

Status report on the current and future satellite systems by CMA

Presented to CGMS45-CMA-WP-01, Plenary session, agenda item D.1

Overview - Planning of CMA satellite systems

FengYun Meteorological Satellites

Polar System

First Generation
FY-1 A, B, C, D



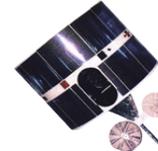
Second Generation
FY-3 A, B, C, D, E, F, G



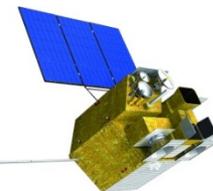
Expected until 2025

Geostationary System

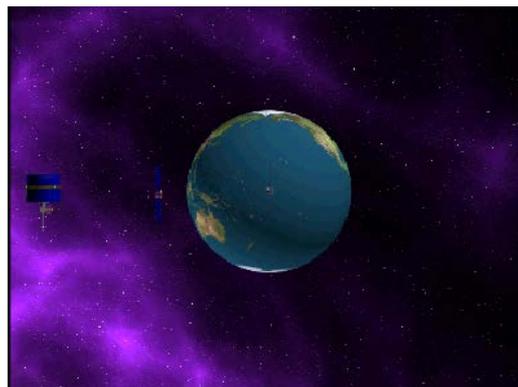
First Generation
FY-2 A, B, C, D, E, F, G, H



Second Generation
FY-4 A, B, C, D, E

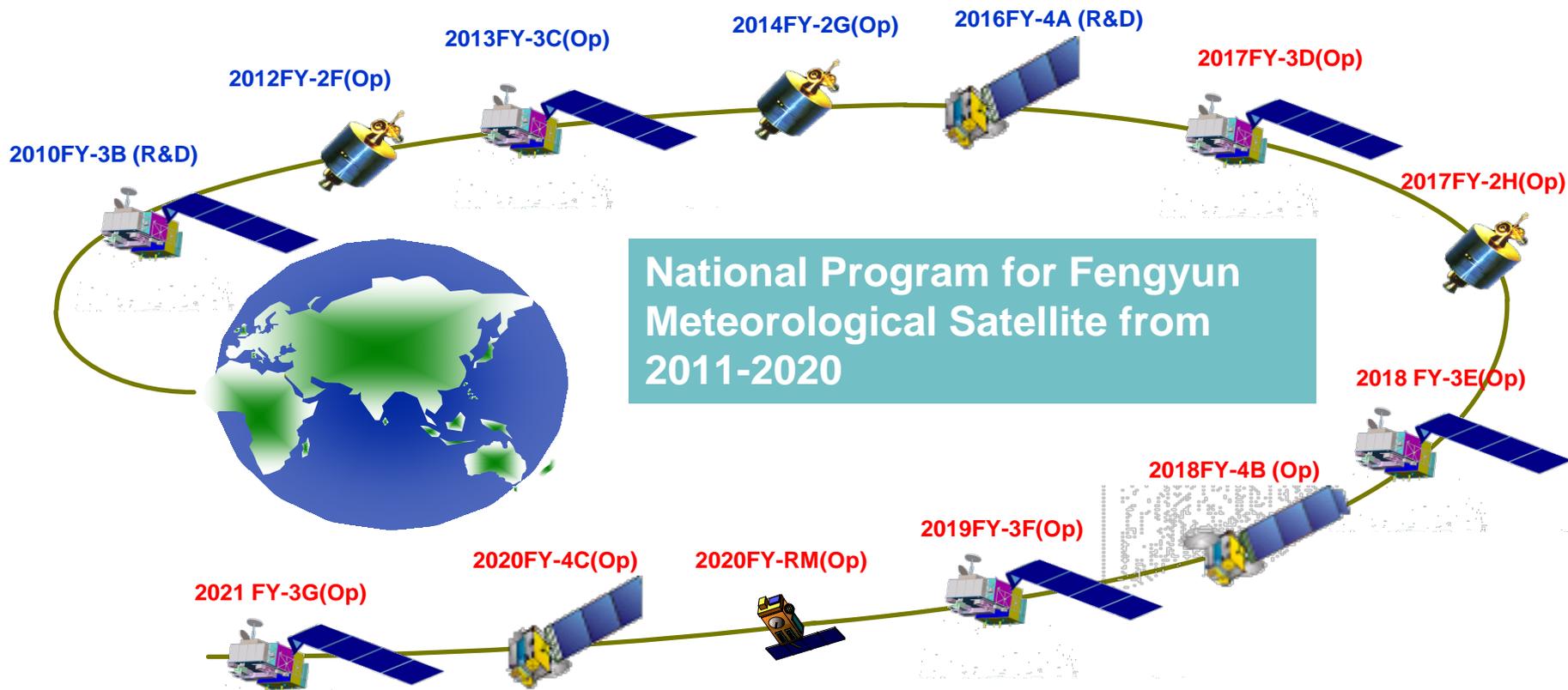


Expected until 2030



Overview - Planning of CMA satellite systems

Road Map of FENGYUN Meteorological Satellites Development by Year 2020



■ 8 satellites will be launched within this decade

Planning of Atmospheric Missions in 2015-2025

Since 2015, CMA FENGYUN meteorological satellite programs have been integrated into **N**ational **S**pace **I**nfrastructure **P**lan (2015-2025). In **NSIP**, a number of atmosphere-related satellites are planned in coming decade.

Programs led by CMA

- Weather Satellite series: **FY-2, & FY-4 GEO**
- Climate & Environment Satellite series: **FY-3 LEO**

Programs that CMA engaged in

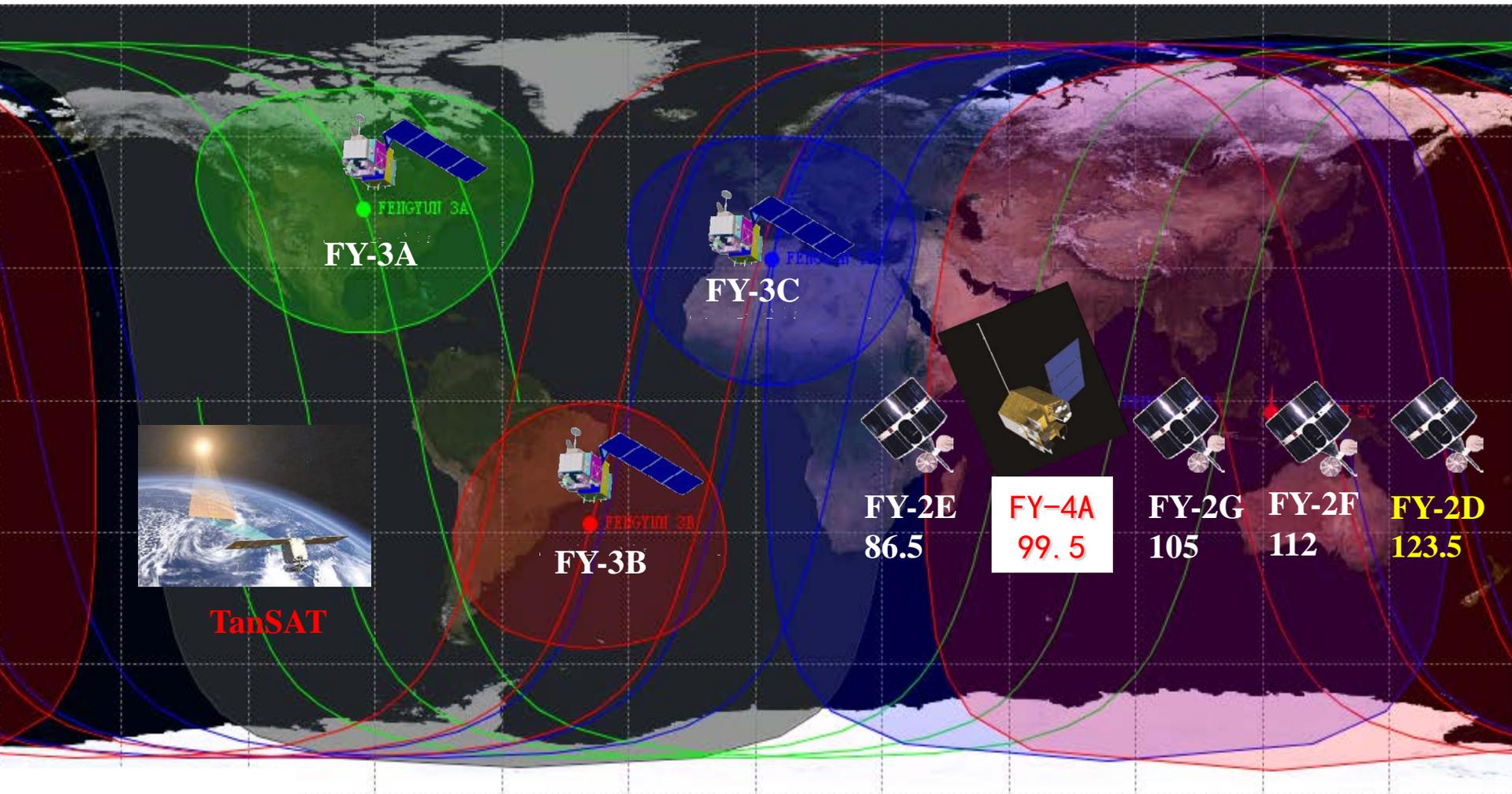
- High Resolution Earth Observation Satellite series: **GF series, by CNSA+CMA+MEP+MLR**
- Atmospheric Environment Monitoring Satellite series : **New Series, by MEP+CMA**

Joint R&D Programs

- Carbon Observation Satellite program: **TanSat, by MOST+CAS+CMA**

On Orbit Satellite

8 on the orbit, 6 in operation, 2 in commission test



Fengyun GEO Constellation

In operation

FY-2G: Full Disk (105° E)

FY-2E: Full Disk (86.5° E)

FY-2F: Regional (112° E)

In commission test

FY-4A: (99.5° E → 105° E)

In back-up

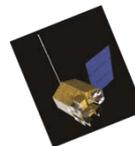
FY-2D (123.5° E)

Full Disk Scan

Rapid Regional Scan



FY-2E



FY-4A



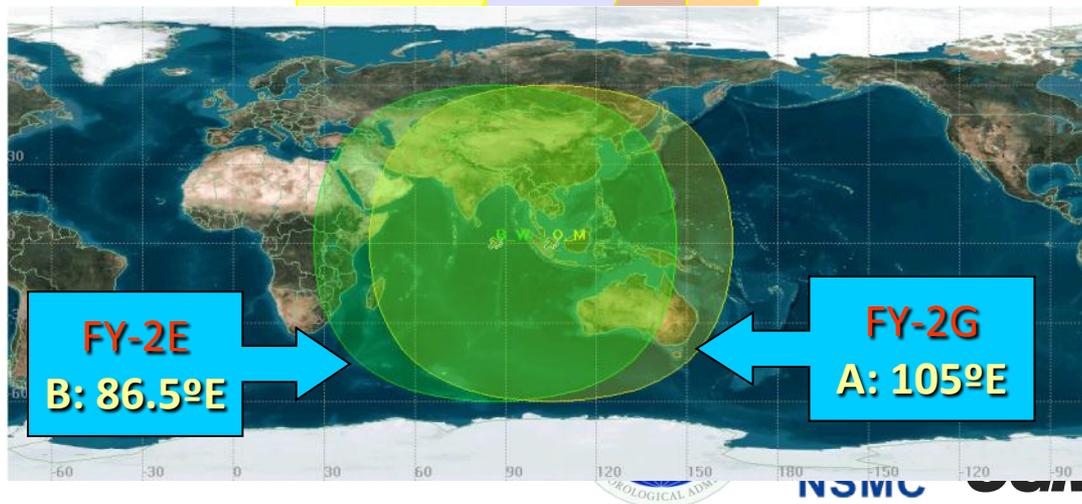
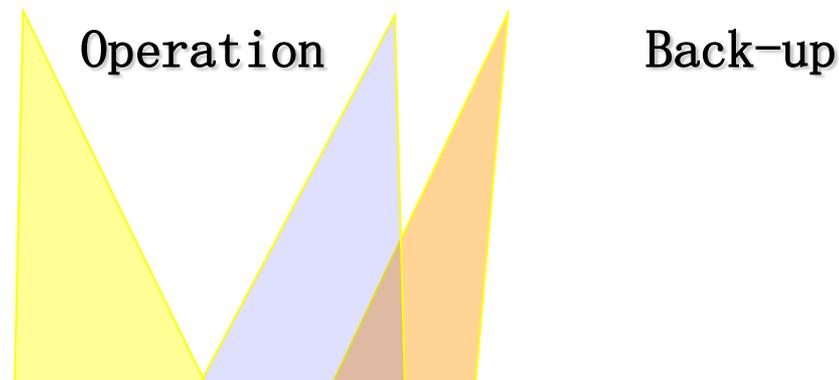
FY-2G



FY-2F



FY-2D



CURRENT GEO SATELLITES

1. GF-4

- The 4th satellite in High res. Earth Obs. Satellite Project led by CNSA, while CMA is responsible for GF-4 data reception and transmission, as well as data preprocessing in MET mode.
- Successfully launched in Dec. 29, 2015
- Commissioning test finished and handover declared on June 1st, 2016

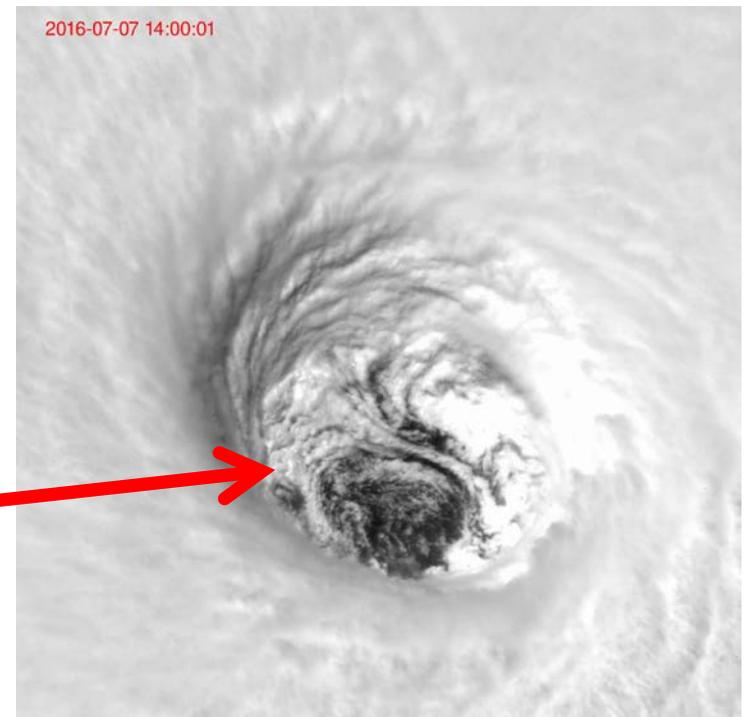
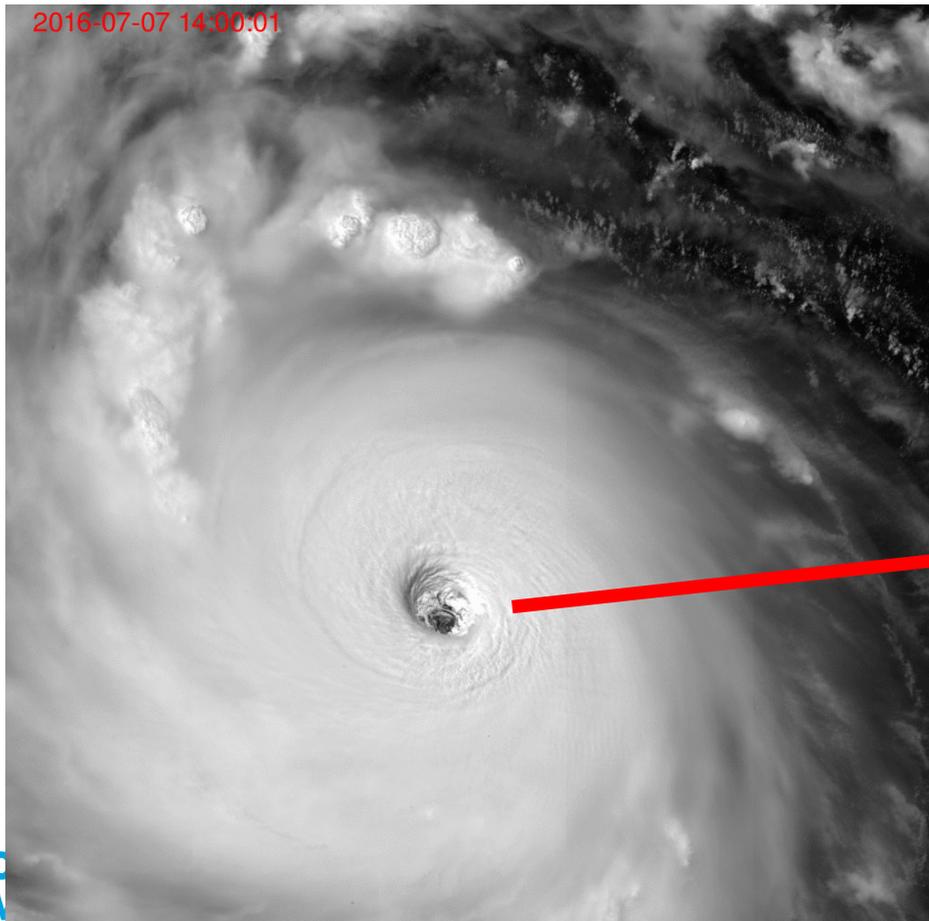
2. FY-4A

- Launched in Dec. 11, 2016
- Ground segment construction is still ongoing

GF-4: New eyesight from GEO orbit

Typhoon NEPARTEK, 07-07-2016

Detector 10,000X10,000
Spatial res. 50 meters
Temporal res. 10, 20, 60s



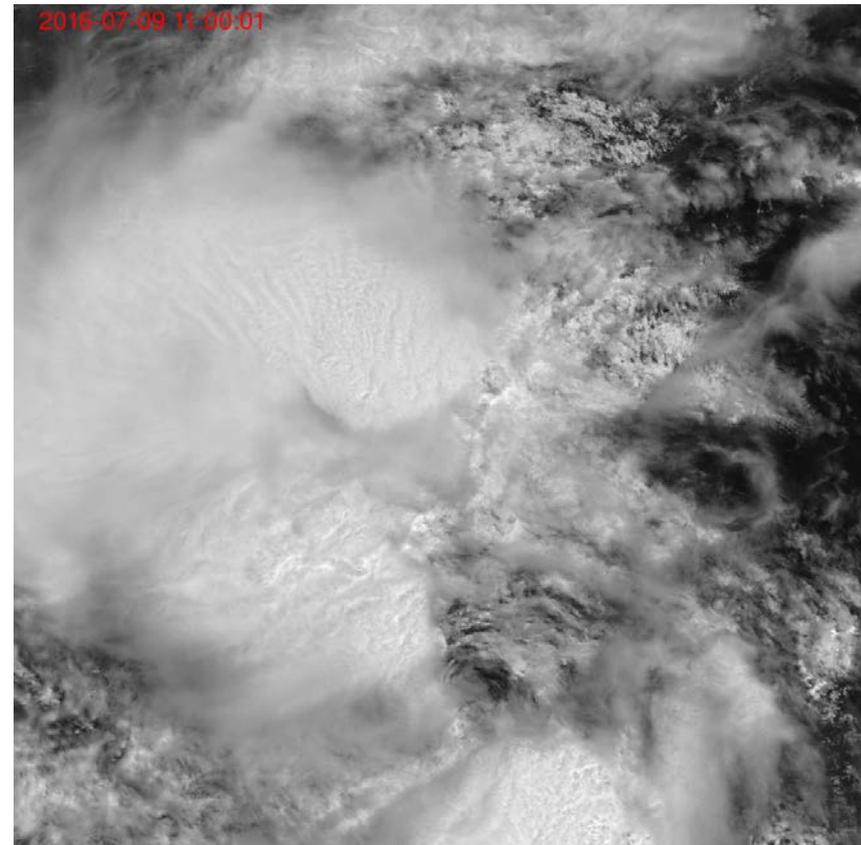
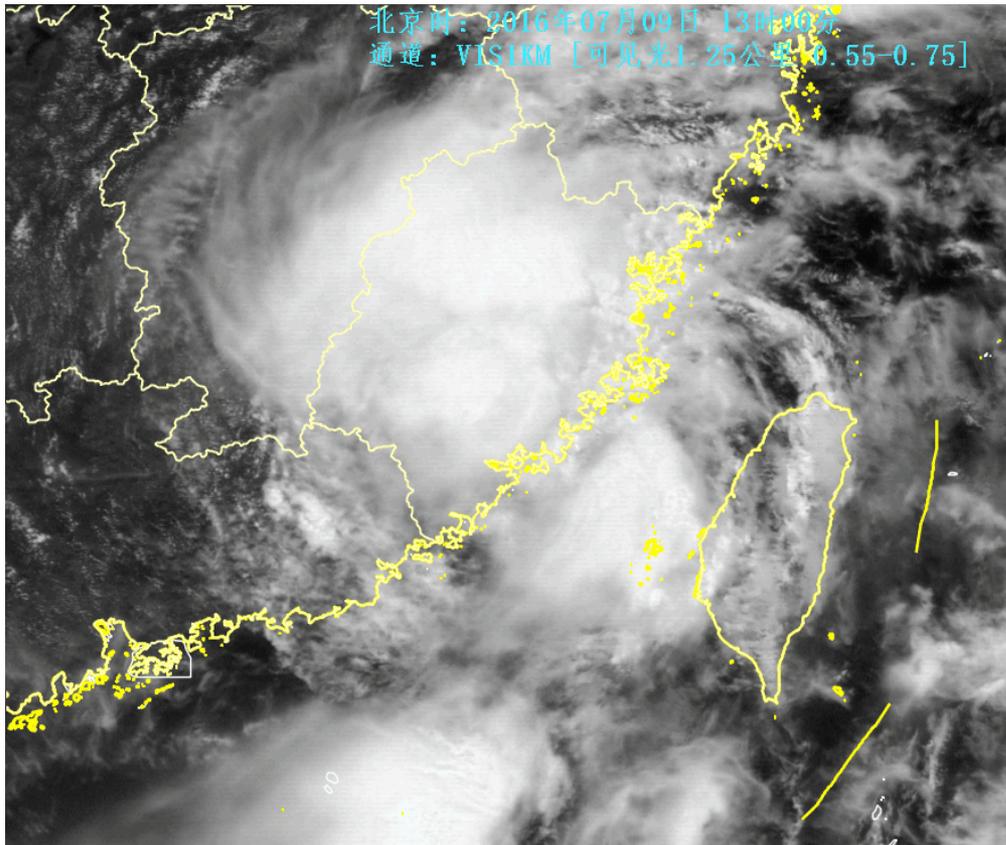
CGMS

Landing of Typhoon Nepartak

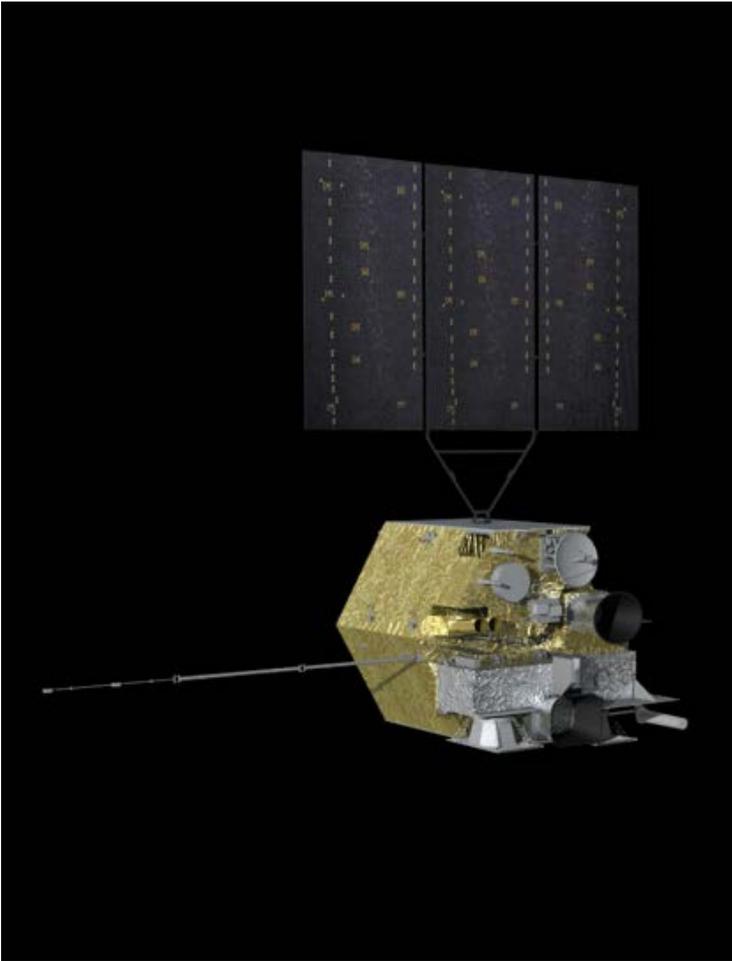
Spatial: 1.25 Km **VS** 50 m
Temporal: 6 min **VS** 9 s

FY-2F

GF-4



FY-4A -- same timeframe with GOES-R



Spacecraft:

1. Launch Weight: approx 5300kg
2. Stabilization: Three-axis
3. Attitude accuracy: 3"
4. Bus: 1553B+Spacewire
5. Raw data transmission : X band
6. Output power: $\geq 3200W$
7. Design life: over 7 years

FY-4A Instruments:

- AGRI**: Advanced Geosynchronous Radiation Imager
- GIIRS**: Geo. Interferometric Infrared Sounder
- LMI**: Lightning Mapping Imager
- SEP**: Space Environment Package

FY-4A: Post Launch Test plan

Dec, 2016: FY-4A Satellite Launch
Dec, 2016: Satellite and instrument adjust

-----**Phase I : Space segment test**

Jan, 2017: Post Launch test start, Payload test
Mar, 2017: Calibration & INR test , Release FY-4A first set imagery
Jun, 2017: L1 products test, Release FY-4A first set L1 products
Jun,30 2017: Phase I test finish, satellite handover to CMA

-----**Phase II: Ground segment and Application test**

July-Sept, 2017: L2/L3 products test Application system test.
Sept-Dec, 2017: Pre operation of ground segment
Dec, 31 2017 : Phase II test finish, system is ready for operational

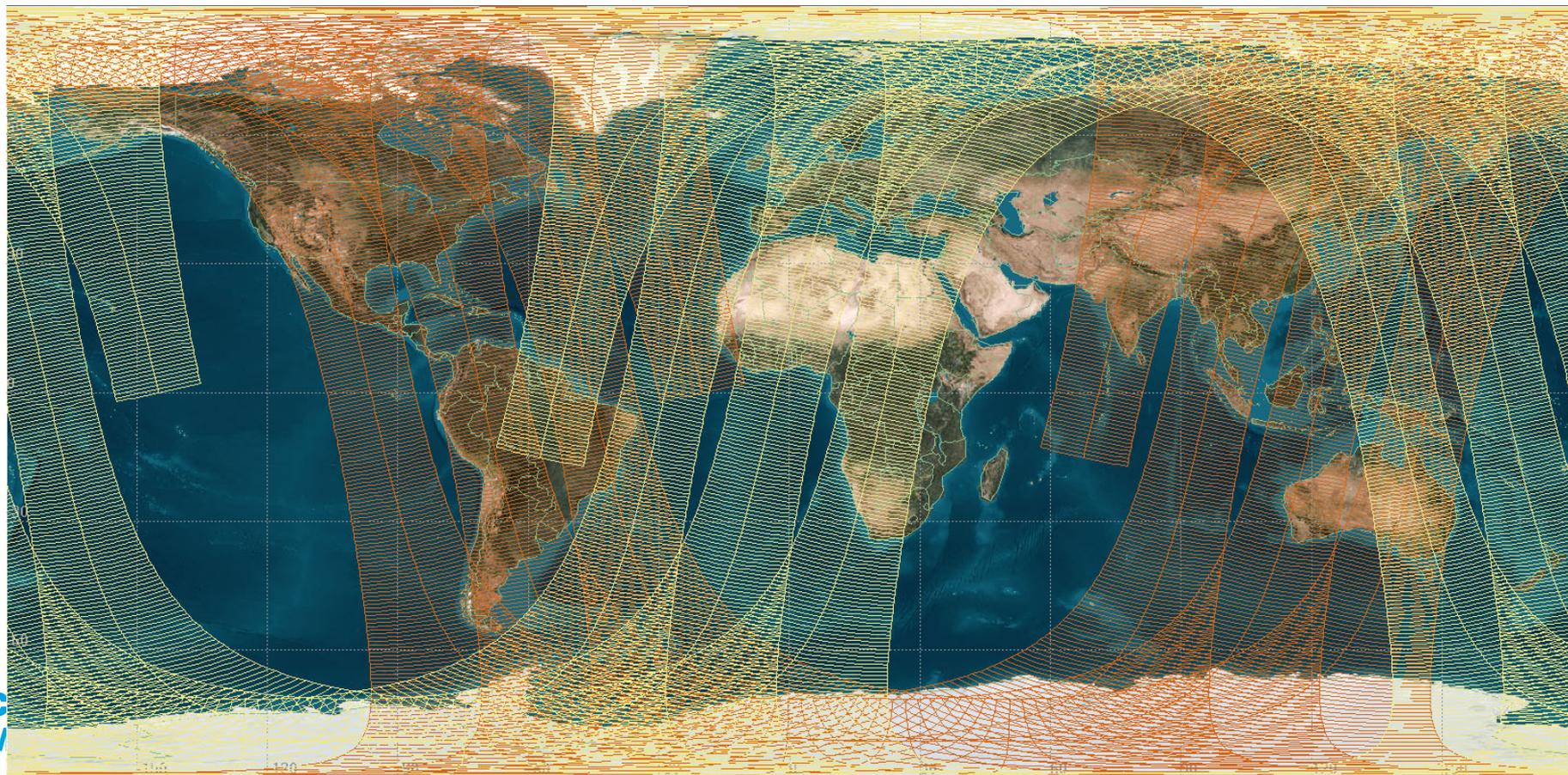


Fengyun Polar Constellation

- Decommission: FY-1D
- In operation: FY-3B + FY-3C (global) + FY-3A (regional)

 FY-3C LTC 10:20 AM

 FY-3B LTC 13:40 PM



CURRENT R&D SATELLITES

1. TANSAT

- Launched in Dec. 22, 2016
- A joint R&D satellite program initiated by MOST and supported by CMA and CAS.
- NSMC is responsible for data reception, processing and distribution, taking advantage of current FY-3 ground segment resources.

TanSat: Post Launch Test plan

Dec, 2016: Satellite Launch

Dec, 2016: Satellite and instrument adjust

Jan, 2017: Post Launch test start, Payload test

Mar, 2017 Calibration test and L1 products test

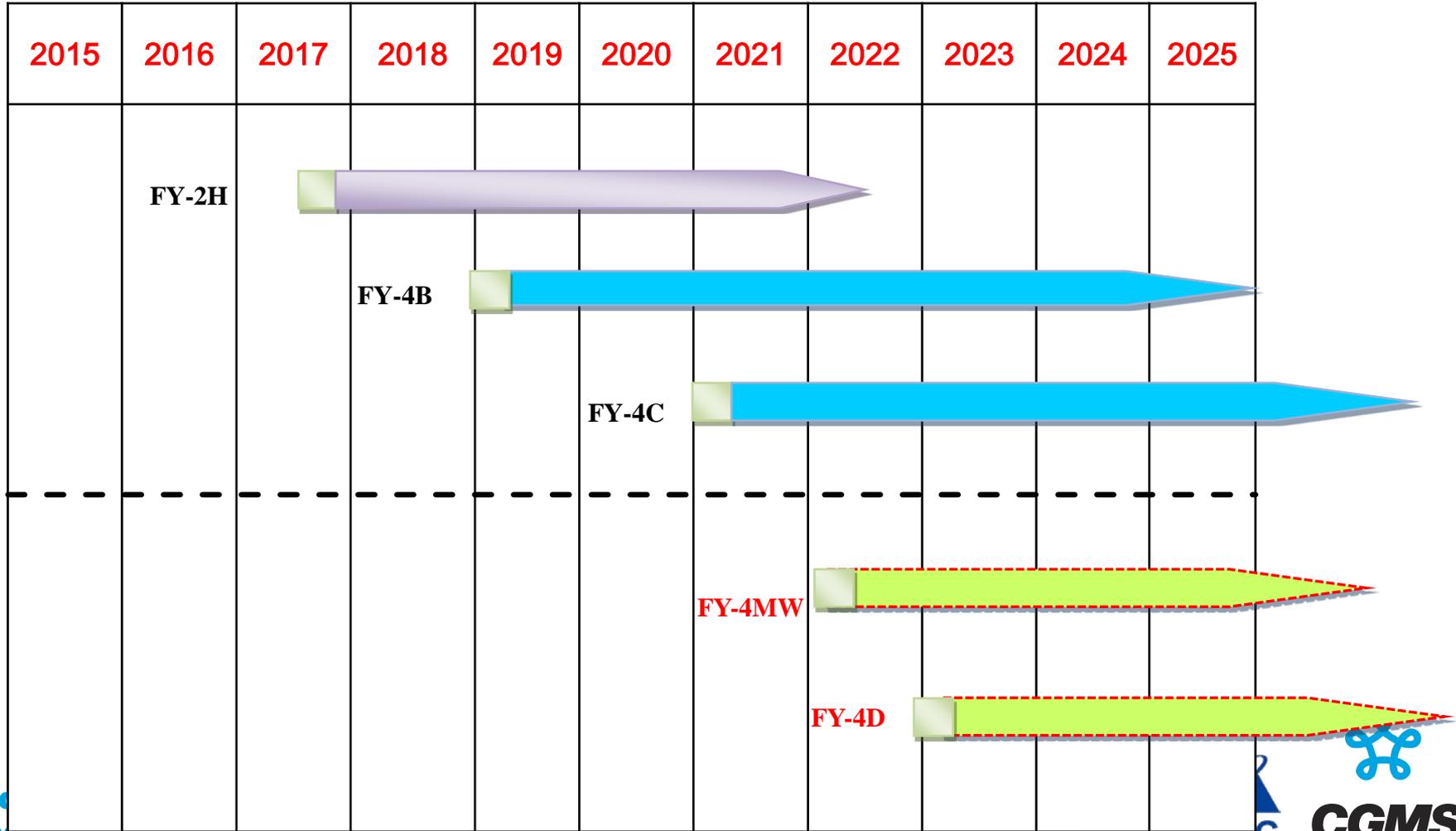
May, 2017 L2 products test

Jun, 2017: Finish Post Launch test.

July, 2017: Operation by CMA

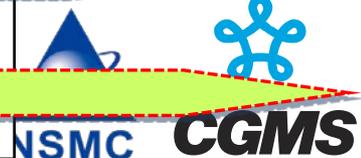
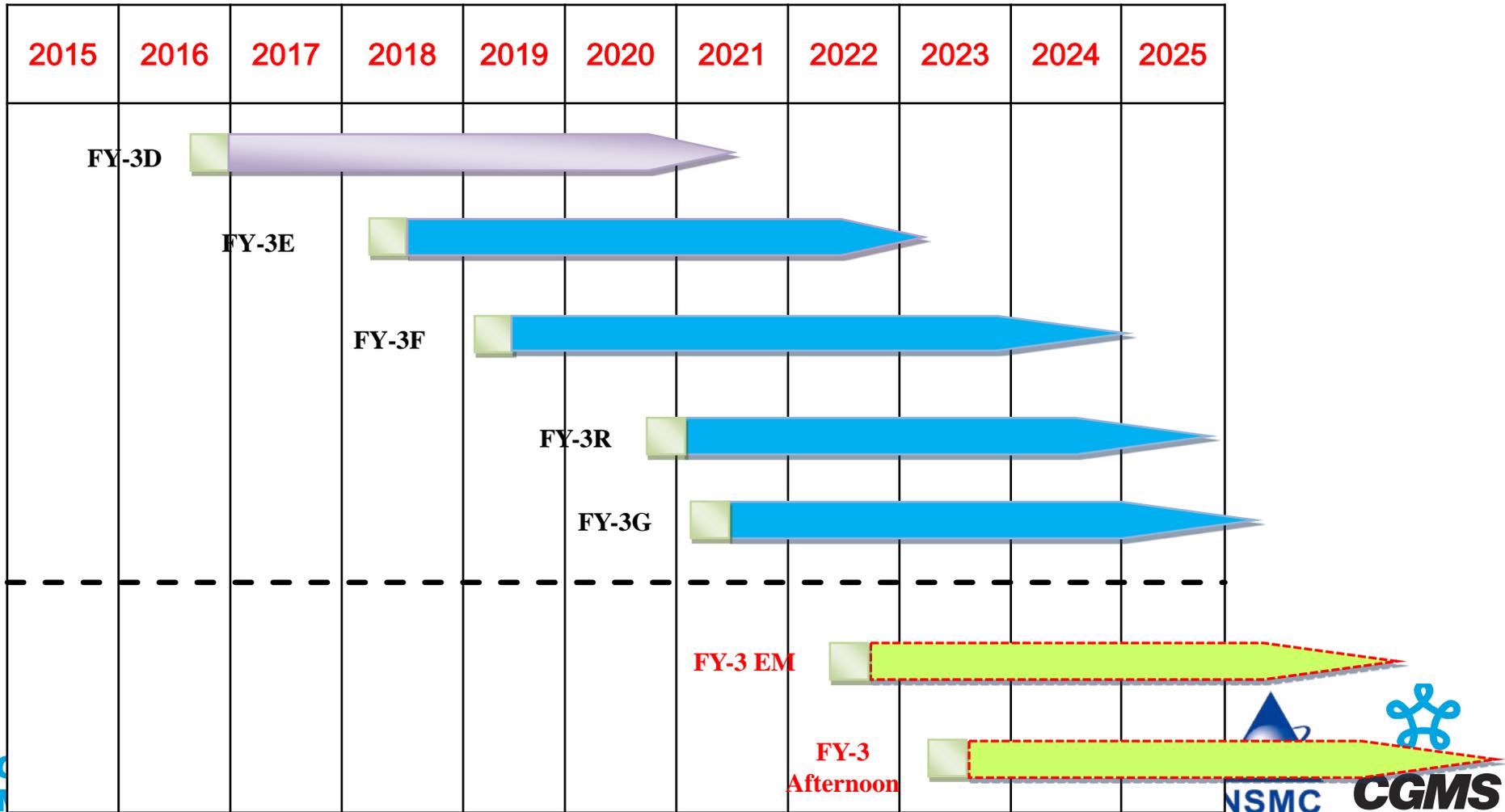
FUTURE GEO SATELLITES

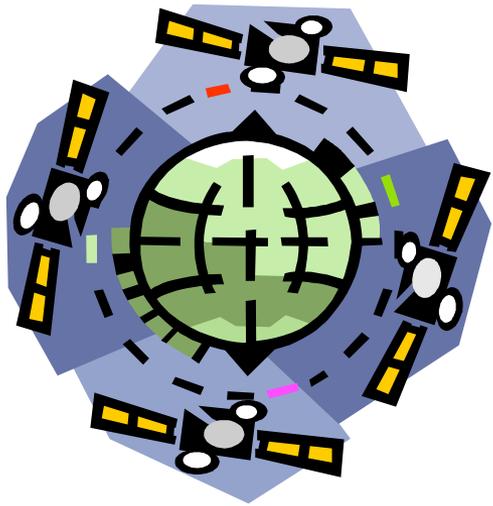
FengYun GEO Satellites Launch Plan by 2025



FUTURE LEO SATELLITES

FengYun LEO Satellites Launch Plan by 2025





Thank you!



Key issues of relevance to CGMS:

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- .
- Reference to HLPP....

To be considered by CGMS:

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