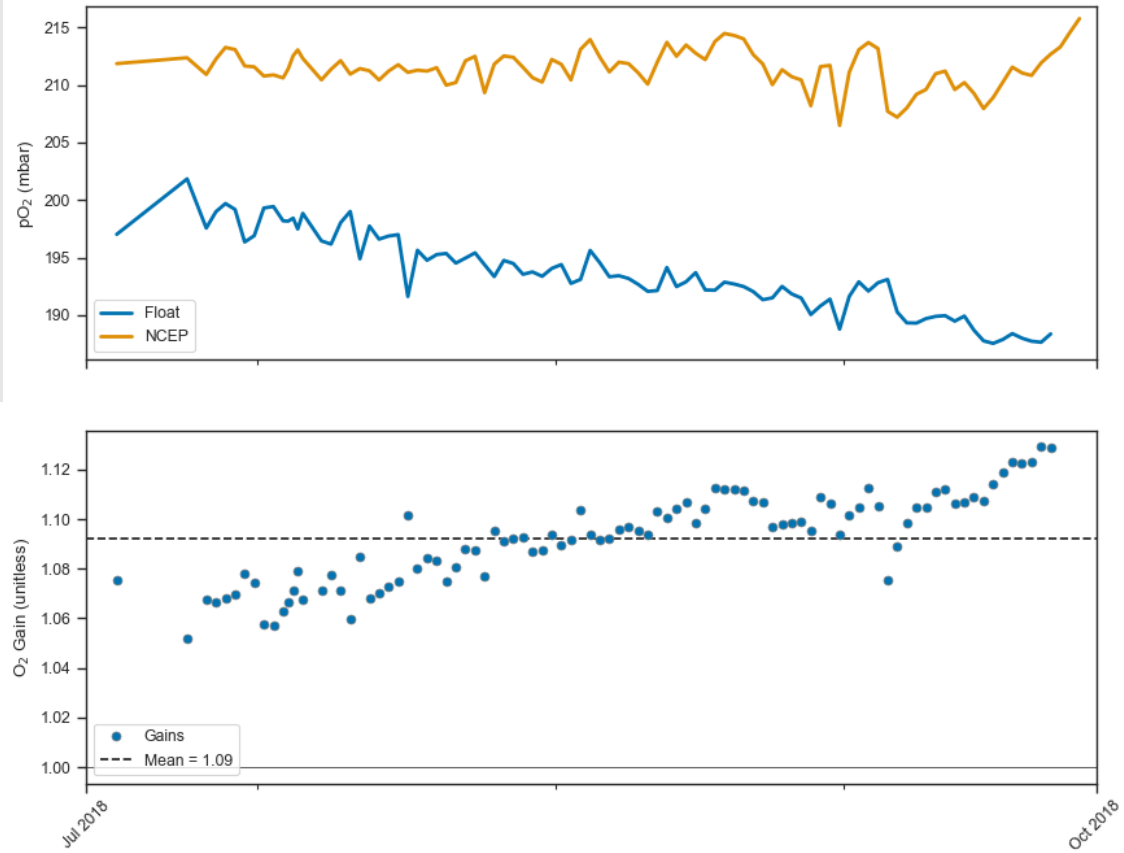
Basic package usage

```
import bgcArgo as bgc

# tell the package where to look for data on your personal machine
bgc.set_dirs(argo_path=argo_path, ncep_path=ncep_path, woa_path=woa_path)

# load a synthetic (Sprof) profile
syn = bgc.sprof(6902896)
# calculate gains in-air and using saturation data
inair_g = syn.calc_gains()
sat_g   = syn.calc_gains(ref='WOA)

# print out the mean gain and visualize
g = syn.plot('gain', ref='NCEP')

>>> print(f'Mean in-air gain: {np.nanmean(inair_g):.2f}')
>>> plt.show()
```

Out: 1.09



Future work & closing notes

- Package can be installed and used, but validation is not complete at this point. Package is in active development.

- There are many other functions of the package that I didn't cover today, including performing oxygen time-response correction, calculating gain with a carryover factor (Bittig et al. 2018), and more!

- If you're interested in collaborating as (1) and alpha user/tester, (2) contributing to a python tool for another variable or (3) generally helping with development of the package, or submitting issues via github - please get in touch!! My email is chris.gordon@dfo.mpo.gc.ca.

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Some useful links

- Github page: https://github.com/ArgoCanada/bgcArgoDMQC
- Package guide/documentation: https://bgcargodmqc.readthedocs.io
- Try it out (via pangeo binder): https://binder.pangeo.io/v2/gh/ArgoCanada/bgcArgoDMQC/master?filepath=notebooks%2FbgcArgoDMQC-basic-usage.ipynb