# SOFIE
# Level 2 netCDF file
# Description

| SOFIE_Level_2_netcdf_file_description_v1.0 | Date: February 19, 2008 |
|---|---|

| Revisions | | | | |
|---|---|---|---|---|
| Rev | Description of Change | By | Approved | Date |
| 1.0 | Initial Release | E. Thompson | L. Gordley | 2/19/2008 |

This is a description of the data contained in the SOFIE Level 2 netCDF files released in V1.0, the first public release. The listing of the data that the user can obtain by doing a "ncdump" on the netCDF file is described.

A few details: The temperature retrieval uses the signals from band 13, the $H_2O$ retrieval uses band 6, the $O_3$ retrieval uses Band 1 and $CH_4$ uses the signals from band 11. Note that the precision estimates are preliminary and will be refined in future releases; they are indicative of how well the retrieval actually performed and are included for that reason.

A few important notes regarding some data not included in V1.0

$CO_2$ and $CO_2$ precision estimates: $CO_2$ retrievals will be started after a thorough evaluation of the temperature results using the 2.7 micron and the 4.3 micron channels. The $CO_2$ retrieval requires a very precise inter calibration of those two channels.

NO and NO precision: The NO channel has unexpected detector characteristics, namely an unexpected level of temperature sensitivity. This requires some special corrections in the level 1 processing that wasn't planned. Those corrections are under development. NO retrievals are expected for the 2nd release in late spring.

13 arcmin lockdown data: This data requires advance pointing analysis and signal drift corrections with accompanying validation, which were not ready in time for the first release. This data is taken approximately once a week for calibration purposes.

**SOFIE Level 2 netCDF file description for V1.0**

| Name | Long name | Valid min | Valid max | Missing value | Fill value | Units/description |
|---|---|---|---|---|---|---|
| Int event(event) | Event_number | 1 | 1000000 | -1 | | |
| Int Orbit(event) | Orbit_number | 1 | 50000 | -1 | -1 | |
| Int Date(event) | Date of occultation event | | | | | YYYYDDD |
| Int Mode (event) | Spacecraft occultation mode, Rise or Set | | | | | |
| Double Latitude_83km(event) | Geodetic latitude of 83km tangent point | -90 | 90 | -1.e24 | -1.e24 | deg |
| Double Longitude_83km(event) | | 0 | 360 | -1.e24 | -1.e24 | Deg E |
| Double Time_83km(event) | Time of 83 km measurement, Seconds since Unix Epoch+MicroTime (milliseconds) | 0 | None | -1.e24 | -1.e24 | msec |
| Double Altitude(altitude) | Geodetic altitude grid | | | | | km |
| Double Pressure(event,altitude) | Atmospheric pressure at tangent point | 0 | 2000 | -1.e24 | -1.e24 | mbar |
| Double Temperature(event,altitude) | Atmospheric temperature at tangent point | 0 | 1000 | -1.e24 | -1.e24 | K |
| Double Temperature_Precision(event,altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Latitude(event,altitude) | Geodetic latitude of tangent point | -90 | 90 | -1.e24 | -1.e24 | deg |

| Name | Long name | Valid min | Valid max | Missing value | Fill value | Units/description |
|---|---|---|---|---|---|---|
| Double Longitude(event, altitude) | East longitude of tangent pint | 0 | 360 | -1.e24 | -1.e24 | Deg E |
| Double Time(event, altitude) | Measurement time, ms since midnight | 0 | 8640000 | -1.e24 | -1.e24 | ms |
| Double H2O_vmr(event,altitude) | Water vapor volume mixing ratio at tangent point | 0 | 1 | -1.e24 | -1.e24 | vmr |
| Double H2O_vmr_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double CH4_vmr(event,altitude) | Methane volume mixing ratio at tangent point | 0 | 1 | -1.e24 | -1.e24 | vmr |
| Double CH4_vmr_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double O3_vmr(event, altitude) | Ozone volume mixing ratio at tangent point | 0 | 1 | -1.e24 | -1.e24 | vmr |
| Double O3_vmr_precision(event,altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double CO2_vmr(event, altitude) | Data not currently available. Data will be available in future releases. | | | | | |
| Double CO2_vmr_precision(event, altitude) | Data not currently available. Data will be available in future releases. | | | | | |
| Double NO_vmr(event, altitude) | Data not currently available. Data will be available in future releases. | | | | | |
| Double NO_vmr_precision(event, altitude) | Data not currently available. Data will be available in future releases. | | | | | |
| Double Extinction_0330(event, altitude) | Data not currently available. Data will be available in future releases. | | | | | |
| Double Extinction_0330_precision(event, altitude) | Data not currently available. Data will be available in future releases. | | | | | |

| Name | Long name | Valid min | Valid max | Missing value | Fill value | Units/description |
|---|---|---|---|---|---|---|
| Double Extinction_0867(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_0867_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Extinction_1037(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_1037_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Extinction_2462(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_2462_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Extinction_2934(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_2934_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Extinction_3064(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_3064_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Extinction_3186(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double | Data not currently available. Data | | | | | |

| Name | Long name | Valid min | Valid max | Missing value | Fill value | Units/description |
|---|---|---|---|---|---|---|
| Extinction_3186_precision(event, altitude) | will be available in future releases | | | | | |
| Double Extinction_3384(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_3384_precision(event, altitude) | Data not currently available. Data will be available in future releases. | | | | | |
| Double Extinction_3479(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_3479_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Extinction_4646(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_4646_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |
| Double Extinction_5006(event, altitude) | Extinction coefficient of tangent ray at the wavelength of this band | 0 | 1000 | -1.e24 | -1.e24 | 1/km |
| Double Extinction_5006_precision(event, altitude) | Data not currently available. Data will be available in future releases | | | | | |

Where the dimensions are:

event = UNLIMITED ; // (32 currently)
altitude = 736 ;
name_size = 300 ;

and the global attributes are:

:Title = "SOFIE Level2 Pre-Launch" ;
:DP_Type = "Level2 Pre-Launch" ;
:Source = "SOFIE DPC" ;
:Mission = "AIM" ;
:DP_Version = "0.01" ;
:PF_Version = "0.01" ;
:SW_Version = "0.01" ;
:SW_Name = "Sofie Level2" ;
:Calib_Version = "0.01" ;
:Description = "Sofie Level2 Data Product" ;
:History = "Pre-Launch" ;
:Gen_Date = "2007-04-05" ;