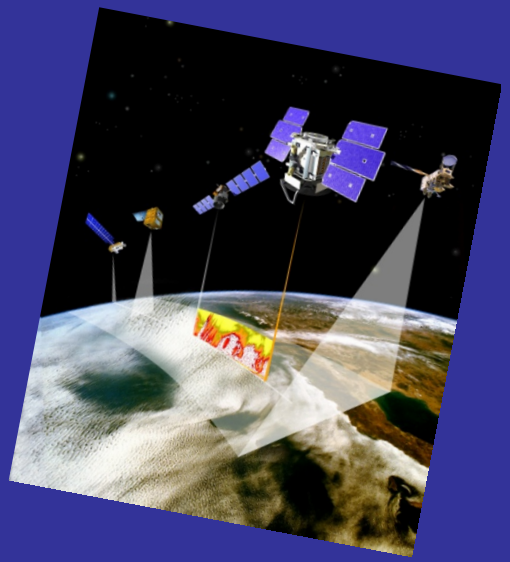
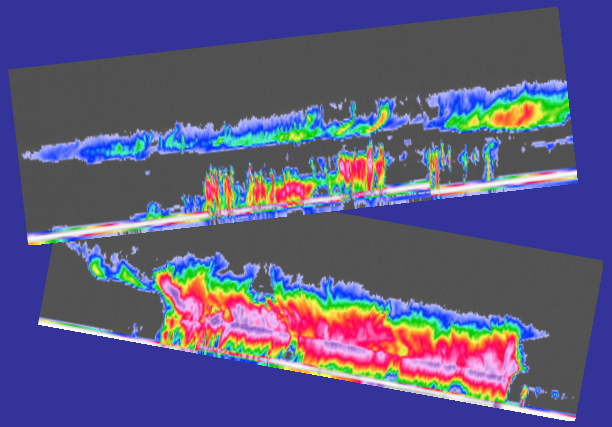
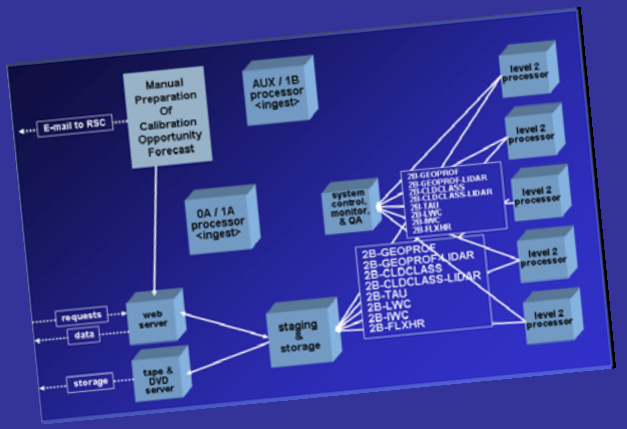
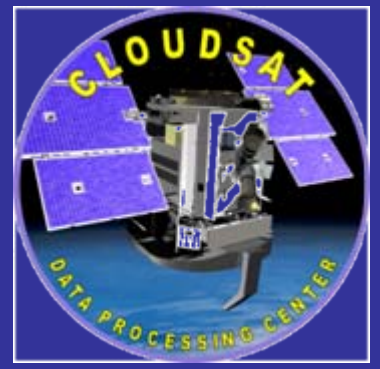
CloudSat Data Processing Center (DPC)

"CloudSat Data Processing and R05 Processing Plan ..."

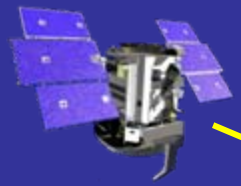




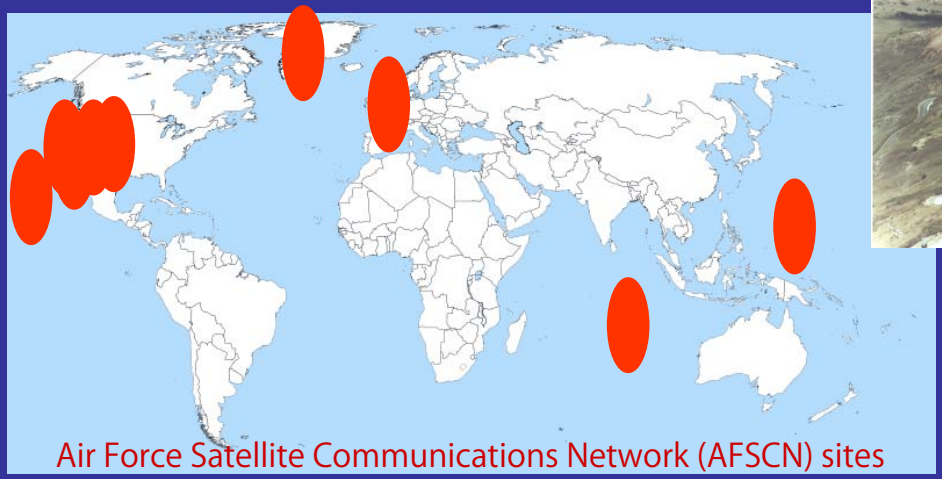


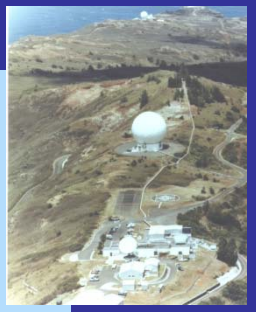


CloudSat: Data Capture Stats …



~7 times per day CloudSat CPR and Engineering data downlinked to Kirtland AFB via the AFSCN



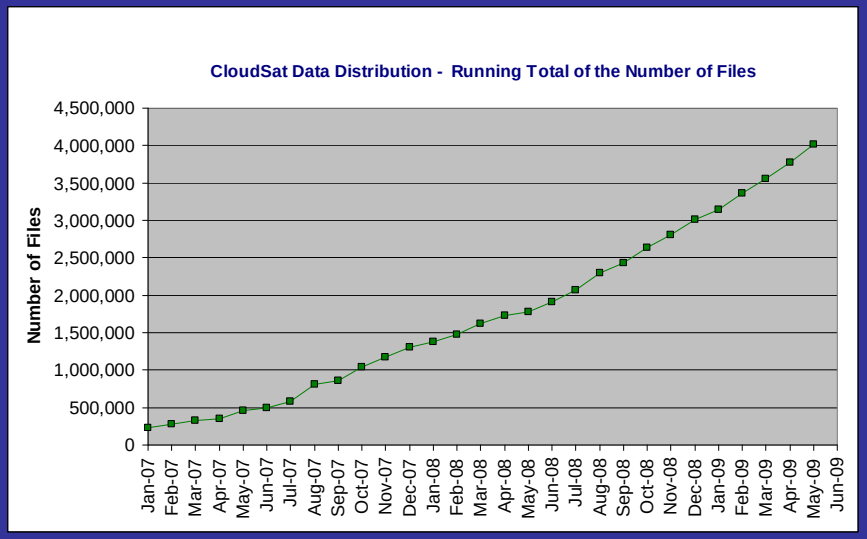


- The USAF has collected 99.97% of all science data opportunities since the start of operations
  - No lost data in past 9 months
  - In the past year --> 1.2 seconds out of 197,420,000

Data Distribution Stats

Through 6/1/2009	Granules (orbits)	Vertical Profiles (37,088/Granule)	240-m Vertical Bins (125/Profile)
	15,396	570,969,760	71.4 Billion

	Product Files	Data Volume (TB)
May 2009	240,193	15.5
Mission-to-Date as of 31 May 2009	4,010,402	300.9
Monthly Average Since Oct 2007	157,458	13.2



CloudSat Data Distribution by Country

CloudSat Data have been distributed to scientists in 50 countries … shown are the top 13 by volume

Country	# files	% of Total
United States	2,807,602	70.01%
China	288,173	7.19%
Japan	248,913	6.21%
France	154,204	3.85%
United Kingdom	71,094	1.77%
Canada	45,745	1.14%
South Korea	40,687	1.01%
Germany	30,096	0.75%
Italy	26,753	0.67%
Norway	12,514	0.31%
India	7,079	0.18%
Sweden	3,688	0.09%
Denmark	2,181	0.05%
Thailand	917	0.02%
The Netherlands	741	0.02%

> 1,000 data products
> 10,000 data products
> 100,000 data products000

CloudSat Data Distribution

4,010,402 data products (301 Tbytes) as of 31 May 09

(Top Users by Center Shown Below)

United Kingdom
EAPRS Lab. De Montfort Univ
UK Met Office
University of Oxford
University of Reading
ECMWF

Denmark
Denmark Meteorological Institute

The Netherlands
Royal Netherlands Meteorological Institute

Norway
Norwegian Meteorological Institute

Sweden
Chalmers University of Technology

Canada
Dalhousie University
McGill University
Environment Canada
Meteorological Service of Canada
University of Quebec at Montreal

France
ICARE/LOA
CEPT
CNRS
Laboratoire de Météorologie Dynamique

Italy
University of Bologna
Ferrara University
CNR-ISAC

Germany
Max-Planck-Institut f. Meteorology, Hamburg
University of Bonn
German Weather Service

United States
Caltech
Florida State University
Harvard University
NASA JPL
NASA GSFC
NASA LaRC
NASA MSFC
NASA ARC
NCAR
Naval Research Laboratory
Pacific Northwest Labs
Texas A&M University
University of Florida Miami
University of Maryland
University of Miami
University of Washington
University of Wisconsin-Madison
Lawrence Livermore National Lab
Colorado State University
University of Arizona
Georgia Institute of Technology
Air Force Weather Agency
University of Colorado
MIT
UCLA
NOAA
Naval Post Graduate School
National Meteorological Center
New York University
University of Hawaii
University of Illinois

South Korea
Seoul National University
Yonsei University
Inst of Satellite Info Sciences

India
INUPMEER

China
Beijing University
Chinese Academy Meteorological Sciences
Institute of Atmospheric Physics
Lanzhou University
Nanjing University Info Sci and Tech
University of Science and Technology
China National Meteorological Center
Institute of Theoretical Physics

Japan
Advanced Earth Science and Tech Org
Japan Aerospace Exploration Agency
Kyoto University
National Institute of Info and Comm Tech
Osaka Prefecture University
Tohoku University
Yamaguchi University
National Defense Academy
Nagoya University
Center for Climate System Research
Japan Meteorological Agency
National Institute for Environmental Studies

CloudSat "Standard" Product Release Status/Sched.

	Description	Algorithm Developer(s)	Current Version	Next Release Date (NET)
1B-CPR	Radar Backscatter Profiles	Steve Durden (JPL), Simone Tanelli (JPL)	R04	Aug-09 (R05 to ST)
2B-GEOPROF	Cloud Geometrical Profile	Jay Mace, Qiuqing Zhang (U of Utah) , Roj Marchand (U. Wash)	R04	Sep-09 (R05 to ST)
2B-CLDCLASS	Cloud Classification	Ken Sassen (U of Alaska), Zhien Wang (U. Wyo)	R04	Sep-09 (R05 to ST)
2B-CWC-RO	Combined Water Content - Radar Only	Norm Wood (CSU)	R04	Oct-09 (R05 to ST)
2B-TAU	Cloud Optical Depth - Off Nadir	Igor Polonsky (CSU)	R04	Nov-09 (R05 to ST)
2B-CWC-RVOD	Combined Water Content - Radar + Vis. Optical Depth	Norm Wood (CSU)	R04	Nov-09 (R05 to ST)
2B-FLXHR	Fluxes and Heating Rates	Tristan L'Ecuyer (CSU)	R04	Nov-09 (R05 to ST)
2B-GEOPROF-LIDAR	Cloud Geometrical Profile from CPR and CALIPSO Lidar	Jay Mace, Qiuqing Zhang (U. UT), Roj Marchand (U. WA)	R04	Oct-09 (R05 to ST)
2B-CLDCLASS-LIDAR	Cloud Classification from CPR and CALIPSO Lidar	Zhien Wang (U. Wyo)	n/a	Nov-09 (R05 to ST)

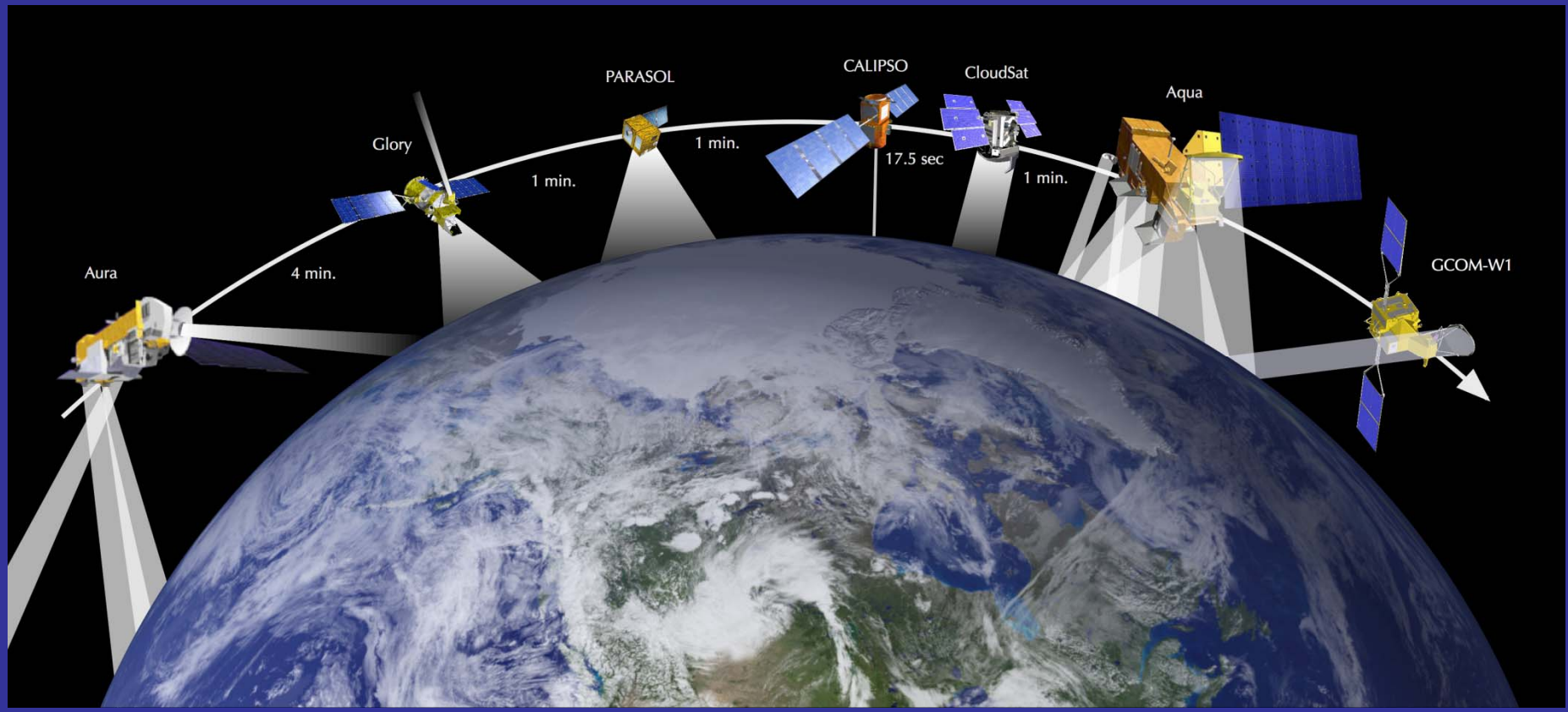
CloudSat "Enhanced" Product Release Status/Sched.

	Description	Algorithm Developers	Current Version	Next Release Date (NET)
2C-PRECIP-COLUMN	Column Integrated Precipitation	John Haynes (CSU), Tristan L'Ecuyer (CSU)	R04	(Released R04 to GSC)
2C-RAIN-PROFILE	Vertical Distribution of Rain	Tristan L'Ecuyer (CSU), Cristian Mitrescu (NRL)	n/a	Sep-09 (R04 to ST)
2C-SNOW	Vertical Distribution of Snowfall	Norm Wood (CSU), Tristan L'Ecuyer (CSU), Sergey Matrosov (U. CO)	n/a	Nov-09 (R04 to ST)
2C-ICE	Radar / Lidar Microphysics	Jay Mace (U. UT), Min Deng (U. WY), Zhien Wang (U. WY), Hajime Okamoto (Japan)	n/a	Dec-09 (R04 to ST)

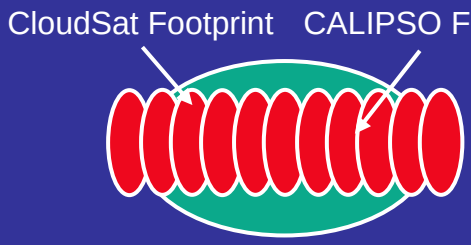
CloudSat “Optimum” Product Release Status/Sched.

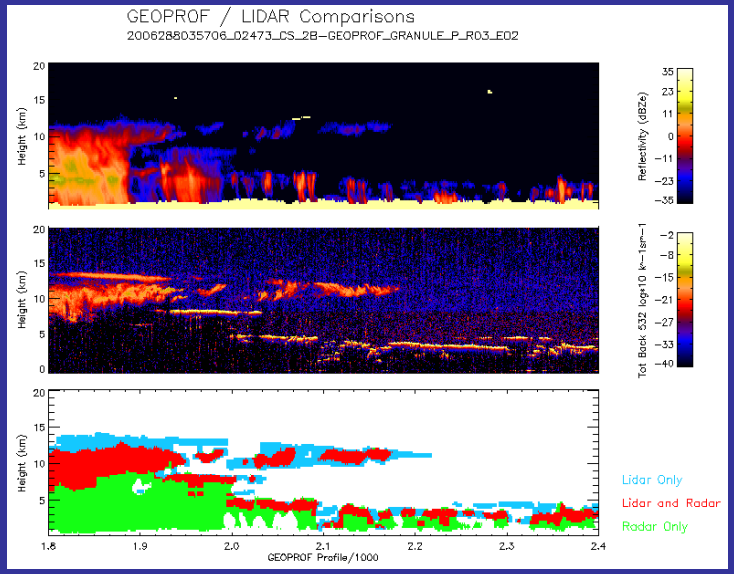
	Description	Algorithm Developers	Current Version	Next Release Date (NET)
2B-FLXHR-Lidar	FLXHR from Combined CPR and Lidar	Tristan L'Ecuyer (CSU)	n/a	Dec-09

Formation Flying …

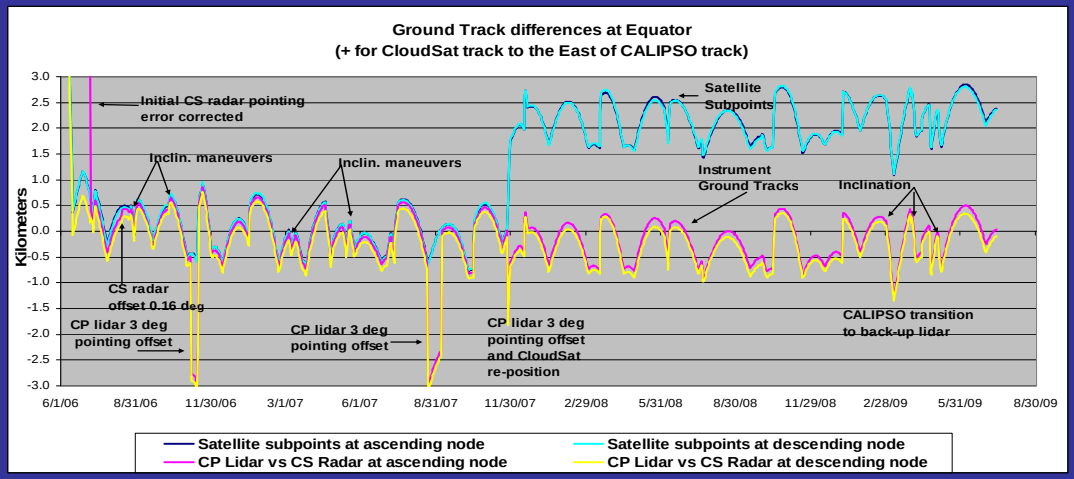


CloudSat DPC: CPR-Lidar Product

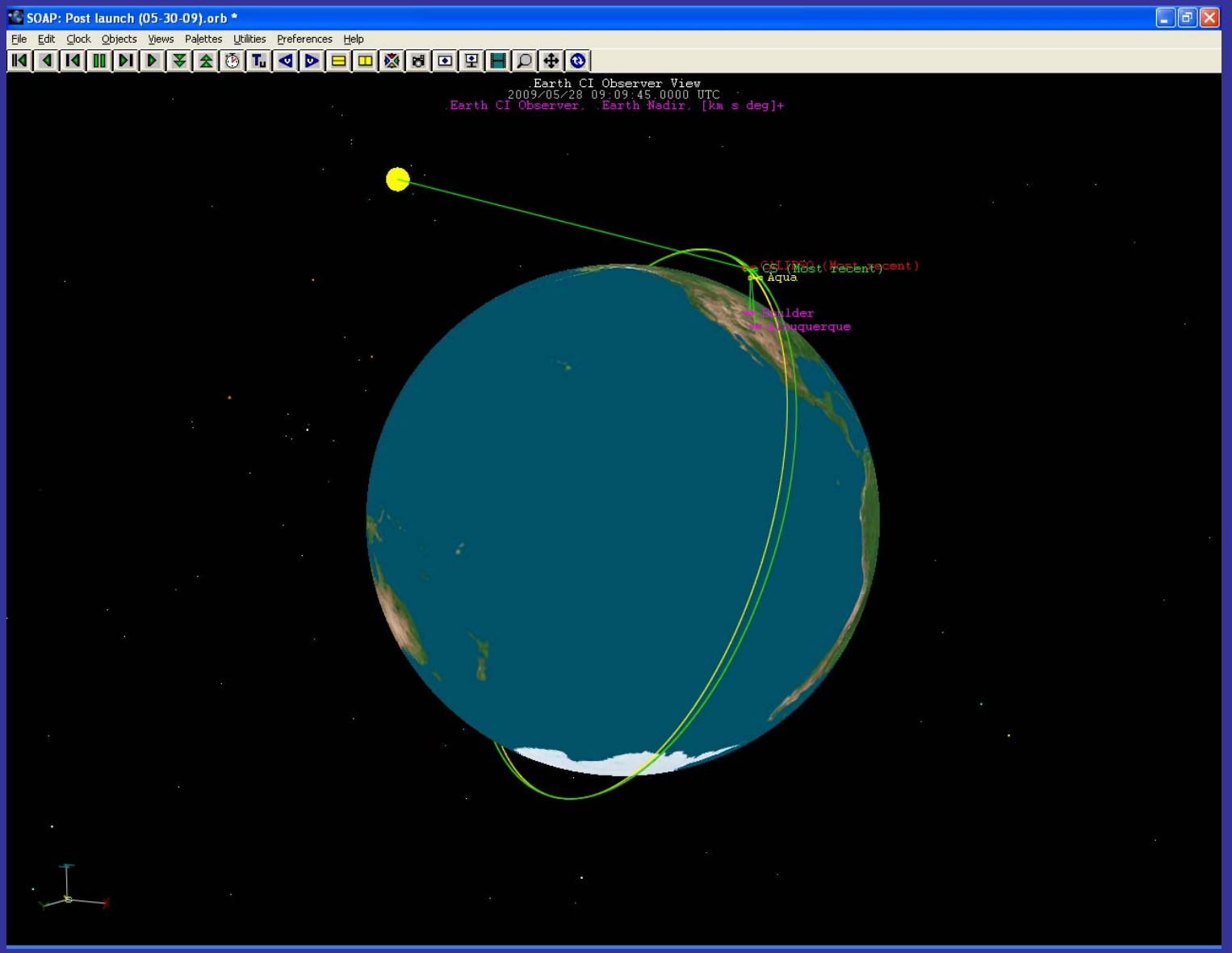


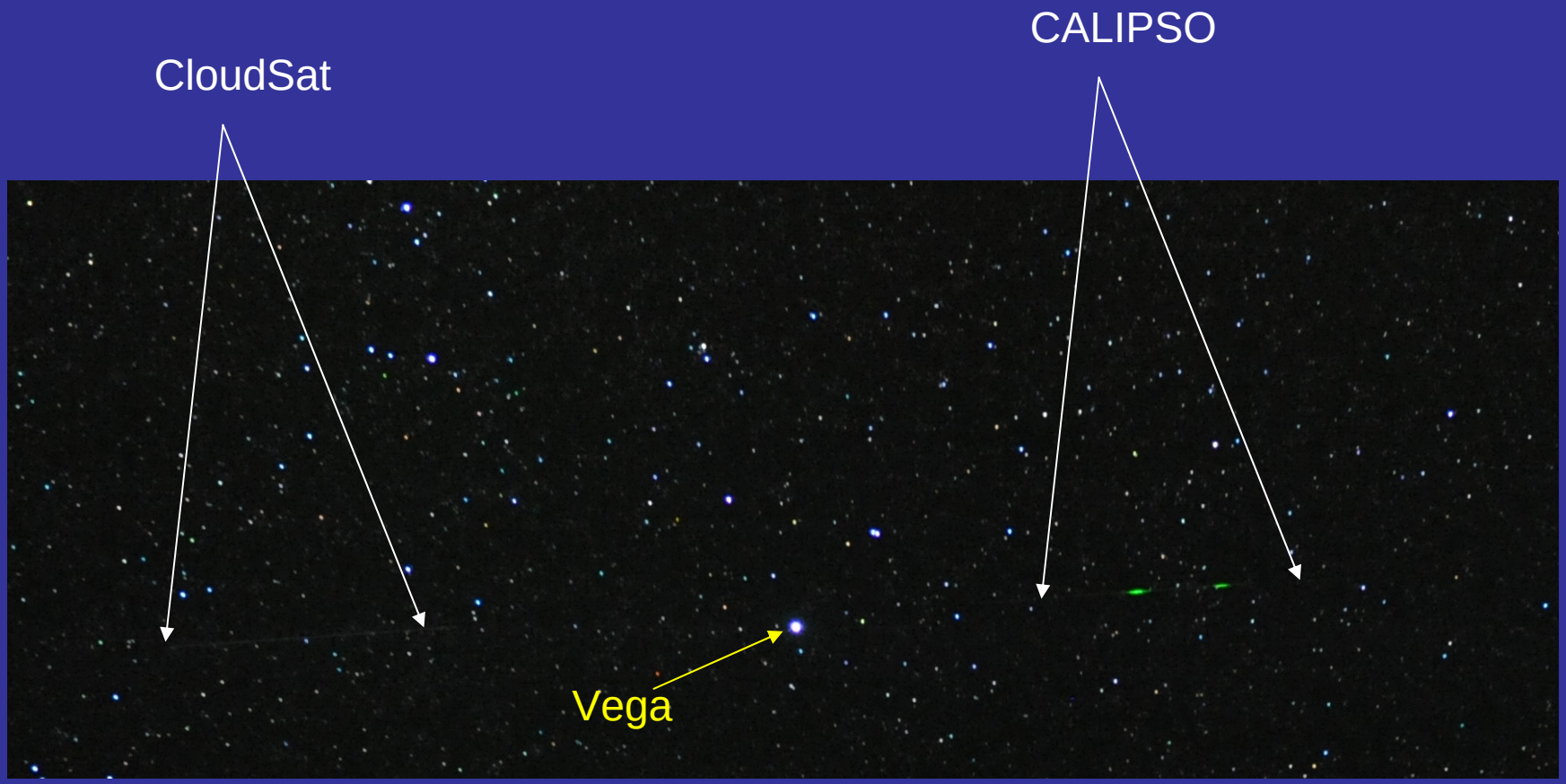


CloudSat/CALIPSO footprint overlap ~ 90% since start of operational phase (~5% due to maneuvers/off-nadir pointing periods)

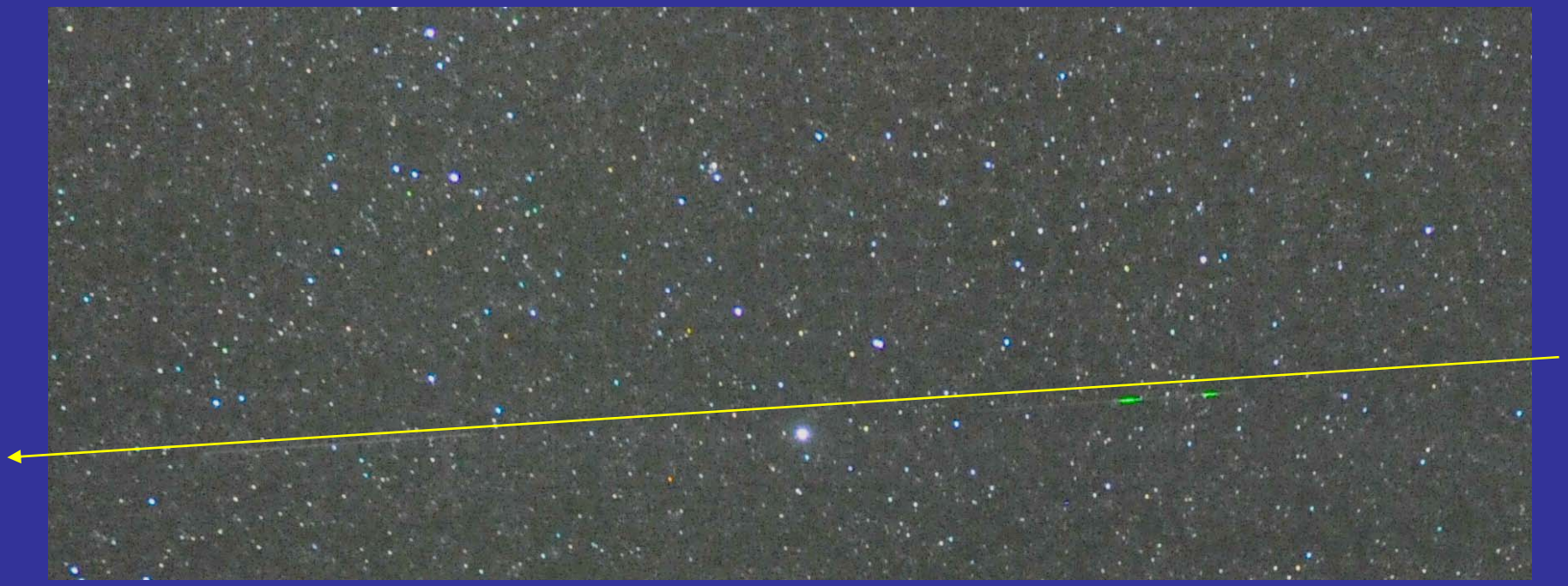


Amateur CloudSat/CALIPSO photo taken by Gregg Hendry (Engineer at Ball Aerospace) during an overflight near Boulder CO on May 30th, 2009





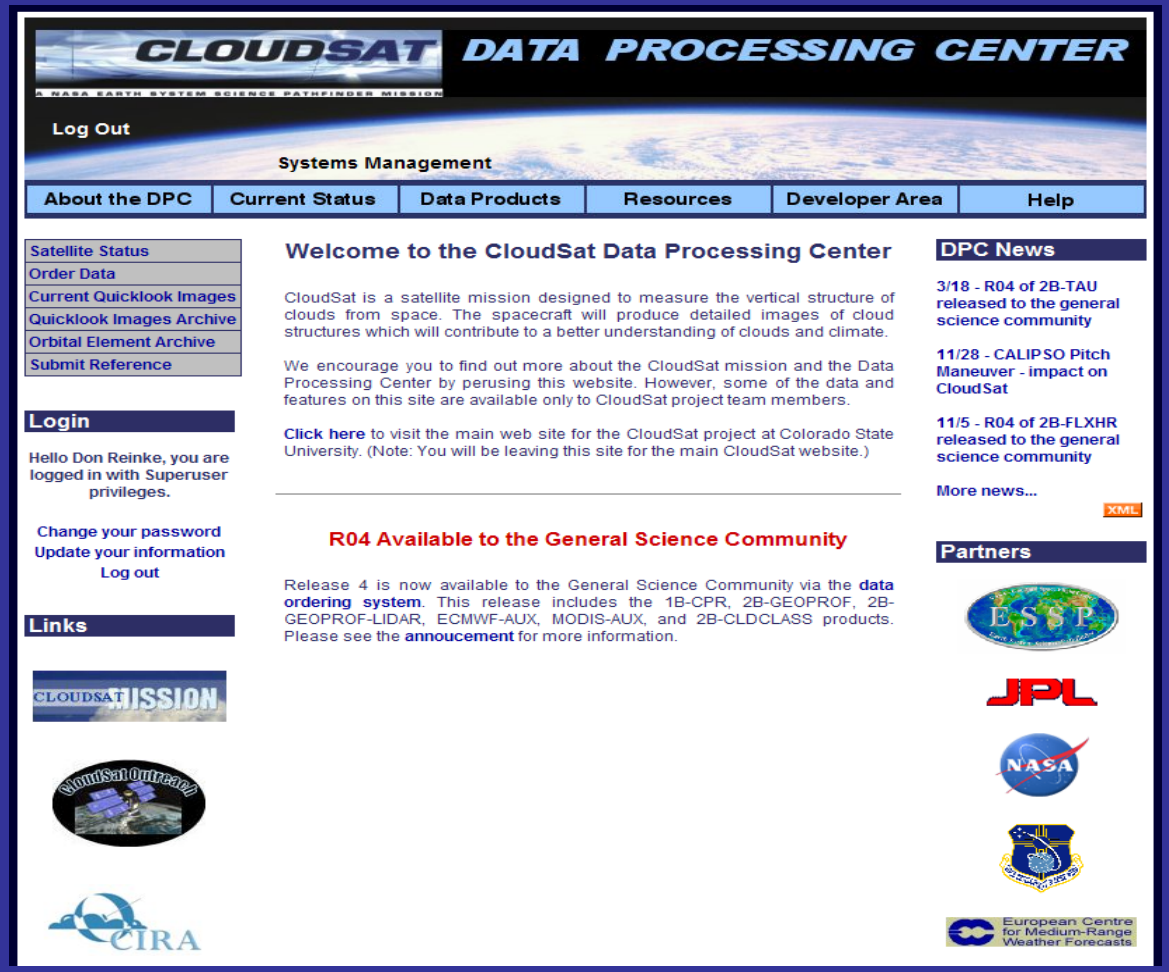
May 30, 2009 …
6 second exposure centered on 09:12:45 UTC
ISO 6400, f/2.8



Enhanced image … showing CloudSat track offset to the west of CALIPSO

(CALIPSO is approx. 17 sec behind CloudSat. The spacecraft ground track is offset to allow the clouds, sampled by CloudSat, to rotate toward the east … to be located under CALIPSO when it passes over 17 seconds later)

CloudSat Data Processing Center Website



http://www.cloudsat.cira.colostate.edu