

Readme for SPEX airborne data in the PACE-PAX archive

Filenames and contents

PACE-PAX SPEX airborne data are archived at:

https://www-air.larc.nasa.gov/cgi-bin/ArcView/pacepax#VAN_DIEDENHOVEN.BASTIAAN/

This folder contains zip files named (according to PACE-PAX convention):

PACEPAX-SPEXAIRBORNE-L1C_ER2_2024XXXX_RA.zip

and

PACEPAX-SPEXAIRBORNE-L2_ER2_2024XXXX_RA.zip

where “XXXX” specifies the month and day of the flight. The file version is given by “RA”.

These folders contain L1C and L2 aerosol files that are consistent in naming convention and format with the PACE SPEXone L1C and L2 aerosol files. A separate file is provided for each ‘straight’ ER-2 flight leg.

L1C file specifics

L1C files contain L1 data collocated to the surface, consistent with SPEXone L1C files. For SPEX airborne the L1C footprints are approximately 1x1km² on ground for which middle coordinates are given in the files. This results in a maximum of 9 valid footprints across the SPEX airborne swath.

L2 file specifics

PAX-SPEX L2 version 1.0 aerosol data is processed using RemoTAP-V14.5, which is the same code as for the SPEXone operational L2 processing. For SPEX airborne, the retrieval uses 40 bands of radiance and DoLP between 407 and 707 nm, with 9 viewing geometries. The required ancillary information for L2 is preprocessed through the SRON-ANCgen processor, including preparing the profiles of O3 mass mixing ratio and specific humidity from MERRA2 and preparing the profiles of NO2 volume mixing ratio from GEOS-CF.

Separate files are available for retrievals over land and ocean surfaces. Note that no cloud and quality masks are applied yet. To select cloud-free and high quality retrievals, selection criteria need to be applied to the values of *chi2* (available in the *diagnostic_data*) group. Recommended values are:

chi2 < 2 over ocean, and
chi2 < 1.5 over land.