

Joint Polar Satellite System Common Ground System Multi-mission Support

Mike Jamilkowski
Shawn Miller
Kerry Grant
5 February 2014

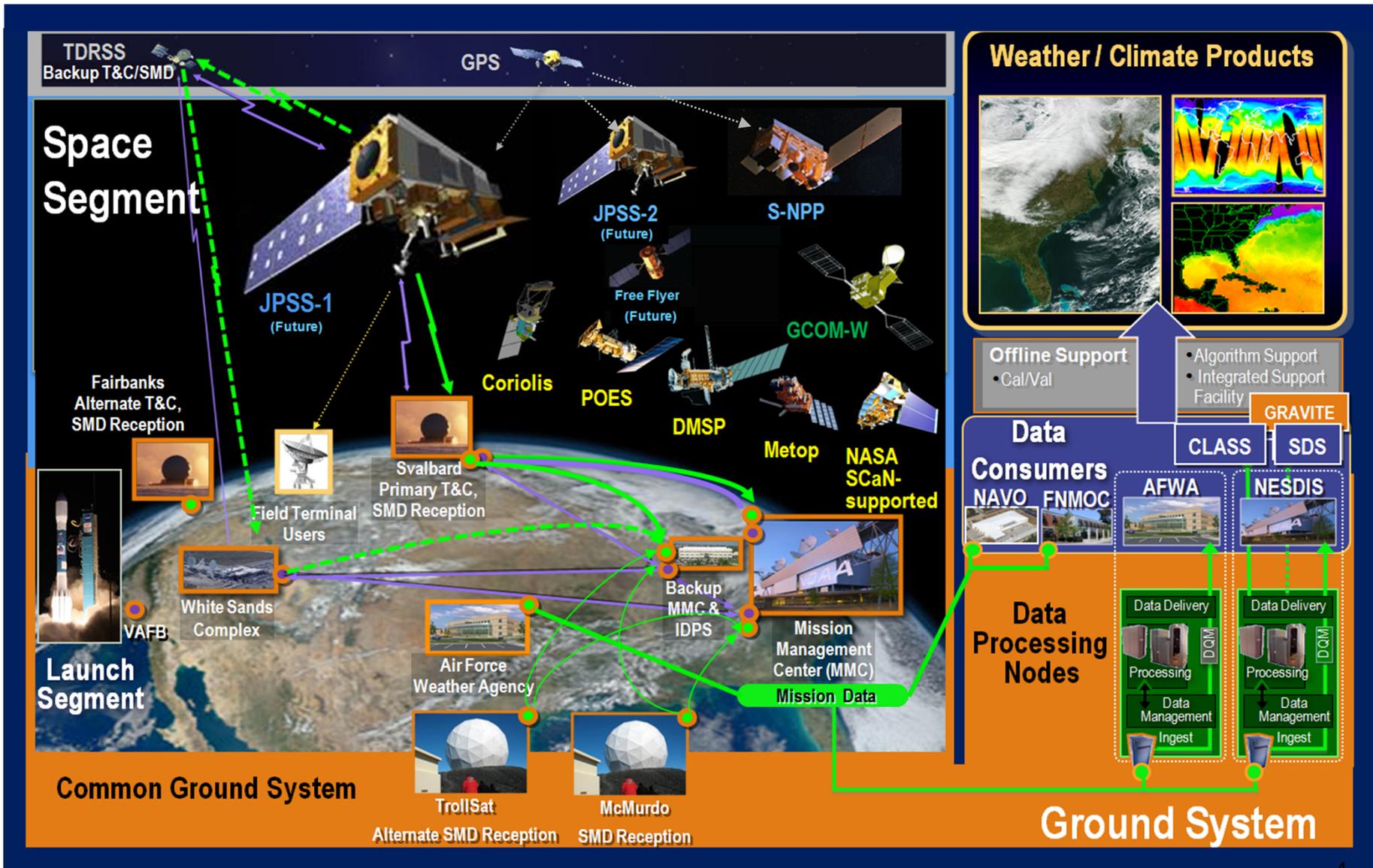
- The Joint Polar Satellite System (JPSS) will contribute the afternoon orbit component and ground processing system to replace the current Polar-orbiting Operational Environmental Satellites (POES)
 - JPSS satellites will carry a suite of sensors designed to collect meteorological, oceanographic, climatological, and solar-geophysical observations of the earth, atmosphere, and space
 - The ground processing system for JPSS, known as the Common Ground System (JPSS CGS), provides command, control, data acquisition, routing and processing, and product delivery
 - JPSS constellation consists of Suomi National Polar-orbiting Partnership (S-NPP), JPSS-1, JPSS-2, and Free Flyer 1
- The CGS currently flies S-NPP and acquires, routes and processes S-NPP mission data to provide Environmental Data Records (EDRs) to NOAA and DoD processing centers operated by the U.S. government, generating multiple terabytes per day across more than two dozen environmental data products.



- CGS also provides global data routing support to seven additional missions and data acquisition to four of those missions
 - GCOM-W
 - WindSat Coriolis
 - POES
 - DMSP
 - Metop
 - NASA SCaN (e.g. Terra, Aqua, LDCM...)
 - NSF USAP
- CGS's flexible architecture allows for multi-mission capabilities that offer significant opportunities for cost reduction and improved information integration across missions



JPSS System Architecture





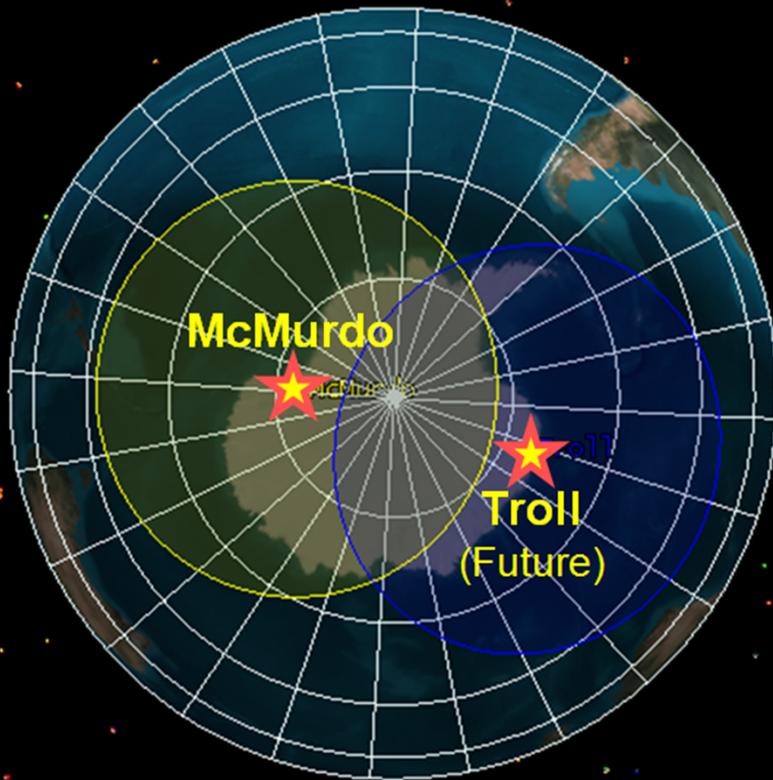
Current CGS Supported and Operated Missions

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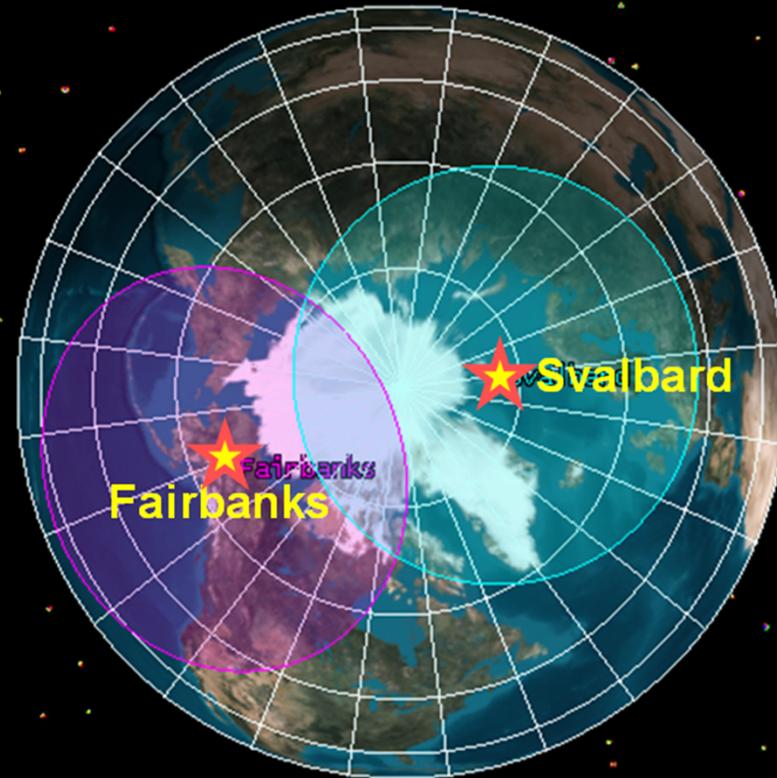
JPSS Service & Mission Info.	JPSS-Supported Missions Managed and operated by other agencies and supported by one or more JPSS services							JPSS-Managed Missions Managed and operated by the JPSS Program				
	NSF USAP	Coriolis/ Wind-Sat	POES	SCaN-supported Missions	DMSP	Metop	GCOM-W1	S-NPP	JPSS		Polar Free Flyer	
									J1	J2		
Mission/Payload Type	Comm	MW	MW-IR-UV Vis-SEM	IR-Vis-O ₃ - UV-Chem	MW-IR-UV Vis-SEM	MW-IR- Vis-SEM	MW	MW-IR-UV Vis-O ₃ -ER	MW-IR-UV Vis-O ₃ -ER	MW-IR-UV Vis-O ₃ -ER	DCS-SAR-TSI	
Number of Payloads Supported	N/A	1	10	15	6	7	1	5	5	5	3	
Number of Supported Spacecraft	Now (13-15)	N/A	1	3 - 5	3	2	2	1	1	0	0	0
	Future (16)	N/A	1	0	4	2	3	2	1	1	1	1
Launch Date	N/A	Operational							2017	2021 (ready by 2019)	~+/- 6 mos of J1	
Support Date	N/A	Current							2015	2018	TBD	
Mission Planning	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	
Spacecraft Control	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	
Satellite Command & Telemetry	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	
Data Acquisition	No	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	
Data Routing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Data Processing & Distribution	No	No	No	No	No	No	RDR-level	xDR-level	xDR-level	xDR-level	No	
Cal/Val	No	No	No	No	No	No	No	Yes	Yes	Yes	No	
Field Terminal Support	No	No	No	No	No	No	No	Yes (in Block 2.0)	Yes	Yes	No	

The JPSS CGS is a fielded and evolving multi-mission ground system

JPSS POLAR RECEPTOR/ANTENNA SITES

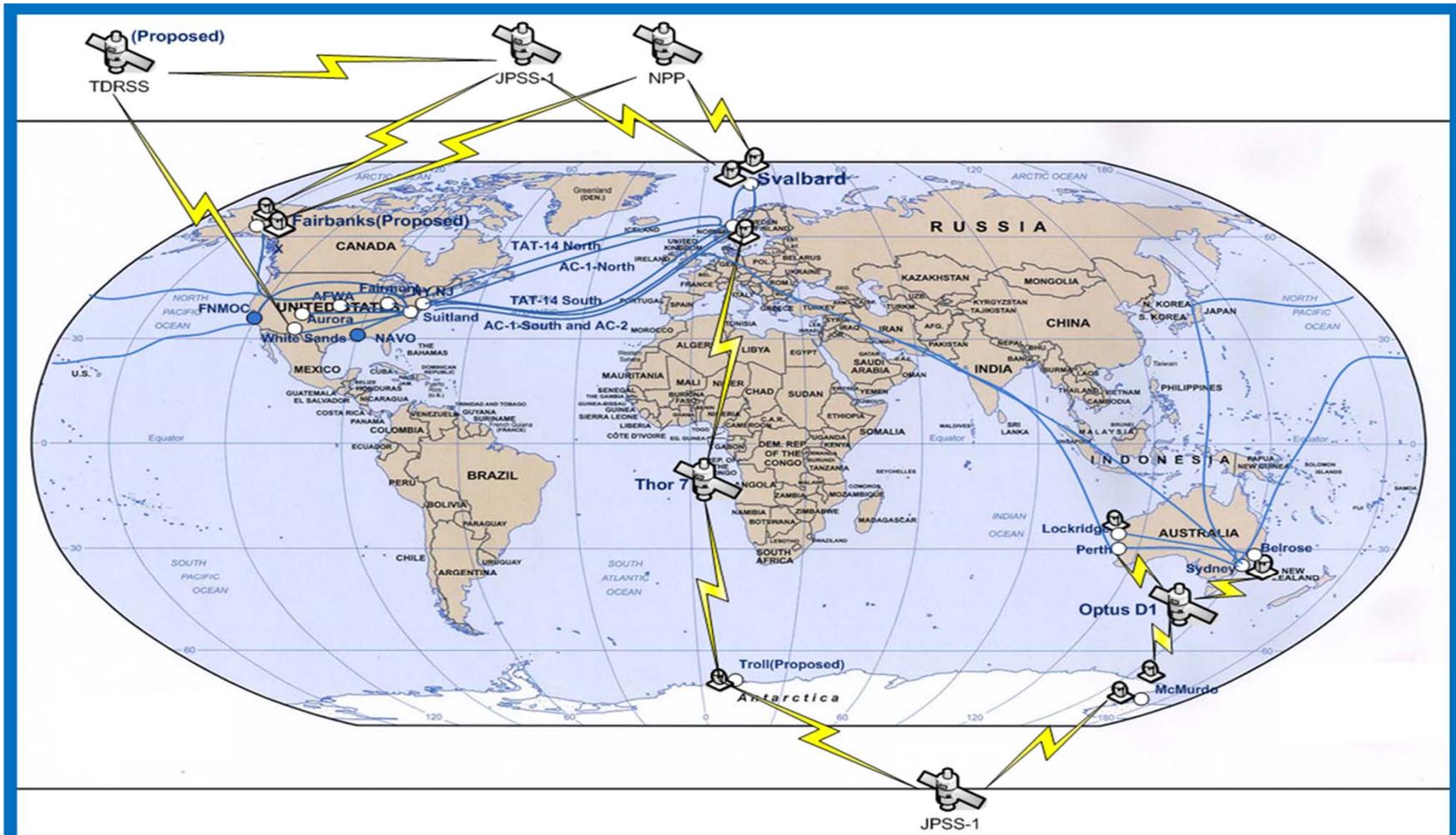


South Pole - Antarctica



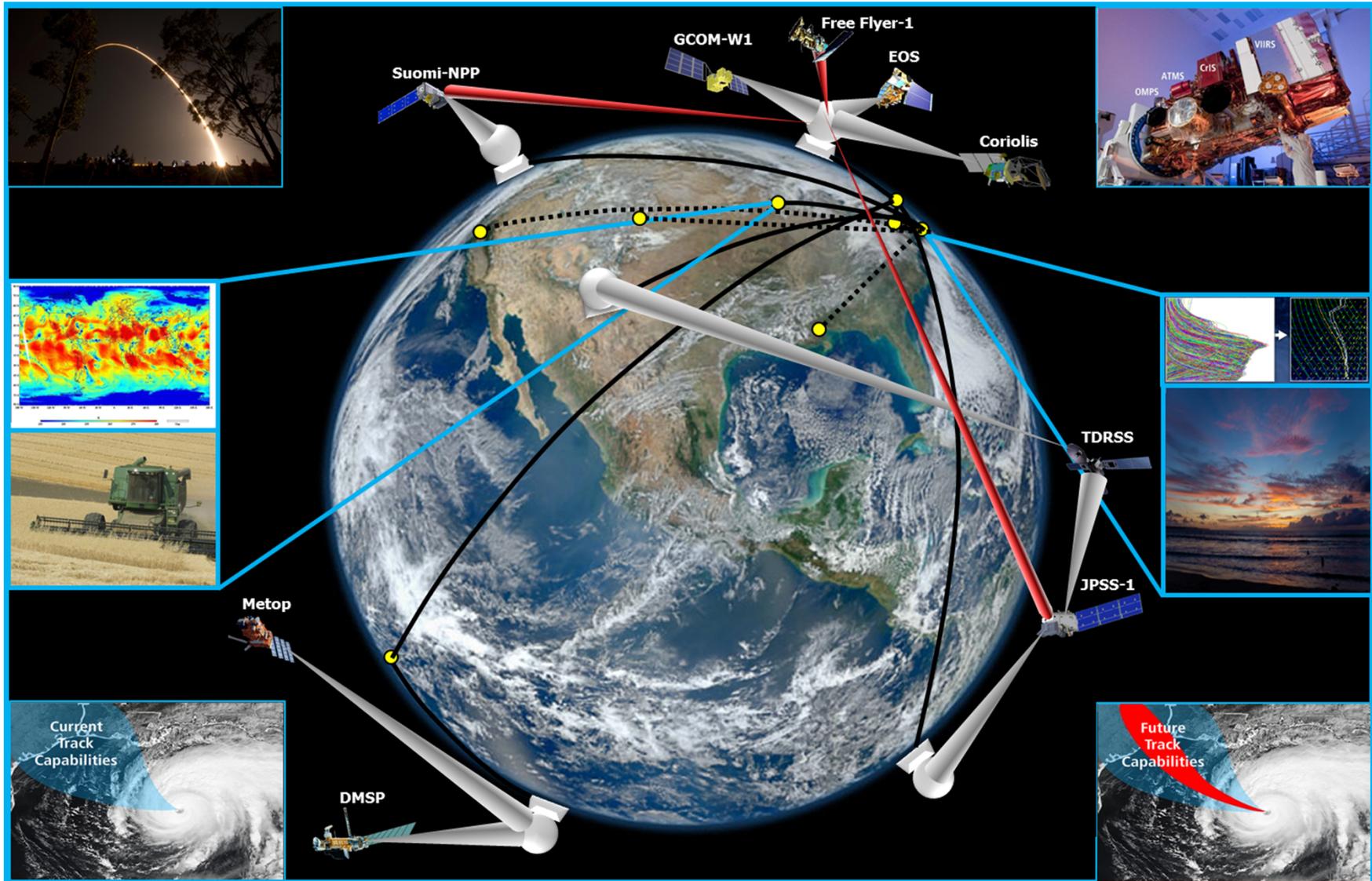
North Pole - Arctic

Global Communications – Comm Links

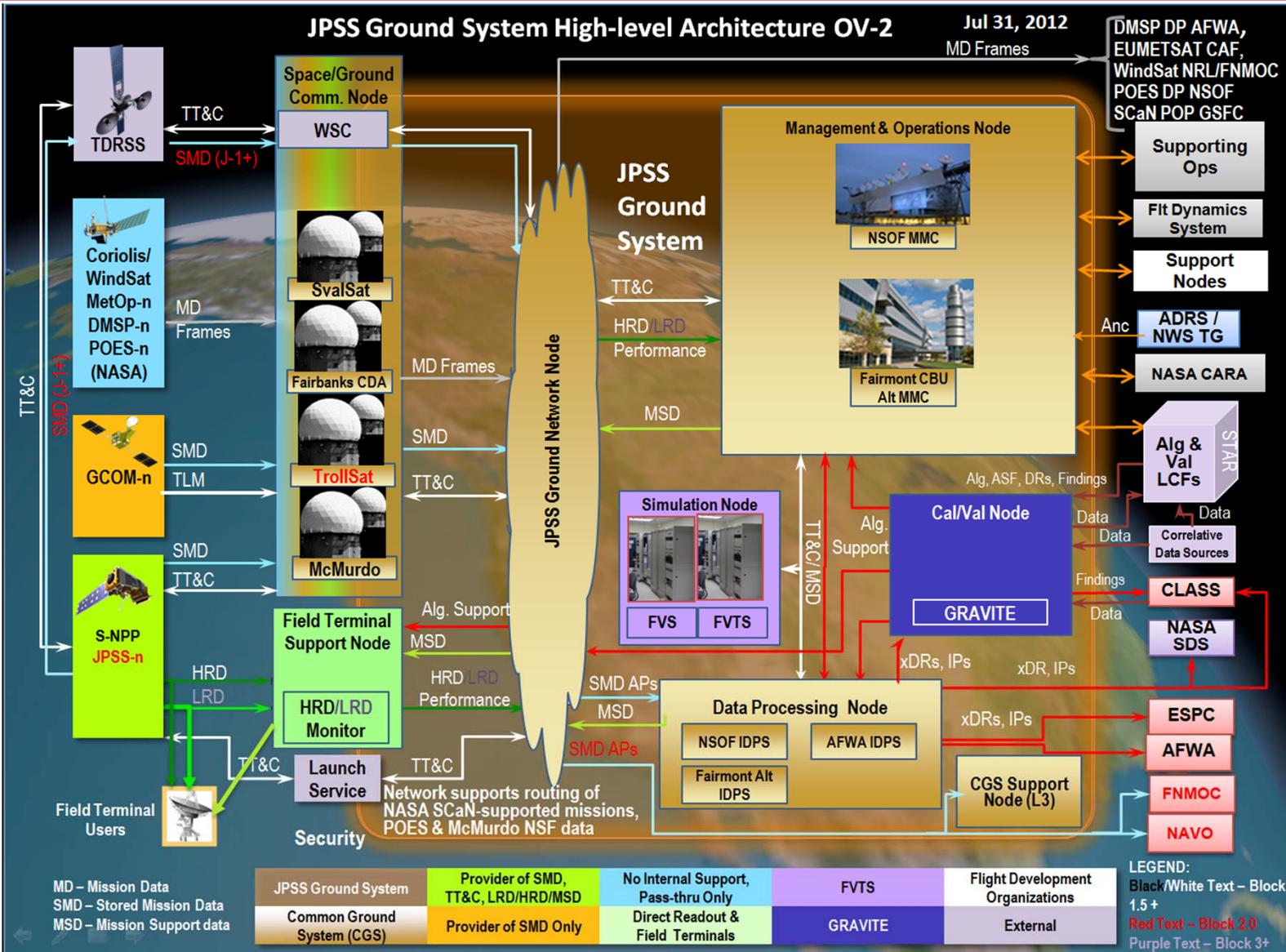


Fast Data Delivery Using Existing Commercial Communications Networks

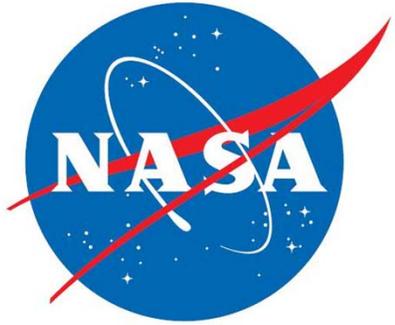
Multi-mission Operational Concept



Architecture Modularity and Flexibility



- CGS design tenants emphasize ability to incorporate multiple missions
 - Modular functionality
 - Flexible interfaces
 - Improved information integration across missions
 - Generalized capabilities rather than point solutions
- Support for new missions can be tailored to specific needs
 - Data acquisition and routing
 - Command and control
 - Data processing and delivery



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