

Atmospheric Potential Oxygen forward Model Intercomparison Project (APO-MIP) - Notes on Submitted Files

■ CAM-SD

- 11 surface files (stations and Gould) and four aircraft files, with different naming conventions, included variables, and data types
- Aircraft files also include pressure, surface pressure, temperature, humidity, hz wind, vt wind, potential temperature, and BL height
- Also including 3D fields (one netcdf file per day)
- In the submitted files, three tracers (o2_cesm, n2_cesm, and co2_cesm) are in kg/kg. To convert to mol/mol, multiply by 28.96/molwt, where molwt is either 28, 32, or 44 for N2, O2, or CO2 respectively. This correction has been applied in the post-processed common-obspack-format files.
- The ORCAS file has bad data during the last four hours (UTC) of Feb. 29.
- Gould ship file miss data from 2016 to 2017
- In 3D output, the file
cam6327_sd.apo-forward.001.cam.h0.2003-04-16-00000_APO_subset.nc is empty

■ CAMS_LMDZ

- 10 text files in CAMS-specific format, one each corresponding to requested tracers
 - Within each of which are 460,635 rows and 2 columns (ObsPack ID and Value)
 - It is necessary to match ObsPack ID to the original file
- None of the optional output
- For APO, the values provided must be multiplied by 12/64.4 after having removed the 400 ppm offset. For O2, the factor is be 12/32. For N2, it's 12/14.
- o2_gridfed fluxes stop in 2015, which also affects apo_gridfed.

■ CTE_TM5

- 511 obspack files
- 59 fixed station hourly output files
- The O2/APO/CO2 tracers are in the variable 'modelsamplesensemble_forecast', in this order:
 - apo_jena=1
 - o2_cesm=2
 - co2_cesm=3
 - n2_cesm=4

- o2_gk01r16=5
 - co2_somffn=6
 - n2_era=7
 - co2_oco2mip=8
 - co2_gridfed=9
 - o2_gridfed=10
 - co2bg=11 (this is the 400 ppm field)
 - co2bg=12 (this is the CTE one, from our init field in 2000)
 - co2_bio=13
 - co2_ocn=14
 - co2_fire=15
 - co2_fossil=16
 - Also including 3D fields (one netcdf file per day)
 - Includes CTE priors (co2_bio, co2_ocn, co2_fire, and co2_fossil)
 - Files also include pressure, temperature, humidity, hz wind, and BL height

- Jena_TM3
 - 10 subdirectories, one each corresponding to requested tracers
 - within each of which are 506 records, each with timeseries (.ts), daily mean (.dmm.ts), and monthly mean (.mm.ts) files
 - CarboScope specific file naming convention as described here:
 - <https://www.bgc-jena.mpg.de/~christian.roedenbeck/INVERSION/HOWTO/StationCodes.html>
 - Also including 3D fields (yearly netcdf files for each tracer)
 - Output for AOA aircraft samples is missing

- MIROC4-ACTM
 - 128 Obspack text files (e.g. mlo_surface-flask_1_representative.txt)
 - Daily 3D output for 21 years, one netcdf file per tracer
 - Also includes surface pressure fields
 - Also includes an inversion result in variable 'CO2actm_gc3t'
 - ALT obspack file missing 2 records from 1989, LJO obspack file missing 5 records from 1989/1990

- NICAM-TM_gl5
 - 15 primary Obspack netcdf files (e.g. nicam-tm_gl5_mlo_surface-flask_4_representative.nc) each with all 10 tracers
 - No 'time', just 'time_components' and 'time_decimal'
 - Also including three ship files in ObsPack format

- Also including full ObsPack (one netcdf file per year)
- Also including 3-hourly output at fixed sites (one netcdf file per tracer)
- Files also include pressure, temperature, and humidity
- Including 3D and 2D (surface) files

■ NICAM-TM_gl6

- Same format as _gl5 output

■ NIES

- 18 Obspack netcdf files (e.g. mlo_surface-flask_4_representative.nc) each with all 10 tracers
- Including three ship files in ObsPack format
- Also including 3-hourly station data in one nc file
- No 3D files