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Outline

- Data levels
- Data products
- Sizing estimates
- Data product development schedule
- Overall data product file structure
- Data product files
- Data processing timeline
- Data product development schedule
- Data interface and access
- Planning tools







GUVI Data Level Definitions

Data Level	Description
Raw Telemetry	Unprocessed digital telemetry
Level 0	Unprocessed instrument data at full resolution that has been separated by instrument or subsystem
Level 1 A	Unprocessed instrument data at full resolution, time referenced and annotated with ancillary information including radiometric and geometric parameters
Level 1B	Level 1 A data processed to sensor units (e.g. Rayleighs/color). This is a virtual product — no data files will be produced.
Level 1C	Level 1B radiance data mapped on a uniform, earth-referenced grid
Level 2B	Derived geophysical variables at the resolution of retrieval
Level 3	Derived geophysical variables mapped on a uniform, earth- referenced, space-time grid
Survey	Summary or low fidelity data used for quicklook or data mining
Status	Reports and/or timelines describing planning or status information







GUVI Level 1 & 2 Data Products

Aurora	Night	Day		
Boundary specification	Total electron	Solar EUV flux		
	content	index, Q _{euv}		
Effective * energy flux,		O/N ₂ ratio on disk		
Q				
Effective * average		Temperature profile		
energy, <e></e>				
Peak ionization rate		Neutral density		
		profiles: O, N_2 , O_2 on		
		limb		
Column ionization rate				

^{*} Effective assumes precipitating particles are pure electrons







Data Product Sizing Estimates

Level 0 data	~ 90 MBytes/day			
Level 1A data	~ 12 MBytes/orbit			
Level 1C data:				
Disk:	~ 20 MBytes/orbit			
Limb:	~ 2 MBytes/orbit			
Spectrograph:	~ 2 MBytes/orbit			
Level 2B data:				
Disk:	~ 4 MBytes/orbit			
Limb:	~ 0.75 MBytes/orbit			
Overlays	~ 0.40 MBytes/orbit			
Survey products:	~ 30 MBytes/day			







Data Product File Structure

- Routine Level 1 & 2 data products produced on an orbit basis
- Survey/summary products produced on a daily basis
- TIMED requires all data products exchanged between Science Data System Facilities to be in NetCDF (a self documenting file format) except survey products containing images or animation
- NetCDF data file readers will be available at a minimum in Ada, C++ and IDL







Level 1A Data Products

- Virtual
- Sorted by spacecraft time for a single orbit and contains:
 - Spacecraft time
 - Raw GUVI housekeeping and telemetry at full resolution
 - Subset TIMED spacecraft housekeeping data
 - Actual spacecraft position, velocity & attitude
 - Kp, Ap and F10.7







Level 1C Data Files

- Level 1C consists of 3 separate data product files per orbit:
 - Disk (25 km X 25 km resolution)
 - Proton and mixed proton/electron auroral boundaries (actual and model)
 - Gridded, binned, calibrated and geolocated sensor data for day, night, auroral, twilight and unknown pixels







Level 1C Data Files - cont.

- Limb (25 km X 25 km resolution)
 - Gridded, binned, calibrated and geolocated sensor data for day, night auroral, twilight and unknown pixels
 - Altitudes for limb profile
- Spectrograph (25 km X 25 km resolution)
 - Spectrograph counts







Level 2B Data Files

- Level 2B consists of 2 separate data product files per orbit:
 - Disk (100 km X 100 km resolution)
 - · Qeuv for the entire day
 - Proton and mixed proton/electron auroral boundaries (actual and model)
 - Gridded, geolocated and binned (in some cases) for day, night, auroral and mixed data
 - Limb (100 km X 100 km resolution)
 - Gridded and binned for day and night pixels







Dynamic Overlay Data Files

- F10.7 daily and 81 day average
- Kp daily and 3 hour
- ap, Ap daily and 3 hour
- Satellite ground track coordinates
- Sunward disk scan boundary coordinates
- Anti-sunward disk scan boundary coord.
- Terminator crossing coordinates
- Local solar time
- Solar zenith angle







Supporting Data Files

- Separate files correlated by s/c time containing:
 - GUVI housekeeping data
 - Spacecraft house keeping data
 - Actual position, velocity and attitude data
 - Tangent point position & solar conditions
 - Pierce point position position & solar conditions







User Created Data Products

- Web based utility provided to register and store user created data products on the DP POC
- User created data products will be archived by DP POC
- No version control provided by DP POC for user data products
- If provided to the Science Data System, must be in NetCDF
- GUVI file naming conventions must be utilized
- TIMED and GUVI header requirements must be utilized







Data Product Development Schedule

Data Product	Available		
Format	Now		
Template			
Level 1A	8/98		
Level 1C	2/99		
Level 2B	10/99		
Status	12/99		
Survey	12/99		





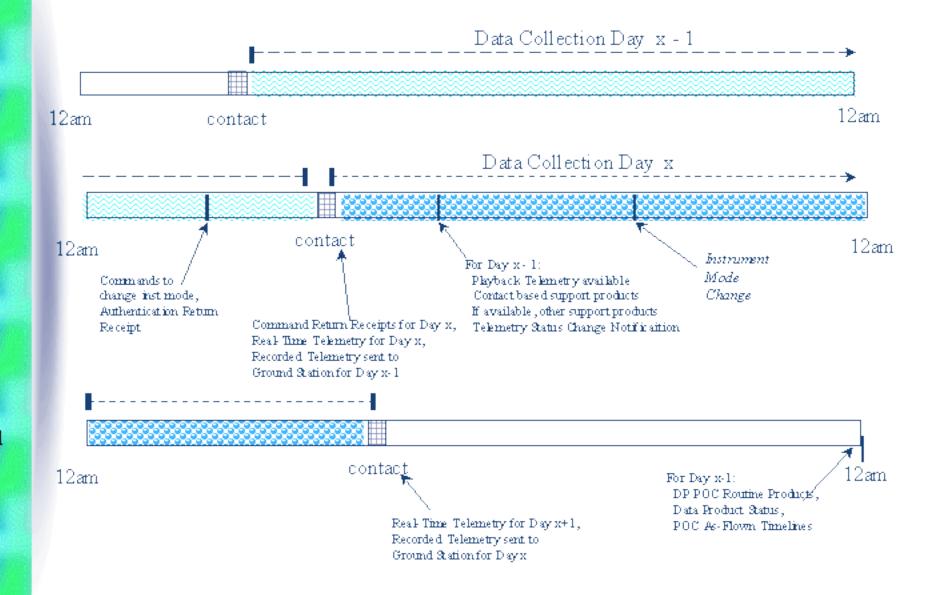


Data Processing Schedule



Day x

Day x + 1



March 27, 1998

GUVI DP POC CDR







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Nominal POC Data Processing Schedule

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- Access to routine GUVI data products:
 - Distributed to GUVI Co-Is via CD-ROM
 - Available via the Internet
- Data product interface
 - NetCDF readers available via the Internet
 - DP POC User Interface graphically displays all routine GUVI data products
 - User login required to access data products via Internet
 - Ability to categorize and/or search the GUVI data with the data catalog







TIMED Planning Tools

Used to provide operational information

- Daily coverage plots, predicted and actual
 - Color coded areas of coverage for each instrument plotted on a continental map
 - Underlying coverage data available for download
- Time plots showing planned and as flown timelines
 - Instrument by instrument or all instruments together, including S/C
 - Available given a time range
- Plans, reports and other files can be downloaded from the TIMED area







GUVI Planning Tools

- Predicted timelines
- As flown timelines
- TIMED contact schedule
- Coordination with other instruments/sites
 - TIMED/GUVI w/in LOS of site
 - Site w/in LOS of TIMED/GUVI
 - Mode of another instrument
- Polar projections of predicted auroral boundary over time