Overview of China Earth Observation Program

China National Space Administration

15th June, 2022

Overview of China Earth Observation Program

- **I. Updates of Main activities**
- **II. Outlook for future**

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Updates of Main activities

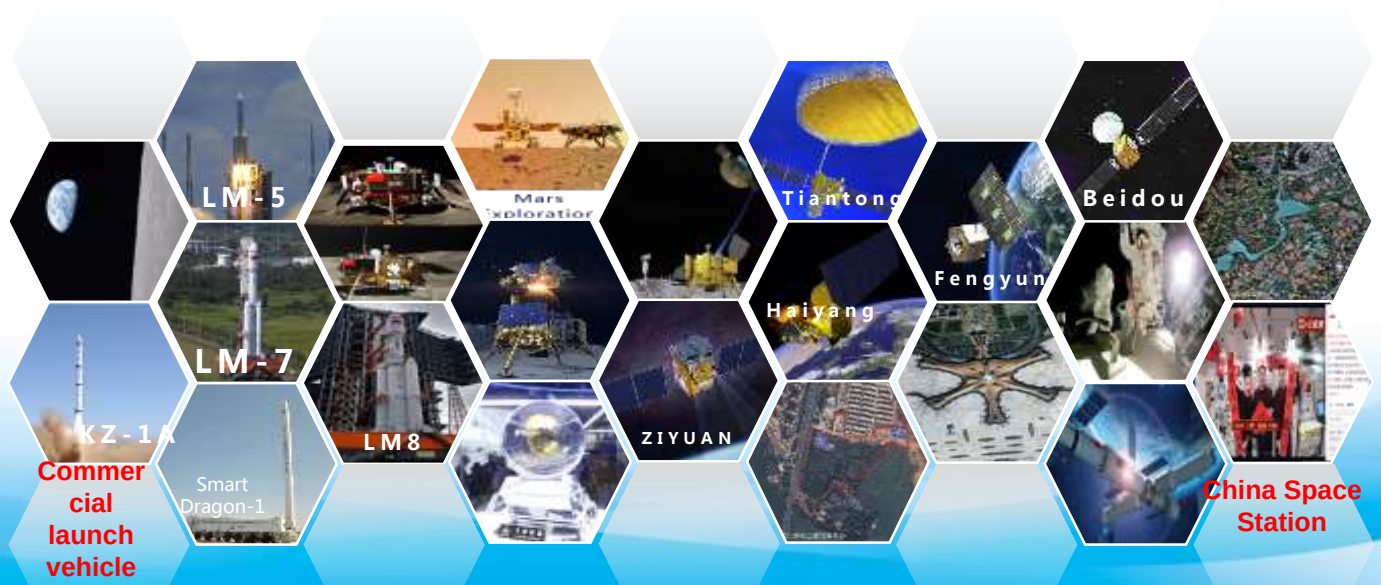
Space Governance Policies

- **Chinese Government Released Space White Paper in Jan, 2022**

  China's Space Program: a 2021 Perspective

- **CNSA Released in April, 2022**

  Interim Provisions for the International Cooperation on National Civil Remote Sensing Satellites Data



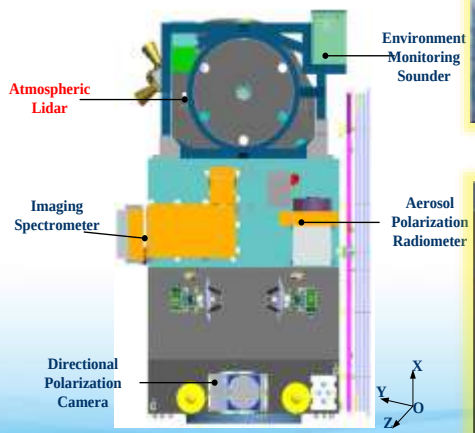
Satellites launched since CGMS-49

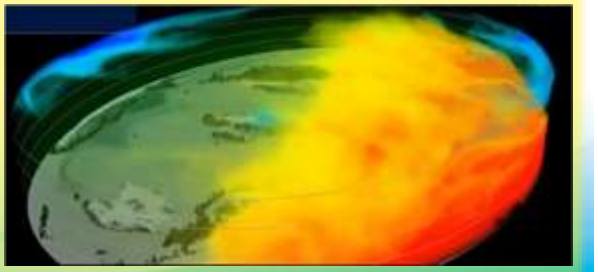
◆ DQ-1, launched in April, 2022

Atmospheric Environment Monitoring through high accuracy CO2 sounding

Payloads including:

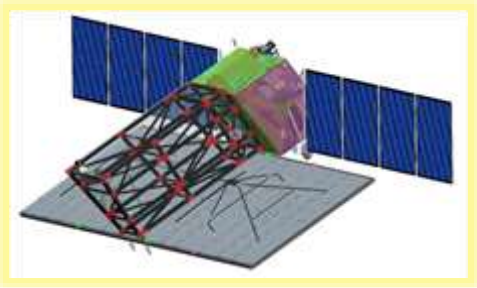
- **Triple channel Lidar**
- **High accuracy polarimetry**
- **Wide swath imaging spectrometer**
- **Directional Polarization Camera**
- **Enviroment Monitoring Sounder**





Satellites launched since CGMS-49

- **L-Band SAR LT-1 A/B, launched in Jan/Feb, 2022**



- **differential interferometric synthetic aperture radar**
- **obtain multi-scenario images**
- **extract land deformation information**

Satellites launched since CGMS-49

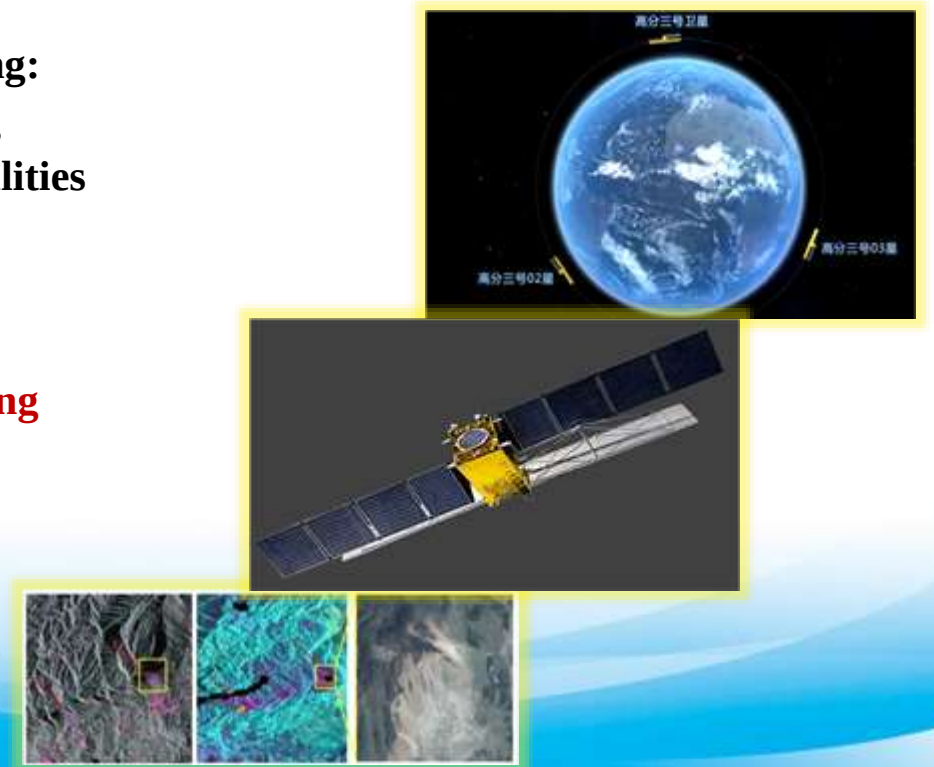
◆ C-Band SAR GF-3 02/03, launched in Nov, 2021 and April, 2022

C band SAR Satellite Constellation, achieving:

- **1-meter resolution and one-day revisiting**
- **Improve sea and land observation capabilities**

Meet the requirements:

- **marine disaster mitigation**
- **marine dynamic environmental monitoring**
- **land survey**
- **environmental protection**
- **water conservancy**
- **agriculture and meteorology**



Satellites launched since CGMS-49

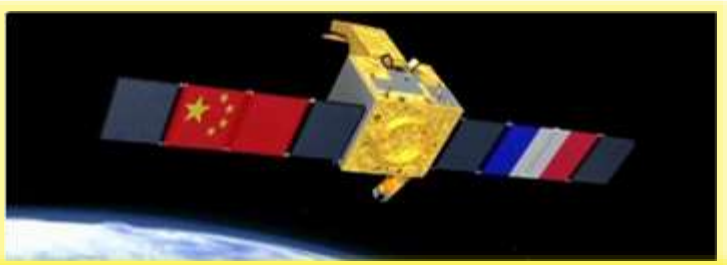
International Cooperation Activities

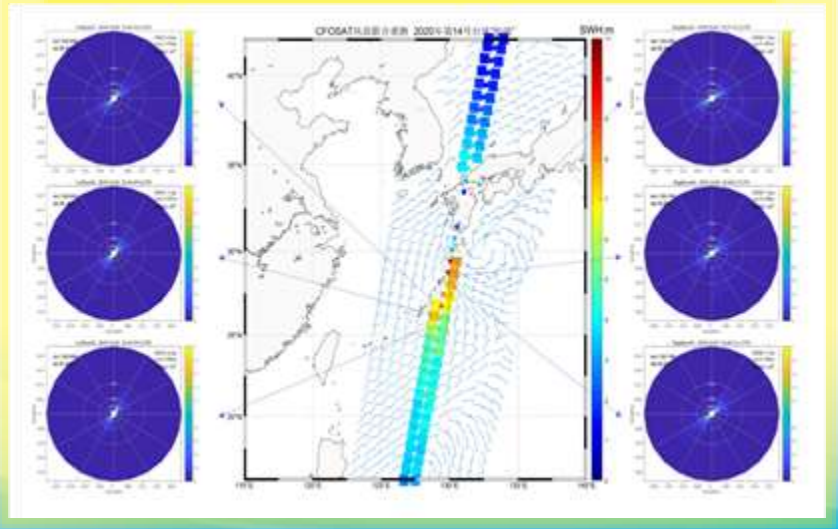
◆ **BRICS Remote Sensing Satellite Constellation**

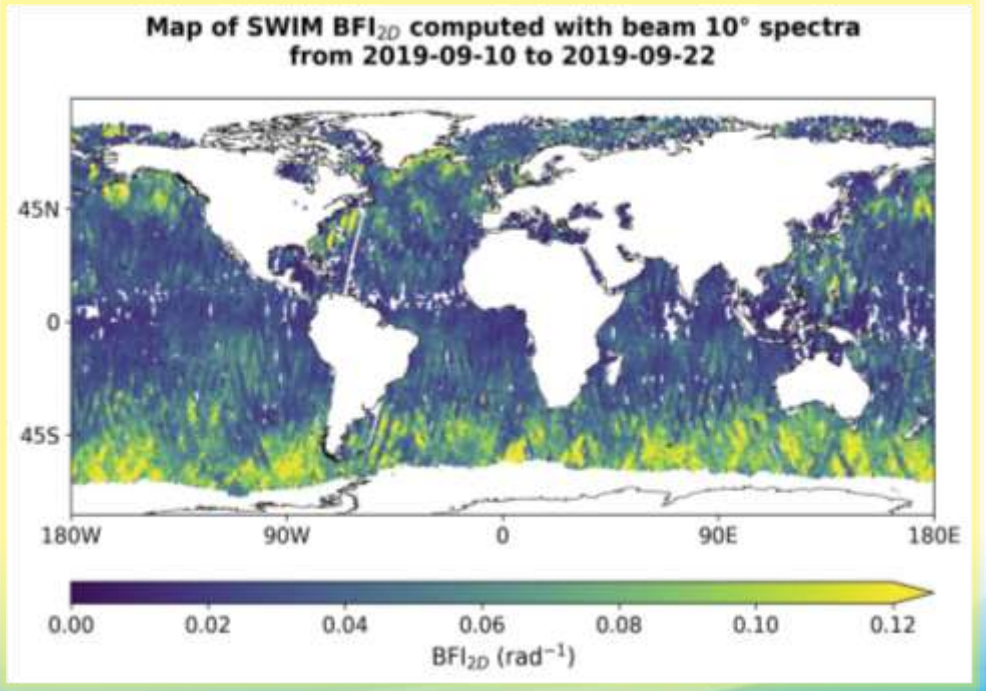
◆ **Website for Data Exchange of BRICS Satellite Constellation**

◆ **Pilot Project Proposal**

International Cooperation Activities







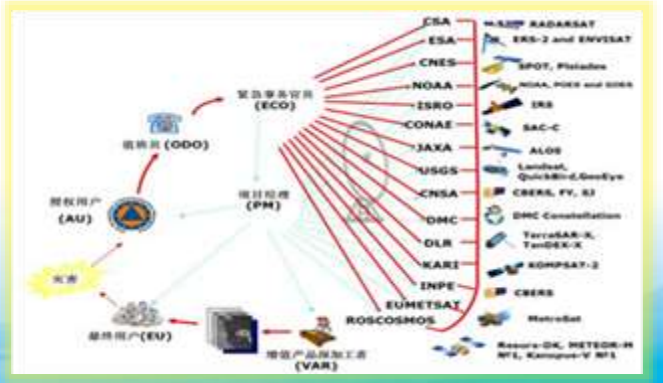
- **Typhoon Trajectory**

International Cooperation Activities

SCO China Office has joined Charter drafting group and contributed to the preparation of the Charter with CNES and UNOOSA colleagues, which will be previewed in June 2022.

◆ Project: HABITAT Yangtze

◆ China-ASEAN Cooperation



◆ Participating in CHARTER Mechanism

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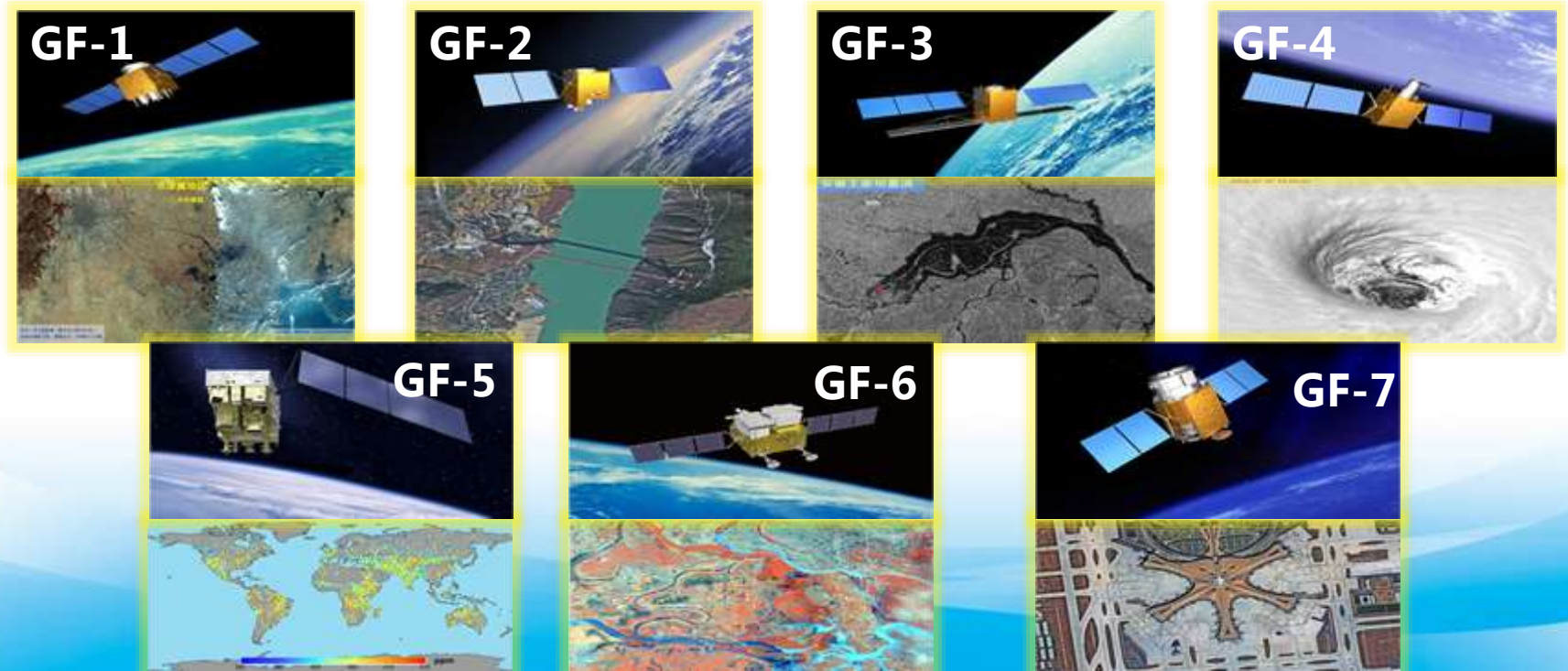
Outlook for future

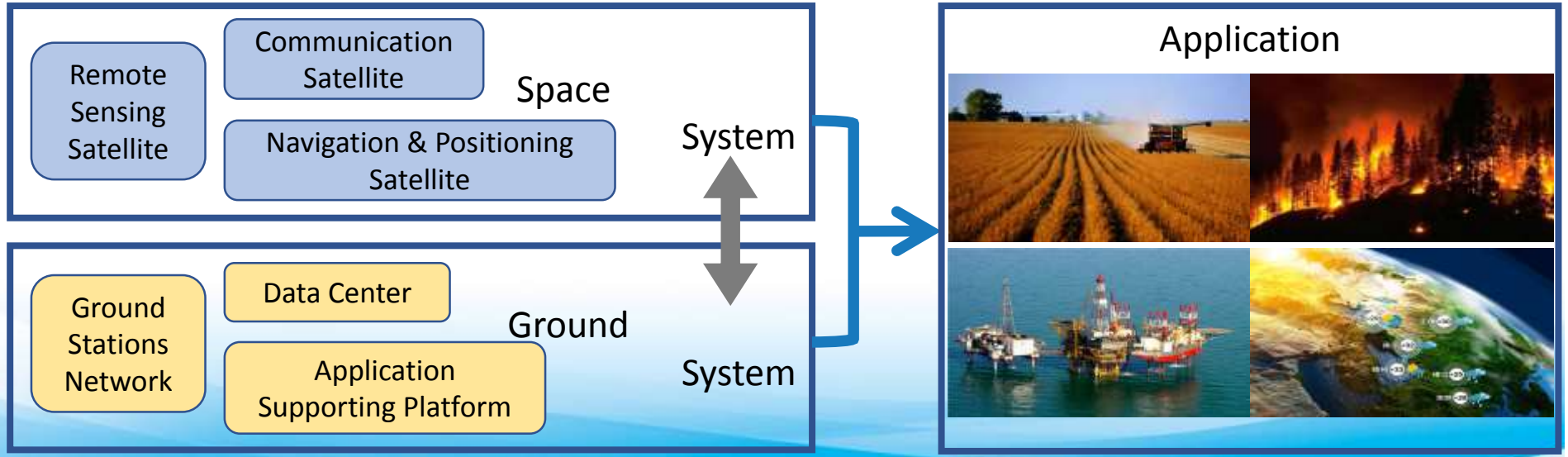
GF series satellites

- **Enhancing high-resolution Earth observation system ability**
- **Expanding application of remote sensing satellite data in various domain**



Civil Space Infrastructure

- **The Civil Space Infrastructure consists of the space and ground system.**
- **The data acquired is applied in agriculture, emergency response, marine resources exploitation, climate change monitoring, etc.**



China's Earth Observation Strategy

Land Observation

- **High Resolution Optical Satellite**
- **Medium Resolution Optical Satellite**
- **SAR Satellite**

Ocean Observation

- **Ocean Color Satellite**
- **Marine Dynamics Satellite**
- **Costal Environment Monitoring Satellite**

Weather Observation

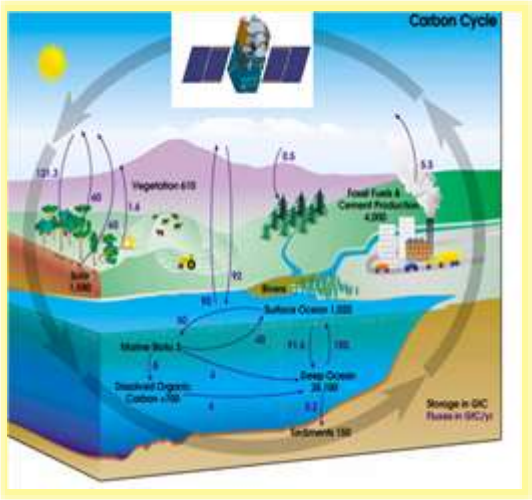
- **Weather Satellite**
- **Climate Satellite**
- **Atmosphere Composition Satellite**

Earth Science

Seismo-Electromagnetic Satellite

Civil Space Infrastructure —— Land

◆ Terra Ecosystem Carbon Monitoring Satellite

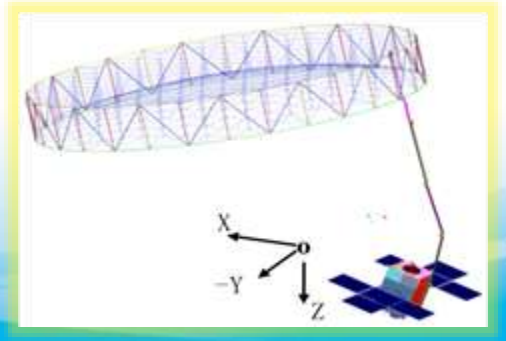


Evaluate the Forest Biomass and Aerosols Distribution for climate changing with payloads including:

- **Multi-Beam LIDAR**
- **Directional Multi-Spectral Imager**
- **Directional Polarization Imager**

◆Water Resources Monitoring Satellite

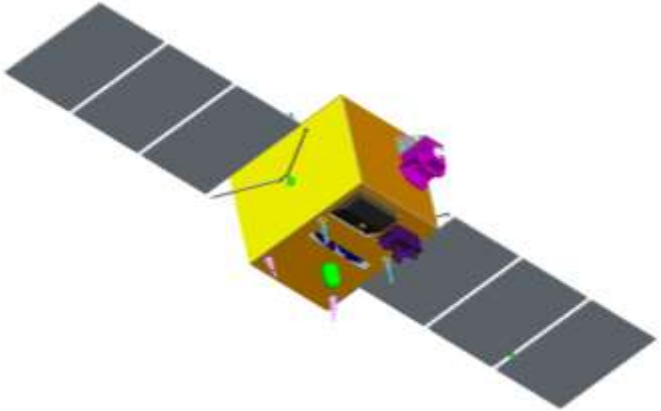
◆GEO SAR Satellite



（L Band SAR with resolution of 20m）

Civil Space Infrastructure —— Ocean

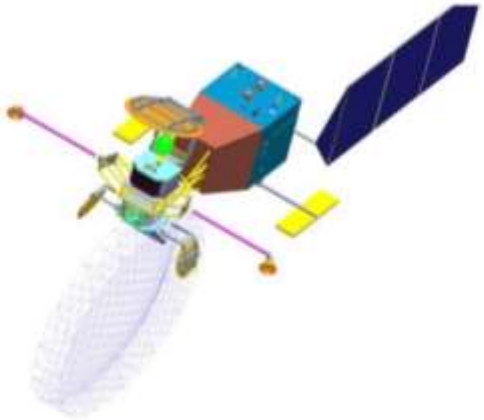
◆ New Generation Ocean Color Satellite



Next generation of HY-1 for ocean color monitoring with payloads including:

- **Ocean Color and Temperature Scanner**
- **Programmable Medium Resolution**
- **Imager and Coastal zone Imager**

◆ New Generation Marine Dynamic Satellite

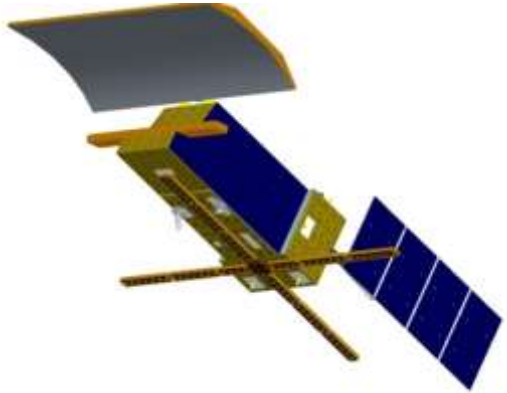


A new generation marine dynamic satellite to comprehensively measure the surface altimeter, wind field and temperature with payloads including

- **Interference Imaging Altimeter**
- **Dual Frequency microwave Scatterometer**
- **Multi-channel Polarization Microwave Radiometer**

Civil Space Infrastructure —— Ocean

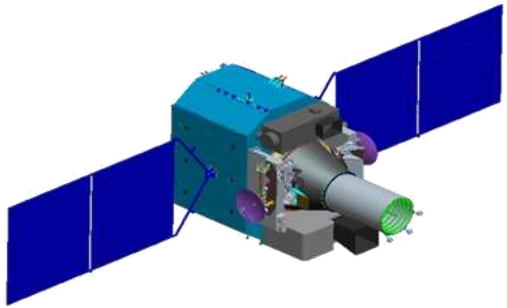
◆Ocean Salinity Monitoring Satellite



Monitor the ocean salinity for marine dynamic environment and global water cycle with payloads including:

- **Microwave Imaging Radiometer using Aperture Synthesis**
- **Passive-Active Microwave Sensor**

◆ Marine Environment Monitoring Satellite

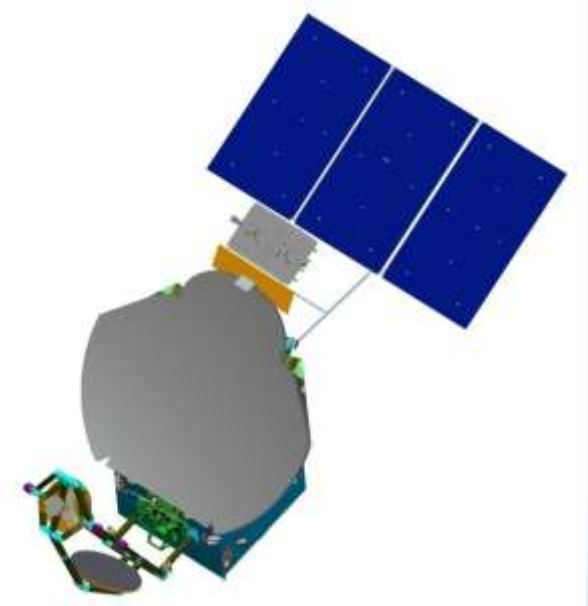


Monitor the marine enviroment in real-time with Geostationary satellite with Payloads including:

- **Coastal Zone Monitoring Imager**
- **Atmospheric Monitoring Spectrometer**
- **Ocean Oil Spill Detector**

Civil Space Infrastructure —— Atmosphere

◆Geostationary Orbit Microwave Sounding Satellite



- **Combine the time-sensitive advantage of geostationary orbit remote sensing with the ability of microwave to penetrate cloud and rain atmosphere.**

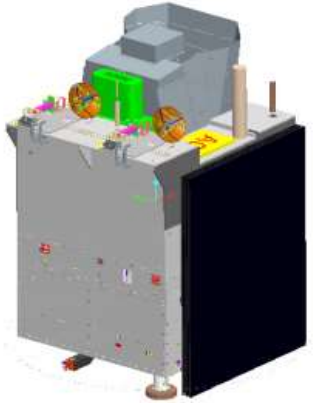
- **Effectively improve the monitoring and early warning capacity of rapidly changing disastrous weather, such as typhoon and rainstorm.**

Payloads:

- **Submillimeter-wave Sounder**
- **Lighting Imager**
- **Atmosphere Trace Gas Detector**

International Cooperation Satellites

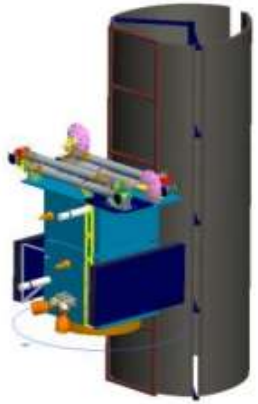
◆CBERS-05: High-Resolution Optical Satellite



CBERS-05 will mainly be used for the continuity and improvement of CBERS optical data with payloads including:

- **High-resolution CMOS Camera (China)**
- **Atmosphere Correction Instrument (China)**
- **Advanced Wide Field Imager (Brazil)**

◆CBERS-06: X-SAR Satellite



Expand CBERS to radar area, using X-band high-resolution data for the monitoring of marine oil spill, deforestation, agriculture, etc.

Thanks for your attention