APL SSUSI EDR FILE FORMAT DOCUMENT

Document Version 1.4.7

# Change Log

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 1.4.7 | 2/27/13 | Added EDR-AURORA-PRED description, removed Ionospheric bubble EDR as was no longer produced after release 5.0.0. Fixed typos in the description of the quality flags in the 3D ionosphere product. |
| 1.4.6 | 10/15/2012 | Updated documentation for EDR-GAIM files with Chapman intensity profile |
| 1.4.5 | 5/2/2012 | Updated documentation for 3D Ionosphere EDR |
| 1.4.4 | 10/11/11 | Made separate title page, table of contents page and change log pages. |
| 1.4.3 | 10/10/11 | Added Day Auroral GAIM data to edr-gaim disk files |
| 1.4.2 | 9/29/11 | Put back Bubble EDR for now until it is phased out next year. |
| 1.4.1 | 9/14/11 | Added new dayside topside limb variables to EDR-DAY-LIMB product |
| 1.4.0 | 8/8/11 | Added section for EDR-GAIM description |
| 1.3.0 | 6/15/11 | Added documentation for the 3D Ionosphere EDR, and removed documentation for the Ionosphere Bubble EDR |
| 1.2.3 | 7/6/10 | Fixed definitions of nadir and disk quality bits for night disk EDR |
| 1.2.2 | 3/5/10 | Added new fields to Ionosphere Bubble EDR for bubble characterization. These include NMF2, HMF2, MEAN\_BUBBLE\_ERROR, STD\_BUBBLE\_ERR, MEAN\_BUBBLE, and STD\_BUBBLE. |
| 1.2.1 | 9/23/09 | Reorganized Data quality flag bit order to make it more uniform. Dayside limb now has a standard data\_quality flag. Separate integer flags for HMF2, etc, will eventually be phased out. |
| 1.2.0 | 9/22/09 | Added documentation for the Ionosphere Bubble EDR. |
| 1.1.3 | 6/15/09 | Added PROTON\_FLAG\_NORTH/SOUTH and HEMISPHERE\_POWER\_NORTH/SOUTH to the auroral product. |
| 1.1.2 | 6/10/09 | Added MeV contamination flag to the data quality index |
| 1.1.1 | 10/3/08 | Added SAA data quality bits description for EDR night disk. Upped data product version numbers for full orbit |
| 1.1.0 | 9/24/08 | Added CALIBRATION\_PERIOD\_VERSION, and SOFTWARE\_VERSION\_NUMBER. Changed file naming to reflect new AFWA standard naming scheme. Fixed minor typos. |
| 1.0.10 | 8/1/08 | Changed filenaming conventions and realigned document to data products |
| 1.0.9 | 7/2/08 | Added new fields and flags to Nightside Limb product, now 0103 |
| 1.0.8 | 6/30/08 | Added new fields and flags to Nightside Disk Product, now 0103 |
| 1.0.7 | 11/16/07 | Filled in missing HmE, NmE fields in Auroral EDR description |
| 1.0.6 | 10/05/07 | Added Dayside limb description: added CalVal corrected NmF2 to nightside limb |
| 1.0.5 | 9/20/07 | Added CalVal Correction factor and values – fixed some typos |
| 1.0.4 | 8/23/07 | Modified Dayside Disk EDR description |
| 1.0.3 | 7/06/07 | Added Dayside Disk EDR table |
| 1.0.2 | 2/16/07 | Added magnetic local time to northern and southern auroral boundary. Added geographic lat/lon to northern and southern auroral boundary. |
| 1.0.1 | 1/29/07 | Changed names of geophysical parameters. Removed dimensions from global attribute sources. Updates to EDR Limb data product |
| 1.0.0 | 1/5/2007 | Initial Version of document. |

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# Introduction

The following tables describe the contents of the SSUSI EDR (Environmental Data Record) files produced by IDL code supplied by APL. The information content of the current IDL produced EDR file is very similar to that created by the older ADA code, with the exception of the newer the Ionosphere Bubble EDR. This document describes the format of the data only. For more information about how the quantities are derived, see the SSUSI Data Products Algorithms document.

There are four types of EDR files: limb (nightside and dayside), disk (nightside and disk), auroral, and ionospheric bubble. All are ultimately derived from rebinned L1B radiance data. To distinguish between day, night and auroral grids on the disk the array sizes, the indices for across track ‘M’ and along tack, ‘N’ will be annotated with letters to indicate whether they are for aurora (with an ‘a’) or for disk (‘d’) or limb (‘l’) and for night (‘n’) or day (‘d’). These are outlined in the table below. At present there is no grid in the ionosphere EDR.

|  |  |  |
| --- | --- | --- |
|  | **Across Track Index** | **Along Track Index** |
| Nightside Disk | Mnd | Nnd |
| Nightside Limb | Mnl | Nnl |
| Dayside Disk | Mdd | Ndd |

|  |  |  |
| --- | --- | --- |
| Dayside Disk Aurora | Mdda | Ndda |

|  |  |  |
| --- | --- | --- |
| Dayside Limb | Mdl | Ndl |
|  |  |  |
|  | **Geomagnetic Latitude** | **Geomagnetic Longitude** |
| Aurora | Ma | Na |

There are a set of global attributes common to all EDR files; these are described in the next section. This is followed by detailed descriptions of the remaining customized content of the EDR files: (Nightside Limb, Nightside Disk, Auroral, and Ionosphere).

The processing algorithms use the SSUSI SDR and L1B files previously generated to create separate limb and disk full orbit files for a given SSUSI orbit. The disk EDR files are re-binned onto a lower resolution grid, based on bin sizes proscribed by APL.

Those parameters not generated by the current build of the level EDR software marked by a ‘\*’. They may be included in a later version of the file. NetCDF attributes associated with variables are listed together with the variable and are indented.

# EDR File Naming Conventions

|  |  |
| --- | --- |
| **SSUSI EDR Data Product** | **SSUSI EDR Data Product Name** |
| SSUSI EDR Nightside Disk | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-NIGHT-DISK\_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR Nightside Limb | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-NIGHT-LIMB\_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR Dayside Disk | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-DAY-DISK\_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR Dayside Limb | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-DAY-LIMB\_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR Aurora | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-AURORA\_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR Aurora Prediction | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-AURORA-PRED\_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR Bubble | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-IONO-BUBBLE\_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD>YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR Ionosphere | **PS.AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-IONO \_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR GAIM-LIMB | **PS. AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-GAIM-LIMB \_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |
| SSUSI EDR GAIM-DISK | **PS. AFWA\_SC.U\_DI.A\_GP.FXX-SSUSI\_PA.APL-EDR-GAIM-DISK \_DD.YYYYMMDD\_SN.oooo-rr\_DF.NC**  FXX denotes bird number, e.g., F16  DD.YYYYMDD:  YYYY= 4 digit year  MM – 2 digit Month  DD - 2 digit day of month  SN.ooooo-rr:  ooooo – 5 digit orbit number  rr – 2 digit data occurrence number. |

# EDR Global File Attributes

These attributes are common to EDR disk, limb, aurora, GAIM, and ionosphere files.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
|  |  |  |  |
| **Global file attributes** | | | |
| FILENAME | STRING | - | e.g.,  “[PS.APL\_V0102S010CD031\_SC.U\_DI.A\_GP.F16-SSUSI\_PA.APL-EDR-DAY-DISK\_DD.20050919\_SN.09913-01\_DF.NC](http://guvi.jhuapl.edu/ssusi_gdas/users/schaerk1/data/full_orbit/PS.APL_V0102S010CD031_SC.U_DI.A_GP.F16-SSUSI_PA.APL-EDR-DAY-DISK_DD.20050919_SN.09913-01_DF.NC)” |
| MISSION | STRING | - | e.g., “F16” |
| DATA\_PRODUCT\_TYPE | STRING | - | e.g., “EDR Aurora” |
| SOURCE | STRING | - | Names of the SDR and/or L1B File(s) used to generate this file. |
| SCAN\_TYPE | STRING | - | “DISK” or “LIMB” |
| REGION\_TYPE | STRING | - | “NIGHT” or “AURORA” or “DAY” or “TWILIGHT” |
| DATA\_PRODUCT\_VERSION | STRING | - | e.g., “0106” |
| DATA\_PRODUCT\_REVISION | STRING | - | e.g., “001” |
| DATA\_DOCUMENTATION\_VERSION | STRING | - | Version number of the SSUSI File Definition Data Document utilized, e.g., “0106” |
| SOFTWARE\_VERSION\_NUMBER | STRING | - | Sequence number of SSUSI GDAS release software e.g., “021” |
| SOFTWARE\_VERSION | STRING | - | e.g., “devel” |
| SOFTWARE\_NAME | STRING | - | “APL SDR to EDR algorithm X” |
| CALIBRATION\_TABLES\_NAMES | STRING | - | ‘;’ separated list of calibration files that were used to generate this EDR file. | |
| CALIBRATION\_TABLES\_CREATED | STRING | - | Date when calibration table was created, e.g.,  “Thu Oct 13 16:15:05 2005”  If more than one file is used, a semi-colon separated list is used. | |
| CALIBRATION\_PERIOD\_VERSION | STRING | - | Letter indicating calibration period along with 3 digit number of the calibration version in relation to all possible calibration version files, e.g. D031 implies calibration period D and the calibration table is the 31st version of the calibration file. |
| DESCRIPTION | STRING | - | e.g., “EDR Imaging Mode Data – Nightside Disk” |
| COMMENT | STRING | - | e.g., “No comment” |
| HISTORY | STRING | - | e.g., “No revisions” |
| DATE\_GENERATED | STRING | - | e.g., “2005094213027” |
| STARTING\_TIME | STRING | - | e.g., “2004150100727” |
| STOPPING\_TIME | STRING | - | e.g., “2004150114908” |
| STARTING\_ORBIT\_NUMBER | FLOAT | - | Orbit number of the starting grid cell e.g., “3159.0” |
| STOPPING\_ORBIT\_NUMBER | FLOAT | - | Orbit number of the ending grid cell e.g., “3160.0” |
| NODAL\_CROSSING\_EPOCH | DOUBLE | - | The CDF EPOCH of the Nodal crossing data in the GWC ephemeris from the Prep file. e.g., “63273228090000.” |
| NODAL\_DAY | INTEGER | - | The day of month of the Nodal Crossing |
| NODAL\_MONTH | INTEGER | - | The month of the Nodal Crossing |
| NODAL\_YEAR | INTEGER | - | The year of the Nodal Crossing |
| NO\_DATA\_IN\_BIN\_VALUE | FLOAT | - | The value placed in EDR grid cells with no L1B/SDR pixels, e.g., “fNaN” |
|  |  |  |  | |
| **Geophysical information (if available)** |  |  |  | |
| GEOPHYSICAL\_INFO\_UPDATE | STRING | - | Last update time, e.g., “20010418:0000” | |
| DAY\_81\_F107 | STRING | - | 81 day average of F10.7 with current day as day 41,e.g., “ 0.000000” | |
| DAILY\_F107 | STRING | - | Daily average of F10.7 e.g., “ 0.000000” | |
| F10\_7\_SOURCE | STRING | - | Where the F10.7 parameter originated, e.g., “DYN\_PARAMS\_01108.TXT” | |
| HOUR\_3\_KP | STRING | - | 3 hour average of Kp, e.g., “ 2.00000” | |
| DAILY\_KP | STRING | - | Daily average of Kp, e.g., “ 2.00000” | |
| KP\_AP\_SOURCE | STRING | - | Source of Kp, Ap indices, e.g., “DYN\_PARAMS\_01108.TXT” | |
| DAILY\_AP | STRING | - | Daily average of Ap, e.g., “ 2.00000” | |

# EDR Nightside Limb Data File

**PRODUCT VERSION 0105**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 0104 | 08/01/08 | Realigned document to data products |
| 0103 | 7/1/08 | Added new fields for max radiance and altitude of max, and new DQI |
| 0102 | 10/5/07 | Added CalVal corrected NmF2 to file |
| 0101 | 1/29/2007 | Removed acrosspixelsize, alongpixelsize, effectivelookangle, acrosstrackangle, alongtrackangle. Changed dimensions on tangentpoint\_re and tangentpoint\_altitude. |
| 0100 | 1/5/2007 | Initial Version of nightside limb definition table |

The table below details the EDR Nightside Limb data files.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
|  |  |  |  |
| **Global Nightside Limb data file attributes** |  | | |
|  |  |  |  |
| **Time and Position Information** | | | |
| TIME  TIME\_TITLE  TIME\_UNITS | DOUBLE  STRING  STRING | [Nnl]  -  - | The effective time of each scan.  ”Time of each scan”  ”Seconds since the start of the day” |
| TIME\_EPOCH  TIME\_EPOCH\_TITLE  TIME\_EPOCH\_UNITS | DOUBLE  STRING  STRING | [Nnl]  -  - | The effective time of each scan.  “Time of each scan”  “Milli-seconds since 01-Jan-0000 00:00:00.000 (CDF epoch value)” |
| YEAR  YEAR\_TITLE | INT  STRING | [Nnl]  - | The year of each rebinned scan  “Year of each scan” |
| DOY  DOY\_TITLE | INT  STRING | [Nnl]  - | The day of year of each rebinned scan.  “Day of year of each scan” |
| LATITUDE  LATITUDE\_TITLE  LATITUDE\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | DMSP spacecraft latitude  “S/C geographic latitude at effective times”  “Degrees” |
| LONGITUDE  LONGITUDE\_TITLE  LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | DMSP spacecraft longitude  “S/C geographic longitude at effective times”  “Degrees” |
| ALTITUDE  ALTITUDE\_TITLE  ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | DMSP spacecraft altitude  “S/C altitude at effective times”  “Kilometers” |
| TANGENTPOINT\_LATITUDE\_GEOGRAPHIC  TANGENTPOINT\_LATITUDE\_GEOGRAPHIC \_TITLE  TANGENTPOINT\_LATITUDE\_GEOGRAPHIC \_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Pixel tangent point geographic latitude at approximately 300km  “Tangent point geographic latitude”  “Degrees” |
| TANGENTPOINT\_LONGITUDE\_GEOGRAPHIC  TANGENTPOINT\_LONGITUDE \_GEOGRAPHIC \_TITLE  TANGENTPOINT\_LONGITUDE\_GEOGRAPHIC \_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Pixel tangent point geographic longitude  “Tangent point geographic longitude”  “Degrees” |
| TANGENTPOINT\_RE  TANGENTPOINT\_RE\_TITLE  TANGENTPOINT\_RE\_UNITS | DOUBLE  STRING  STRING | [Nnl]  -  - | Radius of earth at tangent point latitude  “Earth radius at tangent point latitude”  “km” |
| ALTITUDE\_MODEL\_GRID  ALTITUDE\_ MODEL\_GRID \_TITLE  ALTITUDE\_ MODEL\_GRID \_UNITS | FLOAT  STRING  STRING | [Mnl]  -  - | Altitude at which MSIS is run  “Model grid altitude”  “km” |
| TANGENTPOINT\_ALTITUDE  TANGENTPOINT\_ALTITUDE \_TITLE  TANGENTPOINT\_ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Pixel tangent point altitude  “Tangent point altitude”  “Kilometers” |
|  |  |  |  |
| **Calibration parameters** | | | |
| DARK\_COUNT\_CORRECTION  DARK\_COUNT\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for dark counts.  “Corrected for Dark counts (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1216\_CORRECTION  SCATTER\_LIGHT\_1216\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1216 scattered lights.  “Corrected for 1216 scattered light (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1304\_CORRECTION  SCATTER\_LIGHT\_1304\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304 scattered lights.  “Corrected for 1304 scattered light (0/1 – No/Yes).” |
| OVERLAP\_1304\_1356\_CORRECTION  OVERLAP\_1304\_1356\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304/1356 overlap.  “Corrected for 1304/1356 overlap (0/1 – No/Yes).” |
| LONGWAVE\_SCATTER\_CORRECTION  LONGWAVE\_SCATTER\_CORRECTION\_TITLE | INT STRING | -  - | Correct counts for long-wave scattered light.  “Corrected for long-wave scattered light (0/1 – No/Yes).” |
|  |  |  |  |
| **Electron density profile data** |  |  |  |
| NUM\_VER\_NONZERO\_POINTS | INT | [Nnl] | Number of non-zero points in VER profile  “Number of VER non-zero points” |
| VOLUME\_EMISSION\_RATE  VOLUME\_EMISSION\_RATE\_TITLE  VOLUME\_EMISSION\_RATE\_UNITS | FLOAT  STRING  STRING | [Nnl, Mnl]  -  - | Volume Emission Rate  “Volume emission rate of monatomic oxygen”.  “/sec/cc”. |
| VOLUME\_EMISSION\_RATE\_UNCERTAINTY  VOLUME\_EMISSION\_RATE\_UNCERTAINTY\_TITLE  VOLUME\_EMISSION\_RATE\_UNITS | FLOAT  STRING  STRING | [Nnl, Mnl]  -  - | Volume emission rate uncertainty.  “Volume emission rate uncertainty”.  “percent” |
| VOLUME\_EMISSION\_RATE\_CHISQUARED  VOLUME\_EMISSION\_RATE\_CHISQUARED\_TITLE  VOLUME\_EMISSION\_RATE\_CHISQUARED\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Volume emission rate fit chi-squared  “Volume emission rate chi-squared”.  “” |
| CHAPMAN\_CHISQUARED  CHAPMAN \_CHISQUARED\_TITLE  CHAPMAN \_CHISQUARED\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Chapman fit chi-squared  “Chapman fit chi-squared”.  “” |
| EDP  EDP \_TITLE  EDP \_UNITS | FLOAT  STRING  STRING | [Nnl, Mnl]  -  - | Electron density profile.  “Electron density profile”.  “Cm\*\*-3” |
| EDP\_UNCERTAINTY  EDP\_UNCERTAINTY\_TITLE  EDP\_UNCERTAINTY\_UNITS | FLOAT  STRING  STRING | [Nnl, Mnl]  - | EDP uncertainty  “Electron density profile uncertainty”.  “percent” |
| NMF2  NMF2\_TITLE  NMF2\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | NMF2.  “Maximum number density of electrons”.  “cm\*\*3” |
| NMF2\_UNCERTAINTY  NMF2\_ UNCERTAINTY \_TITLE  NMF2\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | NMF2 uncertainty  “Uncertainty in the maximum number density of electrons”.  “percent” |
| CALVAL\_NMF2\_CORRECTION\_FACTOR | FLOAT | - | Factor to multiply NmF2 to match Ionosonde data in CalVal study |
| CALVAL\_CORRECTED\_NMF2  CALVAL\_CORRECTED\_NMF2\_TITLE  CALVAL\_CORRECTED\_NMF2\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | NMF2.  “Maximum number density of electrons multiplied by the CALVAL correction factor”.  “cm\*\*3” |
| CALVAL\_CORRECTED\_NMF2\_UNCERTAINTY  CALVAL\_CORRECTED\_NMF2\_ UNCERTAINTY \_TITLE  CALVAL\_CORRECTED\_NMF2\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | NMF2 uncertainty  “Uncertainty in the maximum number density of electrons multiplied by the CALVAL correction factor”.  “percent” |
| HMF2  HMF2 \_TITLE  HMF2\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | HMF2.  “Height of the peak F-region electron density”.  “Km” |
| HMF2\_UNCERTAINTY  HMF2\_ UNCERTAINTY \_TITLE  HMF2\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | HMF2 uncertainty  “Uncertainty in the height of the F-region electron density”.  “percent” |
| TOPH  TOPH\_TITLE  TOPH\_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Top-side scale height.  “Top side scale height”.  “Km” |
| TOPH \_ UNCERTAINTY  TOPH \_ UNCERTAINTY \_TITLE  TOPH \_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | TOPH uncertainty  “Uncertainty in the top side scale height”.  “percent” |
| MAXRAD\_1304  MAXRAD\_1304.TITLE  MAXRAD\_1304.UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Maximum Limb 1304 Radiance  "Maximum 1304 radiance (from SDR)" "Rayleigh" |
| MAXRAD\_1356  MAXRAD\_1356.TITLE  MAXRAD\_1356.UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Maximum Limb 1356 Radiance  "Maximum 1356 radiance (from SDR)" "Rayleigh" |
| MAXRAD\_LBHS  MAXRAD\_LBHS.TITLE  MAXRAD\_LBHS.UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Maximum Limb LBHS Radiance  "Maximum LBHS radiance (from SDR)" "Rayleigh" |
| ZMAX\_1304  ZMAXRAD\_1304.TITLE  ZMAXRAD\_1304.UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Altitude of Maximum Limb 1304 Radiance  "Altitude of maximum 1304 radiance (from SDR)"  "Km" |
| ZMAX\_1356.TITLE  ZMAXRAD\_1356.TITLE  ZMAXRAD\_1356.UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Altitude of Maximum Limb 1356 Radiance  "Altitude of maximum 1356 radiance (from SDR)"  "Km" |
| ZMAX\_LBHS  ZMAXRAD\_LBHS.TITLE  ZMAXRAD\_LBHSUNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Altitude of Maximum Limb LBHS Radiance  "Altitude of maximum LBHS radiance (from SDR)"  "Km" |
| TOP\_LBHS  TOP\_LBHS.TITLE  TOP\_LBHS.UNITS | FLOAT  STRING  STRING | [Nnl]  -  - | Top of the limb LBHS radiance  "LBHS radiance at top of limb (from SDR)"  "Rayleigh" |
| DATA\_QUALITY | UNSIGNED SHORT | [Nnl] | Bit # Meaning if set to true   1. VER fit unsuccessful (chi squared test: rchi2v>10) 2. Chapman fit unsuccessful (chi squared test: rchi2c>10) 3. NmF2 uncertainty > 50% 4. HmF2 < 0 km 5. HmF2 > 500 km 6. HmF2 uncertainty > 50% 7. NRP < 7 8. SZA < 105 degrees 9. MeV contamination   9-15 Spare |
|  |  |  |  |
|  |  |  |  |

# EDR Nightside Disk Data File

**PRODUCT VERSION 0105**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 0104 | 8/1/08 | Realigned document to data products; DQI arrays are unsigned shorts, not BYTEs. |
| 0103 | 6/30/08 | Added SZA and LBHS; added sza and LBHS flags |
| 0102 | 9/20/07 | Apparently went to 0102 with previous |
| 0101 | 9/20/07 | CalVal corrected Densities added to product. |
| 0100 | 1/5/2007 | Initial Version of nightside disk definition table |

The table below details the EDR Nightside Disk file.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
|  |  |  |  |
| **Global Nightside Disk data file attributes** | | | |
| ACROSSPIXELSIZE  ACROSSPIXELSIZE\_TITLE  ACROSSPIXELSIZE\_UNITS | INT  STRING  STRING | -  -  - | Across track pixel size for the grid.  ”Across track pixel size”  ”km” |
| ALONGPIXELSIZE  ALONGPIXELSIZE\_TITLE  ALONGPIXELSIZE\_UNITS | INT  STRING  STRING | -  -  - | Along track pixel size for the grid.  ”Across track pixel size”  ”km” |
| NIGHTSIDEDISK\_LOOKUP\_TABLE | UNSIGNED SHORT | - | Lookup table used for the nightside disk limb algorithm  0 = JDO;  1 = OO |
|  | | | |
| **Time and Position Information** | | | |
| TIME  TIME\_TITLE  TIME\_UNITS | DOUBLE  STRING  STRING | [Nnd]  -  - | The effective time of each rebinned scan.  “Time of each rebinned scan”  ”Seconds since the start of the day” |
| TIME\_EPOCH  TIME\_EPOCH\_TITLE  TIME\_EPOCH\_UNITS | DOUBLE  STRING  STRING | [Nnd]  -  - | The effective time of each rebinned scan.  ”Time of each rebinned scan”  ”Milli-seconds since 01-Jan-0000 00:00:00.000 (CDF epoch value)” |
| YEAR  YEAR\_TITLE | INT  STRING | [Nnd]  - | The year of each rebinned scan.  “Year of each rebinned scan” |
| DOY  DOY\_TITLE | INT  STRING | [Nnd]  - | The day of year of each rebinned scan.  “Day of year of each rebinned scan” |
| LATITUDE  LATITUDE\_TITLE  LATITUDE\_UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | DMSP spacecraft Latitude.  “S/C geographic latitude at effective times”  “Degrees” |
| LONGITUDE  LONGITUDE\_TITLE  LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | DMSP spacecraft Longitude.  “S/C geographic longitude at effective times”  “Degrees” |
| ALTITUDE  ALTITUDE\_TITLE  ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | DMSP spacecraft Altitude.  “S/C altitude at effective times”  “Kilometers” |
| PIERCEPOINT\_NIGHT\_LATITUDE  PIERCEPOINT\_NIGHT\_LATITUDE \_TITLE  PIERCEPOINT\_NIGHT\_LATITUDE\_UNITS | FLOAT  STRING  STRING | [Nnd, Mnd,]  -  - | Rebinned latitude of the pierce point, geolocated using the nightside reference altitude.  “Nightside geographic latitude of the pierce point”  “Degrees” |
| PIERCEPOINT\_NIGHT\_LONGITUDE  PIERCEPOINT\_NIGHT\_LONGITUDE \_TITLE  PIERCEPOINT\_NIGHT\_LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Nnd, Mnd,]  -  - | Rebinned longitude of the pierce point, geolocated using the nightside reference altitude.  “Nightside geographic longitude of the pierce point”  “Degrees” |
| PIERCEPOINT\_NIGHT\_ALTITUDE  PIERCEPOINT\_NIGHT\_ALTITUDE \_TITLE  PIERCEPOINT\_NIGHT\_ALTITUDE\_UNITS | FLOAT  STRING  STRING | -  -  - | Reference altitude for nightside  “Nightside reference altitude for geolocation”  “Kilometers” |
| ACROSSTRACKANGLE | FLOAT | [Mnd, Nnd] | Across track angle (theta) on the grid. |
| ALONGTRACKANGLE | FLOAT | [Nnd] | Along track angle (alpha) on the grid. |
|  |  |  |  |
| **Calibration parameters** | | | |
| DARK\_COUNT\_CORRECTION  DARK\_COUNT\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for dark counts.  “Corrected for Dark counts (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1216\_CORRECTION  SCATTER\_LIGHT\_1216\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1216 scattered lights.  “Corrected for 1216 scattered light (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1304\_CORRECTION  SCATTER\_LIGHT\_1304\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304 scattered lights.  “Corrected for 1304 scattered light (0/1 – No/Yes).” |
| OVERLAP\_1304\_1356\_CORRECTION  OVERLAP\_1304\_1356\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304/1356 overlap.  “Corrected for 1304/1356 overlap (0/1 – No/Yes).” |
| LONGWAVE\_SCATTER\_CORRECTION  LONGWAVE\_SCATTER\_CORRECTION\_TITLE | INT STRING | -  - | Correct counts for long-wave scattered light.  “Corrected for long-wave scattered light (0/1 – No/Yes).” |
|  |  |  |  |
| **Electron density profile data** | | | |
| NMF2\_DISK  NMF2 \_DISK\_TITLE  NMF2\_DISK\_UNITS | FLOAT  STRING  STRING | [Mnd, Nnd]  - | NMF2 on the disk.  “Peak F-region electron density on the disk”.  “Cm\*\*-3”. |
| NMF2\_DISK\_UNCERTAINTY  NMF2\_DISK\_ UNCERTAINTY \_TITLE  NMF2\_DISK\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Mnd, Nnd]  - | Uncertainty of NMF2 on the disk.  “Uncertainty in the peak F-region electron density on the disk”.  “percent” |
| SZA\_DISK  SZA\_DISK.TITLE  SZA\_DISK.UNITS | FLOAT  STRING  STRING | [Mnd, Nnd]  - | Piercepoint Solar Zenith Angle on the disk.  “Solar Zenith Angle at the night referenced disk piercepoint”.  “degrees”. |
| LBHS\_DISK  LBHS\_DISK.TITLE  LBHS\_DISK.UNITS | FLOAT  STRING  STRING | [Mnd, Nnd]  - | LBH short on the disk.  “LBH short radiance geolocated to the nightside referenced disk”.  “Rayleighs”. |
| NMF2\_NADIR  NMF2\_NADIR \_TITLE  NMF2\_NADIR \_UNITS | FLOAT  STRING  STRING | [Nnd]  - | NMF2 on the nadir.  “Peak F-region electron density on the nadir”.  “Cm\*\*-3” |
| NMF2\_NADIR\_UNCERTAINTY  NMF2\_NADIR\_ UNCERTAINTY \_TITLE  NMF2\_NADIR\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Nnd]  - | Uncertainty of NMF2 on the nadir.  “Uncertainty in the peak F-region electron density on the nadir”.  “percent” |
| CALVAL\_NMF2\_CORRECTION\_FACTOR | FLOAT | - | Correction factor to be applied to the NmF2 electron densities as recommended in the final CalVal report. |
| CALVAL\_CORRECTED\_DISK\_NMF2  CALCAL\_CORRECTED\_DISK\_NMF2.TITLE  CALVAL\_CORRECED\_DISK\_NMF2.UNITS | FLOAT  STRING  STRING | [Mnd,Nnd] | NmF2 with correction factor applied  “CalVal corrected peak F-region electron density on the disk”  “cm^-3" |
| CALVAL\_CORRECTED\_VDISK\_NmF2  CALVAL\_CORRECTED\_VDISK\_NmF2.TITLE  CALVAL\_CORRECTED\_VDISK\_NmF2.UNITS | FLOAT  STRING  STRING | [Mnd, Nnd] | Correction factor squared and applied to the NmF2 Variance  "CalVal corrected variance in the peak F-region electron density on the disk"  "cm^-6" |
| CALVAL\_CORRECTED\_NADIR\_NmF2  CALVAL\_CORRECTED\_NADIR\_NmF2.TITLE  CALVAL\_CORRECTED\_NADIR\_NmF2.UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | Correction factor applied to nadir NmF2 densities  "CalVal corrected Peak F-region electron density at nadir"  "cm^-3" |
| CALVAL\_CORRECTED\_VNADIR\_NmF2  CALVAL\_CORRECTED\_VNADIR\_NmF2.TITLE  CALVAL\_CORRECTED\_VNADIR\_NmF2.UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | Correction factor squared and applied to nadir NmF2 variance  "CalVal corrected Variance in the peak F-region electron density at nadir"  "cm^-6" |
| HMF2\_NADIR  HMF2\_NADIR \_TITLE  HMF2\_NADIR \_UNITS | FLOAT  STRING  STRING | [Nnd  -  - | HMF2 on the nadir.  “Height of the peak F-region electron density at nadir”.  “Km” |
| HMF2\_NADIR \_ UNCERTAINTY  HMF2\_NADIR \_ UNCERTAINTY \_TITLE  HMF2\_NADIR \_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | Uncertainty of HMF2 on the nadir  “Uncertainty in the height of the F-region electron density at nadir”.  “percent” |
| SZA\_NADIR  SZA\_NADIRTITLE  SZA\_NADIR.UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | Nadir Piercepoint Solar Zenith Angle.  “Solar Zenith Angle at the night referenced nadir piercepoint”.  “degrees”. |
| LBHS\_NADIR  LBHS\_NADIR.TITLE  LBHS\_NADIR.UNITS | FLOAT  STRING  STRING | [Nnd]  -  - | LBH short at Nadir.  “LBH short radiance geolocated to the nightside referenced nadir”.  “Rayleighs”. |
| FoF2\_DISK  FoF2\_DISK\_TITLE  FoF2\_DISK\_UNITS | FLOAT  STRING  STRING | [Mnd, Nnd]  - | FoF2 on the disk.  “Plasma frequency on the disk”.  “Hz” |
|  |  |  |  |
| FoF2\_DISK\_ UNCERTAINTY  FoF2\_DISK\_ UNCERTAINTY \_TITLE  FoF2\_DISK\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Mnd, Nnd]  - | Uncertainty of FoF2 on the disk  “Uncertainty in the plasma frequency on the disk”.  “Hz\*\*2” |
| FoF2\_NADIR  FoF2\_ NADIR \_TITLE  FoF2\_ NADIR \_UNITS | FLOAT  STRING  STRING | [Nnd]  - | FoF2 at nadir.  “Plasma frequency at nadir”.  “Hz” |
| FoF2\_ NADIR \_ UNCERTAINTY  FoF2\_ NADIR \_ UNCERTAINTY \_TITLE  FoF2\_ NADIR \_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Nnd]  - | Uncertainty of FoF2 at nadir  “Uncertainty in the plasma frequency at nadir”.  “percent” |
| DATA\_QUALITY\_GLOBAL | UNSIGNED SHORT | [1] | 1 byte global data quality  “Global data quality Flags – see EDR Format document for details”  Bit # Meaning if set to true   1. Northern Anomaly Crest Not Found 2. Southern Anomaly Crest Not Found 3. spare 4. spare 5. spare 6. spare 7. spare 8. spare |
| DATA\_QUALITY\_NADIR | UNSIGNED SHORT | [Nnd] | Bit # Meaning if set to true   1. Nadir 1356 A Radiance undefined (NaN) 2. Solar Zenith Angle too small 3. LBH short exceeds limit 4. SAA contaminated radiances 5. Nadir NmF2 uncertainty > 50% 6. Nadir HmF2 uncertainty > 50% 7. Nadir 6300 A Radiance undefined (NaN) 8. Spare 9. MeV Noise contamination 10. Mirror position unknown |
| DATA\_QUALITY\_DISK | UNSIGNED SHORT | [Mnd, Nnd] | Bit # Meaning if set to true   1. Nadir 1356 A Radiance undefined (NaN) 2. Solar Zenith Angle too small 3. LBH short exceeds limit 4. SAA Contaminated disk radiances 5. Disk NmF2 uncertainty > 50% 6. Spare 7. Spare 8. Spare 9. MeV Noise contamination 10. Mirror position unknown |

# EDR Dayside Disk Data File

**PRODUCT VERSION 0105**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 0103 | 9/22/09 | Reordered data quality bits |
| 0102 | 08/1/2008 | Realigned document to data products |
| 0101 | 08/23/2007 | Updated to reflect file |
| 0100 | 1/5/2007 | Initial Version of nightside disk definition table |

The table below details the EDR Dayside Disk file.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
|  |  |  |  |
| **Global Nightside Disk data file attributes** | | | |
| ACROSSPIXELSIZE  ACROSSPIXELSIZE\_TITLE  ACROSSPIXELSIZE\_UNITS | INT  STRING  STRING | -  -  - | Across track pixel size for the grid.  ”Across track pixel size”  ”km” |
| ALONGPIXELSIZE  ALONGPIXELSIZE\_TITLE  ALONGPIXELSIZE\_UNITS | INT  STRING  STRING | -  -  - | Along track pixel size for the grid.  ”Across track pixel size”  ”km” |
| ON2\_TABLE | STRING | - | e.g. “DTON2R\_TABLE\_V0100.sav” |
| QEUV\_TABLE | STRING | - | e.g. “DTQEUV\_TABLE\_V0100.sav” |
| EDPP\_TABLE | STRING | - | e.g. “EDPP\_TABLE\_V0100.sav” |
|  | | | |
| **Time and Position Information** | | | |
| TIME  TIME\_TITLE  TIME\_UNITS | DOUBLE  STRING  STRING | [Ndd]  -  - | Time of each newly rebinned along track day altitude pixel  “Time of each newly rebinned along track day altitude pixel”  ”Seconds since the start of the day” |
| TIME\_EPOCH  TIME\_EPOCH\_TITLE  TIME\_EPOCH\_UNITS | DOUBLE  STRING  STRING | [Ndd]  -  - | Time of each newly rebinned along track day altitude pixel  ” Time of each newly rebinned along track day altitude pixel”  ”Milli-seconds since 01-Jan-0000 00:00:00.000 (CDF epoch value)” |
| YEAR  YEAR\_TITLE | INT  STRING | [Ndd]  - | Year of each newly rebinned along track day altitude pixel  “Year of each newly rebinned along track day altitude pixel” |
| DOY  DOY\_TITLE | INT  STRING | [Ndd]  - | The day of year of each newly rebinned scan dayside along track pixel.  “Day of year of each newly rebinned along track day altitude pixel” |
| LATITUDE  LATITUDE\_TITLE  LATITUDE\_UNITS | FLOAT  STRING  STRING | [Ndd]  -  - | DMSP spacecraft Latitude.  “S/C geographic latitude, rebinned to the day altitude grid”  “Degrees” |
| LONGITUDE  LONGITUDE\_TITLE  LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Ndd]  -  - | DMSP spacecraft Longitude.  “S/C geographic longitude, rebinned to the day altitude grid”  “Degrees” |
| ALTITUDE  ALTITUDE\_TITLE  ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Ndd]  -  - | DMSP spacecraft Altitude.  “S/C altitude, rebinned to the day altitude grid”  “Kilometers” |
| PIERCEPOINT\_DAY\_LATITUDE  PIERCEPOINT\_DAY\_LATITUDE \_TITLE  PIERCEPOINT\_DAY\_LATITUDE\_UNITS | FLOAT  STRING  STRING | [Ndd, Mdd]  -  - | Rebinned latitude of the pierce point, geolocated using the dayside reference altitude.  “Geographic latitude of the pierce point; rebinned to the day altitude grid”  “Degrees” |
| PIERCEPOINT\_DAY\_LONGITUDE  PIERCEPOINT\_DAY\_LONGITUDE \_TITLE  PIERCEPOINT\_DAY\_LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Ndd, Mdd]  -  - | Rebinned longitude of the pierce point, geolocated using the dayside reference altitude.  “Geographic longitude of the pierce point; rebinned to the day altitude grid”  “Degrees” |
| PIERCEPOINT\_DAY\_ALTITUDE  PIERCEPOINT\_DAY\_ALTITUDE \_TITLE  PIERCEPOINT\_DAY\_ALTITUDE\_UNITS | FLOAT  STRING  STRING | -  -  - | Reference altitude for dayside  “Dayside reference altitudes for pierce point location calculations”  “Kilometers” |
| PIERCEPOINT\_DAY\_SZA  PIERCEPOINT\_DAY\_ SZA \_TITLE  PIERCEPOINT\_DAY\_ SZA \_UNITS | FLOAT  STRING  STRING | [Ndd, Mdd]  -  - | Rebinned solar zenith angle of the pierce point, geolocated using the dayside reference altitude.  “Dayside solar zenith angle for center of the new limb grid cell”  “Degrees” |
| EFFECTIVE\_LOOK\_ANGLE  EFFECTIVE\_LOOK\_ANGLE\_TITLE  EFFECTIVE\_LOOK\_ANGLE\_UNITS | FLOAT  STRING  STRING | [Ndd, Mdd] | Effective look angle.  “Effective cross track look angle to day grid centers”  “Degrees” |
|  |  |  |  |
| **Calibration parameters** | | | |
| DARK\_COUNT\_CORRECTION  DARK\_COUNT\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for dark counts.  “Corrected for Dark counts (1-Yes, 0-No).” |
| SCATTER\_LIGHT\_1216\_CORRECTION  SCATTER\_LIGHT\_1216\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1216 scattered lights.  “Corrected for 1216 scattered light (1-Yes, 0-No).” |
| SCATTER\_LIGHT\_1304\_CORRECTION  SCATTER\_LIGHT\_1304\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304 scattered lights.  “Corrected for 1304 scattered light (1-Yes, 0-No).” |
| OVERLAP\_1304\_1356\_CORRECTION  OVERLAP\_1304\_1356\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304/1356 overlap.  “Corrected for 1304/1356 overlap (1-Yes, 0-No).” |
| LONGWAVE\_SCATTER\_CORRECTION  LONGWAVE\_SCATTER\_CORRECTION\_TITLE | INT STRING | -  - | Correct counts for long-wave scattered light.  “Corrected for long-wave scattered light (1-Yes, 0-No).” |
|  |  |  |  |
| **Electron density profile data** | | | |
| NMF2  NMF2 \_ TITLE  NMF2\_ UNITS | FLOAT  STRING  STRING | [Ndd, Mdd]  - | NMF2 on the disk.  “Peak F-region electron density on the disk”.  “Cm\*\*-3”. |
| NMF2\_ UNCERTAINTY  NMF2\_ UNCERTAINTY \_TITLE  NMF2\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Ndd, Mdd]  - | Error of NMF2 on the disk.  “Error in the peak F-region electron density on the disk”.  “Cm\*\*-3” |
| HMF2  HMF2\_TITLE  HMF2\_UNITS | FLOAT  STRING  STRING | [Ndd, Mdd]  - | HMF2 on the disk.  “Height of the peak F-region electron density on the disk”.  “Km” |
| HMF2\_UNCERTAINTY  HMF2\_UNCERTAINTY \_TITLE  HMF2\_UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Ndd, Mdd]  - | Error of HMF2 on the disk  “Error in the height of the F-region electron density on the disk”.  “Km” |
| QEUV\_NADIR  QEUV \_ NADIR \_TITLE  QEUV \_ NADIR \_UNITS | FLOAT  STRING  STRING | [Ndd]  - | QEUV at nadir.  “Integrated solar irradiance from 5 to 45 nm at nadir”.  “ergs^2 cm^-4 s^-2” |
| QEUV \_ NADIR \_ UNCERTAINTY  QEUV \_ NADIR \_ UNCERTAINTY \_TITLE  QEUV \_ NADIR \_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Ndd]  - | Error of QEUV at nadir  “Error in integrated solar irradiance from 5 to 45 nm at nadir”.  “ergs^2 cm^-4 s^-2” |
| ON2\_NADIR  ON2\_ NADIR \_TITLE  ON2\_ NADIR \_UNITS | FLOAT  STRING  STRING | [Ndd]  - | ON2 at nadir.  “Ratio of the O to N2 vertical column densities at nadir”.  “none” |
| ON2\_ NADIR \_ UNCERTAINTY  ON2\_ NADIR \_ UNCERTAINTY \_TITLE  ON2\_ NADIR \_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Ndd]  - | Error of ON2 at nadir  “Error in ratio of the O to N2 vertical column densities at nadir”.  “none” |
| ON2  ON2\_ TITLE  ON2\_ UNITS | FLOAT  STRING  STRING | [Ndd]  - | ON2.on the disk  “Ratio of the O to N2 vertical column densities on the disk”.  “none” |
| ON2\_ UNCERTAINTY  ON2\_ UNCERTAINTY \_TITLE  ON2\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Ndd]  - | Error of ON2 on the disk  “Error in ratio of the O to N2 vertical column densities on the disk”.  “none” |
| TEC  TEC \_TITLE  TEC \_UNITS | FLOAT  STRING  STRING | [Ndd]  - | Total electron content  “Total electron content”.  “TECU (10^16 electron m^-2)” |
| TEC\_ UNCERTAINTY  TEC\_ UNCERTAINTY \_TITLE  TEC\_ UNCERTAINTY \_UNITS | FLOAT  STRING  STRING | [Ndd]  - | Error of ON2 at nadir  “Error in total electron content”.  “TECU (10^16 electron m^-2)” |
|  |  |  |  |
| DATA\_QUALITY\_DISK | UNSIGNED SHORT | [Ndd] | 2 bytes  Bit # Meaning if set to true   1. Spare 2. Spare 3. NmF2 uncertainty > 100%        signmf2/(1+nmf2) > 1.0 4. HmF2 <= 0 km            hmf2 <= 0.0 5. HmF2 > 500 km            hmf2 > 500.0 6. HmF2 uncertainty > 50%        sighmf2/(1+hmf2) > 1.0 7. spare 8. spare 9. MeV noise contamination 10. Mirror pointing unknown |
| DATA\_QUALITY\_NADIR | UNSIGNED SHORT | [Ndd] | Dayside Nadir Products  Bit # Meaning if set to true   1. Spare 2. Spare 3. NmF2 uncertainty > 100%        signmf2/(1+nmf2) > 1.0 4. HmF2 <= 0 km            hmf2 <= 0.0 5. HmF2 > 500 km            hmf2 > 500.0 6. HmF2 uncertainty > 50%        sighmf2/(1+hmf2) > 1.0 7. spare 8. spare 9. MeV noise contamination 10. Mirror pointing unkown |

# EDR Dayside Limb Data File

**PRODUCT VERSION 0105**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 0105 | 9/20/11 | Added Topside Sunlit Electron densities |
| 0104 | 10/25/11 | Added Red Leak correction flag |
| 0103 | 9/22/09 | Redefined Data Quality bits |
| 0102 | 8/1/2008 | Realigned document to data products |
| 0100 | 10/5/2007 | Initial Version of nightside limb definition table |

The table below details the EDR Dayside Limb data files.

The dimensions are:

1. Nd (for the dayside alongtrack pixel dimension),
2. Md (for the dayside altitude dimension), and
3. Nz (for the dayside topside altitude dimension)

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
|  |  |  |  |
| **Global Dayside Limb data file attributes** |  | | |
|  |  |  |  |
| **Time and Position Information** | | | |
| TIME  TIME\_TITLE  TIME\_UNITS | DOUBLE  STRING  STRING | [Ndl]  -  - | The effective time of each scan.  ”Time of each scan”  ”Seconds since the start of the day” |
| TIME\_EPOCH  TIME\_EPOCH\_TITLE  TIME\_EPOCH\_UNITS | DOUBLE  STRING  STRING | [Ndl]  -  - | The effective time of each scan.  “Time of each scan”  “Milli-seconds since 01-Jan-0000 00:00:00.000 (CDF epoch value)” |
| YEAR  YEAR\_TITLE | INT  STRING | [Ndl]  - | The year of each rebinned scan  “Year of each scan” |
| DOY  DOY\_TITLE | INT  STRING | [Ndl]  - | The day of year of each rebinned scan.  “Day of year of each scan” |
| LATITUDE  LATITUDE\_TITLE  LATITUDE\_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | DMSP spacecraft latitude  “S/C geographic latitude at effective times”  “Degrees” |
| LONGITUDE  LONGITUDE\_TITLE  LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | DMSP spacecraft longitude  “S/C geographic longitude at effective times”  “Degrees” |
| ALTITUDE  ALTITUDE\_TITLE  ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | DMSP spacecraft altitude  “S/C altitude at effective times”  “Kilometers” |
| MEAN\_TANGENTPOINT\_LATITUDE\_GEOGRAPHIC  \_TITLE  \_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Pixel averaged tangent point geographic latitude  “Mean cross track tangent point geographic latitude”  “Degrees” |
| MEAN\_TANGENTPOINT\_LONGITUDE\_GEOGRAPHIC  \_TITLE  \_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Pixel averaged cross track tangent point geographic longitude  “Mean cross track tangent point geographic longitude”  “Degrees” |
| MEAN\_TANGENTPOINT\_LATITUDE\_GEOMAGNETIC  \_TITLE  \_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Pixel averaged tangent point geomagnetic latitude  “Mean cross track tangent point geomagnetic latitude”  “Degrees” |
| MEAN\_TANGENTPOINT\_LONGITUDE\_GEOMAGNETIC  \_TITLE  \_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Pixel averaged cross track tangent point geomagnetic longitude  “Mean cross track tangent point geomagnetic longitude”  “Degrees” |
| MEAN\_GEOMAGNETIC\_LOCAL\_TIME  \_TITLE  \_UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Pixel averaged tangent point geomagnetic local time  “Mean cross track tangent point geomagnetic local time”  “hours” |
| TANGENTPOINT\_LATITUDE\_GEOGRAPHIC  \_TITLE  \_UNITS | FLOAT  STRING  STRING | [Ndl] | Pixel tangent point geographic latitude  “Tangent point geographic latitude”  “Degrees” |
| TANGENTPOINT\_LONGITUDE\_GEOGRAPHIC  \_TITLE  \_UNITS | FLOAT  STRING  STRING | [Ndl] | Pixel tangent point geographic longitude  “Tangent point geographic longitude”  “Degrees” |
| TANGENTPOINT\_ALTITUDE  TANGENTPOINT\_ALTITUDE \_TITLE  TANGENTPOINT\_ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Ndl] | Pixel tangent point altitude  “Tangent point altitude”  “Kilometers” |
|  |  |  |  |
| **Calibration parameters** | | | |
| DARK\_COUNT\_CORRECTION  DARK\_COUNT\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for dark counts.  “Corrected for Dark counts (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1216\_CORRECTION  SCATTER\_LIGHT\_1216\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1216 scattered lights.  “Corrected for 1216 scattered light (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1304\_CORRECTION  SCATTER\_LIGHT\_1304\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304 scattered lights.  “Corrected for 1304 scattered light (0/1 – No/Yes).” |
| OVERLAP\_1304\_1356\_CORRECTION  OVERLAP\_1304\_1356\_CORRECTION\_TITLE | INT  STRING | -  - | Correct counts for 1304/1356 overlap.  “Corrected for 1304/1356 overlap (0/1 – No/Yes).” |
| LONGWAVE\_SCATTER\_CORRECTION  LONGWAVE\_SCATTER\_CORRECTION\_TITLE | INT STRING | -  - | Correct counts for long-wave scattered light.  “Corrected for long-wave scattered light (0/1 – No/Yes).” |
| RED\_LEAK\_CORRECTION  RED\_LEAK\_CORRECTION.TITLE | INT  STRING | -  - | Flag to indicate whether red leak correction has been applied.  "Corrected for red leaked light (0/1 - No/Yes)" |
|  |  |  |  |
| **Electron and Neutral density profile data** |  |  |  |
| QEUV  QEUV\_TITLE  QEUV\_UNITS | FLOAT  STRING  STRING | - | Mean Solar Qeuv averaged over all data in input SDR  “Mean integrated solar irradiance from 5 to 45 nm”  “ergs cm^-2 s^-1” |
| QEUV\_UNCERTAINTY  QEUV\_UNCERTAINTY.TITLE  QEUV\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | -  -  - | Mean solar Qeuv uncertainty  'Uncertainty of integrated solar irradiance from 5 to 45 nm”  “percent” |
| ON2  ON2.TITLE  ON2.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Oxygen to Nitrogen density ratio  “Ratio of the O to N2 vertical column densities”  “none” |
| ON2\_UNCERTAINTY  ON2\_UNCERTAINTY.TITLE  ON2\_UNCERTAINTY..UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Uncertainty of the Oxygen to Nitrogen density ratio  “Uncertainty in ratio of the O to N2 vertical column densities”  “percent” |
| NMF2  NMF2.TITLE  NMF2.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Electron Number density at the F-region maximum  “Maximum number density of electrons"  "cm^-3" |
| NMF2\_UNCERTAINTY  NMF2\_UNCERTAINTY.TITLE  NMF2\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Uncertainty of the electron number density variance at the F-region maximum  “Uncertainty in the maximum number density  of electrons"  "percent" |
| HMF2  HMF2.TITLE  HMF2.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Altitude of the NmF2 peak density  “Height of the peak F-region electron  density"  "km" |
| HMF2\_UNCERTAINTY  HMF2\_UNCERTAINTY.TITLE  HMF2\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Uncertainty of the NmF2 peak density altitude  "Uncertainty in the height of the F-region electron density"  "percent" |
| TEC  TEC.TITLE  TEC.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Total electron column density  "Total electron content"  "TECU (10^16 electron m^-2)" |
| TEC\_UNCERTAINTY  TEC\_UNCERTAINTY.TITLE  TEC\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Total electron column density uncertainty  "Uncertainty in total electron content"  "percent" |
| N2DP  N2DP.TITLE  N2DP.UNITS | FLOAT  STRING  STRING | [Ndl, Mdl]  -  - | Molecular nitrogen density  "N2 density profile"  "cm^-3" |
| N2DP\_UNCERTAINTY  N2DP\_UNCERTAINTY.TITLE  N2DP\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl, Mdl]  -  - | Molecular nitrogen density uncertainty  "Uncertainty in the N2 density profile"  "percent" |
| O2DP  O2DP.TITLE  O2DP.UNITS | FLOAT  STRING  STRING | [Ndl, Mdl]  -  - | Molecular Oxygen density  "O2 density profile"  "cm^-3 |
| O2DP\_UNCERTAINTY  O2DP\_UNCERTAINTY.TITLE  O2DP\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl, Mdl]  -  - | Molecular Oxygen density uncertainty  "Uncertainty in the O2 density profile"  "percent" |
| ODP  ODP.TITLE  ODP.UNITS | FLOAT  STRING  STRING | [Ndl, Mdl]  -  - | Atomic Oxygen density  "O density profile"  "cm^-3" |
| ODP\_UNCERTAINTY  ODP\_UNCERTAINTY.TITLE  ODP\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl, Mdl]  -  - | Atomic Oxygen density uncertainty  "Uncertainty in the O density profile"  "percent" |
| NMF2\_FLAG  NMF2\_FLAG.TITLE  NMF2.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Data quality flagged as 1 if NmF2 is good  "Data quality flag for NMF2"  "none" |
| HMF2\_FLAG  HMF2\_FLAG.TITLE  HMF2\_FLAG.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Data quality flagged as 1 if HmF2 is good  "Data quality flag for HMF2"  "none" |
| TEC\_FLAG  TEC\_FLAG.TITLE  TEC\_FLAG.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Data quality flagged as 1 if TEC is good  "Data quality flag for TEC"  "none" |
| TOPSIDE\_Z0  TOPSIDE\_Z0.TITLE  TOPSIDE\_Z0.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Minimum altitude for fitting topside EDP  “the minimum height acceptable for topside limb fitting”  “km” |
| TOPSIDE\_N\_AT\_Z0  TOPSIDE\_N\_AT\_Z0.TITLE  TOPSIDE\_N\_AT\_Z0.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | The topside electron density at the minimum altitude  “the electron density at Z0”  “electrons per cc” |
| TOPSIDE\_N\_AT\_Z0\_UNCERTAINTY  TOPSIDE\_N\_AT\_Z0\_UNCERTAINTY.TITLE  TOPSIDE\_N\_AT\_Z0\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Estimated error in the topside electron density  “uncertainty in Topside electron number density at Z0  “electrons per cc” |
| TOPSIDE\_H  TOPSIDE\_H.TITLE  TOPSIDE\_H.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | atmospheric scale height  “Scale height of exponential fit to the atmosphere”  “km” |
| TOPSIDE\_H\_UNCERTAINTY  TOPSIDE\_H\_UNCERTAINTY.TITLE TOPSIDE\_H\_UNCERTAINTY.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Error estimate of the atmospheric scale height  “Uncertainty in atmosphere scale height H”  “km” |
| TOPSIDE\_EDP | FLOAT  STRING  STRING | [Nd,Nz] | Electron densities at topside altitudes  “Electron Densities at topside\_altitudes”  “electrons per cubic centimeter” |
| TOPSIDE\_ALTITUDES | FLOAT  STRING  STRING | [Nd,Nz] | Altitudes where topside electron densities are fit.  “altitudes where topside\_edp are fit”  “km” |
| TOPSIDE\_CHISQ | FLOAT  STRING | [Nd] | Chi-squared of the topside fit  “The topside EDP fit chi-squared value” |
| TOPSIDE\_FIT\_Q | FLOAT  STRING | [Nd] | Topside fit Q parameter  “indicates the quality of the topside EDP fit – 0 means a poor fit while 1 is an excellent fit.: |
| DATA\_QUALITY  DATA\_QUALITY.TITLE  DATA\_QUALITY.UNITS | FLOAT  STRING  STRING | [Ndl]  -  - | Bit # Meaning if set to true   1. Topside EDP fit unsuccessful – did not converge 2. Topside EDP fit failed (singular matrix or unbounded chisquared 3. NmF2 is bad (outside physical limits) 4. Topside\_N\_at\_Z0 uncertatinty > Topside\_N\_at\_Z0 5. Topside\_H <10 km or Topside\_H > 200 km 6. HmF2 is bad ( < 0 or > 600 km) 7. Not enough points to fit topside EDP 8. Spare 9. MeV noise contamination in pixel 10. Mirror pointing is unknown, so results are bad. 11. Topside\_H\_uncertaity > Topside\_H   11-15 Spare  “See EDR data document for description”  “none” |

# EDR Aurora Data File

**PRODUCT VERSION 0105**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 0106 | 2/28/2013 | Added discrete arc identification, poleward auroral boundary, and magnetic field visualization |
| 0105 | 5/12/12 | Added Radiance fields to EDR for auroral imagery |
| 0104 | 9/22/09 | Added global data quality flag |
| 1.0.3 | 6/15/09 | Added PROTON\_FLAG\_NORTH/SOUTH and HEMISPHERE\_POWER\_NORTH/SOUTH |
| 1.0.2 | 8/1/08 | Realigned document to data products |
| 1.0.1 | 11/16/07 | Missing documentation for NmE, HmE |
| 1.0.0 | 1/5/2007 | Initial Version of Aurora definition table |

The table below details the EDR Auroral file.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable Name** | **Type** | | **Dimensions** | | **Value/Comment** |
|  |  | |  | |  |
| **Global Auroral data file attributes** | | | | | |
| AURORA\_EDRS\_MAXWELLIAN\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_AURORA\_EDRS\_MAXWELLIAN\_TABLE\_v0000.dat” |
| AURORA\_EDRS\_MAXWELLIAN\_TABLE\_CREATED | STRING | | - | | Date when Aurora Maxwellian table created |
| AURORA\_EDRS\_GAUSSIAN\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_AURORA\_EDRS\_GAUSSIAN\_TABLE\_v0000.dat” |
| AURORA\_EDRS\_GAUSSIAN\_TABLE\_CREATED | STRING | | - | | Date when Aurora Gaussian table created |
| DAYGLOW\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_DAYGLOW\_TABLE\_v0000.dat” |
| DAYGLOW\_TABLE\_CREATED | STRING | | - | | Date when Dayglow table created |
| GEO\_MAG\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_GEO\_MAG\_TABLE\_v0000.dat” |
| GEO\_MAG\_TABLE\_CREATED | STRING | | - | | Date when Geo Mag table created |
| L1B\_DAYGLOW\_TREATED\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_L1B\_DAYGLOW\_TREATED\_TABLE\_v0000.dat” |
| L1B\_DAYGLOW\_TREATED \_TABLE\_CREATED | STRING | | - | | Date when L1B dayglow treated table created |
| MODEL\_MLAT\_MLT\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_MODEL\_MLAT\_MLT\_TABLE\_v0000.dat” |
| MODEL\_MLAT\_MLT \_TABLE\_CREATED | STRING | | - | | Date when Model MLat MLT table created |
| MODEL\_BOUNDARY\_KP\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_MODEL\_BOUNDARY\_KP\_TABLE\_v0000.dat” |
| MODEL\_BOUNDARY\_KP\_TABLE\_CREATED | STRING | | - | | Date when Model boundary Kp table created |
| QUIET\_NO\_NOISE\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_QUIET\_NO\_NOISE\_TABLE\_v0000.dat” |
| QUIET\_NO\_NOISE\_TABLE\_CREATED | STRING | | - | | Date when Quiet no noise table created |
| SCAN\_TIME\_TABLE\_NAME | STRING | | - | | e.g. “SSUSIF16\_SCAN\_TIME\_TABLE\_v0000.dat” |
| SCAN\_TIME\_TABLE\_CREATED | STRING | | - | | Date when Scan time table created |
| \*STATISTICAL\_AURORA\_DATA\_TABLE\_NAME | STRING | | - | | e.g. “SSUSI\_STATISTICAL\_AURORA\_TABLE\_v0000.dat” |
| \*STATISTICAL\_AURORA\_DATA\_TABLE\_CREATED | STRING | | - | | Date when Statistical Aurora data table created |
| PIXELSIZE\_GEOMAGNETIC\_LATITUDE  PIXELSIZE\_GEOMAGNETIC\_LATITUDE\_TITLE  PIXELSIZE\_GEOMAGNETIC\_LATITUDE\_UNITS | FLOAT  STRING  STRING | | -  -  - | | Geomagnetic latitude pixel size  “Geomagnetic latitude pixel size”  “Degrees” |
| PIXELSIZE\_GEOMAGNETIC\_LONGITUDE  PIXELSIZE\_GEOMAGNETIC\_ LONGITUDE \_TITLE  PIXELSIZE\_GEOMAGNETIC\_ LONGITUDE \_UNITS | FLOAT  STRING  STRING | | -  -  - | | Geomagnetic longitude pixel size  “Geomagnetic longitude pixel size”  “Degrees” |
| **Time and Position Information** | | | | | |
| TIME  TIME\_TITLE  TIME\_UNITS | DOUBLE  STRING  STRING | | -  -  - | | The effective time of each rebinned scan.  “Time of each rebinned scan”  ”Seconds since the start of the day” |
| TIME\_EPOCH  TIME\_EPOCH\_TITLE  TIME\_EPOCH\_UNITS | DOUBLE  STRING  STRING | | -  -  - | | The effective time of each rebinned scan.  ”Time of each rebinned scan”  ”Milli-seconds since 01-Jan-0000 00:00:00.000 (CDF epoch value)” |
| YEAR  YEAR\_TITLE | INT  STRING | | -  - | | The year of each rebinned scan.  “Year of each rebinned scan” |
| DOY  DOY\_TITLE | INT  STRING | | -  - | | The day of year of each rebinned scan.  “Day of year of each rebinned scan” |
| LATITUDE  LATITUDE\_TITLE  LATITUDE\_UNITS | FLOAT  STRING  STRING | | [#scans]  -  - | | DMSP spacecraft Latitude.  “S/C geographic latitude at effective times”  “Degrees” |
| LONGITUDE  LONGITUDE\_TITLE  LONGITUDE\_UNITS | FLOAT  STRING  STRING | | [#scans]  -  - | | DMSP spacecraft Longitude.  “S/C geographic longitude at effective times”  “Degrees” |
| ALTITUDE  ALTITUDE\_TITLE  ALTITUDE\_UNITS | FLOAT  STRING  STRING | | [#scans]  -  - | | DMSP spacecraft Altitude.  “S/C altitude at effective times”  “Kilometers” |
| GEOMAGNETIC\_AURORAL\_LATITUDE  GEOMAGNETIC\_ AURORAL \_LATITUDE\_TITLE  GEOMAGNETIC\_ AURORAL \_LATITUDE\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Rebinned geomagnetic latitude, geolocated using the auroral reference altitude  “Auroral geomagnetic latitude”  “Degrees” |
| GEOMAGNETIC\_ AURORAL \_LONGITUDE  GEOMAGNETIC\_ AURORAL \_LONGITUDE\_TITLE  GEOMAGNETIC\_ AURORAL \_LONGITUDE\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Rebinned geomagnetic longitude, geolocated using the auroral reference altitude  “Auroral geomagnetic longitude”  “Degrees” |
| ACROSSTRACKANGLE | FLOAT | | [Na, Ma] | | Across track angle (theta) on the grid. |
| ALONGTRACKANGLE | FLOAT | | [Na] | | Along track angle (alpha) on the grid. |
|  |  | |  | |  |
| **Calibration parameters** | **Calibration parameters** | | **Calibration parameters** | | **Calibration parameters** |
| DARK\_COUNT\_CORRECTION  DARK\_COUNT\_CORRECTION\_TITLE | INT  STRING | | -  - | | Correct counts for dark counts.  “Corrected for Dark counts (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1216\_CORRECTION  SCATTER\_LIGHT\_1216\_CORRECTION\_TITLE | INT  STRING | | -  - | | Correct counts for 1216 scattered lights.  “Corrected for 1216 scattered light (0/1 – No/Yes).” |
| SCATTER\_LIGHT\_1304\_CORRECTION  SCATTER\_LIGHT\_1304\_CORRECTION\_TITLE | INT  STRING | | -  - | | Correct counts for 1304 scattered lights.  “Corrected for 1304 scattered light (0/1 – No/Yes).” |
| OVERLAP\_1304\_1356\_CORRECTION  OVERLAP\_1304\_1356\_CORRECTION\_TITLE | INT  STRING | | -  - | | Correct counts for 1304/1356 overlap.  “Corrected for 1304/1356 overlap (0/1 – No/Yes).” |
| LONGWAVE\_SCATTER\_CORRECTION  LONGWAVE\_SCATTER\_CORRECTION\_TITLE | INT STRING | | -  - | | Correct counts for long-wave scattered light.  “Corrected for long-wave scattered light (0/1 – No/Yes).” |
|  |  | |  | |  |
| **Auroral Boundary South Data** | | | | | |
| SOUTH\_DATA  SOUTH \_DATA\_TITLE  SOUTH \_DATA\_UNITS | BOOLEAN  STRING  STRING | -  -  - | | Data availability check  “Data available check for south”.  “0=w/out data, 1=w/data” | |
| SOUTH\_SWATH\_BOUNDARY  SOUTH \_SWATH\_BOUNDARY\_TITLE  SOUTH \_SWATH\_BOUNDARY\_UNITS | BOOLEAN  STRING  STRING | -  -  - | | Swath boundary data availability check  “Data available check for south swath boundary”.  “0=w/out data, 1=w/data” | |
| SOUTH\_GEOMAGNETIC\_LATITUDE  SOUTH\_GEOMAGNETIC\_LATITUDE\_TITLE  SOUTH\_GEOMAGNETIC\_LATITUDE\_UNITS | FLOAT  STRING  STRING | [1..1000]  -  - | | Southern Auroral boundary geomagnetic latitude  “Southern auroral boundary geomagnetic latitude”  “Degrees” | |
| SOUTH\_GEOMAGNETIC\_LONGITUDE  SOUTH\_GEOMAGNETIC\_ LONGITUDE \_TITLE  SOUTH\_GEOMAGNETIC\_ LONGITUDE \_UNITS | FLOAT STRING  STRING | [1..1000]  -  - | | Southern Auroral boundary geomagnetic longitude  “Southern auroral boundary geomagnetic longitude”  “Degrees” | |
| SOUTH\_GEOMAGNETIC\_LOCAL\_TIME  SOUTH\_GEOMAGNETIC\_ LOCAL\_TIME \_TITLE  SOUTH\_GEOMAGNETIC\_ LOCAL\_TIME \_UNITS | FLOAT  STRING  STRING | [1..1000]  -  - | | Southern Auroral boundary magnetic local time  “Southern auroral boundary magnetic local time”  “Hours” | |
| SOUTH\_GEOGRAPHIC\_LATITUDE  SOUTH\_ GEOGRAPHIC \_LATITUDE\_TITLE  SOUTH\_ GEOGRAPHIC \_LATITUDE\_UNITS | FLOAT  STRING  STRING | [1..1000]  -  - | | Southern Auroral boundary geographic latitude  “Southern auroral boundary geographic latitude”  “Degrees” | |
| SOUTH\_ GEOGRAPHIC \_LONGITUDE  SOUTH\_ GEOGRAPHIC \_ LONGITUDE \_TITLE  SOUTH\_ GEOGRAPHIC \_ LONGITUDE \_UNITS | FLOAT STRING  STRING | [1..1000]  -  - | | Southern Auroral boundary geographic longitude  “Southern auroral boundary geographic longitude”  “Degrees” | |
| MODEL\_ SOUTH\_GEOMAGNETIC\_LATITUDE  MODEL \_SOUTH\_GEOMAGNETIC\_LATITUDE\_TITLE  MODEL\_ SOUTH\_GEOMAGNETIC\_LATITUDE\_UNITS | FLOAT  STRING  STRING | [1..1000]  -  - | | Model southern Auroral boundary geomagnetic latitude  “Model southern auroral boundary geomagnetic latitude”  “Degrees” | |
| MODEL\_ SOUTH\_GEOMAGNETIC\_LONGITUDE  MODEL\_ SOUTH\_GEOMAGNETIC\_ LONGITUDE \_TITLE  MODEL\_ SOUTH\_GEOMAGNETIC\_ LONGITUDE \_UNITS | FLOAT  STRING  STRING | [1..1000]  -  - | | Model southern Auroral boundary geomagnetic longitude  “Model southern auroral boundary geomagnetic longitude”  “Degrees” | |
| MODEL\_ SOUTH\_GEOMAGNETIC\_LOCAL\_TIME  MODEL\_ SOUTH\_GEOMAGNETIC\_ LOCAL\_TIME \_TITLE  MODEL\_ SOUTH\_GEOMAGNETIC\_ LOCAL\_TIME \_UNITS | FLOAT  STRING  STRING | [1..1000]  -  - | | Model southern Auroral boundary magnetic local time  “Model southern auroral boundary magnetic local time”  “Hours” | |
| MODEL\_SOUTH\_GEOGRAPHIC\_LATITUDE  MODEL\_SOUTH\_ GEOGRAPHIC \_LATITUDE\_TITLE  MODEL\_SOUTH\_ GEOGRAPHIC \_LATITUDE\_UNITS | FLOAT  STRING  STRING | [1..1000]  -  - | | Model southern Auroral boundary geographic latitude  “Model southern auroral boundary geographic latitude”  “Degrees” | |
| MODEL\_SOUTH\_ GEOGRAPHIC \_LONGITUDE  MODEL\_SOUTH\_ GEOGRAPHIC \_ LONGITUDE \_TITLE  MODEL\_SOUTH\_ GEOGRAPHIC \_ LONGITUDE \_UNITS | FLOAT STRING  STRING | [1..1000]  -  - | | Model southern Auroral boundary geographic longitude  “Model southern auroral boundary geographic longitude”  “Degrees” | |
| DISK\_RADIANCEDATA\_INTENSITY\_SOUTH  DISK\_RADIANCEDATA\_INTENSITY\_SOUTH\_TITLE  DISK\_RADIANCEDATA\_INTENSITY\_SOUTH\_UNITS | FLOAT  STRING  STRING | [#colors, Na, Ma] | | SOUTH Disk radiance data  “SOUTH Disk radiance data”  “rayleighs” | |
| SOUTH\_DATA\_QUALITY | UNSIGNED SHORT | [1..1000] | | 1-3 bytes  Byte 1 Southern Aurora Boundary  Bit # Meaning if set to true   1. TBD 2. TBD 3. TBD 4. Spare 5. Spare 6. Spare 7. Spare 8. Spare | |
| AUR\_ARC\_RADIANCE\_SOUTH | float | South GEOMAGNETIC LONGITUDE, South GEOMAGNETIC LATITUDE | | south auroral arc radiance map | |
| AUR\_ARC\_GROUP\_MAP\_SOUTH | short | South GEOMAGNETIC LONGITUDE, South GEOMAGNETIC LATITUDE | | south auroral arc group number map | |
| AUR\_ARC\_MEDIAN\_RAD\_SOUTH | float | N\_AUR\_ARC\_GROUP\_SOUTH | | south auroral arc median radiance | |
| AUR\_ARC\_BOX\_VERTEX\_SOUTH | float | N\_AUR\_ARC\_GROUP\_SOUTH,  N\_AUR\_ARC\_BOX\_VERTEX\_SOUTH | | south auroral arc bounding boxes vertex coordinates | |
| AUR\_ARC\_BOX\_ORIENT\_SOUTH | float | N\_AUR\_ARC\_GROUP\_SOUTH,  N\_AUR\_ARC\_BOX\_VERTEX\_SOUTH | | south auroral arc bounding box size and orientation | |
| **Auroral Boundary North Data** | | | | | |
| NORTH\_DATA  NORTH\_DATA\_TITLE  NORTH\_DATA\_UNITS | BOOLEAN  STRING  STRING | | -  -  - | | Data availability check  “Data available check for north”.  “0=w/out data, 1=w/data” |
| NORTH\_SWATH\_BOUNDARY  NORTH\_SWATH\_BOUNDARY\_TITLE  NORTH\_SWATH\_BOUNDARY\_UNITS | BOOLEAN  STRING  STRING | | -  -  - | | Swath boundary data availability check  “Data available check for north swath boundary”.  “0=w/out data, 1=w/data” |
| NORTH\_GEOMAGNETIC\_LATITUDE  NORTH\_GEOMAGNETIC\_LATITUDE\_TITLE  NORTH \_GEOMAGNETIC\_LATITUDE\_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Northern Auroral boundary geomagnetic latitude  “Northern auroral boundary geomagnetic latitude”  “Degrees” |
| NORTH \_GEOMAGNETIC\_LONGITUDE  NORTH \_GEOMAGNETIC\_ LONGITUDE \_TITLE  NORTH \_GEOMAGNETIC\_ LONGITUDE \_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Northern Auroral boundary geomagnetic longitude  “Northern auroral boundary geomagnetic longitude”  “Degrees” |
| NORTH \_GEOMAGNETIC\_LOCAL\_TIME  NORTH \_GEOMAGNETIC\_ LOCAL\_TIME \_TITLE  NORTH \_GEOMAGNETIC\_ LOCAL\_TIME \_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Northern Auroral boundary magnetic local time  “Northern auroral boundary magnetic local time”  “Hours” |
| NORTH \_GEOGRAPHIC\_LATITUDE  NORTH \_ GEOGRAPHIC \_LATITUDE\_TITLE  NORTH \_ GEOGRAPHIC \_LATITUDE\_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Northern Auroral boundary geographic latitude  “Northern auroral boundary geographic latitude”  “Degrees” |
| NORTH \_ GEOGRAPHIC \_LONGITUDE  NORTH \_ GEOGRAPHIC \_ LONGITUDE \_TITLE  NORTH \_ GEOGRAPHIC \_ LONGITUDE \_UNITS | FLOAT STRING  STRING | | [1..1000]  -  - | | Northern Auroral boundary geographic longitude  “Northern auroral boundary geographic longitude”  “Degrees” |
| MODEL\_ NORTH \_GEOMAGNETIC\_LATITUDE  MODEL\_ NORTH \_GEOMAGNETIC\_LATITUDE\_TITLE  MODEL\_ NORTH \_GEOMAGNETIC\_LATITUDE\_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Model northern Auroral boundary geomagnetic latitude  “Model northern auroral boundary geomagnetic latitude”  “Degrees” |
| MODEL\_ NORTH \_GEOMAGNETIC\_LONGITUDE  MODEL\_ NORTH \_GEOMAGNETIC\_ LONGITUDE \_TITLE  MODEL\_ NORTH \_GEOMAGNETIC\_ LONGITUDE \_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Model northern Auroral boundary geomagnetic longitude  “Model northern auroral boundary geomagnetic longitude”  “Degrees” |
| MODEL\_NORTH \_GEOMAGNETIC\_LOCAL\_TIME  MODEL\_NORTH \_GEOMAGNETIC\_ LOCAL\_TIME \_TITLE  MODEL\_NORTH \_GEOMAGNETIC\_ LOCAL\_TIME \_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Model northern Auroral boundary magnetic local time  “Model northern auroral boundary magnetic local time”  “Hours” |
| MODEL\_NORTH\_GEOGRAPHIC\_LATITUDE  MODEL\_ NORTH \_ GEOGRAPHIC \_LATITUDE\_TITLE  MODEL\_ NORTH \_ GEOGRAPHIC \_LATITUDE\_UNITS | FLOAT  STRING  STRING | | [1..1000]  -  - | | Model northern Auroral boundary geographic latitude  “Model northern auroral boundary geographic latitude”  “Degrees” |
| MODEL\_ NORTH \_ GEOGRAPHIC \_LONGITUDE  MODEL\_ NORTH \_ GEOGRAPHIC \_ LONGITUDE \_TITLE  MODEL\_ NORTH \_ GEOGRAPHIC \_ LONGITUDE \_UNITS | FLOAT STRING  STRING | | [1..1000]  -  - | | Model northern Auroral boundary geographic longitude  “Model northern auroral boundary geographic longitude”  “Degrees” |
| DISK\_RADIANCEDATA\_INTENSITY\_NORTH  DISK\_RADIANCEDATA\_INTENSITY\_NORTH\_TITLE  DISK\_RADIANCEDATA\_INTENSITY\_NORTH\_UNITS | FLOAT  STRING  STRING | | [#colors, Na, Ma] | | NORTH Disk radiance data  “NORTH Disk radiance data”  “rayleighs” |
| NORTH\_DATA\_QUALITY | UNSIGNED SHORT | | [1..1000] | | 2 bytes  Byte 1 Northern Aurora Boundary  Bit # Meaning if set to true   1. TBD 2. TBD 3. TBD 4. Spare 5. Spare 6. Spare 7. Spare    1. Spare |
|  |  | |  | |  |
| **Auroral Data** | | | | | |
| ELECTRON\_MEAN\_NORTH\_ENERGY\_MAP  ELECTRON\_MEAN\_NORTH\_ENERGY\_MAP\_TITLE  ELECTRON\_MEAN\_NORTH\_ENERGY\_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Electron mean energy 2-D map for northern hemisphere in MLat-MLT  “Electron mean northern energy map”.  “keV” |
| ELECTRON\_MEAN\_SOUTH\_ENERGY\_MAP  ELECTRON\_MEAN\_ SOUTH \_ENERGY\_MAP\_TITLE  ELECTRON\_MEAN\_ SOUTH \_ENERGY\_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Electron mean energy 2-D map for southern hemisphere in MLat-MLT  “Electron mean southern energy map”.  “keV” |
| ENERGY\_FLUX\_NORTH\_MAP  ENERGY\_FLUX\_NORTH\_MAP\_TITLE  ENERGY\_FLUX\_NORTH\_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Electron energy flux 2-D map for northern hemisphere in MLat-MLT  “Electron energy flux northern map”.  “ergs/s/cm2” |
| ENERGY\_FLUX\_SOUTH\_MAP  ENERGY\_FLUX\_ SOUTH \_MAP\_TITLE  ENERGY\_FLUX\_ SOUTH \_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Electron energy flux 2-D map for southern hemisphere in MLat-MLT  “Electron energy flux southern map”.  “ergs/s/cm2” |
| ELECTRON\_FLUX\_NORTH\_BOUNDARY\_MAP  ELECTRON\_FLUX\_NORTH\_BOUNDARY\_MAP\_TITLE  ELECTRON\_FLUX\_NORTH\_BOUNDARY\_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Electron energy flux map with boundary for northern hemisphere  “Electron energy flux northern map with boundary”.  “ergs/s/cm2” |
| ELECTRON\_FLUX\_SOUTH\_BOUNDARY\_MAP  ELECTRON\_FLUX\_ SOUTH\_BOUNDARY\_MAP\_TITLE  ELECTRON\_FLUX\_ SOUTH\_BOUNDARY\_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Electron energy flux map with boundary for southern hemisphere  “Electron energy flux southern map with boundary”.  “ergs/s/cm2” |
| LATITUDE\_GEOMAGNETIC\_GRID\_MAP  LATITUDE\_GEOMAGNETIC\_GRID\_MAP\_TITLE  LATITUDE\_GEOMAGNETIC\_GRID\_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Magnetic latitude for the above maps  “Magnetic latitude grid map”.  “degrees” |
| MLT\_GRID\_MAP  MLT\_GRID\_MAP\_TITLE  MLT\_GRID\_MAP\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Magnetic local time in hours for the above maps  “Magnetic local time grid map”.  “hours” |
| ELECTRON\_ENERGY\_FLUX\_THRESHOLDS  ELECTRON\_ENERGY\_FLUX\_THRESHOLDS\_TITLE  ELECTRON\_ENERGY\_FLUX\_THRESHOLDS\_UNITS | FLOAT  STRING  STRING | | [2]  -  - | | Electron energy flux threshold (north, south) for boundary detection  “Electron energy flux threshold”.  “Ergs/s/cm2” |
| HME\_NORTH  HME\_NORTH.TITLE  HME\_NORTH.UNITS | FLOAT  STRING  STRING | | [Na, Ma] | | Height of the E-region peak in the north auroral region  “HmE North”  “km” |
| NME\_NORTH  NME\_NORTH.TITLE  NME\_NORTH.UNITS | FLOAT  STRING  STRING | | [Na, Ma] | | Peak electron density of the E-region in the north auroral region  “NmE North”  “cm^-3” |
| HME\_SOUTH  HME\_SOUTH.TITLE  HME\_SOUTH.UNITS | FLOAT  STRING  STRING | | [Na, Ma] | | Height of the E-region peak in the south auroral region  “HmE South”  “km” |
| NME\_SOUTH  NME\_SOUTH.TITLE  NME\_SOUTH.UNITS | FLOAT  STRING  STRING | | [Na, Ma] | | Peak electron density of the E-region in the south auroral region  “NmE South”  “cm^-3” |
| PROTON\_FLAG\_NORTH  PROTON\_FLAG\_NORTH\_TITLE  PROTON\_FLAG\_NORTH\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Proton flag for north auroral region (possible values = 0/1)  “Proton flag north”  “N/A” |
| PROTON\_FLAG\_SOUTH  PROTON\_FLAG\_SOUTH\_TITLE  PROTON\_FLAG\_SOUTH\_UNITS | FLOAT  STRING  STRING | | [Na, Ma]  -  - | | Proton flag for south auroral region (possible values = 0/1)  “Proton flag south”  “N/A” |
| HEMISPHERE\_POWER\_NORTH  HEMISPHERE\_POWER \_NORTH\_TITLE  HEMISPHERE\_POWER \_NORTH\_UNITS | FLOAT  STRING  STRING | | -  -  - | | Hemisphere power for north auroral region  “Hemisphere power north”  “GW” |
| HEMISPHERE\_POWER\_SOUTH  HEMISPHERE\_POWER \_SOUTH\_TITLE  HEMISPHERE\_POWER \_SOUTH\_UNITS | FLOAT  STRING  STRING | | -  -  - | | Hemisphere power for south auroral region  “Hemisphere power south”  “GW” |
| DATA\_QUALITY\_GLOBAL | UNSIGNED SHORT | | [1] | | Bit # Meaning if set to true   1. Spare 2. Spare 3. Spare 4. Spare 5. Spare 6. Spare 7. Spare 8. Spare 9. Spare 10. Pointing unknown   10-15 Spare |
| \*DATA\_QUALITY | UNSIGNED SHORT | | [Ma] | | 1-3 bytes  Byte 1 Aurora Products  Bit # Meaning if set to true   |  |  | | --- | --- | | 0 | MeV noise | | 1 | Dayside | | 2 | Fair; 0.2<=Q<=2 & nightside & no MeV noise | | 3 | Poor; Q < 0.2 ergs/s/cm\*\*2, or dayside, or MeV noise | | 4 | Spare | | 5 | Spare | | 6 | Spare | | 7-15 | Spare | |
| MagneticFieldLines | float | | MagLinesItems, NumberLines, MaxElements | | This is the array containing all information that can be used to visualize the magnetic field lines. The array is so structured:  MagLinesItems – contains 5 items   1. Geographic Longitude 2. Geographic Latitude 3. Geographic Altitude 4. Magnetic Field Lines Intensity 5. Flag for North=1, or South=2   NumberLines – number of magnetic field lines  MaxElements – Max number of entries a magnetic field line can have |
| AUR\_ARC\_RADIANCE\_NORTH | float | | North GEOMAGNETIC LONGITUDE, North GEOMAGNETIC LATITUDE | | north auroral arc radiance map |
| AUR\_ARC\_GROUP\_MAP\_NORTH | short | | North GEOMAGNETIC LONGITUDE, North GEOMAGNETIC LATITUDE | | north auroral arc group number map |
| AUR\_ARC\_MEDIAN\_RAD\_NORTH | float | | N\_AUR\_ARC\_GROUP\_NORTH | | north auroral arc median radiance |
| AUR\_ARC\_BOX\_VERTEX\_NORTH | float | | N\_AUR\_ARC\_GROUP\_NORTH,  N\_AUR\_ARC\_BOX\_VERTEX\_NORTH | | north auroral arc bounding boxes vertex coordinates |
| AUR\_ARC\_BOX\_ORIENT\_NORTH | float | | N\_AUR\_ARC\_GROUP\_NORTH,  N\_AUR\_ARC\_BOX\_VERTEX\_NORTH | | north auroral arc bounding box size and orientation |

# EDR Auroral Prediction File

**PRODUCT VERSION 0100**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 1.0.0 | 2/27/2013 | Initial Version of Aurora Prediction Product |

The table below details the EDR Auroral Prediction file. Besides the geomagnetic bin indices Na,Ma, there is also a P index to specify the number of orbits predicted into the future. The current number of predicted orbits, P, is set to 15. This parameter is set in the SSUSI\_EDR\_AUR\_PRED\_parameters.config under num\_orb\_pred.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
| **Auroral North Predictions** | | | |
| North\_Electron\_Energy\_Flux\_Pred  North\_Electron\_Energy\_Flux\_Pred:TITLE    North\_Electron\_Energy\_Flux\_Pred:UNITS | FLOAT  STRING  STRING | [P,Na,Ma]  -  - | Electron energy fluxes predicted by the algorithm  "(Northern Hemisphere) Predictions of Auroral Electron Energy Flux"  "ergs/s/cm2" |
| North\_Electron\_Mean\_Energy\_Pred  North\_Electron\_Mean\_Energy\_Pred:TITLE    North\_Electron\_Mean\_Energy\_Pred:UNITS | FLOAT  STRING  STRING | [P,Na,Ma]  -  - | Predicted electron mean energy  "(Northern Hemisphere) Predictions of Auroral Electron Mean Energy"  "keV" |
| North\_Time\_UT\_Pred  North\_Time\_UT\_Pred:TITLE  North\_Time\_UT\_Pred:UNITS | FLOAT  STRING  STRING | [P]  -  - | Universal Time of the Predictions  "(Northern Hemisphere) Times of Predictions - UT"  “hour” |
| North\_Time\_Year\_Pred  North\_Time\_Year\_Pred:TITLE  North\_Time\_Year\_Pred:UNITS | FLOAT  STRING  STRING | [P]  -  - | Year of the predicted oval  "(Northern Hemisphere) Times of Predictions - Year"  “calendar year” |
| North\_Time\_DOY\_Pred  North\_Time\_DOY\_Pred:TITLE  North\_Time\_DOY\_Pred:UNITS | FLOAT  STRING  STRING | [P]  -  - | Day of year of the predicted oval  "(Northern Hemisphere) Times of Predictions - DOY"  “days” |
| North\_Flag\_Pred ;  North\_Flag\_Pred:TITLE  North\_Flag\_Pred:UNITS | SHORT  STRING  STRING | -  - | Indicates that there is a problem with the prediction "(Northern Hemisphere) Prediction flag" |
| Magnetic\_Latitude\_North  Magnetic\_Latitude North:TITLE  Magnetic\_Latitude:UNITS | FLOAT  STRING  STRING | [Na,Ma]  -  - | Northern Magnetic Latitude  "Magnetic Latitude"  "degree" |
| Magnetic\_Local\_Time  Magnetic\_Local\_Time:TITLE  Magnetic\_Local\_Time:UNITS; | FLOAT  STRING  STRING | [P,Na,Ma]  -  - | Nothern Boundary Magnetic Local Time  “Magnetic Local Time”  = "hour" |
| Model\_Boundary\_Magnetic\_Latitude\_North  Model\_Boundary\_Magnetic\_Latitude\_North:TITLE  Model\_Boundary\_Magnetic\_Latitude\_North:UNITS | FLOAT  STRING  STRING | [P,Na,Ma] | Model Boundary Magnetic Latitude North  "Model Boundary Magnetic Latitude North"  "degree" |
| Model\_Boundary\_Magnetic\_Local\_Time\_North  Model\_Boundary\_Magnetic\_Local\_Time\_North:TITLE  Model\_Boundary\_Magnetic\_Local\_Time\_North:UNITS | FLOAT  STRING  STRING | [P,Na,Ma] | Model Boundary Magnetic Local Time North  "Model Boundary Magnetic Local Time North"  "hour" |
|  |  |  |  |
| **Auroral South Data** | | | |
| South\_Electron\_Energy\_Flux\_Pred  South\_Electron\_Energy\_Flux\_Pred:TITLE    South\_Electron\_Energy\_Flux\_Pred:UNITS | FLOAT  STRING  STRING | [P,Na,Ma]  -  - | Electron energy fluxes predicted by the algorithm  "(Southern Hemisphere) Predictions of Auroral Electron Energy Flux"  "ergs/s/cm2" |
| South\_Electron\_Mean\_Energy\_Pred  South\_Electron\_Mean\_Energy\_Pred:TITLE    South\_Electron\_Mean\_Energy\_Pred:UNITS | FLOAT  STRING  STRING | [P,Na,Ma]  -  - | Predicted electron mean energy  "(Southern Hemisphere) Predictions of Auroral Electron Mean Energy"  "keV" |
| South\_Time\_UT\_Pred  South\_Time\_UT\_Pred:TITLE  South\_Time\_UT\_Pred:UNITS | FLOAT  STRING  STRING | [P]  -  - | Universal Time of the Predictions  "(Southern Hemisphere) Times of Predictions - UT"  “hour” |
| South\_Time\_Year\_Pred  South\_Time\_Year\_Pred:TITLE  South\_Time\_Year\_Pred:UNITS | FLOAT  STRING  STRING | [P]  -  - | Year of the predicted oval  "(Southern Hemisphere) Times of Predictions - Year"  “calendar year” |
| South\_Time\_DOY\_Pred  South\_Time\_DOY\_Pred:TITLE  South\_Time\_DOY\_Pred:UNITS | FLOAT  STRING  STRING | [P]  -  - | Day of year of the predicted oval  "(Southern Hemisphere) Times of Predictions - DOY"  “days” |
| South\_Flag\_Pred ;  South\_Flag\_Pred:TITLE  South\_Flag\_Pred:UNITS | SHORT  STRING  STRING | -  - | Indicates that there is a problem with the prediction "(Southern Hemisphere) Prediction flag" |
| Magnetic\_Latitude\_South  Magnetic\_Latitude South:TITLE  Magnetic\_Latitude:UNITS | FLOAT  STRING  STRING | [Na,Ma]  -  - | Southern Magnetic Latitude  "Magnetic Latitude"  "degree" |
| Model\_Boundary\_Magnetic\_Latitude\_South  Model\_Boundary\_Magnetic\_Latitude\_South:TITLE  Model\_Boundary\_Magnetic\_Latitude\_South:UNITS | FLOAT  STRING  STRING | [P,Na,Ma] | Model Boundary Magnetic Latitude South  "Model Boundary Magnetic Latitude South"  "degree" |
| Model\_Boundary\_Magnetic\_Local\_Time\_South  Model\_Boundary\_Magnetic\_Local\_Time\_South:TITLE  Model\_Boundary\_Magnetic\_Local\_Time\_South:UNITS | FLOAT  STRING  STRING | [P,Na,Ma] | Model Boundary Magnetic Local Time South  "Model Boundary Magnetic Local Time South"  "hour" |

# EDR Ionosphere Data File

**PRODUCT VERSION 0109**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 1.0.2 (109) | 1/8/13 | Fixed typo in description of DATA\_QUALITY\_INDEX bit fields |
| 1.0.1 (109) | 5/2/2012 | Updated to reflect final content of May 2012 code delivery |
| 1.0.0 (100) | 6/15/2011 | Initial version of three dimensional ionosphere definition table |

The table below details the EDR Ionosphere file.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
|  |  |  |  |
| **Global Ionosphere Bubble data file attributes** | | | |
| DATA\_QUALITY\_INDEX | UNSIGNED INTEGER | - | Ionosphere Products quality information  Bit # Meaning if set to true   1. Spare 2. Spare 3. Spare 4. Spare 5. Spare 6. Spare 7. Spare 8. spare 9. Mev Noise 10. Mirror Pointing unknown 11. Spare 12. Spare 13. Spare 14. Spare 15. Spare 16. spare |
| EPSR | FLOAT | - | Parameter for tomographic inversion algorithm |
| LAMBDA | FLOAT | - | Parameter for tomographic inversion algorithm |
| TPARAM | FLOAT | - | Parameter for tomographic inversion algorithm |
| CONF\_THRESHOLD | FLOAT | - | Minimum value of the Gaussian pdf function evaluated at the fraction of the difference between nmf2 and the tomographic projection and the error for a pixel to be considered part of a candidate bubble region. |
| EARTHRAD | DOUBLE | - | The radius of the earth used in processing (km). |
| ALTSIZE | INT | - | The number of altitude grids in the reconstruction. |
| LONSIZE | INT | - | The number of longitude grids in the reconstruction. |
| SCANTHRESH | INT | - | The minimum number of scans required in order to complete a three-dimensional reconstruction. |
| ALTRANGE | DOUBLE | - | The altitude range (km) for which the three-dimensional reconstruction is completed. |
| MINALT | DOUBLE | - | The minimum altitude value (km) for which the reconstruction is completed. |
| MINVALALT | DOUBLE | - | The minimum altitude for which a depleted region is detectable. |
| MAXVALALT | DOUBLE | - | The maximum altitude for which a depleted region is detectable. |
| VOLTHRESH | DOUBLE | - | The minimum volume a candidate depleted region has to have in order to be considered a depleted region. |
| SZALAT | DOUBLE | - | Nightside data is determined by sza > SZALAT |
| MAGLATLIMIT | DOUBLE | - | The latitude bound for the geomagnetic reconstruction algorithm. |
| GEOLATLIMIT | DOUBLE | - | The latitude bound for the geographic reconstruction algorithm. |
| SCANSUSED | INTEGER | - | The number of scans used in the reconstruction. |
| STD\_DEP\_TH | DOUBLE | - | The minimum value of the standard deviation of the electron density inside a candidate depleted region for it to be considered a depleted region |
| DEPTH\_TH | DOUBLE | - | The minimum latitudinal depth a candidate depleted region has to have in order to be considered a depleted region |
|  |  |  |  |
| **Ionosphere Data** | | | |
| NDEPS | INT | - | Number of depleted regions detected. |
| TIME  TITLE  DESCRIPTION | INT  STRING  STRING | [NDEPS] | Time  “Time”  “The time associated with the scan nearest to the depleted region centroid. (seconds since start of the day)” |
| DOY | INT | [NDEPS] | Day of year |
| CONFIDENCE  TITLE  UNITS | DOUBLE  STRING STRING | [NDEPS] | Confidence of depleted region detection.  “Confidence of depleted region detection.”  “percent” |
| CENTROID\_LAT  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Centroid geographic latitude  “Centroid geographic latitude”  “degrees” |
| CENTROID\_LON  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Centroid geographic longitude  “Centroid geographic longitude”  “degrees” |
| CENTROID\_ALT  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Centroid geographic altitude  “Centroid geographic altitude”  “km” |
| MEDIAN\_DEP  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Median electron density of depleted region.  “Median electron density of depleted region.”  “electrons per cubic cm” |
| STD\_DEP  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Standard deviation of depleted region electron density.  “Standard deviation of depleted region”’  “electrons per cubic cm” |
| MEDIAN\_DEP\_ERROR  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Median uncertainty for reconstruction in depleted region.  “Median uncertainty for reconstruction in depleted region”  “electrons per cubic cm” |
| DVOL  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Volume of depleted region.  “Volume of depleted region”  “km^3” |
| DEPTH  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Latitudinal depth of depleted region  “Latitudinal depth of depleted region”  “degrees” |
| ORIENTATION  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Orientation of depleted region.  “Orientation of depleted region”  “degrees” |
| NPEAKS | INT | - | Number of peaks detected. |
| PEAKLATS  TITLE  UNITS | DOUBLE  STRING  STRING | [NPEAKS]  -  - | Geographic latitude of equatorial arc peak  “Geographic latitude of equatorial arc peak”  “Degrees” |
| PEAKLONS  TITLE  UNITS | DOUBLE  STRING  STRING | [NPEAKS]  -  - | Geographic longitude for peak latitude.  “Geographic longitude for peak latitude”  “Degrees” |
| PEAKSCONT  TITLE | INT  STRING | [NPEAKS]  -  - | Peak contained in data cube indicator  “Equatorial arc contained in data cube, 1-yes, 0-no” |
| NMF2  TITLE  UNITS | DOUBLE  STRING  STRING | [NGRIDS]  -  - | NMF2 for each 2D reconstruction in the data cube.  “Maximum number density of electrons”  “electrons per cubic meter” |
| HMF2  TITLE  UNITS | DOUBLE  STRING  STRING | [NGRIDS]  -  - | HMF2 for each 2D reconstruction in the data cube.  “Height of the peak F-region electron density”  “km” |
| SCANS  TITLE | LONG  STRING | [NGRIDS] | The scan number of the center scan for each 2D reconstruction in the data cube.  “The scan number of the center scan for each 2D reconstruction in the data cube” |
| MAGSTD  TITLE  UNITS | DOUBLE  STRING  STRING | [NDEPS] | Standard deviation of depleted region magnetic longitude centroid over depletion latitudes – measures field alignment.  “Alignment deviation in depleted region”’  “degrees” |
| ED\_CUBE  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional electron density map.  “Three-dimensional electron density map.”  “electrons per cubic cm” |
| ED\_ERROR  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional electron density error map.  “Three-dimensional electron density error map.”  “electrons per cubic cm” |
| ED\_REGIONS  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional electron density region indicator map.  “Three-dimensional electron density region indicator map.” |
| DEP\_CONF  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three dimensional confidence map.  “Confidence of depleted region.”  “percent” |
| ED\_LON  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional longitude map.  “Three dimensional longitude map.”  “degrees” |
| ED\_LAT  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional latitude map.  “Three-dimensional latitude map.”  “degrees” |
| ED\_MLON  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional geomagnetic longitude map.  “Three dimensional geomagnetic longitude map.”  “degrees” |
| ED\_MLAT  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional geomagnetic latitude map.  “Three-dimensional geomagnetic latitude map.”  “degrees” |
| ED\_ALT  TITLE  UNITS | DOUBLE  STRING  STRING | [L,A, N] | Three-dimensional altitude map.  “Three-dimensional altitude map.”  “km” |
| BUBBLE  TITLE  UNITS | DOUBLE  STRING  STRING | [4,X] | The collection of (lon, lat, alt) points that indicate a depleted region.  “Depletion area location [lon,lat,z, label]”  “[deg, deg, km, label number]” |
|  |  |  |  |

# EDR GAIM-LIMB Data File

**PRODUCT VERSION 0105**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 1.1.0 | 10/15/2012 | Updated version that includes simulated Chapman intensity profile and derived quantities |
| 1.0.0 | 8/8/2011 | Initial Version of GAIM LIMB file definition table |

Note the changes from the SDR-LIMB are the addition of MN subtracted radiances and uncertainties for 1356, and a DQI bit for daylight contaminated data.

The GAIM EDR contains the lowest resolution gridded SSUSI radiances, time, and geolocation information. The raw radoances are taken directly from the SDR. Other corrections and flags are added to this SDR data, e.g., the estimated contribution from mutual neutralization to the 1356 radiance is removed and the result provided for ingestion into GAIM. Here the cross track dimension (NetCDF name: nCross\_G) represented by Mg in the table is the same size as nCross above, but the along track dimension (NetCDF name: nAlong\_G) represented by Ng is different.

There is a dimension (NetCDF name: nchan) for the waveband or “color” of the counts and radiance data. Currently there are 5 colors (121.6, 130.4, 135.6 nm and LBH short and LBH long) and the channel index goes in that order over the range 0-4. However there is nothing specific to color in SDR processing and if the order changes, the indices will match that specified in the Level 1B description document.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | **Value/Comment** |
|  |  |  |  |
| **Time and Position Information** | | | |
| TIME\_GAIM  TIME\_GAIM.TITLE    TIME\_GAIM.UNITS | DOUBLE  STRING  STRING | [Ng]  -  - | The effective time of each rebinned pixel.  “Time of each newly rebinned along track GAIM pixel”  “Seconds since the start of the day” |
| TIME\_EPOCH\_GAIM  TIME\_EPOCH\_GAIM.TITLE    TIME\_EPOCH\_GAIM.UNITS | DOUBLE  STRING  STRING | [Ng]  -  - | The effective time of each rebinned pixel.  “Time of each newly rebinned along track GAIM pixel”  “Epoch Milliseconds” (CDF epoch value) |
| YEAR\_GAIM  YEAR\_GAIM.TITLE | INT  STRING | [Ng]  - | The year of each rebinned pixel  “Year of each newly rebinned GAIM pixel” |
| DOY\_GAIM  DOY\_GAIM.TITLE | INT  STRING | [Ng]  - | The day of year of each rebinned pixel.  “Day of year of each newly rebinned GAIM pixel” |
| ORBIT\_GAIM  ORBIT GAIM.TITLE | INT  String | [Ng]  - | Orbit numbers for each grid row.  “Orbit number of each newly rebinned along track GAIM pixel” |
| LATITUDE\_GAIM  LATITUDE\_GAIM.TITLE  LATITUDE\_GAIM.UNITS | FLOAT  STRING  STRING | [Ng]  -  - | DMSP spacecraft latitude  “S/C geographic latitude at the GAIM grid centers”  “degrees” |
| LONGITUDE\_GAIM  LONGITUDE\_GAIM.TITLE  LONGITUDE\_\_GAIM.UNITS | FLOAT  STRING  STRING | [Ng]  - | DMSP spacecraft longitude  “S/C geographic longitude at the GAIM grid centers”  “degrees” |
| ALTITUDE\_GAIM  ALTITUDE\_GAIM.TITLE  ALTITUDE\_GAIM.UNITS | FLOAT  STRING  STRING | [Ng]  -  - | DMSP spacecraft altitude  “S/C geographic altitude at the GAIM grid centers”  “kilometers” |
| TANGENTPOINT\_LATITUDE\_GAIM  TANGENTPOINT\_LATITUDE\_GAIM.TITLE  TANGENTPOINT\_LATITUDE\_GAIM.UNITS | FLOAT  STRING  STRING | [Mg,Ng]  - | Rebinned pixel tangent point latitude  “Tangent point GAIM geographic latitude”  “degrees” |
| TANGENTPOINT\_LONGITUDE\_GAIM  TANGENTPOINT\_LONGITUDE\_GAIM.TITLE  TANGENTPOINT\_LONGITUDE\_GAIM.UNITS | FLOAT  STRING  STRING | [Mg,Ng]  - | Rebinned pixel tangent point longitude  “Tangent point GAIM geographic longitude”  “degrees” |
| TANGENTPOINT\_ALTITUDE\_GAIM  TANGENTPOINT\_ALTITUDE\_GAIM.TITLE  TANGENTPOINT\_ALTITUDE\_GAIM.UNITS | FLOAT  STRING  STRING | [Mg,Ng]  - | Rebinned pixel tangent point altitude  “Tangent point GAIM geographic altitude”  “kilometers” |
| TANGENTPOINT\_SZA\_GAIM  TANGENTPOINT\_SZA\_GAIM.TITLE  TANGENTPOINT\_SZA\_GAIM.UNITS | FLOAT  STRING  STRING | [Mg,Ng]  -  - | Tangent point solar zenith angle  “solar zenith angle for the center of new limb GAIM grid cell.”  “degrees” |
| IN\_SAA\_GAIM  IN\_SAA\_\_GAIM.TITLE | INT  STRING | [Mg,Ng] | Indicator of whether any limb pixels in the bin may have SAA contamination  ‘SAA flag: 1 any pixels in GAIM bin were observed while the S/C was in SAA, 0 if not” |
| ACROSSPIXELSIZE\_GAIM | INT | - | Number of across track pixels for the rebinned grid (M). |
| ALONGPIXELSIZE\_GAIM | INT | - | Number of along track pixels for the rebinned grid (N). |
| EFFECTIVELOOKANGLE\_GAIM  EFFECTIVELOOKANGLE\_GAIM.TITLE  EFFECTIVELOOKANGLE\_GAIM.UNITS | FLOAT  STRING  STRING | [Mg,Ng]  -  - | Effective scan mirror look angles for the rebinned DAY grid (in degrees).  “Effective cross track look angle from S/C nadir to GAIM grid tangent points”  “Degrees” |
|  |  |  |  |
| **Re-binned Data** | | | |
| LIMBCOUNTSDATA\_GAIM  LIMBCOUNTSDATA\_GAIM.TITLE | FLOAT  STRING | [Mg, Ng, 5]  - | Rebinned raw pixel counts for the five SSUSI colors  “Raw instrument counts in the limb; rebinned to the new GAIM grid” |
| LIMBDECOMP\_UNCERTAINTY\_GAIM  LIMBDECOMP\_ UNCERTAINTY\_GAIM.TITLE | FLOAT  STRING | [Mg, Ng, 5]  - | Decompression uncertainty associated with rebinned counts  “Decompression errors in the limb; rebinned to the new GAIM grid” |
| EXPOSURE\_GAIM  EXPOSURE\_GAIM.TITLE    EXPOSURE\_GAIM.UNITS | FLOAT  STRING  STRING | [Mg, Ng]  -  - | How many L1B pixel exposures are contained in this grid cell  "Number of L1B scan pixels in each limb GAIM grid bin"  "Count” |
| SAA\_COUNT\_GAIM  SAA\_COUNT\_GAIM.TITLE | INT  STRING | [Mg, Ng]  - | Number of raw pixels in each bin having high 4278 photometer counts (a signature of the South Atlantic Anomaly)  “GAIM South Atlantic Anomaly count” |
|  |  |  |  |
| **Calibrated, background-corrected data** | | | |
| LIMB\_INTENSITY\_GAIM  LIMB\_INTENSITY\_GAIM.TITLE  LIMB\_INTENSITY\_GAIM.UNITS | DOUBLE  STRING  STRING | [Mg, Ng, 5]  -  - | Rebinned limb radiances (in Rayleighs)  “Imaging mode limb radiance data; rebinned to the new GAIM grid”  “Rayleighs” |
| LIMB\_RADIANCE\_UNCERTAINTY\_GAIM  LIMB\_RADIANCE\_UNCERTAINTY\_GAIM.TITLE    LIMB\_RADIANCE\_UNCERTAINTY\_GAIM.UNITS | DOUBLE  STRING  STRING | [Mg, Ng, 5]  -  - | Uncertainty in rebinned limb radiances due to counting statistics and decompression (in Rayleighs)  “Limb Radiance error; rebinned to the new GAIM grid”  “Rayleighs” |
| LIMB\_INTENSITY\_MN\_SUBTRACTED\_GAIM    LIMB\_INTENSITY\_MN\_SUBTRACTED\_GAIM.TITLE  LIMB\_INTENSITY\_MN\_SUBTRACTED\_GAIM.UNITS | DOUBLE  STRING  STRING | [Mg, Ng, 5]  -  - | Rebinned limb radiances (in Rayleighs) with the estimated 135.6nm contribution from mutual neutralization emission subtracted  “Imaging mode MN subtracted limb radiance data; rebinned to the GAIM grid”  “Rayleighs” |
| LIMB\_RADIANCE\_MN\_SUBTRACTED\_UNCERTAINTY\_GAIM  LIMB\_RADIANCE\_MN\_SUBTRACTED\_UNCERTAINTY\_GAIM.TITLE  LIMB\_RADIANCE\_MN\_SUBTRACTEDUNCERTAINTY\_GAIM.UNITS | DOUBLE  STRING  STRING | [Mg, Ng, 5]  -  - | Uncertainty in rebinned limb radiances where the estimated MN contribution to 135.6 nm radiation has been subtracted, due to counting statistics, decompression, and error propagation  “Limb MN subtracted Radiance error; rebinned to the GAIM grid”  “Rayleighs” |
| LIMB\_CALIBRATION\_UNCERTAINTY\_GAIM  LIMB\_CALIBRATION\_UNCERTAINTY\_GAIM.TITLE | DOUBLE  STRING | [Mg, Ng, 5] | Calibration uncertainty in rebinned limb radiances (in Rayleighs)  “Rebinned limb radiance calibration  uncertainty on GAIM grid” |
| CHAPMAN\_INTENSITY  CHAPMAN\_INTENSITY\_TITLE  CHAPMAN\_INTENSITY\_UNITS | DOUBLE  STRING  STRING | Mg, Ng]  -  - | Simulated Chapman intensity profile (in Rayleighs)  "Simulated Chapman limb-scan radiance profile"  "Rayleighs" |
| CHAPMAN\_INTENSITY\_UNCERTAINTY  CHAPMAN\_INTENSITY\_UNCERTAINTY \_TITLE  CHAPMAN\_INTENSITY\_UNCERTAINTY \_UNITS | DOUBLE  STRING  STRING | Mg, Ng]  -  - | Simulated Chapman intensity profile uncertainty(in Rayleighs)  "Simulated Chapman limb-scan radiance profile uncertainty"  "Rayleighs" |
| DQI\_GAIM | INT | [Mg,Ng,5] | Data Quality Indicator for data in bins  “Data Quality bitflag:   * 0: MeV noise present in cell, * 1: SAA contamination * 2:Mirror pointing unknown bit position * 3: LBHdayside dayglow indication threshold exceeded,region data * 4: unable to subtract Mutual Neutralization correction failed * 5: Bad Chapman profile * 6: Not enough data for Chapman profile * component |

# EDR GAIM-DISK Data File

**PRODUCT VERSION 0100**

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Changes Made** |
| 1.0.0 | 8/8/2011 | Initial Version of GAIM-DISK file definition table |

Note the changes from the SDR2-DISK are the addition of MN subtracted radiances and uncertainties for 1356.

The GAIM EDR contains the lowest resolution gridded SSUSI radiances, time, and geolocation information. The raw radoances are taken directly from the SDR. Other corrections and flags are added to this SDR data, e.g., the estimated contribution from mutual neutralization to the 1356 radiance is removed and the result provided for ingestion into GAIM. In addition to the cross track and along track pixel numbers M and N, we also need S, the number of instrument scans in order to carry forward some L1B information. (Md,Nd) are the array sizes for the day (cross, along) track arrays and (Mn,Nn) are the array sizes for the night (cross, along) track arrays.

There is a dimension (NetCDF name: nchan) for the waveband or “color” of the counts and radiance data. Currently there are 5 colors (121.6, 130.4, 135.6 nm and LBH short and LBH long) and the channel index goes in that order over the range 0-4. However there is nothing specific to color in SDR processing and if the order changes, the indices will match that specified in the Level 1B description document.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable Name** | **Type** | **Dimensions** | | **Value/Comment** | |
|  |  |  | |  | |
| **Time and Position Information** | | | | | |
| TIME\_GAIM\_DAY  TIME GAIM\_DAY\_TITLE  TIME GAIM\_DAY\_UNITS | DOUBLE  STRING  STRING | [Nd]  -  - | The time of each newly re-binned along track day altitude pixel.  ‘Time of each newly re-binned along track GAIM pixel’  ‘Seconds since the start of the day’ | | |
| YEAR GAIM\_DAY  YEAR\_GAIM\_DAY TITLE | INT  STRING | [Nd]  - | The year of each rebinned day pixel  “Year of each newly rebinned for GAIM day pixel” | | |
| DOY\_GAIM\_DAY  DOY GAIM\_DAY\_TITLE | INT  STRING | [Nd]  - | The day of year of each rebinned day pixel.  “Day of year of each newly rebinned for GAIM day pixel” | | |
| ORBIT GAIM\_DAY  ORBIT GAIM\_DAY TITLE | INT  String | [Nd]  - | Orbit numbers for each day grid row.  “Orbit number of each newly rebinned for GAIM along track day pixel” | | |
| LATITUDE\_GAIM\_DAY  LATITUDE\_GAIM\_DAY\_TITLE  LATITUDE\_GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | [Nd]  -  - | DMSP S/C Latitude.  “S/C geographic latitude, rebinned to the new GAIM day grid”  “ degrees” | | |
| LONGITUDE\_GAIM\_DAY  LONGITUDE\_GAIM\_DAY\_TITLE  LONGITUDE\_GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | [Nd]  -  - | DMSP S/C Longitude.  “S/C geographic longitude, rebinned to the new GAIM day grid”  “degrees” | | |
| ALTITUDE\_GAIM\_DAY  ALTITUDE\_GAIM\_DAY\_TITLE  ALTITUDE\_GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | [Nd]  -  - | DMSP S/C Altitude.  “S/C geographic altitude, rebinned to the new GAIM day altitudegrid”  “km” | | |
| TIME\_GAIM\_DAY\_AURORAL  TIME GAIM\_DAY\_AURORAL \_TITLE  TIME GAIM\_DAY\_AURORAL \_UNITS | DOUBLE  STRING  STRING | [Ndda]  -  - | The time of each newly re-binned along track day altitude pixel.  ‘Time of each newly re-binned along track dayside auroral GAIM pixel’  ‘Seconds since the start of the day’ | | |
| YEAR GAIM\_DAY\_AURORAL  YEAR\_GAIM\_DAY\_AURORAL TITLE | INT  STRING | [Ndda]  - | The year of each rebinned day pixel  “Year of each newly rebinned for dayside auroral GAIM day pixel” | | |
| DOY\_GAIM\_DAY\_AURORAL  DOY GAIM\_DAY\_AURORAL \_TITLE | INT  STRING | [Ndda]  - | The day of year of each rebinned day pixel.  “Day of year of each newly rebinned for GAIM dayside auroral pixel” | | |
| ORBIT GAIM\_DAY\_AURORAL  ORBIT GAIM\_DAY\_AURORAL TITLE | INT  String | [Ndda]  - | Orbit numbers for each day grid row.  “Orbit number of each newly rebinned for GAIM along track dayside auroral pixel” | | |
| LATITUDE\_GAIM\_DAY\_AURORAL  LATITUDE\_GAIM\_DAY\_AURORAL \_TITLE  LATITUDE\_GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | [Ndda]  -  - | DMSP S/C Latitude.  “S/C geographic latitude, rebinned to the new GAIM dayside auroral grid”  “ degrees” | | |
| LONGITUDE\_GAIM\_DAY\_AURORAL  LONGITUDE\_GAIM\_DAY\_AURORAL \_TITLE  LONGITUDE\_GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | [Ndda]  -  - | DMSP S/C Longitude.  “S/C geographic longitude, rebinned to the new GAIM dayside auroral grid”  “degrees” | | |
| ALTITUDE\_GAIM\_DAY\_AURORAL  ALTITUDE\_GAIM\_DAY\_AURORAL \_TITLE  ALTITUDE\_GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | [Ndda]  -  - | DMSP S/C Altitude.  “S/C geographic altitude, rebinned to the new GAIM dayside auroral altitude grid”  “km” | | |
| TIME\_GAIM\_NIGHT  TIME GAIM\_NIGHT\_TITLE  TIME GAIM\_NIGHT\_UNITS | DOUBLE  STRING  STRING | [Nn]  -  - | The time of each newly re-binned along track night altitude pixel.  ‘Time of each newly re-binned for GAIM along track pixel’  ‘Seconds since the start of the day’ | | |
| YEAR GAIM\_NIGHT  YEAR GAIM\_NIGHT\_TITLE | INT  STRING | [Nn]  - | The year of each rebinned night pixel  “Year of each newly rebinned for GAIM night pixel” | | |
| DOY GAIM\_NIGHT  DOY GAIM\_NIGHT\_TITLE | INT  STRING | [Nn]  - | The day of year of each rebinned night pixel.  “Day of year of each newly rebinned for GAIM night pixel” | | |
| ORBIT GAIM\_NIGHT  ORBIT GAIM NIGHT\_TITLE | INT  String | [Nn]  - | Orbit numbers for each night grid row.  “Orbit number of each newly rebinned for GAIM along track night pixel” | | |
| LATITUDE GAIM\_NIGHT  LATITUDE GAIM\_NIGHT\_TITLE  LATITUDE GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | [Nn]  -  - | DMSP S/C Latitude.  “S/C Latitude, rebinned to the new GAIM night grid”  “degrees” | | |
| LONGITUDE GAIM\_NIGHT  LONGITUDE GAIM\_NIGHT\_TITLE  LONGITUDE GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | [Nn]  -  - | DMSP S/C Longitude.  “S/C Longitude, rebinned to the new GAO< night grid”  “degrees” | | |
| ALTITUDE GAIM\_NIGHT  ALTITUDE GAIM\_NIGHT\_TITLE  ALTITUDE GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | [Nn]  -  - | DMSP S/C Altitude.  “S/C Altitude, rebinned to the new GAIM night altitude grid”  ‘km” | | |
| PIERCEPOINT GAIM\_NIGHT\_LATITUDE  PIERCEPOINT GAIM\_NIGHT\_LATITUDE\_TITLE  PIERCEPOINT GAIM\_NIGHT\_LATITUDE\_UNITS | FLOAT  STRING  STRING | [Mn, Nn]  -  - | Night Piercepoint latitude of each rebinned pixel center  “Nightside latitude of the pierce point; rebinned to the new GAIM grid.”  ‘degrees” | | |
| PIERCEPOINT GAIM\_NIGHT\_LONGITUDE  PIERCEPOINT GAIM\_NIGHT\_LONGITUDE\_TITLE  PIERCEPOINT GAIM\_NIGHT\_LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Mn, Nn]  -  - | Night Piercepoint longitude of each rebinned pixel center  “Nightside longitude of the pierce point; rebinned to the new GAIM grid.”  “degrees” | | |
| PIERCEPOINT GAIM\_NIGHT\_ALTITUDE  PIERCEPOINT GAIM\_NIGHT\_ALTITUDE\_TITLE  PIERCEPOINT GAIM\_NIGHT\_ALTITUDE \_UNITS | FLOAT  STRING  STRING | [Mn, Nn]  -  - | Night Piercepoint altitude of each rebinned pixel center  “Nightside pierce point altitude for the new GAIM night grid.”  “km” | | |
| PIERCEPOINT GAIM\_NIGHT\_SZA  PIERCEPOINT GAIM\_NIGHT\_SZA.TITLE  PIERCEPOINT GAIM\_NIGHT\_SZA.UNITS | FLOAT  STRING  STRING | [Md, Nd]  -  - | Night piercepoint solar zenith angle  “Nightside solar zenith angle for the center of new GAIM grid cell.”  “degrees” | | |
| PIERCEPOINT GAIM\_DAY\_LATITUDE  PIERCEPOINT GAIM\_DAY\_LATITUDE\_TITLE  PIERCEPOINT GAIM\_DAY\_LATITUDE\_UNITS | FLOAT  STRING  STRING | [Md, Nd]  - | Day piercepoint latitude of each rebinned pixel center  “Dayside latitude of the pierce point; rebinned to the new GAIM grid.”  “degrees” | | |
| PIERCEPOINT GAIM\_DAY\_LONGITUDE  PIERCEPOINT GAIM\_DAY\_LONGITUDE\_TITLE  PIERCEPOINT GAIM\_DAY\_LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Md, Nd]  - | Day Piercepoint longitude of each rebinned pixel center  “Dayside longitude of the pierce point; rebinned to the new GAIM grid.”  “degrees” | | |
| PIERCEPOINT GAIM\_DAY\_ALTITUDE  PIERCEPOINT GAIM\_DAY\_ALTITUDE\_TITLE  PIERCEPOINT GAIM\_DAY\_ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Md, Nd]  - | Day piercepoint altitude of newly rebinned pixel center  “Dayside pierce point altitudes for the new GAIM grid”  “km” | | |
| PIERCEPOINT GAIM\_DAY\_SZA  PIERCEPOINT GAIM\_DAY\_SZA.TITLE  PIERCEPOINT GAIM\_DAY\_SZA.UNITS | FLOAT  STRING  STRING | [Md, Nd]  -  - | Day piercepoint solar zenith angle  “Dayside solar zenith angle for the center of new GAIM grid cell.”  “degrees” | | |
| PIERCEPOINT GAIM\_DAY\_AURORAL\_LATITUDE  PIERCEPOINT GAIM\_DAY\_AURORAL \_LATITUDE\_TITLE  PIERCEPOINT GAIM\_DAY\_AURORAL \_LATITUDE\_UNITS | FLOAT  STRING  STRING | [Mdda, Ndda]  - | Day piercepoint latitude of each rebinned pixel center  “Dayside latitude of the pierce point; rebinned to the new GAIM dayside auroral grid.”  “degrees” | | |
| PIERCEPOINT GAIM\_DAY\_AURORAL \_LONGITUDE  PIERCEPOINT GAIM\_DAY\_AURORAL \_LONGITUDE\_TITLE  PIERCEPOINT GAIM\_DAY\_AURORAL \_LONGITUDE\_UNITS | FLOAT  STRING  STRING | [Mdda, Ndda]  - | Day Piercepoint longitude of each rebinned pixel center  “Dayside longitude of the pierce point; rebinned to the new GAIM dayside auroral grid.”  “degrees” | | |
| PIERCEPOINT GAIM\_DAY\_AURORAL \_ALTITUDE  PIERCEPOINT GAIM\_DAY\_AURORAL \_ALTITUDE\_TITLE  PIERCEPOINT GAIM\_DAY\_AURORAL \_ALTITUDE\_UNITS | FLOAT  STRING  STRING | [Mdda, Ndda]  - | Day piercepoint altitude of newly rebinned pixel center  “Dayside pierce point altitudes for the new GAIM dayside auroral grid”  “km” | | |
| PIERCEPOINT GAIM\_DAY\_AURORAL \_SZA  PIERCEPOINT GAIM\_DAY\_AURORAL \_SZA.TITLE  PIERCEPOINT GAIM\_DAY\_AURORAL \_SZA.UNITS | FLOAT  STRING  STRING | [Mdda, Ndda]  -  - | Day piercepoint solar zenith angle  “Dayside solar zenith angle for the center of new GAIM dayside auroral grid cell.”  “degrees” | | |
| IN\_SAA GAIM\_DAY  IN\_SAA GAIM\_DAY\_TITLE | INT  STRING | [Md,Nd] | Indicator of whether any day pixels in the bin may have SAA contamination  ‘SAA GAIM grid cell flag: 1 any pixels in bin were observed while the S/C was in SAA, 0 if not” | | |
| IN\_SAA GAIM\_DAY\_AURORAL  IN\_SAA GAIM\_DAY\_AURORAL \_TITLE | INT  STRING | [Mdda,Ndda] | Indicator of whether any day pixels in the bin may have SAA contamination  ‘SAA GAIM dayside auroral grid cell flag: 1 any pixels in bin were observed while the S/C was in SAA, 0 if not” | | |
| IN\_SAA GAIM\_NIGHT  IN\_SAA GAIM\_NIGHT\_TITLE | INT  STRING | [Mn,Nn] | Indicator of whether any night pixels in bin may be contaminated by SAA  ‘SAA GAIM grid cell flag: 1 if any binned pixels were observed while S/C was in SAA, 0 if not” | | |
|  |  |  |  | | |
| ACROSSPIXELSIZE GAIM\_DAY  ACROSSPIXELSIZE GAIM\_DAY\_TITLE  ACROSSPIXELSIZE GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | [Md]  -  - | Arclength on the dayside piercepoint surface of across track pixels.  “Piercepoint surface arclengths of across track GAIM day pixels"  “kilometers” | | |
| ALONGPIXELSIZE GAIM\_DAY  ALONGPIXELSIZE GAIM\_DAY\_TITLE  ALONGPIXELSIZE GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | -  -  - | Arclength on the dayside piercepoint surface of along track pixels  "Piercepoint surface arclength of along track GAIM day pixels"  “kilometers” | | |
| ACROSSPIXELSIZE GAIM\_DAY\_AURORAL  ACROSSPIXELSIZE GAIM\_DAY\_AURORAL \_TITLE  ACROSSPIXELSIZE GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | [Mdda]  -  - | Arclength on the dayside piercepoint surface of across track pixels.  “Piercepoint surface arclengths of across track GAIM dayside auroral pixels"  “kilometers” | | |
| ALONGPIXELSIZE GAIM\_DAY\_AURORAL  ALONGPIXELSIZE GAIM\_DAY\_AURORAL \_TITLE  ALONGPIXELSIZE GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | -  -  - | Arclength on the dayside piercepoint surface of along track pixels  "Piercepoint surface arclength of along track GAIM dayside auroral pixels"  “kilometers” | | |
| ACROSSPIXELSIZE GAIM\_NIGHT  ACROSSPIXELSIZE GAIM\_NIGHT\_TITLE  ACROSSPIXELSIZE GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | [Mn]  -  - | Arclength on the nightside piercepoint surface of across track pixels.  “Piercepoint surface arclengths of across track GAIM night pixels"  “kilometers” | | |
| ALONGPIXELSIZE GAIM\_NIGHT  ALONGPIXELSIZE GAIM\_NIGHT\_TITLE  ALONGPIXELSIZE GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | -  -  - | Arclength on the nightside Piercepoint surface of along track pixels.  "Piercepoint surface arclength of along track GAIM night pixels"  “kilometers” | | |
| EFFECTIVELOOKANGLE GAIM\_DAY  EFFECTIVELOOKANGLE GAIM\_DAY\_TITLE  EFFECTIVELOOKANGLE GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | [M,N]  -  - | Effective scan mirror look angles for the rebinned DAY grid (in degrees).  “Effective cross track look angle to day GAIM grid centers”  “Degrees” | | |
| EFFECTIVELOOKANGLE GAIM\_DAY\_AURORAL  EFFECTIVELOOKANGLE GAIM\_DAY\_AURORAL \_TITLE  EFFECTIVELOOKANGLE GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | [Mdda,Ndda]  -  - | Effective scan mirror look angles for the rebinned DAY grid (in degrees).  “Effective cross track look angle to dayside auroral GAIM grid centers”  “Degrees” | | |
| EFFECTIVELOOKANGLE GAIM\_NIGHT  EFFECTIVELOOKANGLE GAIM\_NIGHT\_TITLE  EFFECTIVELOOKANGLE GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | [M,N]  -  - | Effective scan mirror look angles for the rebinned NIGHT grid (in degrees).  “Effective cross track look angle to night GAIM grid centers”  “Degrees” | | |
|  |  |  |  | | |
| **Re-binned Data** | | | | | |
| DISKCOUNTSDATA GAIM\_DAY  DISKCOUNTSDATA GAIM\_DAY\_TITLE  DISKCOUNTSDATA GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | [Md, Nd,5]  -  - | | Raw pixel data that was re-binned onto the new dayside grid.  “Dayside uncorrected decompressed counts in the disk; rebinned to the new GAIM grid.”  “Uncorrected decompressed counts” | |
| DISKDECOMP\_ UNCERTAINTY GAIM \_DAY  DISKDECOMP\_ UNCERTAINTY GAIM\_DAY\_TITLE  DISKDECOMP\_ UNCERTAINTY GAIM\_DAY\_UNITS | FLOAT  STRING  STRING | [Md, Nd,5]  -  - | | Decompression error uncertainty that was re-binned onto the new grid.  “Dayside Auroral decompression uncertainty for the disk; rebinned to the new grid.”  “Uncorrected decompressed counts” | |
| DISKCOUNTSDATA GAIM\_DAY\_AURORAL  DISKCOUNTSDATA GAIM\_DAY\_AURORAL \_TITLE  DISKCOUNTSDATA GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | [Mdda, Ndda,5]  -  - | | Raw pixel data that was re-binned onto the new dayside grid.  “Dayside uncorrected decompressed counts in the disk; rebinned to the new GAIM grid.”  “Uncorrected decompressed counts” | |
| DISKDECOMP\_ UNCERTAINTY GAIM \_DAY\_AURORAL  DISKDECOMP\_ UNCERTAINTY GAIM\_DAY\_AURORAL \_TITLE  DISKDECOMP\_ UNCERTAINTY GAIM\_DAY\_AURORAL \_UNITS | FLOAT  STRING  STRING | [Mdda, Ndda,5]  -  - | | Decompression error uncertainty that was re-binned onto the new grid.  “Dayside Auroral decompression uncertainty for the disk; rebinned to the new grid.”  “Uncorrected decompressed counts” | |
| EXPOSURE\_DAY\_GAIM  EXPOSURE\_DAY\_GAIM.TITLE    EXPOSURE\_DAY\_GAIMUNITS | FLOAT  STRING  STRING | [Md,Nd,5]  -  - | | How many L1B pixel exposures are contained in this grid cell  "Number of L1B scan pixels in each dayside GAIM grid bin"  "count” | |
| EXPOSURE\_DAY\_GAIM\_AURORAL  EXPOSURE\_DAY\_GAIM\_AURORAL.TITLE    EXPOSURE\_DAY\_GAIM\_AURORAL UNITS | FLOAT  STRING  STRING | [Mdda,Ndda,5]  -  - | | How many L1B pixel exposures are contained in this grid cell  "Number of L1B scan pixels in each dayside auroral GAIM grid bin"  "count” | |
| DISKCOUNTSDATA GAIM\_NIGHT  DISKCOUNTSDATA GAIM\_NIGHT\_TITLE  DISKCOUNTSDATA GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | [Mn, Nn,5]  -  - | | Raw pixel data that was re-binned onto the new nightside grid.  “Nightside uncorrected decompressed counts in the disk; rebinned to the new GAIM grid.”  “Uncorrected decompressed counts” | |
| DISKDECOMP\_UNCERTAINTY GAIM\_NIGHT  DISKDECOMP\_ UNCERTAINTY GAIM \_NIGHT\_TITLE  DISKDECOMP\_ UNCERTAINTY GAIM\_NIGHT\_UNITS | FLOAT  STRING  STRING | [Mn, Nn,5]  -  - | | Decompression error uncertainty that was re-binned onto the new grid.  “Nightside decompression uncertainty for the disk; rebinned to the new GAIM grid.”  “Uncorrected decompressed counts” | |
| EXPOSURE\_NIGHT\_GAIM  EXPOSURE\_NIGHT\_GAIM.TITLE    EXPOSURE\_NIGHT.\_GAIMUNITS | FLOAT  STRING  STRING | [Mn,Nn,5]  -  - | | How many L1B pixel exposures are contained in this grid cell  "Number of L1B scan pixels in each nightside GAIM grid bin"  "Count” | |
| SAA\_COUNT GAIM\_DAY\_AURORAL  SAA\_COUNT GAIM\_DAY\_AURORAL \_TITLE | INT  STRING | [Mdda, Ndda]  - | | Number of raw pixels in each day bin having high 4278 photometer counts (a signature of the South Atlantic Anomaly)  “South Atlantic Anomaly count GAIM dayside auroral grid” | |
| SAA\_COUNT GAIM\_DAY  SAA\_COUNT GAIM\_DAY\_TITLE | INT  STRING | [Md, Nd]  - | | Number of raw pixels in each day bin having high 4278 photometer counts (a signature of the South Atlantic Anomaly)  “South Atlantic Anomaly count GAIM day grid” | |
| SAA\_COUNT GAIM\_NIGHT  SAA\_COUNT GAIM\_NIGHT TITLE | INT  STRING | [Mn, Nn]  - | | Number of raw pixels in each night bin having high 4278 photometer counts (a signature of the South Atlantic Anomaly)  “South Atlantic Anomaly count GAIM night grid” | |
|  |  |  | |  | |
| **Calibrated, background-corrected data** |  |  | | |  |
| DISK\_INTENSITY GAIM\_NIGHT  DISK\_INTENSITY GAIM\_NIGHT\_TITLE  DISK\_INTENSITY GAIM\_NIGHT\_UNITS | DOUBLE  STRING  STRING | [Mn, Nn, 5]  -  - | | | Re-calibrated disk radiances, re-binned onto the new grid.  “Nightside Imaging Mode Disk Radiance data re-binned to new GAIM grid”  “Rayleighs” |
| DISK\_INTENSITY\_MN\_SUBTRACTED GAIM\_NIGHT  DISK\_INTENSITY\_MN\_SUBTRACTED GAIM\_NIGHT\_TITLE  DISK\_INTENSITY\_MN\_SUBTRACTED GAIM\_NIGHT\_UNITS | DOUBLE  STRING  STRING | [Mn, Nn, 5]  -  - | | | Re-calibrated disk radiances, re-binned onto the new grid.  “Nightside Imaging Mode Disk Radiance data re-binned to new GAIM grid”  “Rayleighs” |
| DISK\_INTENSITY GAIM\_DAY  DISK\_INTENSITY GAIM\_DAY\_TITLE  DISK\_INTENSITY GAIM\_DAY\_UNITS | DOUBLE  STRING  STRING | [Md, Nd, 5]  - | | | Re-calibrated disk radiances, re-binned onto the new grid.  “Dayside Imaging Mode Disk Radiance data re-binned to new GAIM grid”  “Rayleighs” |
| DISK\_INTENSITY GAIM\_DAY\_AURORAL  DISK\_INTENSITY GAIM\_DAY\_AURORAL \_TITLE  DISK\_INTENSITY GAIM\_DAY\_AURORAL \_UNITS | DOUBLE  STRING  STRING | [Mdda, Ndda, 5]  - | | | Re-calibrated disk radiances, re-binned onto the new grid.  “Dayside AURORAL Imaging Mode Disk Radiance data re-binned to new GAIM grid”  “Rayleighs” |
| DISK\_RADIANCE\_UNCERTAINTY GAIM\_NIGHT  DISK\_RADIANCE\_UNCERTAINTY GAIM\_NIGHT .TITLE  DISK\_RADIANCE\_UNCERTAINTY GAIM\_NIGHT .UNITS | DOUBLE  STRING  STRING | [Mn, Nn, 5]  -  - | | | Uncertainty in disk values due to counting statistics and decompression, re-binned onto the new grid.  “Nightside disk Counting Statistical Error; rebinned to new GAIM grid”  “Rayleighs” |
| DISK\_RADIANCE\_MN\_SUBTRACTED\_ UNCERTAINTY GAIM\_NIGHT  DISK\_RADIANCE\_MN\_SUBTRACTED \_UNCERTAINTY GAIM\_NIGHT .TITLE  DISK\_RADIANCE\_MN\_SUBTRACTED \_UNCERTAINTY GAIM\_NIGHT .UNITS | DOUBLE  STRING  STRING | [Mn, Nn, 5]  -  - | | | Uncertainty in disk values due to counting statistics and decompression, re-binned onto the new grid.  “Nightside disk Counting Statistical Error; rebinned to new GAIM grid”  “Rayleighs” |
| DISK\_RADIANCE\_UNCERTAINTY GAIM\_DAY  DISK\_RADIANCE\_UNCERTAINTY GAIMDAY\_TITLE  DISK\_RADIANCE\_UNCERTAINTY GAIM\_DAY\_UNITS | DOUBLE  STRING  STRING | [Md, Nd, 5]  -  - | | | Uncertainty in disk values due to counting statistics and decompression, re-binned onto the new grid.  “Dayside disk Counting Statistical Error; rebinned to new GAIM grid”  “Rayleighs” |
| DISK\_RADIANCE\_UNCERTAINTY GAIM\_DAY\_AURORAL  DISK\_RADIANCE\_UNCERTAINTY GAIMDAY\_AURORAL \_TITLE  DISK\_RADIANCE\_UNCERTAINTY GAIM\_DAY\_AURORAL \_UNITS | DOUBLE  STRING  STRING | [Mdda, Ndda, 5]  -  - | | | Uncertainty in disk values due to counting statistics and decompression, re-binned onto the new grid.  “Dayside auroral disk Counting Statistical Error; rebinned to new GAIM grid”  “Rayleighs” |
| DISK\_RECTIFIED\_INTENSITY GAIM\_NIGHT  DISK\_RECTIFIED\_INTENSITY GAIM\_NIGHT\_TITLE  DISK\_RECTIFIED\_INTENSITY GAIM\_NIGHT\_UNITS | DOUBLE  STRING  STRING | [Mn, Nn, 5]  - | | | Re-calibrated and rectified disk radiances, re-binned onto the new grid.  “Nightside Imaging Mode Disk Radiance data – corrected for background and look angle, re-binned to new GAIM grid”  “Rayleighs” |
| DISK\_RECTIFIED\_INTENSITY GAIM\_DAY    DISK\_RECTIFIED\_INTENSITY GAIM\_DAY\_TITLE  DISK\_RECTIFIED\_INTENSITY GAIM\_DAY\_UNITS | DOUBLE  STRING  STRING | [Md, Nd, 5]  - | | | Re-calibrated and rectified disk radiances, re-binned onto the new grid.  “Dayside Imaging Mode Disk Radiance data – corrected for background and look angle, re-binned to new GAIM grid”  “Rayleighs” |
| DISK\_RECTIFIED\_INTENSITY GAIM\_DAY\_AURORAL    DISK\_RECTIFIED\_INTENSITY GAIM\_DAY\_AURORAL \_TITLE  DISK\_RECTIFIED\_INTENSITY GAIM\_DAY\_AURORAL \_UNITS | DOUBLE  STRING  STRING | [Mdda, Ndda, 5]  - | | | Re-calibrated and rectified disk radiances, re-binned onto the new grid.  “Dayside Auroral Imaging Mode Disk Radiance data – corrected for background and look angle, re-binned to new GAIM grid”  “Rayleighs” |
| DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_NIGHT  DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_NIGHT\_TITLE    DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_NIGHT\_UNITS | DOUBLE  STRING  STRING | [Mn, Nn,5]  -  - | | | Uncertainty in rectified disk values due to counting statistics and decompression, re-binned onto the new grid.  “Nightside rectified disk Counting Statistical Error; rebinned to new GAIM grid”  “Rayleighs” |
| DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_DAY  DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_DAY\_TITLE  DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_DAY\_UNITS | DOUBLE  STRING  STRING | [Md, Nd, 5]  -  - | | | Uncertainty in rectified disk values due to counting statistics and decompression, re-binned onto the new grid.  “Dayside rectified disk Counting Statistical Error; rebinned to new GAIM grid”  “Rayleighs” |
| DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_DAY\_AURORAL  DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_DAY\_AURORAL \_TITLE  DISK\_RECTIFIED\_RADIANCE\_UNCERTAINTY\_ GAIM\_DAY\_AURORAL \_UNITS | DOUBLE  STRING  STRING | [Mdda, Ndda, 5]  -  - | | | Uncertainty in rectified disk values due to counting statistics and decompression, re-binned onto the new grid.  “Dayside Auroral rectified disk Counting Statistical Error; rebinned to new GAIM grid”  “Rayleighs” |
| DISK\_CALIBRATION\_UNCERTAINTY GAIM\_NIGHT  DISK\_CALIBRATION\_UNCERTAINTY\_ GAIM\_NIGHT\_TITLE | DOUBLE  STRING | [Mn, Nn, 5]  - | | | Disk calibration uncertainty, re-binned onto the new grid.  “Nightside Disk Calibration Error; rebinned to new grid” |
| DISK\_CALIBRATION\_UNCERTAINTY GAIM\_DAY\_AURORAL DISK\_CALIBRATION\_UNCERTAINTY GAIM\_DAY\_AURORAL \_TITLE | DOUBLE  STRING | [Mdda, Ndda, 5]  - | | | Disk calibration uncertainty, re-binned onto the new grid.    “Dayside Auroral Disk Calibration Error; rebinned to new GAIM grid” |
| DISK\_CALIBRATION\_UNCERTAINTY GAIM\_DAY DISK\_CALIBRATION\_UNCERTAINTY GAIM\_DAY\_TITLE | DOUBLE  STRING | [Md, Nd, 5]  - | | | Disk calibration uncertainty, re-binned onto the new grid.    “Dayside Disk Calibration Error; rebinned to new GAIM grid” |
| DQI\_DAY\_GAIM  DQI\_DAY.TITLE | SHORT  STRING | [Md,Nd,5]  - | | | Data Quality Indicator for data in dayside GAIM grid bins  “Dayside GAIM Data Quality bitflag:   * 0:MeV noise in cell, * 1: SAA, * 2: unknown mirror position” |
| DQI\_DAY\_AURORAL \_GAIM  DQI\_DAY\_AURORAL.TITLE | SHORT  STRING | [Mdda,Ndda,5]  - | | | Data Quality Indicator for data in dayside GAIM grid bins  “Dayside Auroral GAIM Data Quality bitflag:   * 0:MeV noise in cell, * 1: SAA, * 2: unknown mirror position” |
| DQI\_NIGHT\_GAIM  DQI\_NIGHT.TITLE | SHORT  STRING | [Mn,Nn,5]  - | | | Data Quality Indicator for data in nightside GAIM grid bins  “Nightside GAIM Data Quality bitflag:   * 0:MeV noise in cell, * 1: SAA, * 2: unknown mirror position * 3: LBH Thresh exceeded” * 4: Unable to correct for MN |
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