

Interactive comment on “TPVTrack v1.0: A watershed segmentation and overlap correspondence method for tracking tropopause polar vortices” by Nicholas Szapiro and Steven Cavallo

Nicholas Szapiro and Steven Cavallo

nick.szapiro@ou.edu

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We thank the reviewers for the constructive comments towards improving the work and include the contributions in the Acknowledgments. As requested, we submit the revised files, a point-by-point reply to the comments, and a marked-up manuscript showing the changes using latexdiff. Response to RC1 is included inline below. Response to RC2 is attached as a supplement in pdf format.

Sincerely, Nicholas Szapiro and Steven Cavallo

C1

In response to RC1: We thank Baird Langenbrunner for review and improvement of the software package and documentation. In addition to his modifications incorporated via pull request, we include additional software changes for the unified branch, described below in response to the review point-by-point. The manuscript has been changed to acknowledge the review.

More documentation: Docstrings below function definitions now include a brief description of what the function does and the input arguments if possibly ambiguous.

Code portability: Migration to Python 3, cartopy, and a Python package are welcome suggestions for development and incorporation into future versions.

Clear list of output: An output section has been added to the User's Guide, describing output from `demo()` and `demo_algo_plots()`. The other options at the bottom of `driver.py` were products of older versions. They have been removed, with `driver.py` correspondingly cleaned.

“Note that .pyc files will be created (but ignored in .gitignore).”: The sentence has been added to the User's Guide in the ERA-Interim test case section.

Documentation contents: With more comprehensive documentation a goal of future development (as a Python package), description of the core modules in the manuscript and User's Guide is intended to further orient the reader. We direct users to the (readable) source code if the desired implementation details extend beyond what is described in the documentation. NetCDF files output from `preProcess`, `basinMetrics`, and `tracks` now include units and `long_name` metadata. The segmentation and correspondence files contain descriptions metadata.

“info” variable: Changing the “info” variable is now a step in the ERA-Interim test case in the User's Guide.

Reconstruct Anaconda environment: A `docs/environment.yml` is now included and mentioned in the User's Guide.

C2

test-tpvTrack directory: The test-tpvTrack directory with output from the example test case was added with the reviewer's pull request. Files have been updated to match output from the current version.

Changes in my_settings.py: The User's Guide now correctly instructs the user to modify variables in my_settings.py.

Color map: The colormap was changed with the reviewer's pull request.

Please also note the supplement to this comment:

<https://www.geosci-model-dev-discuss.net/gmd-2018-180/gmd-2018-180-AC1-supplement.pdf>

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2018-180>, 2018.