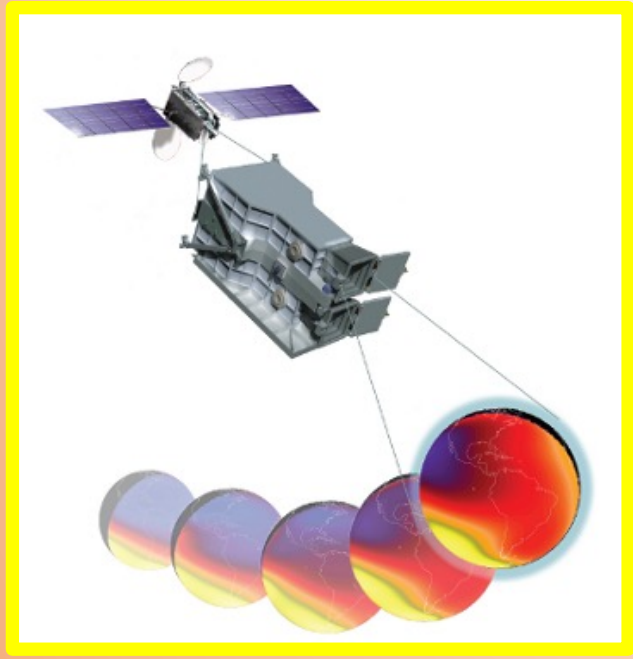
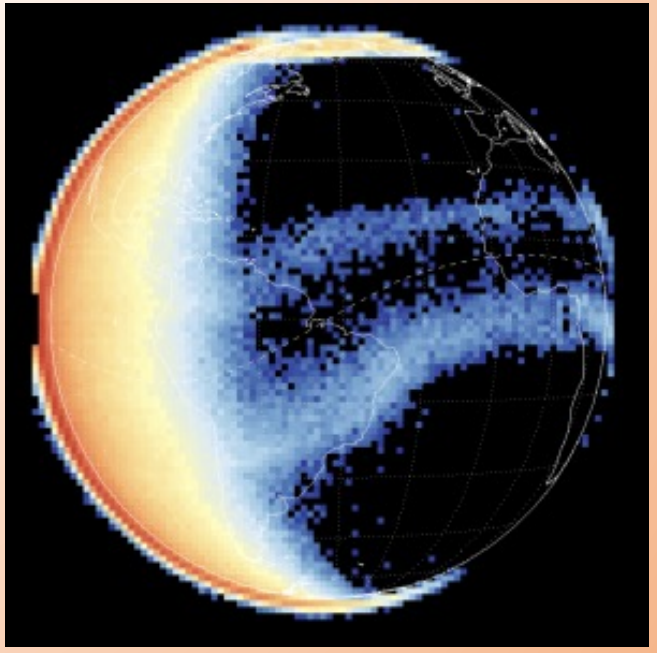
Space Physics Data Facility



# GOLD Data at SPDF



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*[3]ADNET/NASA Goddard, Greenbelt, Maryland*

***GOLD Science Team Meeting, Boulder, October 4-6, 2021***

# GOLD Data Archive at SPDF

- Daily downloads of GOLD data from SDC to SPDF:
  - Level 0 data in the private area; up to now 2,064,769 files with a total volume of 5 TB. Could include Level 1A data as well or instead of the Level 0 data. Awaiting decision by GOLD team and NASA HQ.
  - Level 1b, 1c, 1d and Level 2 data in the public archive (https://spdf.gsfc.nasa.gov/pub/data/); up to now 2,795,552 files with a total volume of 13 TB;
  - As of October 3, 2022:
    Level 1b data up to October 3, 2022
    Level 1c and 1d up to September 5, 2022
    Level 2 (all) up to September 4, 2022
- Level 2 data are being added to CDAWeb:
  - https://cdaweb.gsfc.nasa.gov/: plot, browse, subset, or download data in CDF, netCDF or ASCII format
  - NMAX, ON2, TDISK and O2DEN data are available
  - TLIMB and QEUV are in preparation.

# Data Downloads in 2022 up to now

https://cdaweb.gsfc.nasa.gov/publiclogs

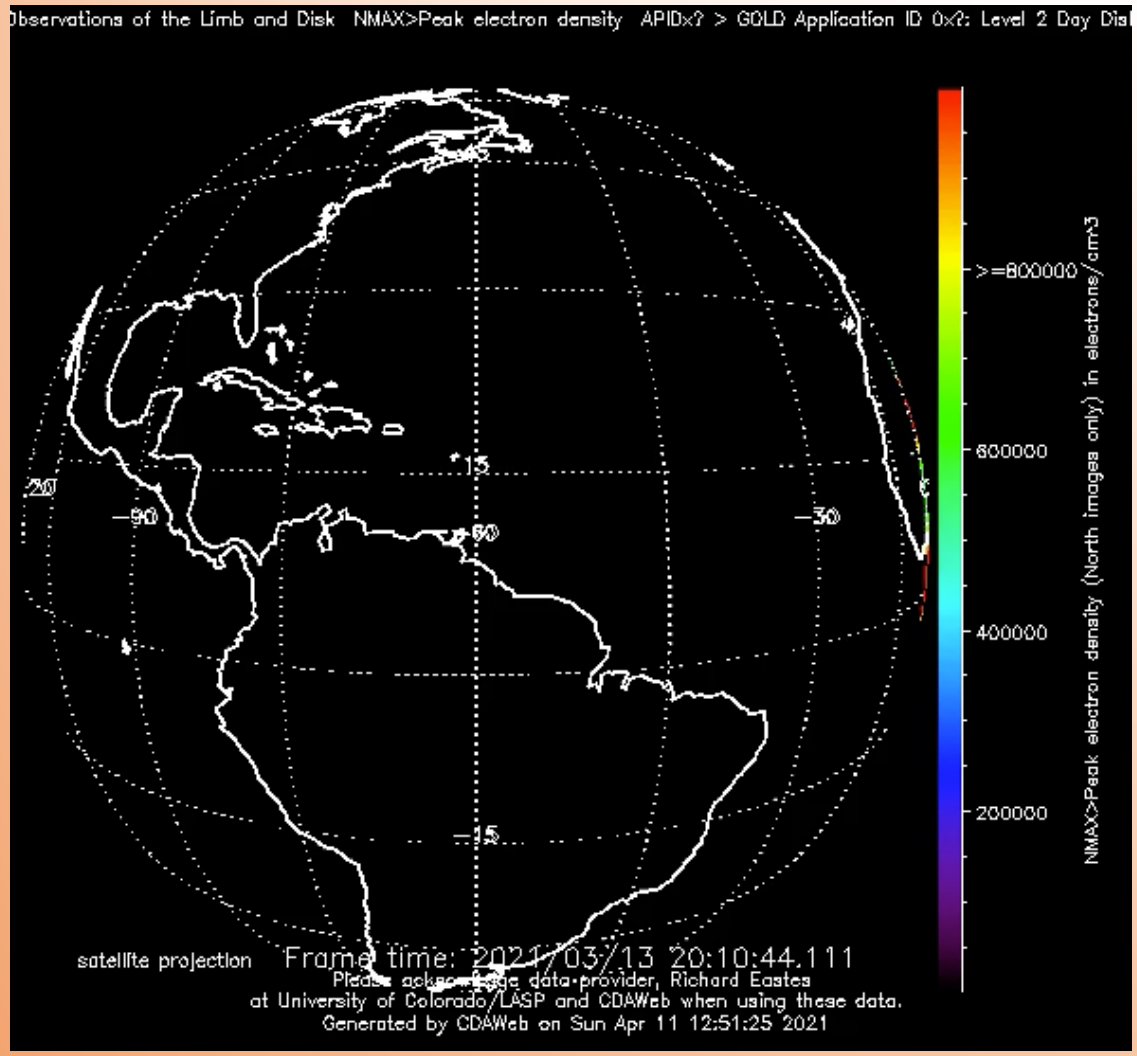
Numbers under the column
FTPS and HTTPS: file downloads'
are all original data files
(not those created by CDAWeb).
647 files created in CDAWeb.

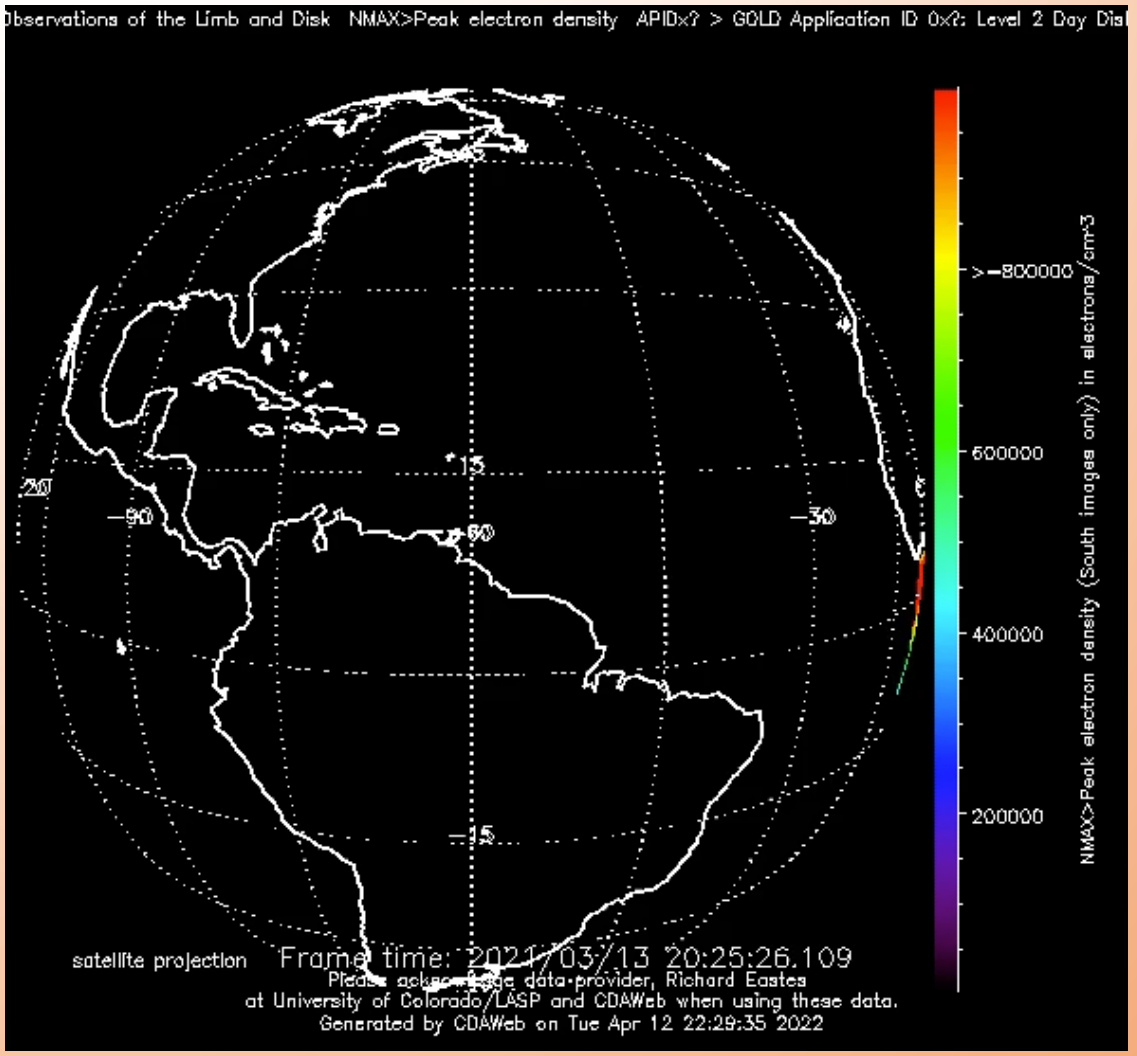
## GOLD:

| year | downloads |
|---|---|
| 2020 | 331,515 files |
| 2021 | 378,140 files |
| 2022 | 376,467 files |

| Mission | FTPS downloads | FTPS Volume | https:file downloads (CDAWeb) | https:file downloads (SPDF) |
|---|---|---|---|---|
| Ace | 136186 | 70.114G | 5340740 | 6682 |
| Aerocube | 0 | 0B | 528 | 0 |
| AIM | 0 | 0B | 3712 | 6093 |
| Ampte | 1 | 486B | 4328 | 6003 |
| Cluster | 68889 | 55.2705G | 3574126 | 5414 |
| CNOFS | 2539 | 84.0711G | 31144 | 4774 |
| CSSWE | 0 | 0B | 3873 | 4423 |
| Darn | 0 | 0B | 185950 | 4507 |
| DE | 72026 | 59.8062G | 45034 | 4555 |
| DSCOVR | 1 | 136B | 104974 | 4542 |
| DMSP | 997939 | 3.79057T | 2471492 | 4802 |
| Equator-s | 0 | 0B | 11749 | 4486 |
| Elfin | 0 | 0B | 11277 | 4453 |
| ERG | 107864 | 361.678G | 1053966 | 4456 |
| FAST | 25872 | 85.9234G | 237242 | 4485 |
| Formosat | 0 | 0B | 343317 | 0 |
| GENESIS | 0 | 0B | 2345 | 4519 |
| Geotail | 388 | 48.3877M | 3384351 | 4566 |
| GOES | 6281 | 315.839G | 101102 | 4719 |
| GOLD | 282832 | 1.53533T | 87922 | 5066 |
| GPS | 34 | 37.5366M | 534045 | 4591 |
| Hawkeye | 0 | 0B | 28283 | 4515 |
| Helios | 0 | 0B | 20403 | 4671 |
| IBEX | 0 | 0B | 49288 | 4476 |
| ICON | 18792 | 362.196G | 127837 | 5987 |
| IMP | 0 | 0B | 99220 | 4528 |
| ISEE | 0 | 0B | 47311 | 4469 |
| ISIS | 229704 | 174.677G | 197816 | 4479 |
| ISS | 0 | 0B | 883 | 0 |
| LANL | 0 | 0B | 1202509 | 4469 |
| MAVEN | 8678 | 126.851G | 104447 | 5354 |
| MMS | 3857867 | 67.7443T | 2541050 | 5268 |
| new-horizons | 5 | 1.53717M | 6202 | 4505 |
| OMNI | 23822 | 795.682G | 649627 | 6689 |
| Pioneer | 4 | 17.6102M | 15211 | 4504 |
| PMC-Turbo | 0 | 0B | 141 | 0 |
| Polar | 11185 | 1.57015T | 403680 | 4527 |
| PSP | 256399 | 5.04404T | 216800 | 5743 |
| RBSP | 336023 | 5.55187T | 1053621 | 13027 |
| Solar-Orbiter | 49170 | 2.4128T | 247158 | 5063 |
| SOHO | 9478 | 1.2242G | 121595 | 4531 |
| STEREO | 34660 | 60.8932G | 171859 | 4523 |
| THEMIS | 185926 | 2.74191T | 2692186 | 4596 |
| TIMED | 726144 | 3.28684T | 295503 | 4509 |
| TWINS | 0 | 0B | 24407 | 4423 |
| Ulysses | 27902 | 1.32419G | 110225 | 4611 |
| Voyager | 79795 | 43.4607G | 79302 | 15411 |
| Wind | 629943 | 634.758G | 6364759 | 4854 |

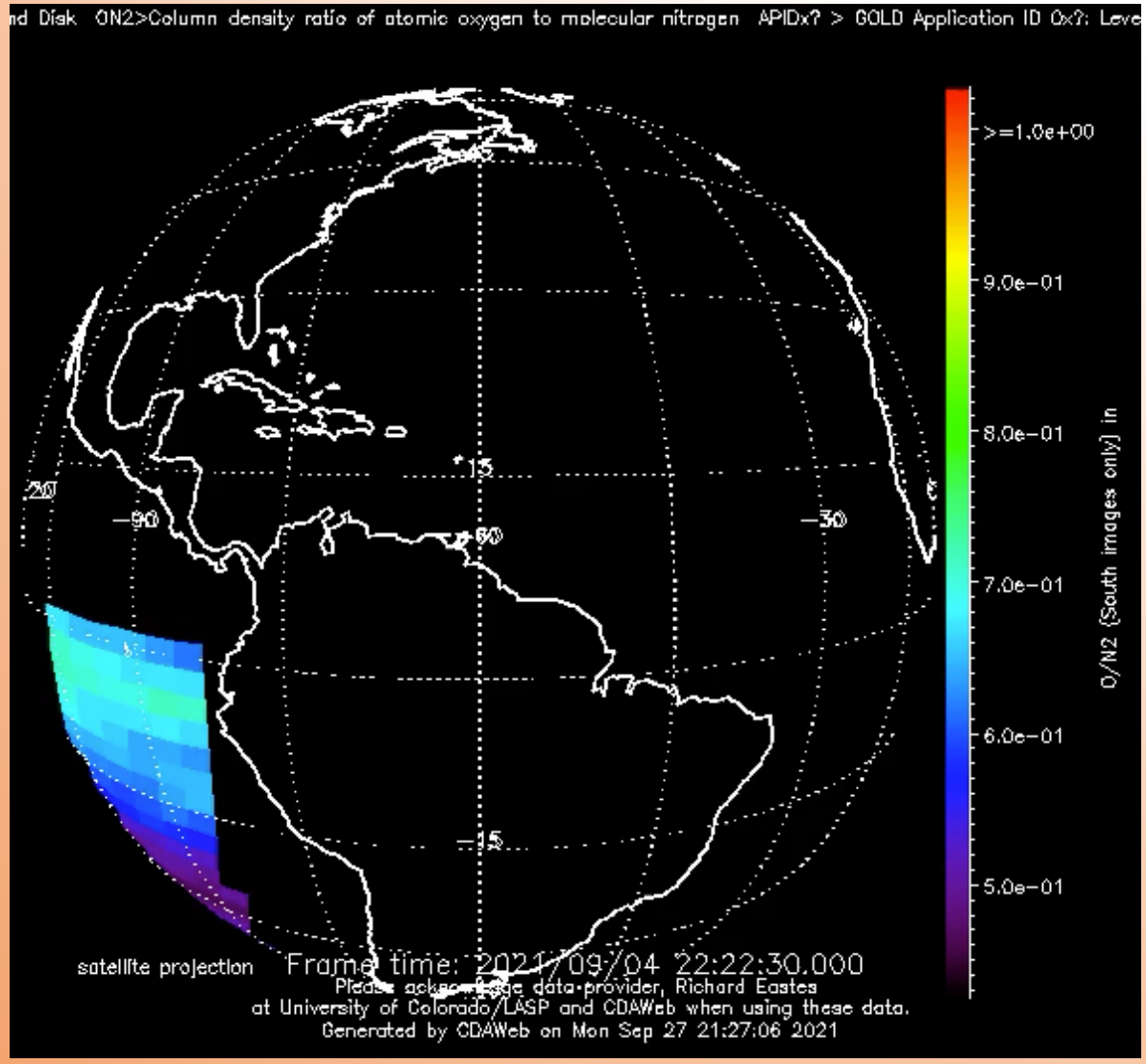
# CDAWeb display of NMAX



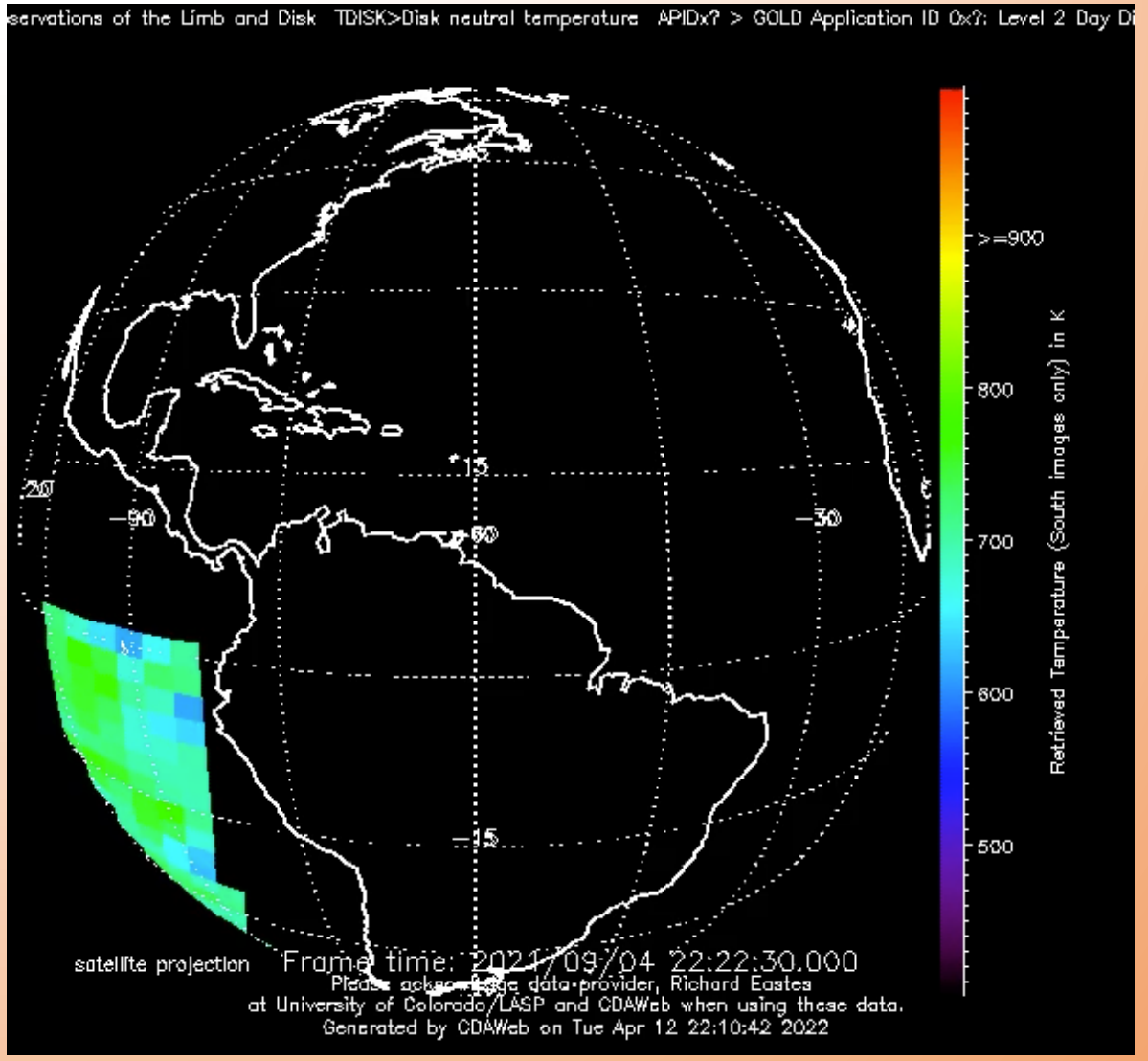




Using IDL Satellite Projection

# CDAWeb display of ON2: $O/N_2$

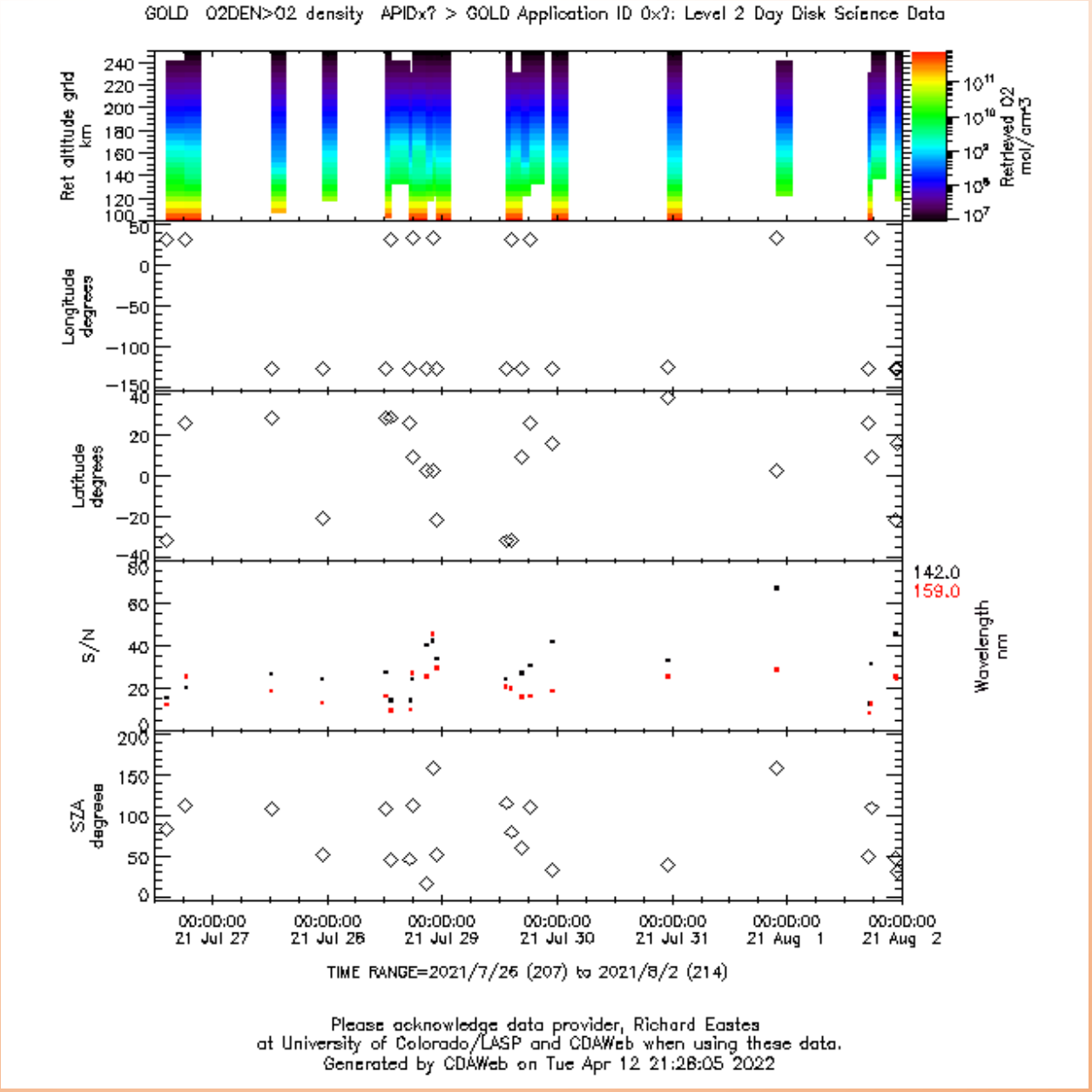



# CDAWeb display of TDISK: $T_n$



# CDAWeb plot of O2DEN parameters:

- Retrieved O2
- Longitude
- Latitude
- S/N
- Solar zenith angle



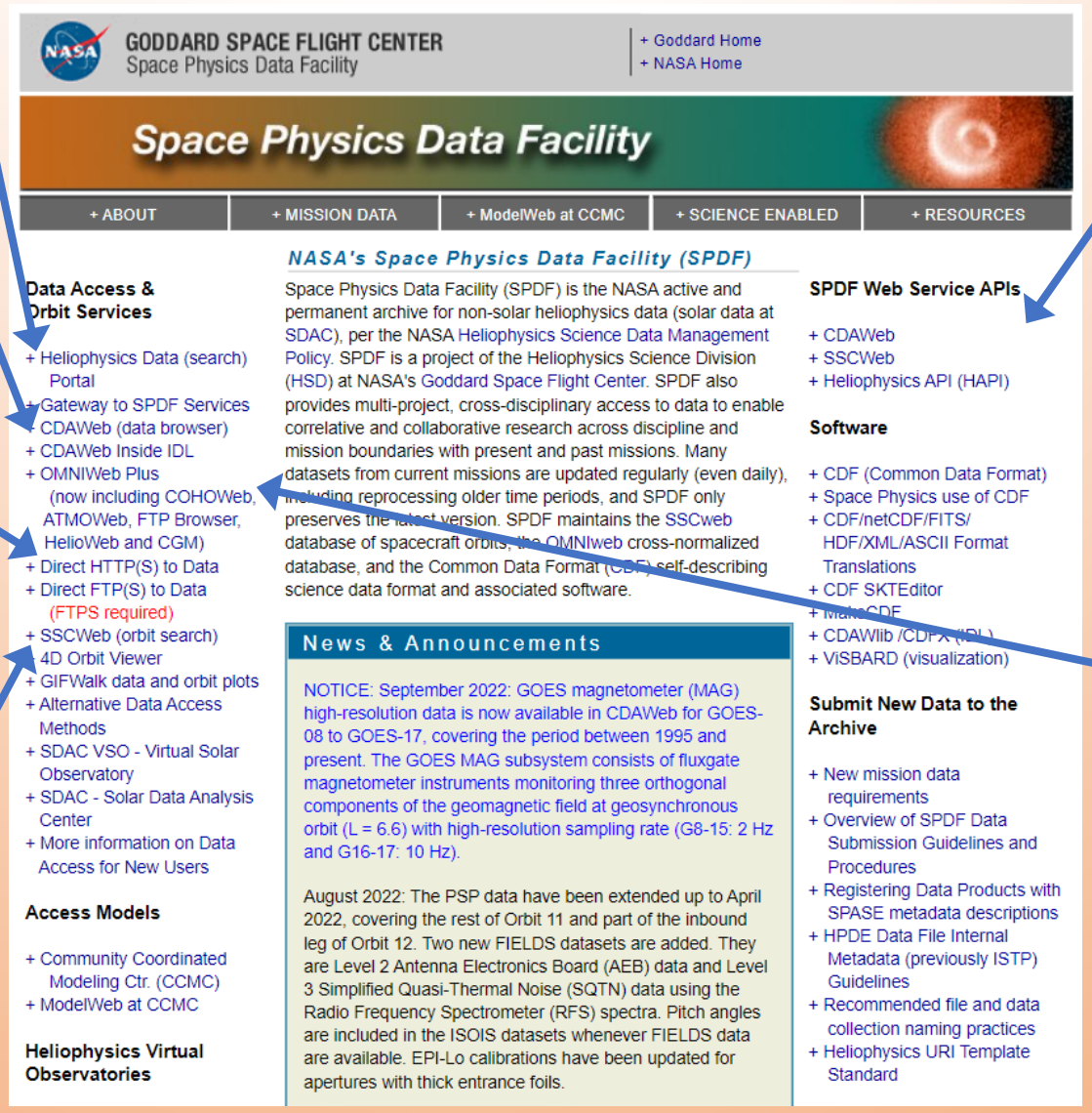
# SPDF provides multiple data and orbits access methods

**Heliophysics Data (search) Portal using the SPASE data model (*http://www.spase-group.org*/)**

**CDAWeb: browse, plot, list, download data, subset by time & selected variables and how to access CDAWeb from IDL**

**Direct file downloads via FTPS and HTTPS**

**SSCWeb: orbit and ground track displays/queries and animation through the 4D Orbit Viewer**




**Web service interfaces (REST, SOAP, IDL, Matlab, Java, Python) including the new HAPI (Heliophysics API)**

**Autoplot access: *http://autoplot.org/help#CDAWeb***

**OMNIWeb: solar wind and IMF parameters and solar and magnetic indices. Includes also COHOWeb, ATMOWeb, FTPBrowser, HelioWeb and Corrected GeoMagnetic (CGM) coordinate computation**

## SPDF Homepage

https://spdf.gsfc.nasa.gov/

# Over 200 Missions Supported by SPDF

* Only orbit data available

ACE
Active*
Aeros
AIM
Akebono*
Alouette1
Alouette2
AMPTE
APEX-MAIN*
Apollo
Aqua
Ariel-4
Arase (ERG)
ARCAD
ARTEMIS
ASTRID II*
AE
Aura
Aureol2
BARREL
BepiColombo
CALIPSO
Cassini*
Cassiope

Cluster
Cosmos 900
C-NOFS
CRRES
CSSWE
Dawn*
DEMETER*
DMSP
Double Star*
DSCOVR
DE
Equator-S
Explorer
FAST
FIREBIRD*
Formosat
Freja*
Galileo*
GCOM W1
Genesis
Geotail
Giotto*
GOCE

GOES
GOLD
GPS
GMS 3
GRACE*
Granat
Hawkeye
Helios
Hinode
Hinotori
IBEX
ICON
IMAGE
IMP 7
IMP 8
IMP_early
Interball
ISEE
ISEE 3-ICE
ISIS
ISS
Jason 2
Juno

Kepler
LANL
LRO
LUNA
Magsat
MAP
Mariner 10
Mars
MAVEN
MESSENGER
Microlab 1
Mir*
MMS
MRO
MSL
MSX*
Munin
New Horizons
NOAA*
Oersted
OGO
Ohzora
PARASOL

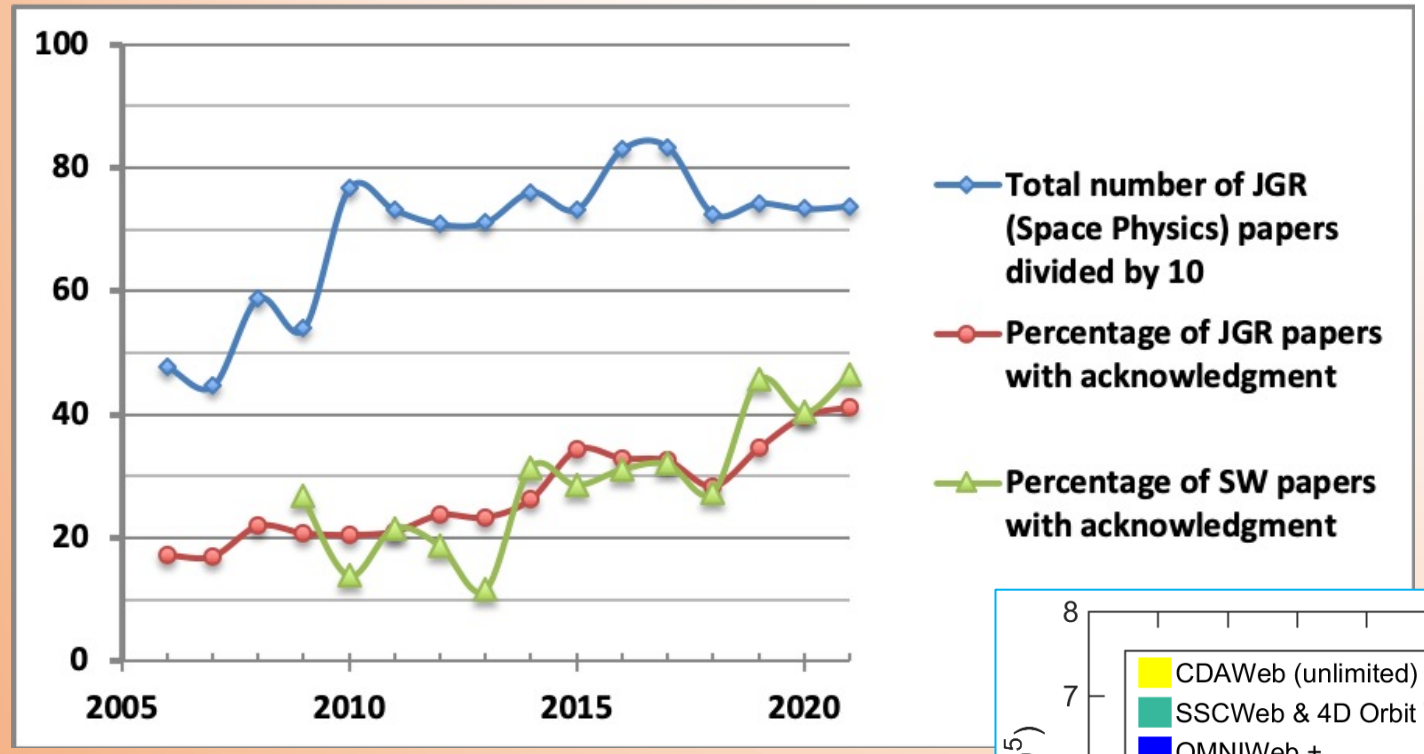
Parker Solar Probe
Phobos
Pioneer
Pioneer 10
Pioneer 11
Pioneer Venus
Polar
Prognoz
Reimei
Rosetta*
RHESSI
SAMPEX
Sakigake*
San Marco
SCATHA*
SDO
SET-1/DSX
SMILE
SNOE
SOHO
Solar Orbiter
SORCE
Spartan-A

Spitzer
Sputnik 1
STEREO
Suisei
Swarm
Tatiana
THEMIS
TIMED
TRACE
TWINS
UARS*
Ulysses
Van Allen Probes
Vega
Venera
Viking
Voyager
Voyager 1
Voyager 2
Wind
XMM-Newton
Yohkoh*
Zond

Total: ~10,000 datasets, ~400 TB data

Recent average monthly data ingestion rate: ~0.7 million data files, ~147 TB data

# Community use of SPDF services




The heliophysics research community makes heavy use of SPDF data and services, as evidenced both in our usage statistics (***plot on right***) and in acknowledgments of our services in published papers (***plot at top***).