



Agency Status Report of CMA

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Outline

1. Introduction
2. FY-3D and FY-3E (in orbit)
3. FY-3F and FY-3G (schedule for 2023)
4. Conclusion

Status of Current FengYun Satellite Systems

➤ Since CGMS-49, CMA's FengYun satellite status has been updated as follows:

- 2 Recruit: FY-4B and FY-3E
- 2 Retired: FY-3B and FY-2F

FY-4B

- launched on Jun. 3, 2021.
- **Pre-operation** since Jun. 1, 2022.

FY-3E

- launched on Jul. 5, 2021.
- **Pre-operation** since Jun. 1, 2022.

FY-3B

- stopped operation on Dec. 9, 2021.

FY-2F

- out of service on Apr. 1, 2022.

7 FengYun Satellites in orbit

GEO

FY-2G, -2H

FY-2G (99.5°E) and FY-2H (79°E)
Full disk every 30 min
FY-2H, last flight unit of FY-2 series.

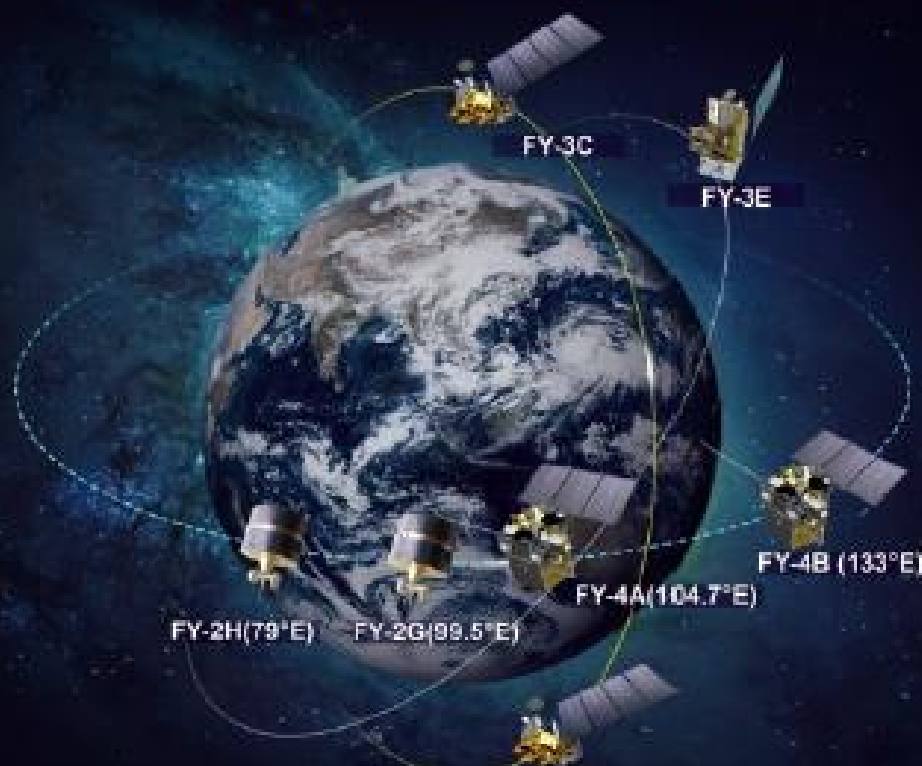
FY-4A, -4B

China's second generation GEO meteorological satellites.

FY-4A (104.7°E), Full disk every 15 min.

FY-4B (133°E), Full disk every 15 min, partial areas rapid scanning at 1 min.

Pre-operational



LEO

FY-3C

Mid-morning orbit
Operational with degraded performance

FY-3D

Afternoon orbit, ECT 13:45 local time
10 EO instruments

FY-3E

Early-morning orbit, ECT 5:41 LT
11 EO instruments
Pre-operational

Future FengYun Satellite System

2025

5 FY satellites are planned be launched.

LEO

- FY-3F (AM) and FY-3G (RM), in the end of 2022.
- FY-3H (PM), planned for launch in 2023.

GEO

- FY-4C, planned for launch in 2024.
- FY-4 MW1, 1st GEO MW satellite, planned for launch in 2025.

2035

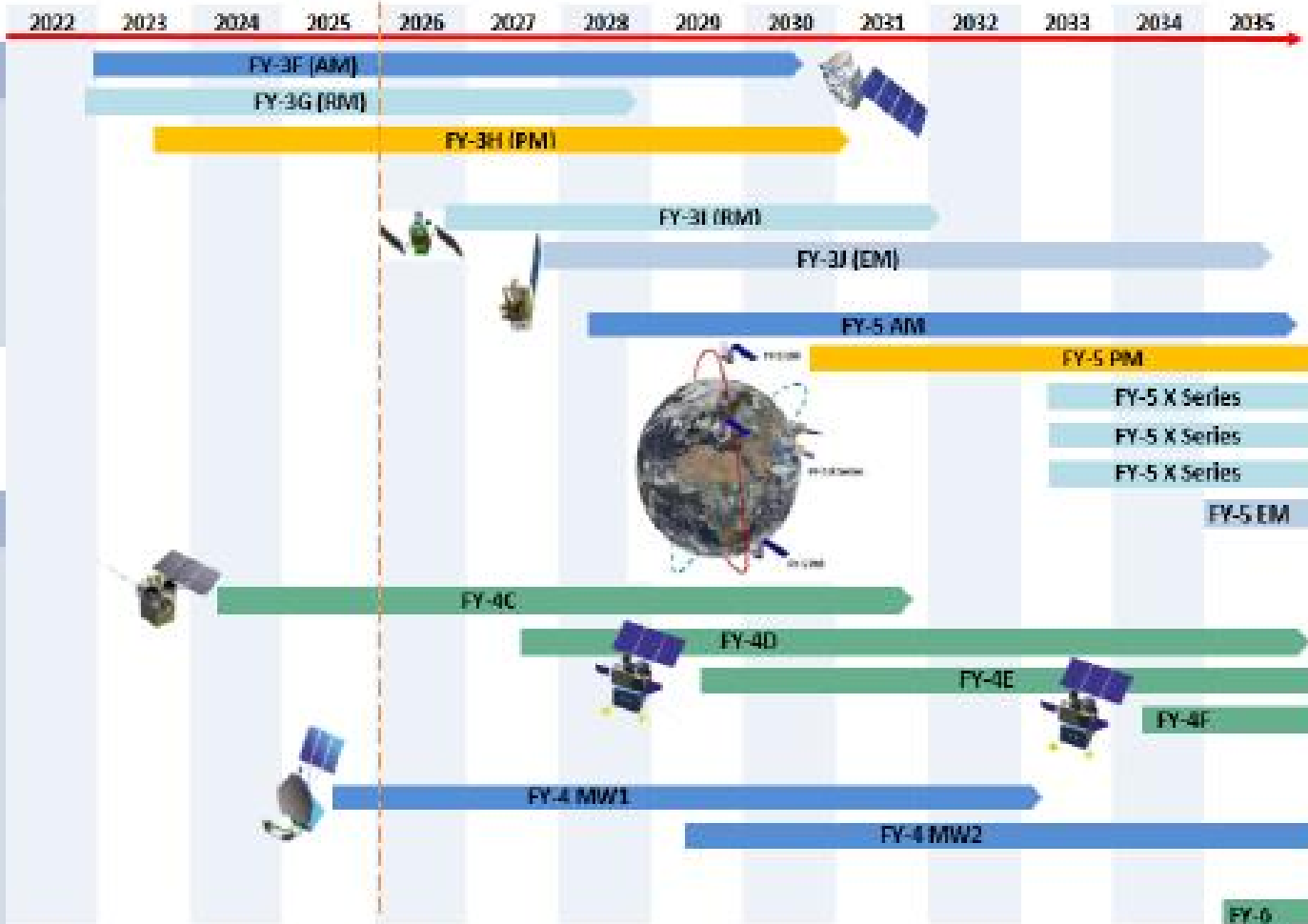
13 FY satellites are planned.

LEO

- FY-3I, 2nd RM satellite.
- FY-3J, EM orbit, FY-3E follow-on mission.
- FY-5 series, FY LEO **THIRD** generation. Including AM, PM, EM and maneuvering orbit (for rain monitoring and atmospheric dynamic)

GEO

- FY-4D, -4E, -4F, FY-4 GEO follow-on mission.
- FY-4 MW2, 2nd GEO MW satellite.
- FY-6, FY GEO **THIRD** generation. Research satellite will be planned before 2035.





Introduction

- ❖ **Passive microwave sensors**
 - MWRI (FY-3A/FY-3B/FY-3C/**FY-3D**/FY-3F/FY-3G)
 - MWHS(FY-3A/FY-3B/**FY-3C**/**FY-3D**/FY-3E/FY-3F)
 - MWTS(FY-3A/FY-3B/FY-3C/**FY-3D**/**FY-3E**/FY-3F)
- ❖ **Active microwave sensors**
 - WindRAD(**FY-3E**)
 - DMR(**FY-3G**)
- ❖ Morning orbit (FY-3A/**FY-3C**/FY-3F)
- ❖ Afternoon orbit (FY-3B/**FY-3D**)
- ❖ Early morning orbit (**FY-3E**)
- ❖ Drift orbit (**FY-3G**)

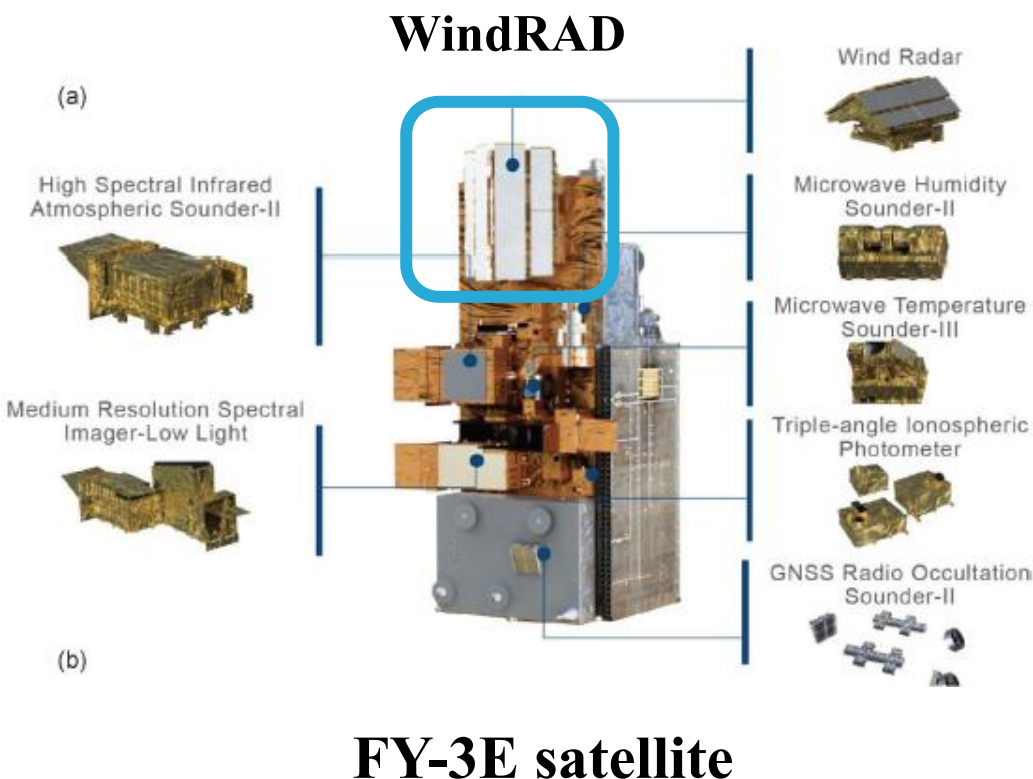


In orbit: Update of FY-3D/MWRI International Pre-processing Software (2022-06-15)

- ❖ An additional module for hot load reflector temperature correction was added in FY-3D/MWRI International Pre-processing software.
- ❖ Ascending/Descending bias and brightness temperature stability of FY-3D/MWRI were improved;

	before correction	after correction
10V	1.37	1.05
10H	1.26	1.01
18V	1.28	1.03
18H	1.31	1.12
23V	1.30	1.04
36V	1.28	1.06
36H	1.52	1.28
89V	1.08	0.84
89H	1.32	1.21

In orbit: WindRAD



➤ Wind Radar (WindRAD) for Chinese FY-3E satellite

- ◆ The first active remote sensing instrument of Fengyun series satellite of China.
- ◆ Detecting global sea surface wind vector, including wind speed and wind direction.
- ◆ dual-frequency: C & Ku band, both with VV & HH polarizations
- ◆ advanced rotating fan-beam



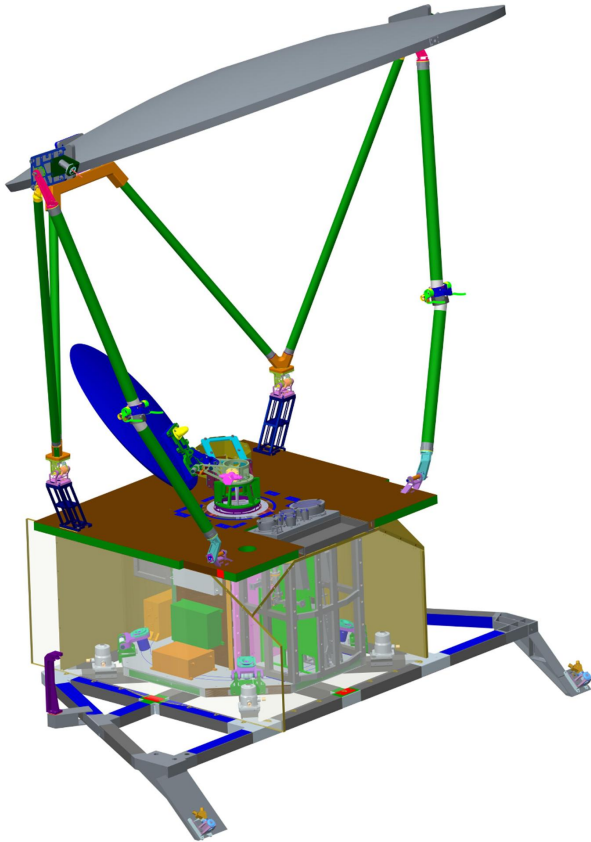
In orbit: WindRAD

FY-3E/WindRAD (Wind Radar)

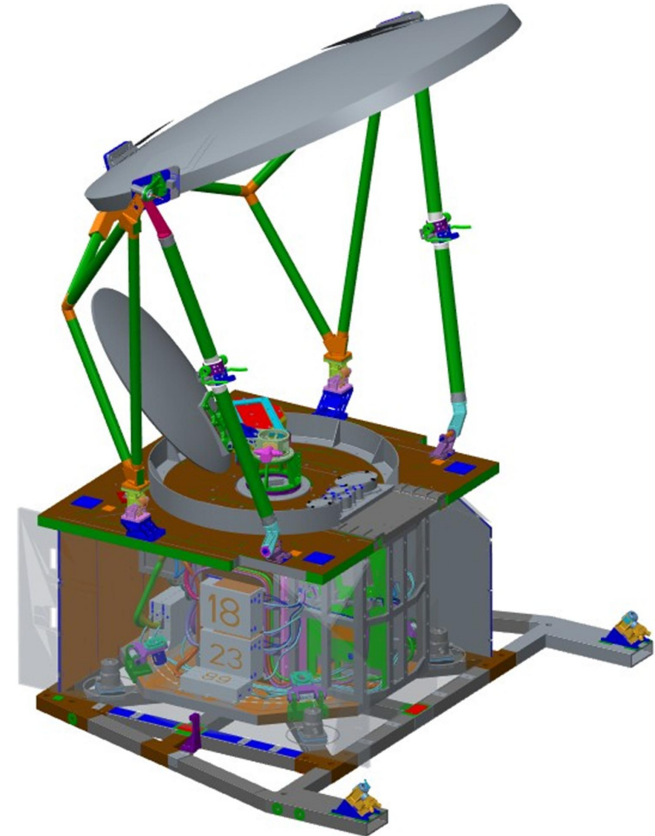
WindRAD has been turned on and conducted the global observation since July 9th, 2021.

- **The status of instrument is quite stable.**
- **Except for several operations for solving the turbulence influence of high-energy particle events and other mode testing.**
 - ◆ **Slice average for L1B processing**
 - ◆ **Improve quality inspection methods**
 - ◆ **In the calculation of backscattering coefficient, the threshold filtering of instrument zenith angle was added**
 - ◆ **The backscattering coefficient correction was added to C V & Ku H/V**

Schedule: MWRI-II/MWRI-RM



MWRI-II
Morning orbit/Afternoon orbit



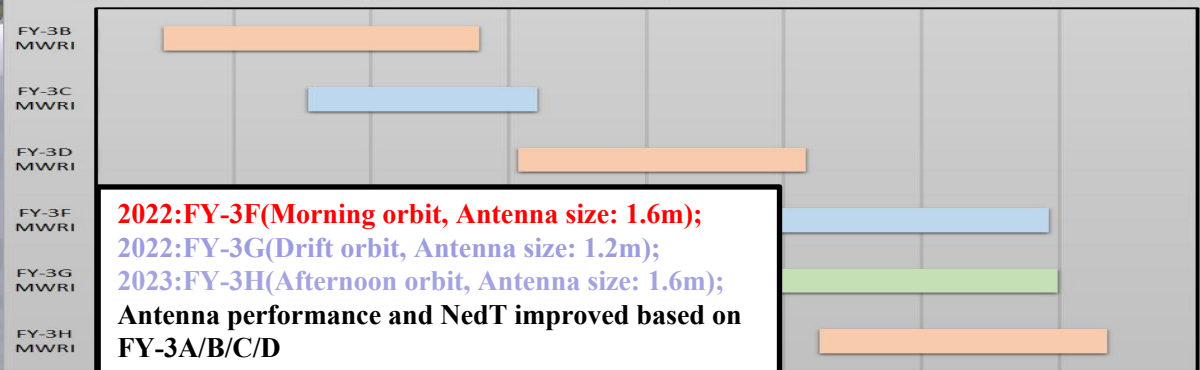
MWRI-RM
Drift orbit



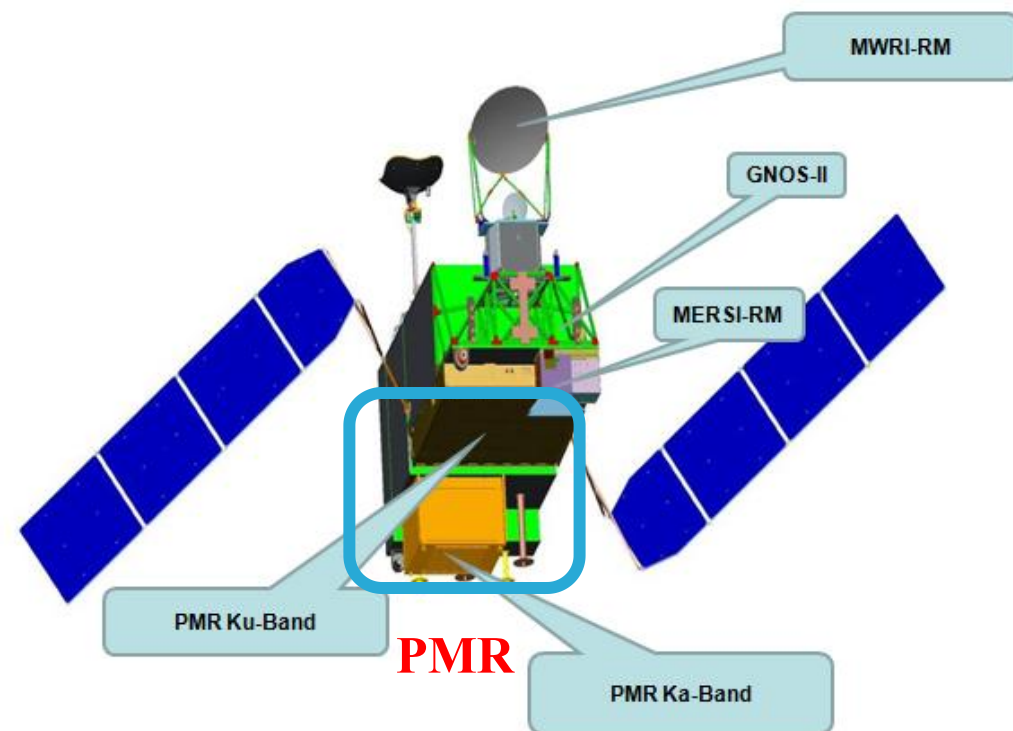
Schedule: MWRI-II/MWRI-RM



	MWRI	MWRI-II/RM	GMI	AMSR 2	MWI	SSMIS
Nation	China	China	US	Japan	EU	US
Antenna size(m)	1	1.6/1.2	1.2	2	0.75	0.6
Main beam(%)	90	95	90	90	90	90
Frequency range(GHz)	10-89	10-183	10-183	6.9-89	18-183	18-183
Channels	10	26	13	16	18	24
NedT	0.5-0.8	0.5-0.8	0.6-1.5	0.4-1.4	0.6-1.2	0.4-1.9



Schedule: PMR



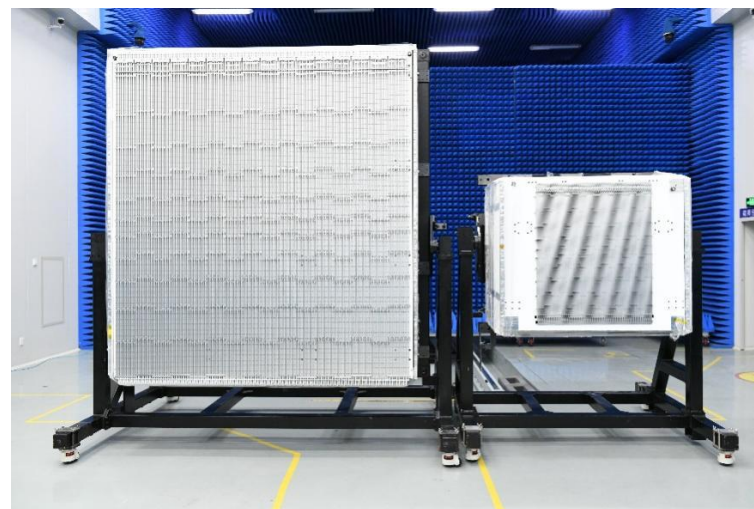
➤ Precipitation Measurement Radar (PMR) for Chinese FY-3G satellite

- ◆ Chinese first active remote sensing instrument of precipitation measurement.
- ◆ observe 3D structure of precipitation drop distribution for typhoon, rain storm, heavy snow, etc.
- ◆ dual-frequency: Ku & Ka bands with HH polarization

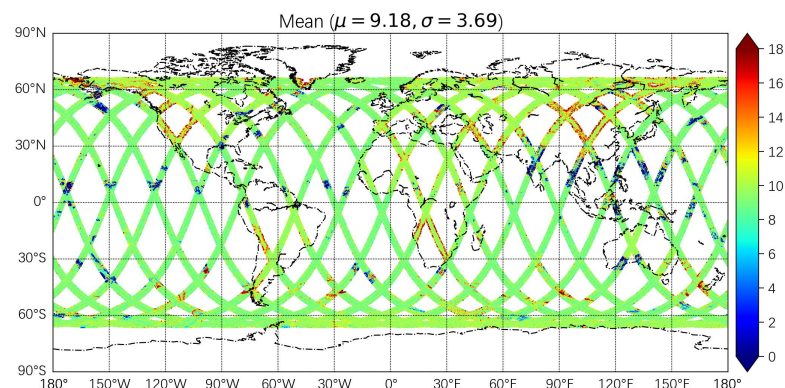


Schedule:PMR

- PMR development has been completed in 2022.
- Instrument test and the whole satellite test have been finished.
- The ground system is in the stage of joint commissioning and test.
- FY-3G is planned to be launched soon and PMR will be turned on soon after the launch.



Geographic Statistics of GPM DPR 2021-07-20
zFactorMeasured-zFactorRTTOV 155





Conclusion

1. Several updates for MWRI\WindRAD and MWTS onboard FY-3D/FY-3E were performed.
2. New MWRI (MWRI-II and MWRI-RM) were developed and will be launched soon, onboard FY-3F and FY-3G separately.
3. PMR(Precipitation Measurement Radar) has been completed and will be launched soon.
4. Follow-on MWTS and MWHS will be launched, onboard FY-3F.



Thank you for your attention