file sm_ABand_2022_2023.mat

Odin/OSIRIS A-band data November 2022 – May 2023

Version: 2024-05-08

Array of stratosphere/mesosphere (sm) profiles containing the following data structures:

sm: array of structures with

orb	s	orbit number
scannr	s	scan number, unique integer identifying the scan, computed as (orbit number * 1000 + scan in orbit)
sattime	v	time [mjd] at the midpoint of each exposure during the scan
satpos	m	positional vectors (xyz) of the spacecraft at the middle of each exposure
satlook	m	unit look vectors (xyz) of the OSIRIS line of sight at the middle of each exposure
zt	v	tangent altitudes for current scan [km]
mjd	s	time (at z = 90 km)
lat	s	latitude (at z = 90 km) [degrees]
lon	s	longitude (at z = 90 km) [degrees]
sza	s	solar zenith angle (at z = 30 km) [degrees]
saa	s	solar azimuth angle (at z = 30 km) [degrees]
ssa	s	solar scattering angle (at z = 30 km) [degrees]
scandir	s	direction of scan (1=upp, 0=down)
expt	v	exposure times [s]
Li	v	mean radiance in specific wavelength interval [ph m-2 s-1 str-1 nm-1], i=1-4 referring to integration over MATS filter bands IR1-IR4
dLi	v	measurement error (Poisson statistics) of Li [ph cm-2 s-1 str-1 nm-1]

abbreviations:

s: scalar

v: column vector along tangent altitude (dimension: zt)

m: matrix along tangent altitudes with three columns xyz (dimension: zt x 3)

xyz: Earth Centered Earth Fixed (ECEF) coordinates, using the WGS84 geoid.

Upcoming steps:

- Provide data in NetCDF file.
- Provide SZA, SAA and SSA at tangent altitude 90 km instead of 30 km.
- Add original OSIRIS spectra.
- Develop spectral background subtraction to infer pure A-band emissions.