



STATUS OF AMVS FROM FENGYUN SATELLITES

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National Satellite Meteorological Center / China Meteorological Administration

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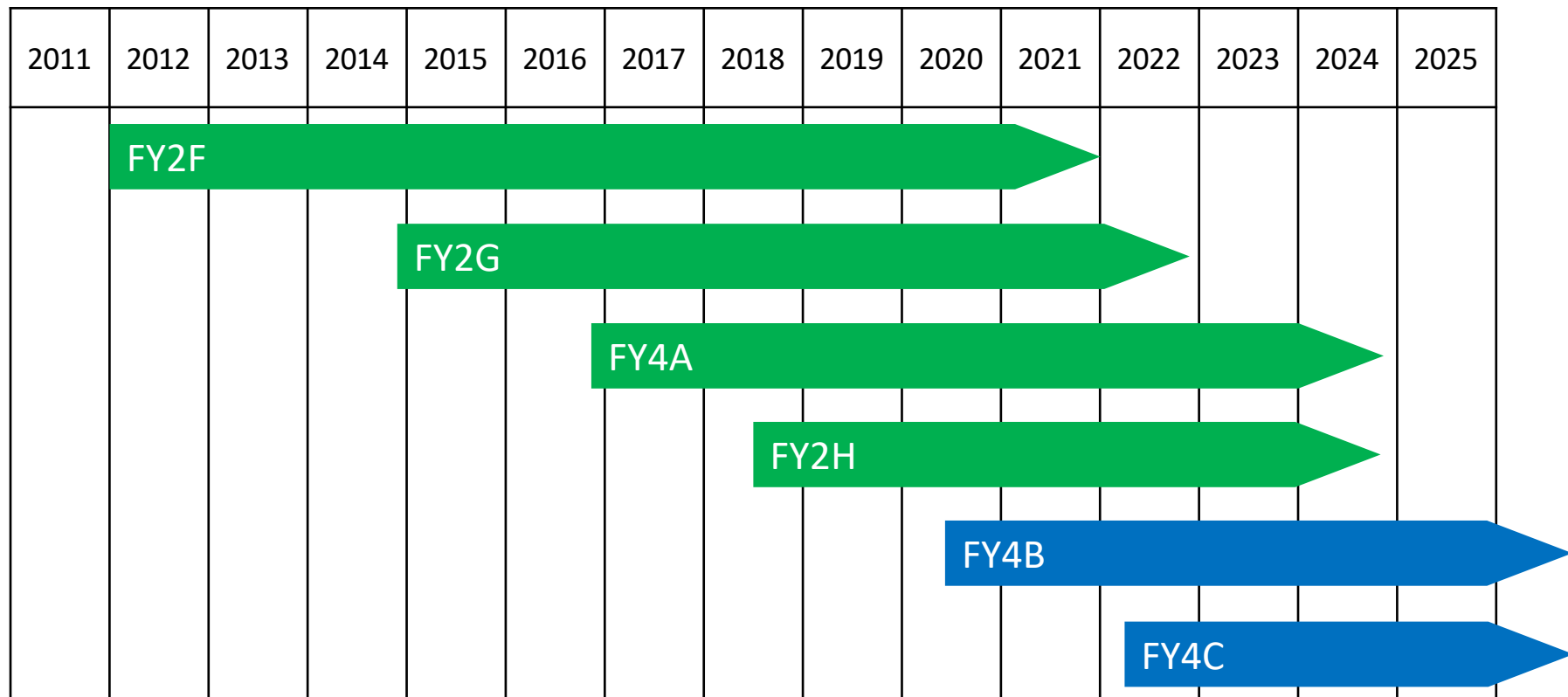
- Status of FENGYUN Satellites
- Operational AMV System and Products
- Satellite Product Distribution and Access
- Future work


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CMA Geostationary Satellite Programs

Continuity of Weather Observations



 In orbit, operational

 Planned

Current FENGYUN Geostationary Satellites

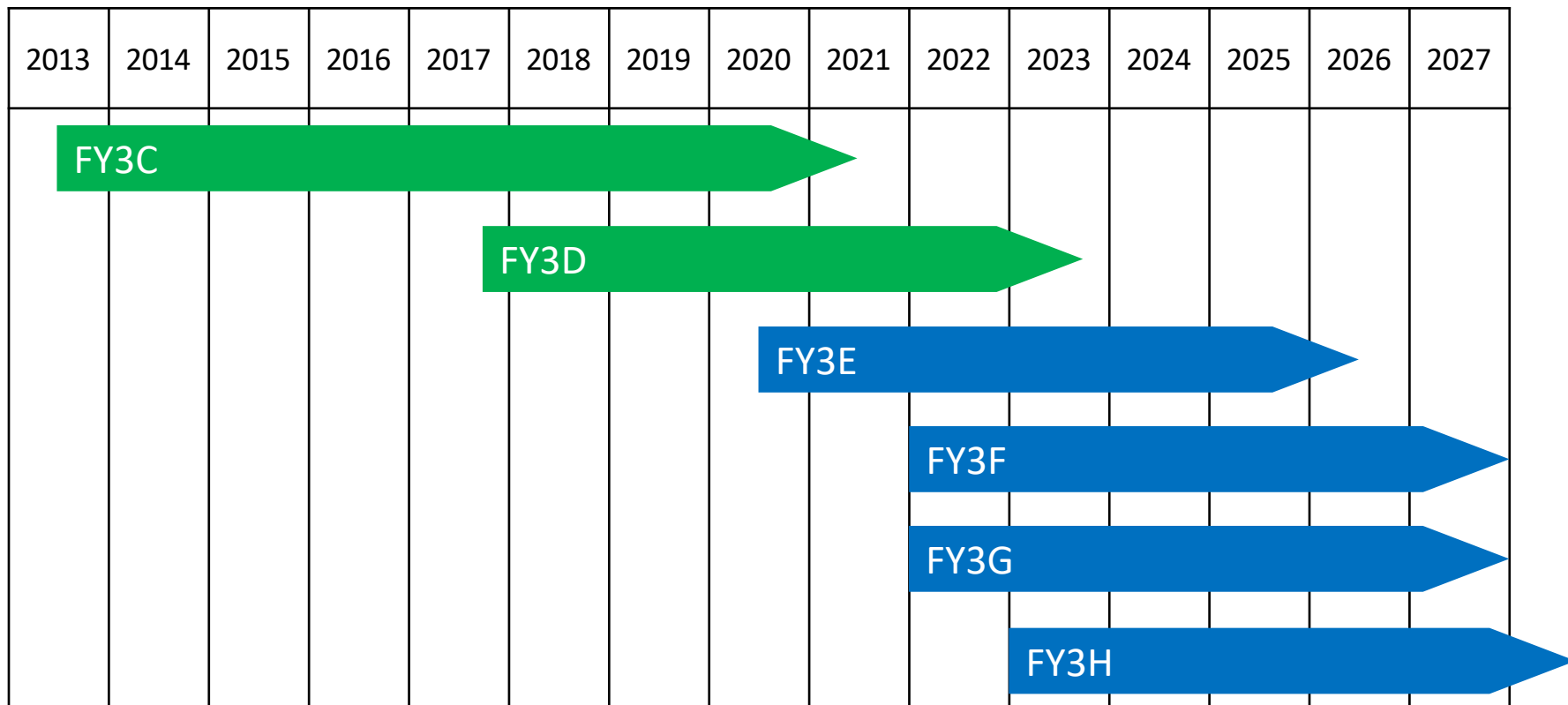
Sector	Satellites currently in Orbit	Location	Lunch date	Status	Instrument Capacity
West-Pacific (108° E-180° E)	FY2F	112° E	13 Jan. 2012	Primary operation for rapid scan	S-VISSR SEM
Indian Ocean (36° E-108° E)	FY2G	99.5° E	31 Dec. 2014	Primary operation for full disk scan	S-VISSR SEM
	FY4A	104.7° E	11 Dec. 2016	Primary operation for full disk scan	AGRI GIIRS LMI SEP
	FY2H	79° E	5 Jun. 2018	Primary operation for full disk scan since 1, Jan. 2019	S-VISSR SEM


Future FENGYUN Geostationary Satellites


Future additional satellite	Scheduled launch	Planned Location	Instruments
FY4B	2020	105° E	AGRI GIIRS GFI SEP
FY4C	2022	TBD	AGRI GIIRS LMI SEP MUSI SUVI

CMA LEO Satellite Programs

Continuity of Weather Observations



 In orbit, operational

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Current FENGYUN Polar-orbiting Satellites

Orbit Type (equatorial crossing times)	Satellites currently in Orbit	Equatorial crossing Time(design specifications)	Equatorial crossing Time(present)	Lunch date	Status	Main Instrument
“morning” Orbit (07:00-12:00) (19:00-24:00)	FY3C	10:00	9:07	23 Sept. 2013	Primary operation	VIRR(O), MERSI(S) IRAS(S), MWRI(S) MWTS-2(S), MWHS-2(O) TOU(O), SIM(S) ERM(O), GNOS(O) SEM(S)
“afternoon” Orbit (12:00-17:00) (00:00-05:00)	FY3D	14:00	13:29	15 Nov. 2017	Primary operation	MERSI-II(O), HIRAS(O) MWTS-II(O), MWHS-II(O) MWRI(O), GAS(O) GNOS(O), WAI(O) IPM(O), SEM(O)

(O) means the instruments working operationally

(S) Means the instruments are suspended

Future FENG YUN Polar-orbiting Satellites

Orbit Type (equatorial crossing times)	Future additional satellite	Equatorial crossing Time	Scheduled Launch	Instruments
“early morning” Orbit (05:00-07:00) (17:00-19:00)	FY3E	5:30	2021	MERSI, MWTS, MWHS, GNOS, WindRad, HIRAS, SIM, SSIM, SEM, IPM, XEUVI,
“morning” Orbit (07:00-12:00) (19:00-24:00)	FY3F	10:00	2022	MERSI, MWTS, MWHS, MWRI, GNOS, HIRAS, OMS, ERM, SIM
Low inclination satellite	FY3G		2022	MERSI, MWRI, GNOS, PMR
“afternoon” Orbit (12:00-17:00) (00:00-05:00)	FY3H	14:00	2023	MERSI, MWTS, MWHS, MWRI, GNOS, HIRAS, GAS, WAI, IPM

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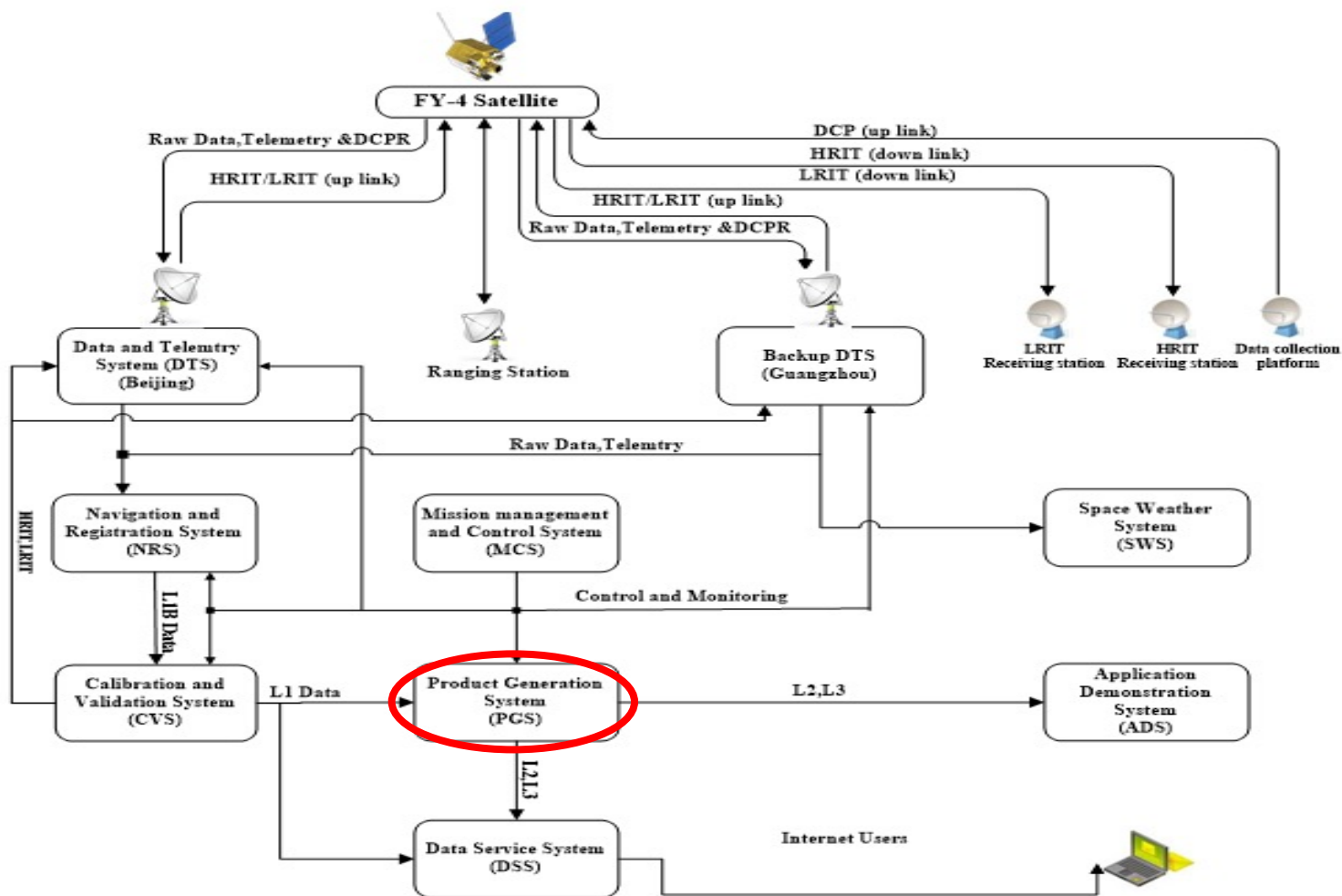
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Operational AMV Systems

- Legacy FY2 and FY4 AMV System
 - Continue to generate FY2G, FY2H, and FY4A AMV products
 - Heritage Winds algorithm

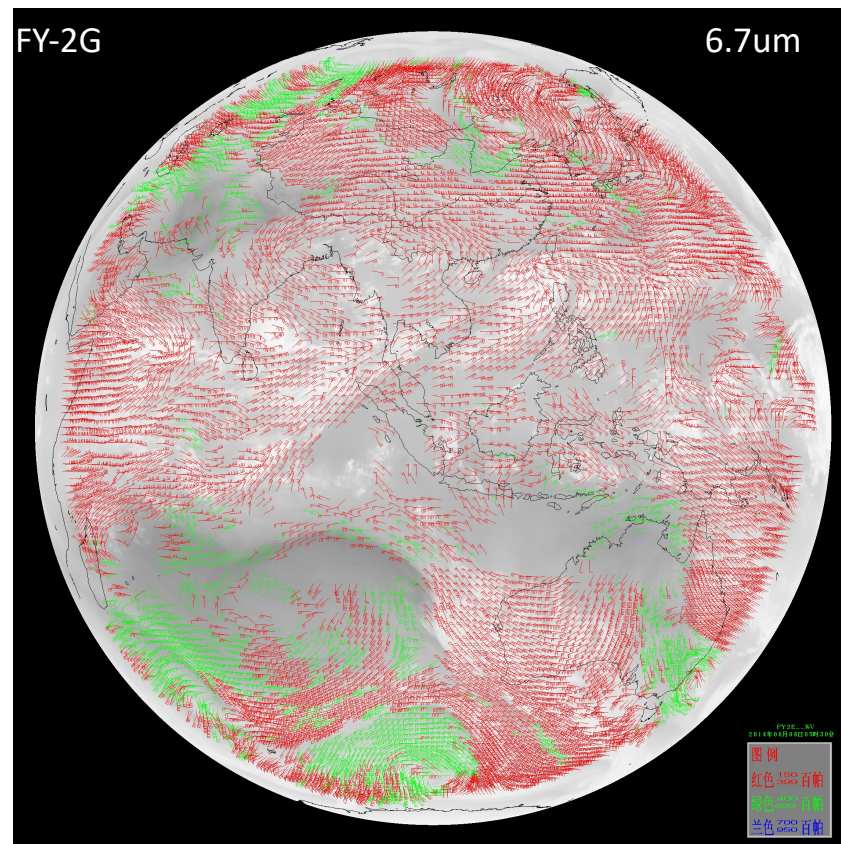
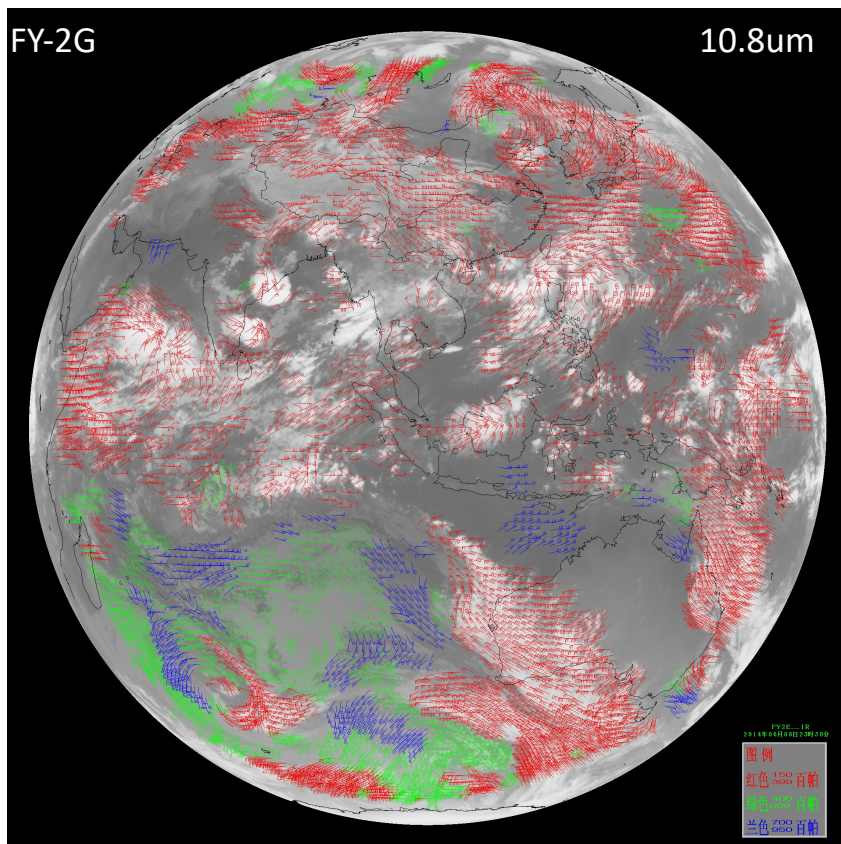
FY4A AMV System

- FY4A AMV System is a subsystem of PGS

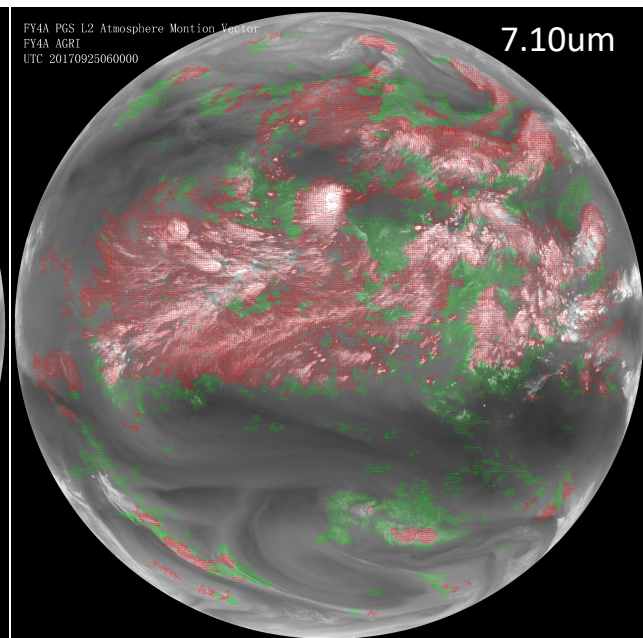
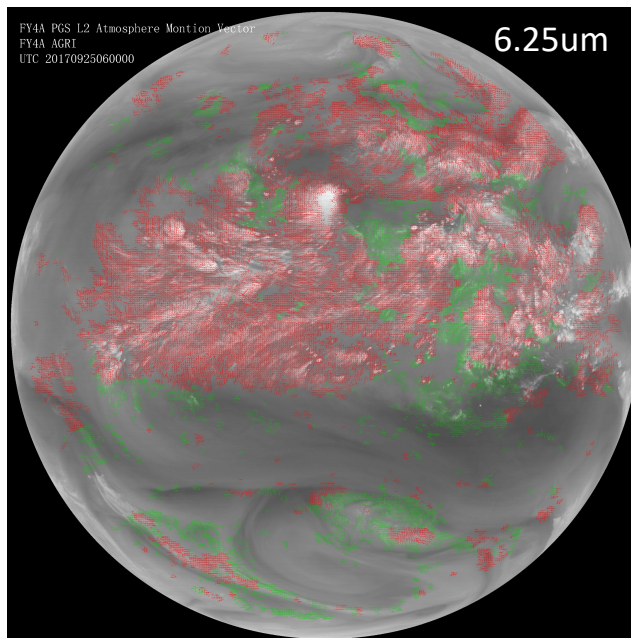
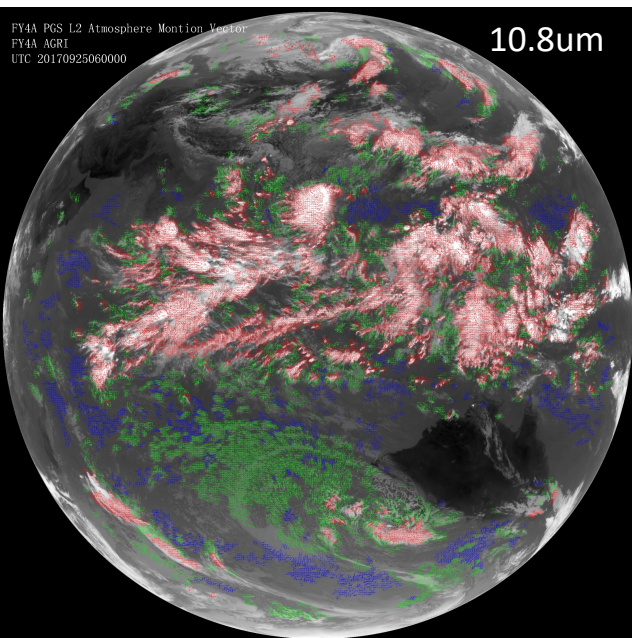


FY2 AMV products in operation

- FY-2G, FY2H Winds



FY-4A AMV products in operation



Current status of FY-2/FY4 winds

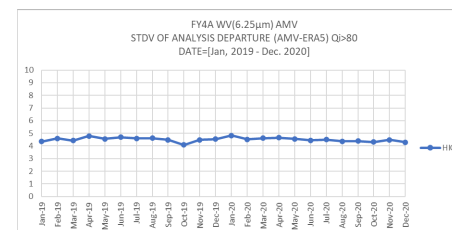
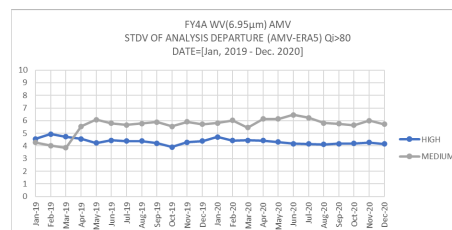
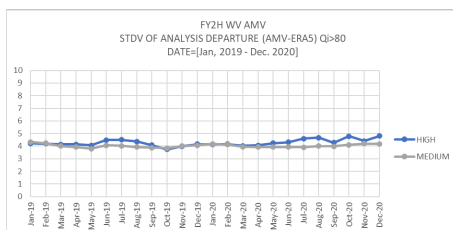
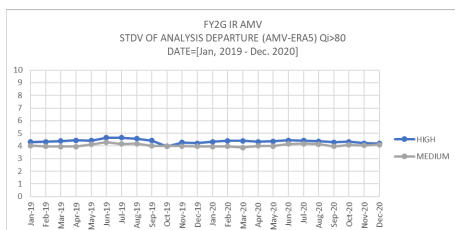
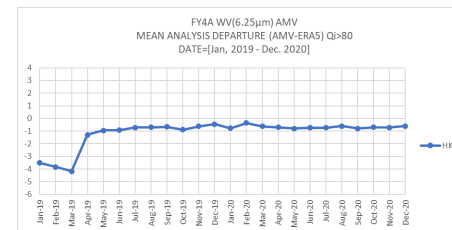
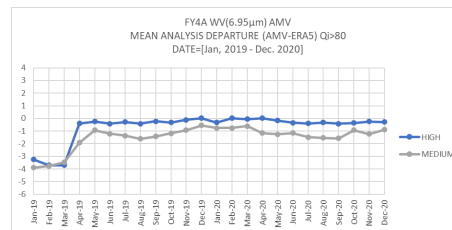
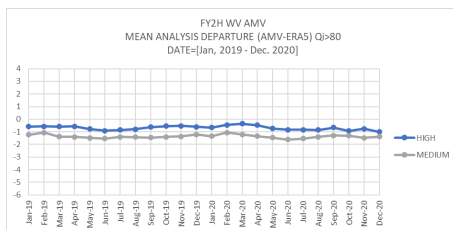
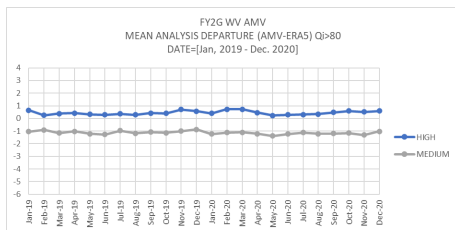
Satellite	AMV Products	Frequency	Image Sectors	Image Interval (min)	Format
FY2G	Infrared (10.8um)	6 hours	FULL DISK	30	Native & BUFR
	Water Vapor (6.7um)	6 hours	FULL DISK	30	Native & BUFR
FY2H	Infrared (10.8um)	6 hours	FULL DISK	30	Native
	Water Vapor (6.7um)	6 hours	FULL DISK	30	Native
	Infrared (10.8um)	30 minutes	NORTHERN DISK	30	Native
	Water Vapor (6.7um)	30 minutes	NORTHERN DISK	30	Native
FY4A	Infrared (10.8um)	3 hours	FULL DISK	15	NETCDF4
	Water Vapor (6.25um)	3 hours	FULL DISK	15	NETCDF4
	Water Vapor (7.10um)	3 hours	FULL DISK	15	NETCDF4

Enhancements:

- FY2H AMV 30-minute in NORTHERN DISK
- FY4A AMV 3-hour in FULL DISK

Quality Monitoring (2019-2020)

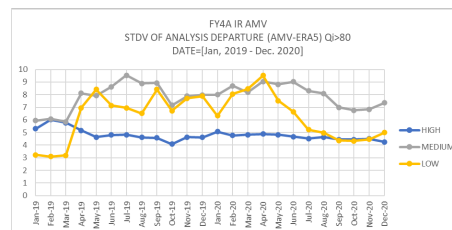
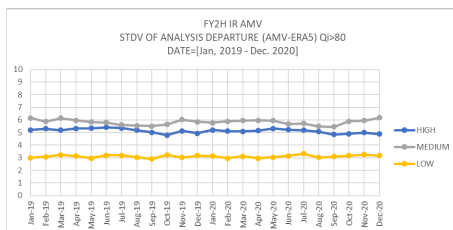
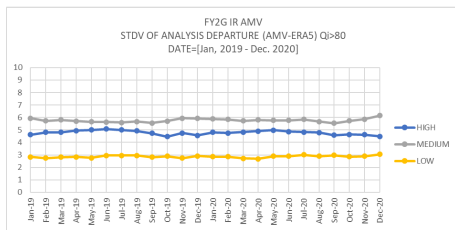
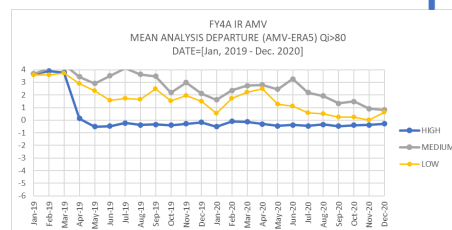
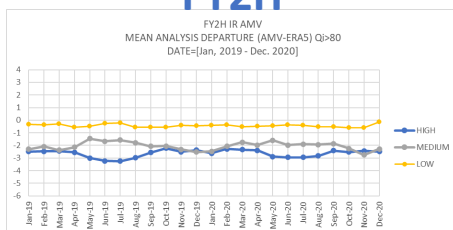
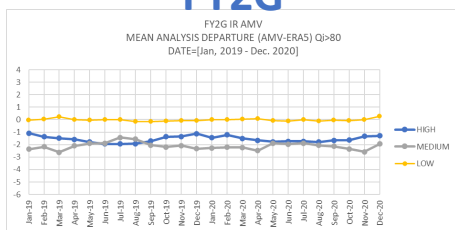
monthly statistics for speed from AMV departure (AMV-ERA5) FY2G /FY2H/FY4A AMV (QI>80)



FY2G

FY2H

FY4A



- The quality of AMVs from FY2G/FY2H is relatively stable
- The quality of AMVs from FY4A gradually stabilized after algorithm improvement

Quality Monitoring

Statistics for speed from AMV departure (AMV-ERA5) FY2G /FY2H/FY4A AMV (QI>80)

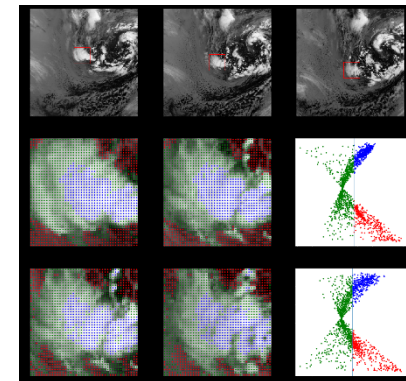
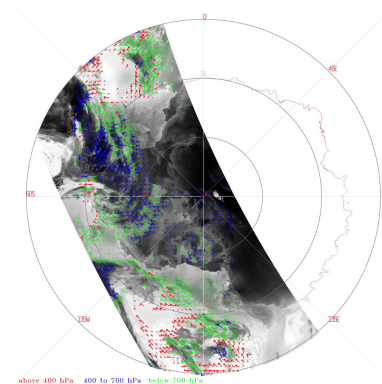
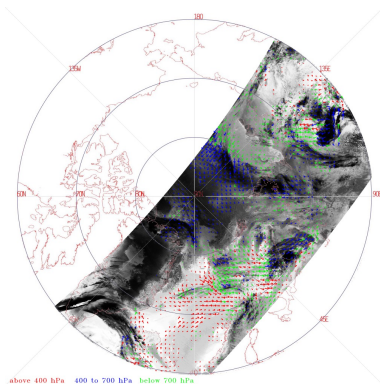
- The qualities of AMVs from FY2G, FY2H and FY4A are basically the same.
- The quality of the high level AMVs from FY4A IR channel is better than that of FY2G and FY2H, but the low level is worse than that of FY2G and FY2H.

Table: Comparison of ERA5 and AMVs from FY2G, FY2H, FY4A (QI>80)

		MEAN OF SPEED BIAS (m/s)			STDV OF SPEED BIAS (m/s)			
		High <400hPa	Middle 400-700hPa	Low >700hPa	High <400hPa	Middle 400-700hPa	Low >700hPa	
FY2G	WV(6.7um)	0.24 to 0.73	-1.38 to -0.87	---	3.97 to 4.65	3.87 to 4.29	---	2019 to 2020
	IR (10.8um)	-1.94 to -1.08	-2.61 to -1.42	-0.17 to 0.27	4.46 to 5.09	5.55 to 6.15	2.69 to 3.05	
FY2H	WV(6.7um)	-1.00 to -0.36	-1.61 to -1.06	---	3.75 to 4.81	3.80 to 4.33	---	
	IR (10.8um)	-3.24 to -2.21	-2.75 to -1.46	-0.59 to -0.13	4.78 to 5.42	5.45 to 6.18	2.91 to 3.32	
FY4A	WV(6.25um)	-0.79 to -0.61	---	---	4.30 to 4.51	---	---	The second half of 2020 After algorithm improved
	WV(7.1um)	-0.42 to -0.24	-1.57 to -0.89	---	4.13 to 4.27	5.65 to 6.24	---	
	IR (10.7um)	-0.48 to -0.28	0.83 to 2.18	0.03 to 0.62	4.26 to 4.64	6.76 to 8.30	4.33 to 5.22	

FY3D AMV Products and Operational Plan

- It uses the infrared ($10.8\mu\text{m}$) and water vapor ($7.2\mu\text{m}$) channel data of the Medium Resolution Spectral Imager-2 (MRSI-II) instrument of FY3D and uses cross correlation method for tracking and CCC method in height assignment.
- FY3D polar wind products are still under development and are expected to start trial operation in 2021.



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AMV Products Distribution

- FY2G, FY2H and FY4A AMV products are in operation and distributed via FTP server or network share disk for intranet users and via CMACast or website for international users.
- FY2G AMV products are distributed via GTS.

Data Service

- Integrated Space/Ground Based Data Service System

- ❖ Real time Data:

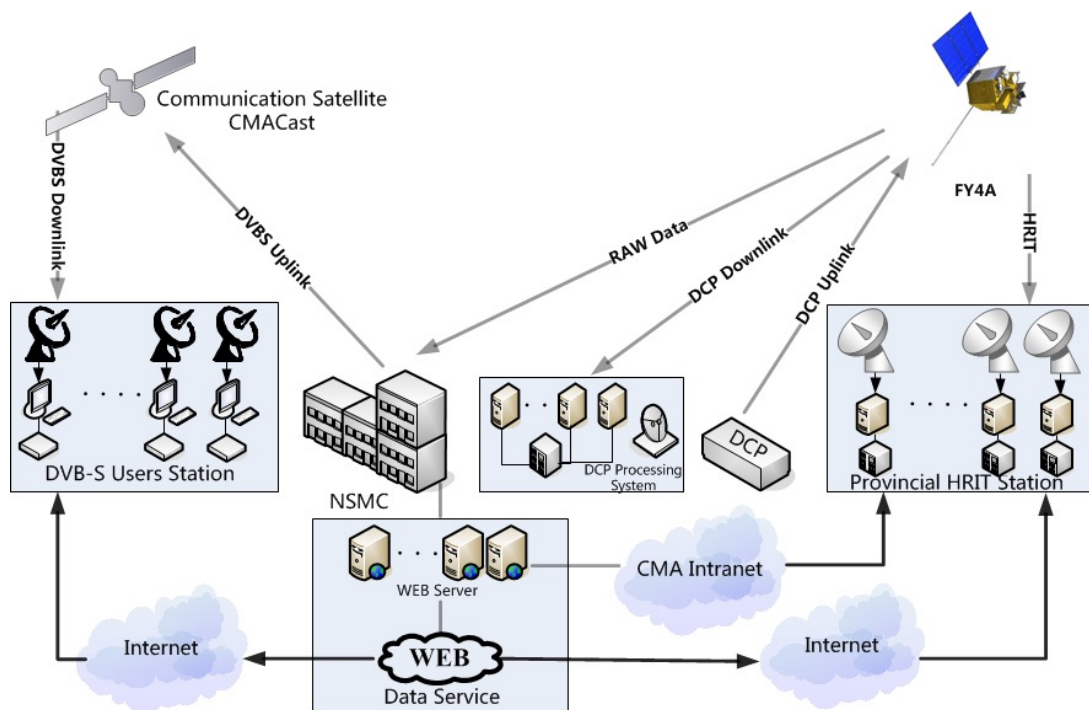
- DB (L1)
- CMACast (L2)

- ❖ Non Real Time

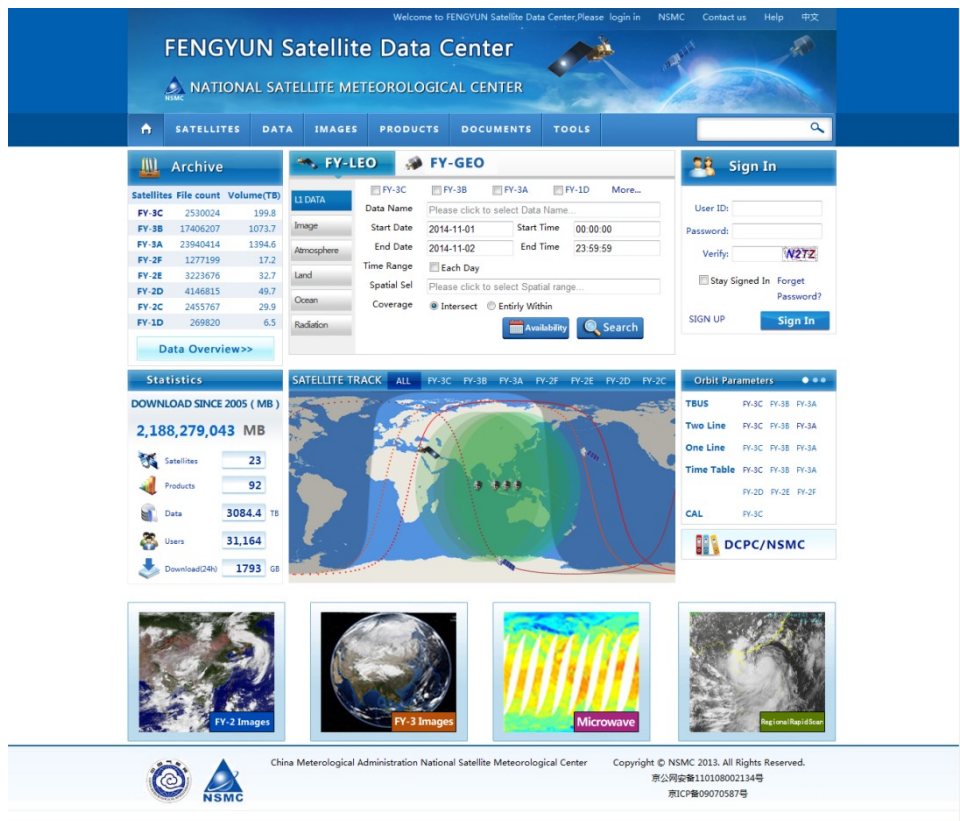
- Website
- Manual Service

- ❖ In addition:

- Cloud Service



Data Service Web Portal



Welcome to FENGYUN Satellite Data Center. Please login NSMC Contact us Help 中文

FENGYUN Satellite Data Center

NATIONAL SATELLITE METEOROLOGICAL CENTER

SATELLITES DATA IMAGES PRODUCTS DOCUMENTS TOOLS

Archive

Satellites	File count	Volume(TB)
FY-3C	2530024	199.8
FY-3B	17406207	1073.7
FY-3A	22940414	1394.6
FY-2F	1277199	17.2
FY-2E	3223676	32.7
FY-2D	4146815	49.7
FY-2C	2455767	29.9
FY-1D	269820	6.5

Data Overview>>

Statistics

DOWNLOAD SINCE 2005 (MB)

2,188,279,043 MB

Satellites: 23
Products: 92
Data: 3084.4 TB
Users: 31,164
Download(QIN): 1793 GB

SATELLITE TRACK

Orbit Parameters

DCPC/NSMC

China Meteorological Administration National Satellite Meteorological Center Copyright © NSMC 2013. All Rights Reserved.
京公网安备110108002134号
京ICP备09070587号

<http://satellite.nsmc.org.cn>

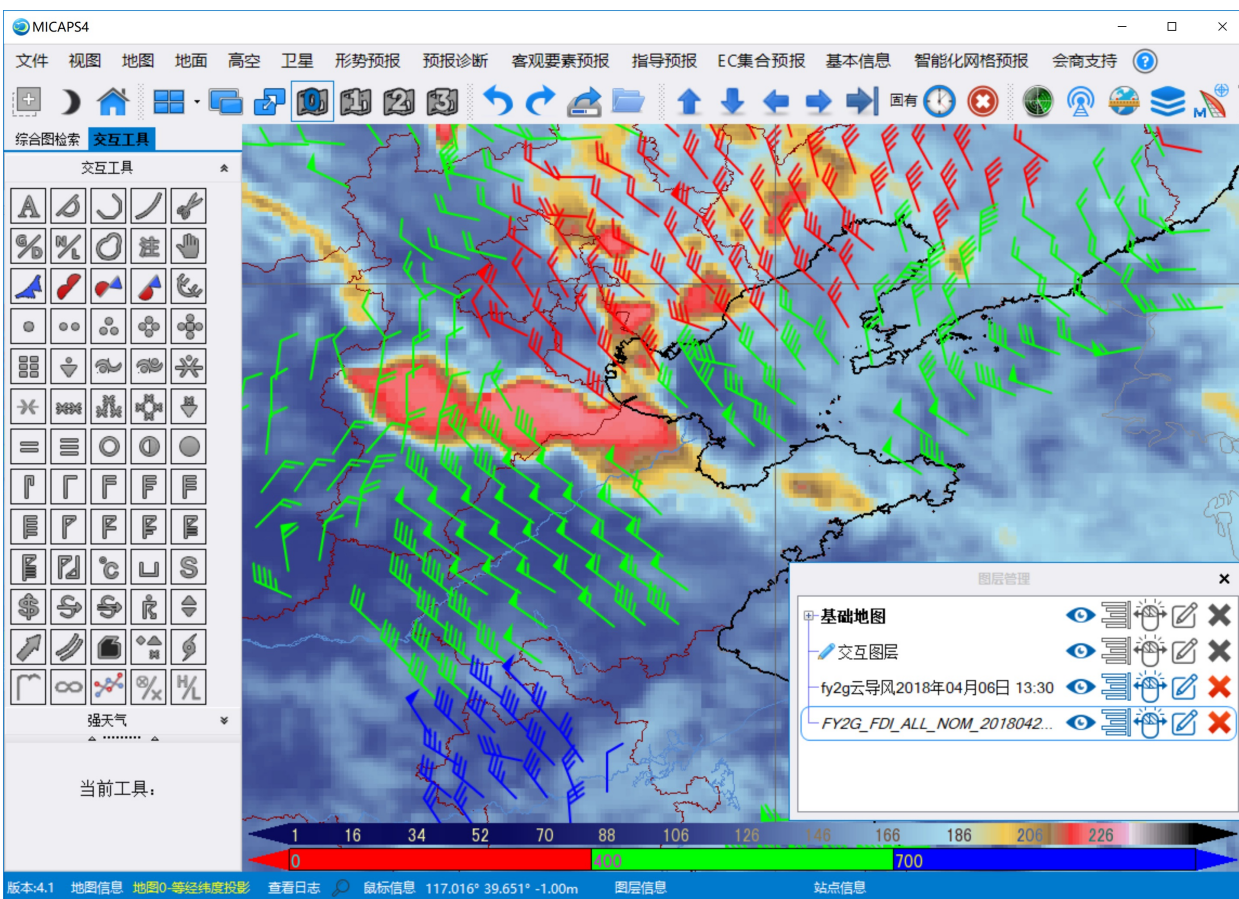
- All 8PB archived data (real time)
- Satellites' information
- Satellite images browse
- Documents and tools

User : freely register,
update need authorize

- ❖ Normal: 500MB/day
- ❖ Junior: 3GB/day
- ❖ Senior: 10GB/day

Day to Day Uses of AMV at MICAPS

MICAPS (Meteorology Information Comprehensive Analysis Process System)



- MICAPS gives the field forecasters access to a multitude of digital data to help them in daily forecast preparation
- MICAPS display software allows for easy integration of AMVs with a multitude of other data sources like model analyses/forecasts, observations from other observation systems

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Future work

- To improve AMV products quality
 - Especially in the middle and low level AMVs from FY4A
- FY3D polar winds
 - FY-3D polar wind products are expected to start trial operation in 2021.



Thank you !