

Current Status and Future Plan of Fengyun Meteorological Satellites



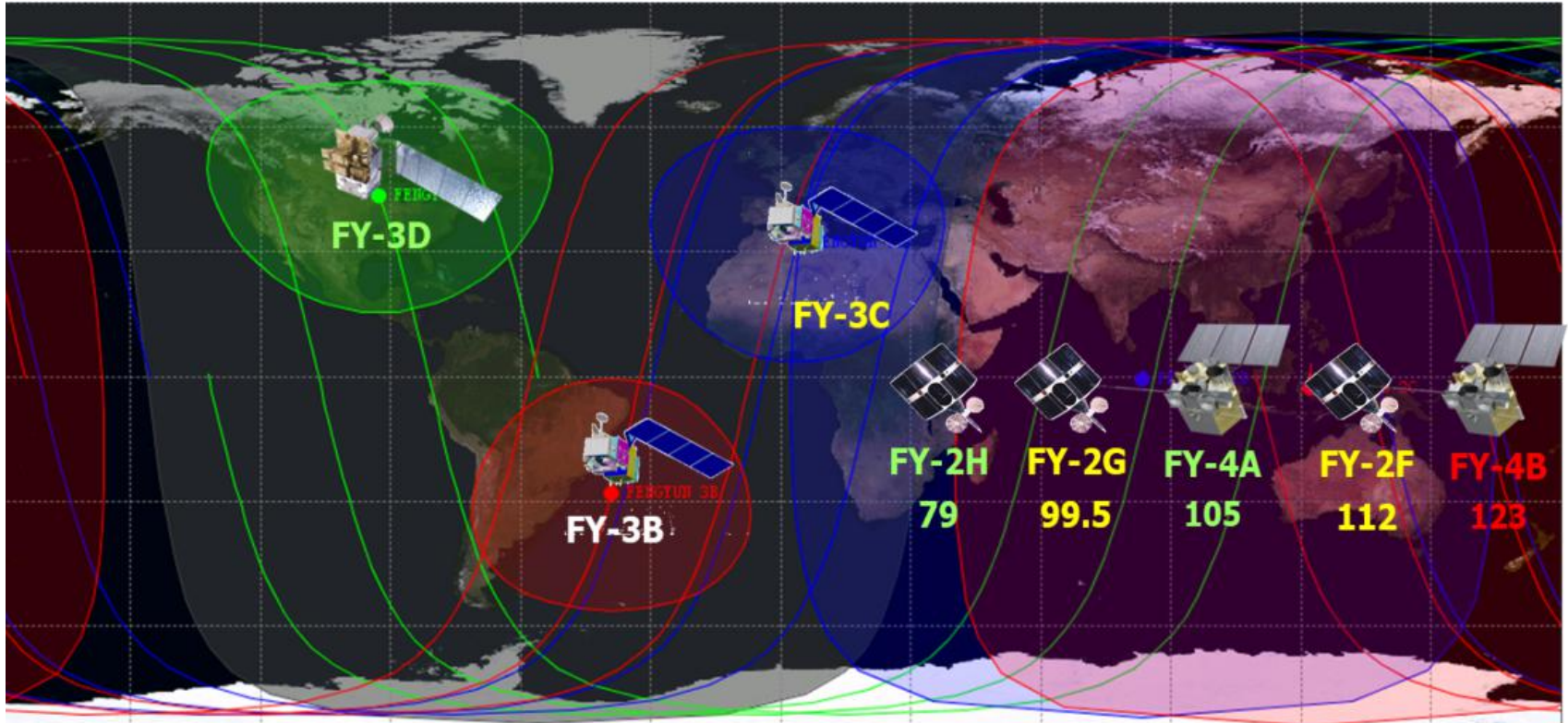
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Current FengYun Constellation

8 On-orbit (1 in on-orbit test, 3 in operation during the designing lifetime, 3 in operation beyond designing lifetime, 1 in de-service)



Status of Instruments

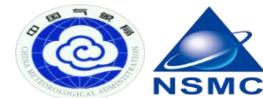


Table 1 Current FENG YUN Geostationary Satellites (as of March 1, 2021)

Satellite (status)		Location	Launch date	EO instruments			
FY-2F	(L)	112 E	2012-1-13	S-VISSR			
FY-2G	(Op)	105 E	2014-12-31	S-VISSR			
FY-2H	(Op)	79 E	2018-06-05	S-VISSR			
FY-4A	(Op)	104.7 E	2016-12-11	AGRI	GIIRS	LMI	SEP

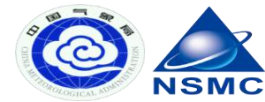
Op = Operational
 P = Pre-operational
 B = Back-up, secondary
 L = Limited availability

Table 2 Current FENG YUN LEO Satellites (as of March 1, 2021)

Satellite (status)		Launch date	EO instruments					
FY-3B	(L)	2010-11-05	MERSI	VIRR	IRAS	MWTS	MWHS	MWRI
			SBUS	TOU	ERM	SIM	SEM	
FY-3C	(B)	2013-09-23	MERSI	VIRR	IRAS	MWTS	MWHS	MWRI
			SBUS	TOU	ERM	SIM	SEM	GNOS
FY-3D	(Op)	2017-11-15	MERSI	HIRAS	MWTS	MWHS	MWRI	IPM
			GAS	WAI	SEM	GNOS		

Operational (or capable of)
 Operational with limitations (or Standby)
 Operational with Degraded Performance
 Not Operational
 Functional, Turned Off

Space + Ground data services



By the year of 2020, many countries received Fengyun satellites data by various means.

- Real-time data users established different kinds of satellite data direct broadcasting systems, including **20 CMACast stations**, **6 FY-2 DB stations**, and **2 FY-3 DB stations**.
- FY-3 pre-processing software packages have been free shared and installed in **25 countries**.
- **29 countries** registered as a member of **FY_ESM**.
- In 2020, CMA initiated **14 times emergency services** for other countries.
- The FY satellite data centre website users have expanded to **115 countries** including more than **80 Belt and Road countries**.

Space-based services

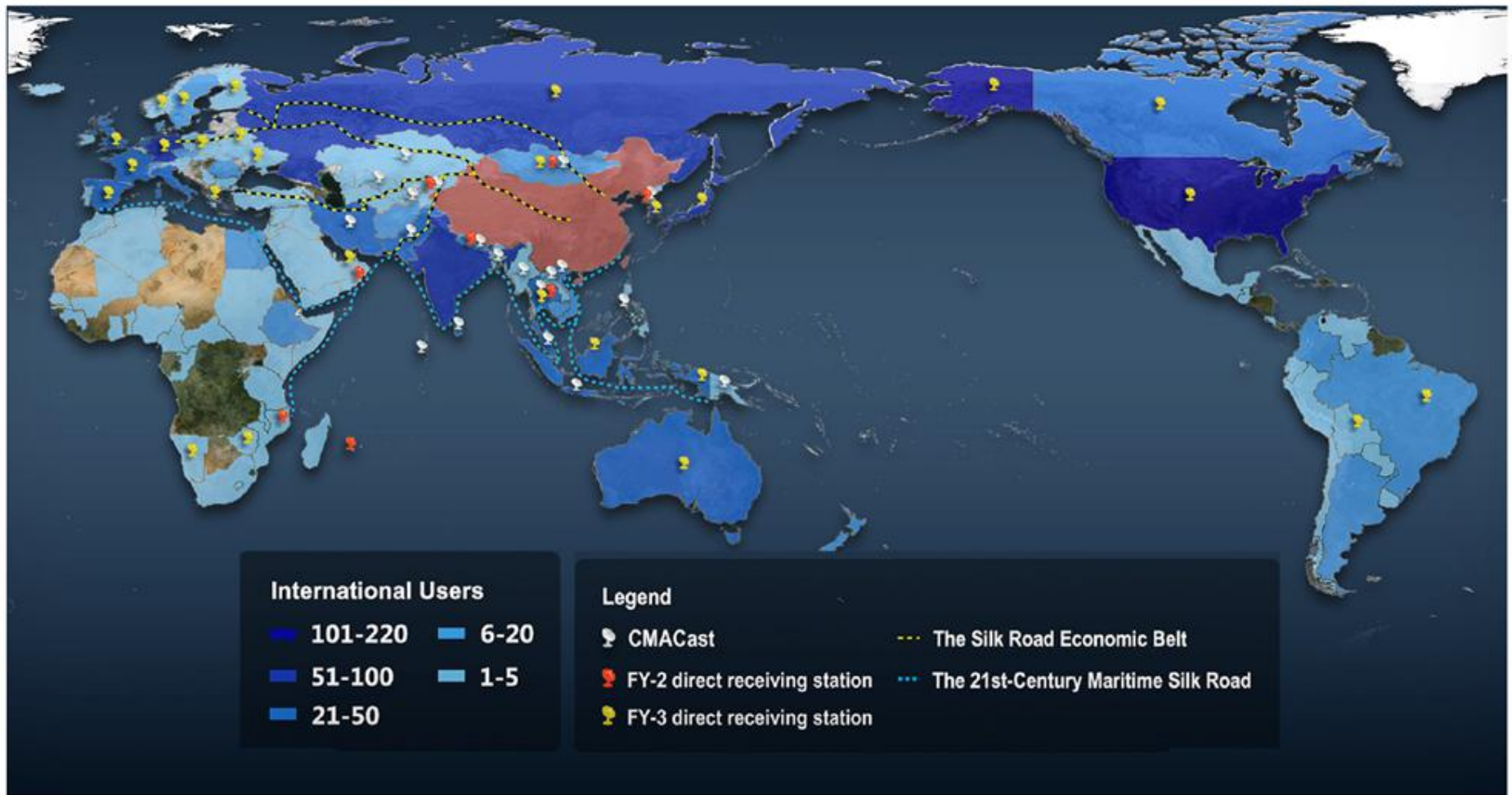
DB stations (GEO and LEO)
CMACast stations
FY-3 Preprocessing software packages

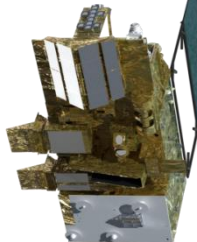
Emergency services

From	2017	2018	2019	2020
FY_ESM	0	2	4	6
CHARTER/UN	0	4	5	7
China-GEOSS	2	3	2	1
Total	2	9	11	14

Ground-based services

Type	User	Time	Services	Protocol	
Intranet service	CMA main users	Real-time dataset	File access	NAS/FTP/ API	
	CMA intranet users	Real-time dataset			
Website order	All user	All dataset	On-line order	HTTP	
		Real-time dataset	Download	FTP	
Customize order	Agreement user	All dataset	Customize	HTTP	
Data client	All user	All dataset	On-line order	PC client	
		Real-time dataset	Data subscribe		
Cloud service	All user	Real-time dataset	Data subscribe	Cloud client	
Sub-service center	All user	Real-time dataset	On-line order	HTTP	
API	All user	All dataset	API	API	
Mobile	Fengyun live	Wechat user	Real-time FY-4 images	Wechat	Wechat applet
	Fengyun Earth View	Wechat user	FY-3D images in a week	Wechat	Wechat applet



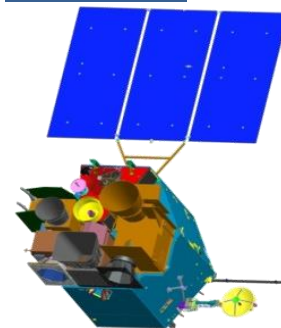


FY-3E, which is the **first early-morning orbit** satellite in China's polar-orbiting meteorological satellite family, is scheduled to be launched in July, 2021. Its local time at descending node is 5:30 AM.

4 characteristics of FY-3E:

- High-precision **optical microwave combined** atmospheric temperature and humidity vertical distribution detection capability;
- **Active remote sensing instrument** wind field accurate detection capability;
- High-efficiency global optical imaging observation capability with **100-meter-level resolution**;
- Comprehensive detection capability of the **sun and space environment**.

No.	Instruments	Statuses
1	Dual-frequency wind radar (WindRAD)	new
2	Solar spectral irradiance monitor (SSIM)	
3	Solar X-EUV Imagers (XEUVI)	
4	MERSI-L	improved
5	MWTS-III	
6	HIRAS-II	
7	GNOS-II	
8	SIM-II	
9	SEM	
10	Tri-IPM	
11	MWHS-II	inherited

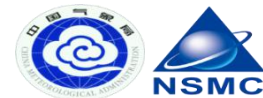


FY-4B, which is the **first operational** geostationary satellite in FY-4 series, has been launched in May, 2021.

- The main observation capabilities are similar to those of FY-4A, with some significant performance improvements.
- It has been positioned at a **123.5° E** to continue operations as a main operational geostationary meteorological satellite.

	Instruments
1	Advanced Geostationary Radiation Imager(AGRI)
2	Geostationary Interferometric Infrared Sounder(GIIRS)
3	Geostationary High Speed Imager(GHI)
4	Space Environment Package(SEP)

Future Fengyun Satellite Systems



Fengyun Satellite Projects by 2025

- 4 FY-3 polar-orbiting satellites to be launched, which will be arranged by the layout of three solar synchronous polar-orbiting satellites in early-morning, mid-morning and afternoon, and one precipitation measurement satellite in inclination orbit by 2025.
- 2 FY-4 GEO optical satellites to be launched.
- 1 FY-4 GEO microwave satellite to be launched.



Fengyun Programme by 2035

FY-5 research satellite	third-generation LEO meteorological satellite Using a new large satellite platform Inherit the main operational capabilities of FY-3
FY-5 operational satellites	In the morning orbit, including early morning, morning, afternoon and night maneuvering orbit, life 10 years
Radiometric benchmark	By 2035, 1 satellite in polar orbit.
FY-4 patch 03 & FY-4 MW	FY-4 patch 03 including 3 satellites FY-4D/E/F FY-4 operational MW satellite to be launched in next 10 years
FY-6 research satellite	third-generation GEO meteorological satellite Inherit the main operational capabilities of FY-4



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For Better

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Make the data better and easier to use !