ERUO
User Manual

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1. Introduction

This manual contains instruction on how to process (and postprocess) the data collected by the MRR-PRO using the ERUO library. Few example measurements accompany the library, and the user manual uses these data files to illustrate the functioning of the library.

The ERUO library is presented in [1] and its code is available at:
https://github.com/alfonso-ferrone/ERUO.git
All the content of this repository needs to be downloaded in order to follow all the steps presented in this manual.

1.1 Software requirements

All the code in the ERUO library has been written in Python 3.8, and we expect it to function correctly for different Python 3.X versions.

In order to use the library, the user needs to have access to Python 3.X with the following packages installed:

- numpy
- scipy
- xarray
- astropy
- netCDF4
- joblib
- matplotlib

The library has been tested on Linux (Ubuntu 20.04.3 LTS) with the following packages versions:

Name	numpy	scipy	xarray	netCDF4	astropy	joblib	matplotlib
Version	1.19.2	1.5.2	0.17.0	1.5.3	4.0.2	0.17.0	3.3.2

ERUO has also been tested on Windows (Windows 10, XXX) with the following packages versions:

Name	numpy	scipy	xarray	netCDF4	astropy	joblib	matplotlib
Version							

We expect the library to function correctly with different version numbers of the libraries, but this has not been tested.

1.2 Notes on the measurement setup

This guide uses the data provided in the ERUO git repository to illustrate the functioning of the library. These measurements have been collected in the vicinity of Princess Elisabeth Antarctica by an MRR-PRO[1] which was saving the “spectrum_raw” in the data files.

The library is designed to use this “spectrum_raw” as starting point of the processing, and it will not function correctly if used on a dataset collected by an MRR-PRO that has been configured to collect “spectrum_reflectivity” instead of “spectrum_raw”.

Therefore, if the user plans to use ERUO on a dataset, they must ensure that in the configuration page of the MRR-PRO the spectrum recording has been set to “spectrum_raw”.

2. How to use ERUO

2.1 Organizing the directories for data and products

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3. Additional material

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4. References

[1] Ferrone, A., Billault-Roux, A.-C. M., and Berne, A.: ERUO: a spectral processing routine for the MRR-PRO, Atmos. Meas. Tech. Discuss. [preprint], https://doi.org/10.5194/amt-2021-294, in review, 2021.

1 More information on the dataset, the measurement campaign and the configuration of the MRR-PRO are available in [1].