

HDF-EOS Aura File Format Guidelines

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What Is Aura?

- **Third in series of EOS atmospheric chemistry satellites (1:45 PM equator crossing time)**
- **Formerly known as CHEM**
- **Scheduled launch date of June 2003**
- **Level 2 data products include:**
 - **Vertical profiles of temperature, pressure, chemical and aerosol species**
 - **Column amounts of chemical species**
 - **Cloud properties**

Aura Instruments

- **HIRDLS** (*High Resolution Dynamics Limb Sounder*)
 - Limb infrared sounder
 - University of CO and Oxford
- **MLS** (*Microwave Limb Sounder*)
 - Limb microwave sounder
 - JPL
- **OMI** (*Ozone Monitoring Instrument*)
 - Nadir wide-field-imaging spectrometer
 - Netherlands, Finland and US
- **TES** (*Tropospheric Emission Spectrometer*)
 - Nadir and limb infrared-imaging spectrometer
 - JPL

All instruments have world-wide co-investigators

Why Guidelines for Aura Instruments?

- **HDF-EOS Swath allows a lot of flexibility**
- **Ease cross-platform use of Aura files**
 - **Ease development of software**
 - **Easier to understand**
- **Intended to standardize Level 2 files**
(may apply to Level 3 and above as well)

Changes Since HDF-EOS Workshop IV

- * Adopted HDF-EOS5 as at-launch version**
- * One type of data file organization now – MLS will use HDF-EOS5 links capability for L2gpValue**
- * Swath Name – instrument specific**
- * Pressure is stored in geolocation field and swath attribute (duplicate copy)**

*** New Item**

Changes Since HDF-EOS Workshop IV (continued)

- * Three levels of attributes (file, swath and data field)**
- * Attributes are now suggested, but not mandatory (except for Pressure)**
- * Instrument teams modified Geolocation and Data Field valids and units**
- * Added appendix of pre-HDF-EOS5 file formats**

Guidelines List

- * **Instrument teams will use HDF-EOS5 by launch**
- **Aura Level 2 files will use HDF-EOS Swath**
- **HDF-EOS structure names will strictly adhere to Valids list**
- **Data will be reported on a pressure grid and be ordered from ground to space**

Guidelines List (continued)

- **Data fields will be ordered with pressure coordinate being the fastest incrementing coordinate**
- **Data fields will be in units specified**
- **HDF fill value and MissingValue will have the same value**
- **Instrument geolocation fields unique to particular instrument will be prefixed with instrument name**

Organization of Data Fields and Attributes

Swathname: <i>Instrument Specific</i>
Dimensions: nTimes nLevels <i>etc.</i>
Geolocation Fields: Time Latitude <i>etc.</i>
Data Fields: Temperature O3 <i>etc.</i>
Global Attributes: Instrument Name Process Level <i>etc.</i>

Each file may have one or more swaths

Each swath may contain one or more species

Standard Names

Adhere to strict names (spacing and capitalization required)

- **Dimension names (nTimes, nLevels, nWavel, nXtrack)**
- **Geolocation Fields – Used to hold descriptor data (includes SolarZenithAngle, OrbitAscendingFlag, etc.)**
- **Data Fields – Contains measured and derived data**
- * **File Attributes (HDF-EOS Global File Attributes) – Includes InstrumentName, ProcessLevel, etc.**
- * **Swath Attributes (HDF-EOS Group Attributes) – Pressure and VerticalCoordinate**
- **Data Field Attributes (HDF-EOS Local Attributes) –Includes MissingValue, ScaleFactor, Units, etc.**

Conclusions

- **Initial standardization complete and adopted by all instrument teams**
- **Revisions are adopted as agreed upon by the authors, who represent every instrument team**
- **Standard may continue to evolve as instrument teams get better understanding of their data storage needs**
- **URL of document:**

http://www.eos.ucar.edu/hirdls/HDFEOS_Aura_File_Format_Guidelines.pdf