Overview of China Earth Observation Satellites

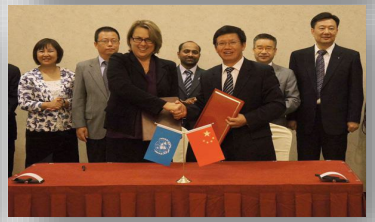
China National Space Administration (CNSA)
Mr. PENG Wei

26th June, 2023

China National Space Administration (CNSA)

- A governmental organization of People's Republic of China
- Responsible for the management of civil space activities
- International space cooperation



International Space Cooperation

136 space cooperation agreements

43 countries and regions

6 international organizations

Overview of China Earth Observation Satellites

01 Progress since CGMS-50

02 **Prospect for Future**

Overview of China Earth Observation Satellites

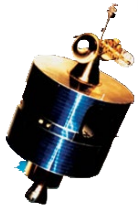
1

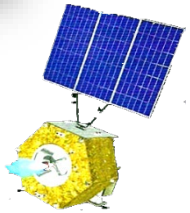
Progress since CGMS-50

China Earth Observation Satellites Series

Meteorology Monitoring

DQ-1

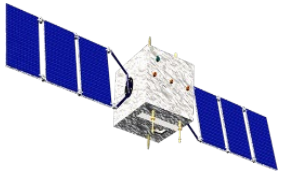


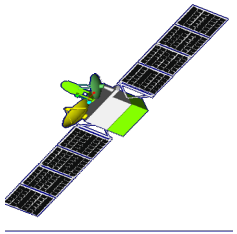


FY-2 **FY-3** **FY-4**

- FengYun(FY) Series
- DaQi(DQ)Series

Ocean Monitoring

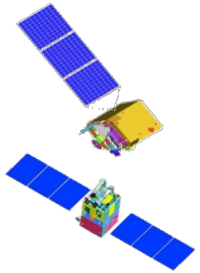




HY-1 **HY-2**

- HaiYang(HY) Series

Land Survey



GF **ZY** **LT**

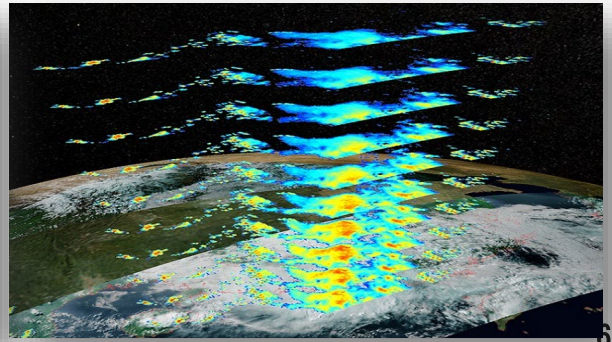
- GaoFen(GF) series
- ZiYuan(ZY) series
- LudiTance(LT) series,etc.

Satellites launched since CGMS-50-Meteorology

FengYun-3G, launched in April, 2023

Combine active precipitation measurement with passive microwave and optical imaging remote sensing to achieve joint and coordinated detection of precipitation, cloud and rain atmospheric parameters.

- Dual-frequency Precipitation Measurement Radar
- Microwave imager
- Medium resolution spectral imager

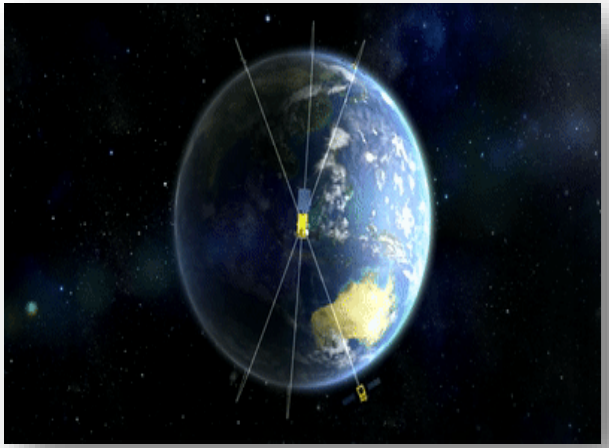


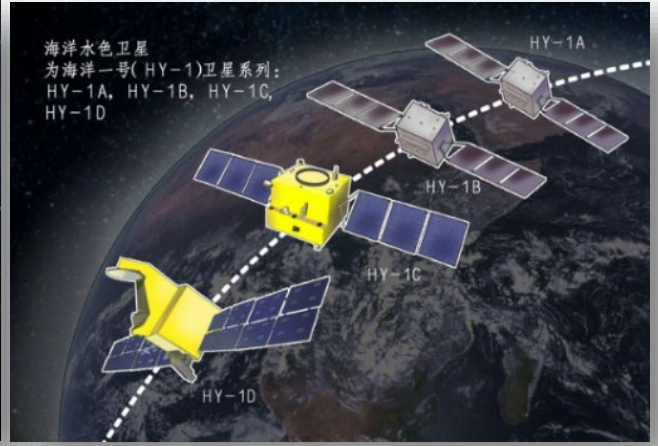
Satellites launched since CGMS-50-Ocean Monitoring

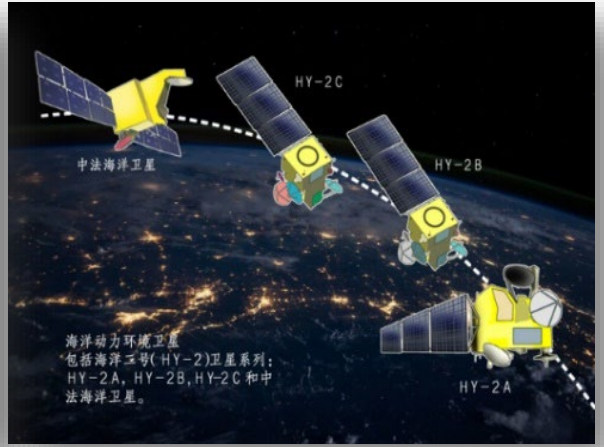
HY Series

China has successfully launched 11 HY Satellites, 8 of which are in orbit.

- HY-1 Series
- HY-2 Series





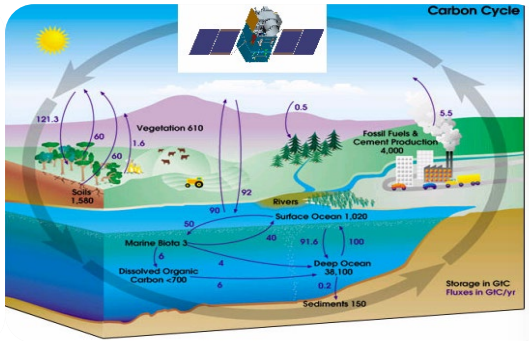


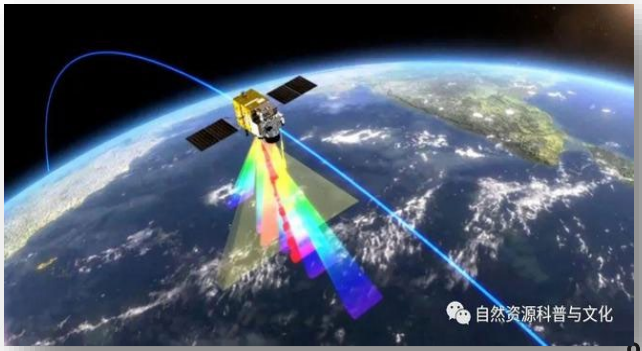
Satellites launched since CGMS-50-Land Survey

- **Terra Ecosystem Carbon Monitoring Satellite, launched in August, 2022**

  Adopt a system combining active and passive remote sensing to achieve high-precision quantitative measurement of vegetation biomass, chlorophyll fluorescence and aerosol distribution. Payloads:

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





Satellites launched since CGMS-50-Land Survey

Environmental Disaster Mitigation II-E Satellite, launched in October, 2022

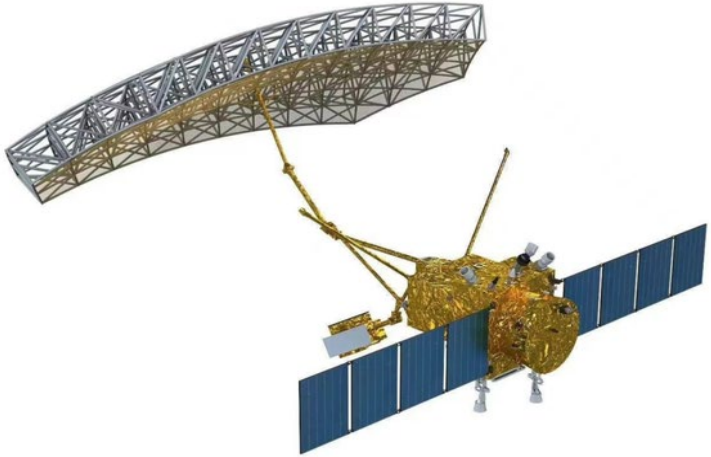
Together with the II-F satellite launched in the second half of this year, the satellite will adopt a dual-star in-orbit operation mode, and have the ability to obtain global 5-meter S-band image data.

Payloads:

- 5-meter S-band SAR

Meet the requirements:

- disaster prevention and mitigation
- environmental protection

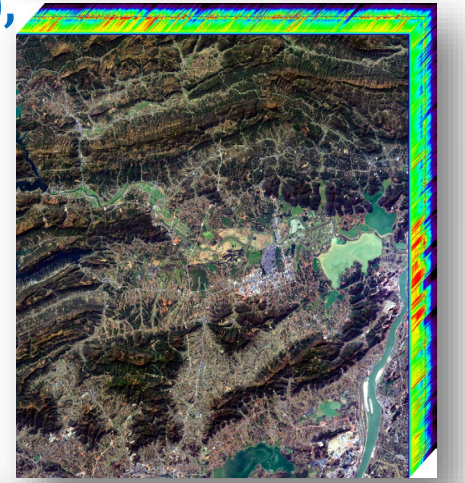


Satellites launched since CGMS-50-Land Survey

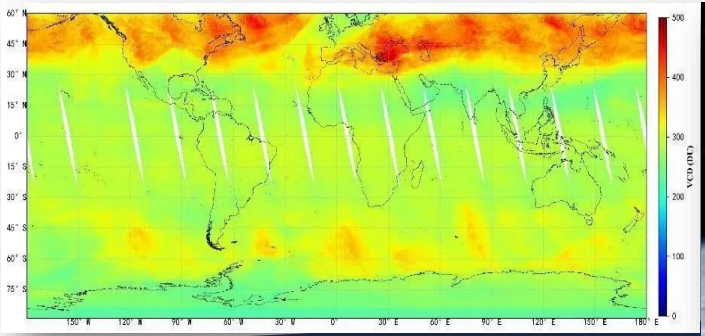
- **Hyperspectral Integrated Observation Satellite(GF-5 01A), launched in December, 2022**

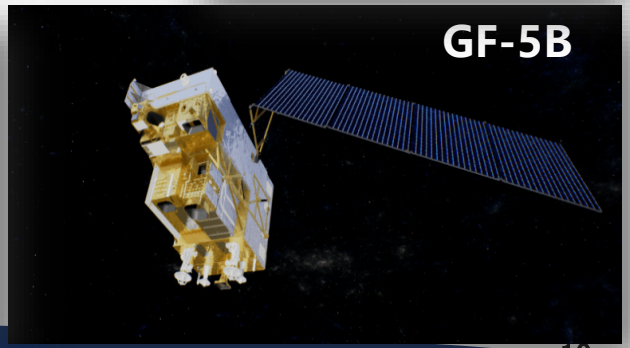
The construction task of Gaofen series satellites space section has been fully completed. Meeting the requirements:

- Environmental quality supervision, Natural resources survey, Climate change research



- **Hyperspectral Observation Satellite(GF-5B), put into service in April, 2023**





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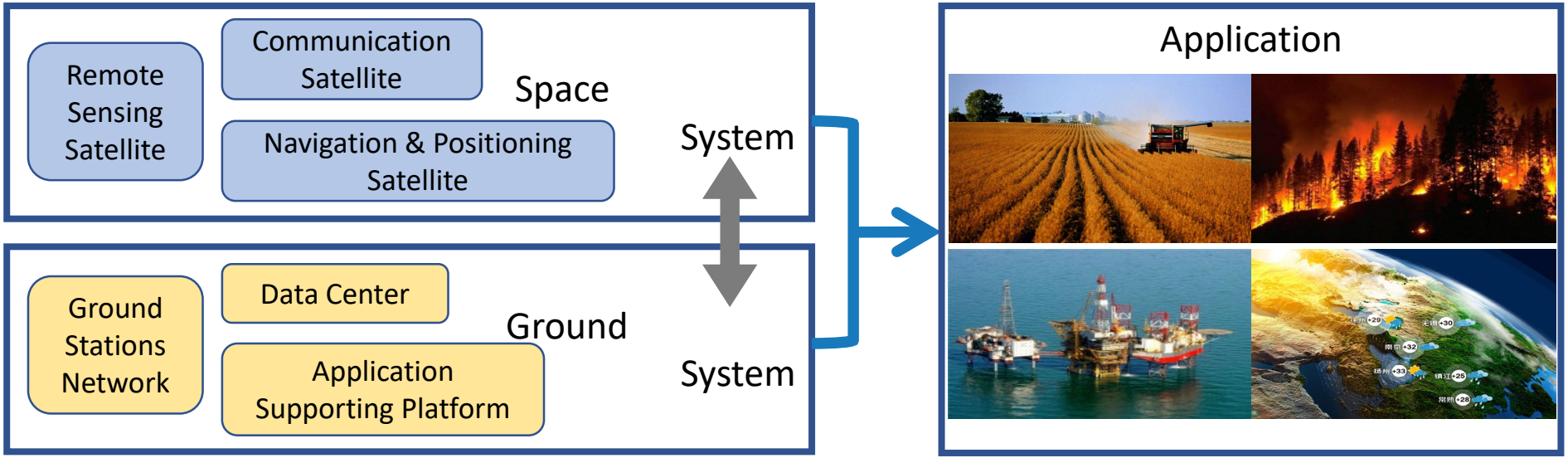
Prospect for Future

China's 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 Earth Observation Strategy

Meteorology Monitoring

- Weather Satellite
- Climate Satellite
- Atmosphere Composition Satellite

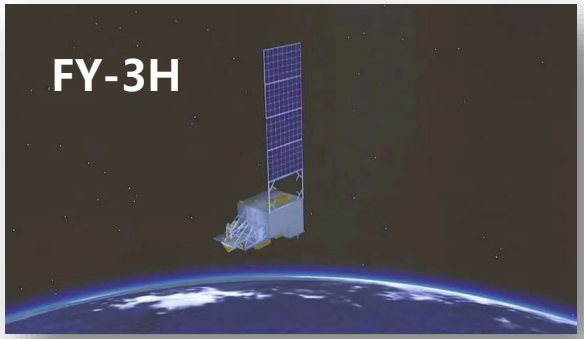
Ocean Monitoring

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

Land Survey

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

Future Satellite Development Plan-Meteorolog



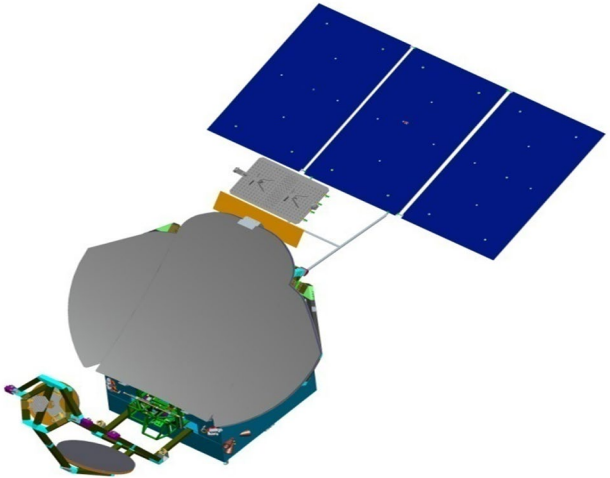
Future Satellite Development Plan-Meteorolog

Geostationary Orbit Microwave Sounding Satellite

- Fill the gaps in the information about the three-dimensional structure of clouds, rain and atmospheric interior obtained by microwave detection methods in the geostationary orbit.
- Realize all-weather and all-day quantitative monitoring and early warning of severe weather systems such as fast-changing typhoons and rainstorms, and the detection of atmospheric temperature and humidity profiles.

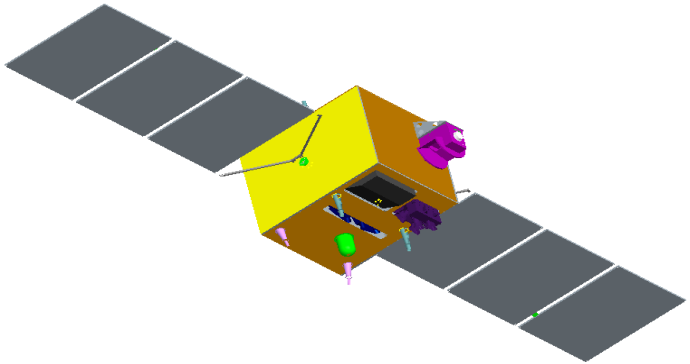
Payloads including:

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



Future Satellite Development Plan–Ocean

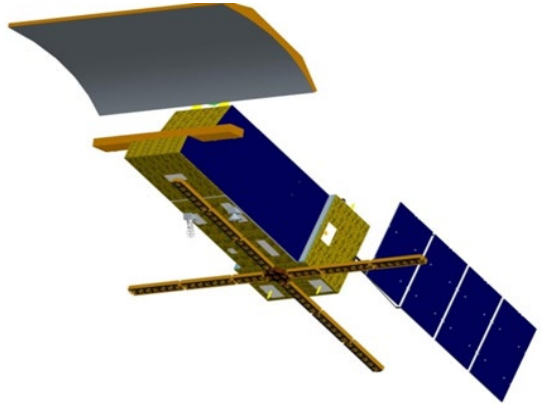
◆ New Generation Ocean Color Satellite



Scheduled to be launched by the end of this year, will improve the spatial resolution and spectral resolution of China ocean color observation. Payloads including:

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

◆ Ocean Salinity Monitoring Satellite



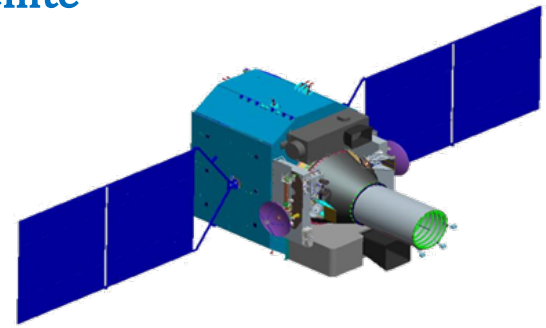
Monitor the ocean salinity for marine dynamic environment and global water cycle.

Payloads including：

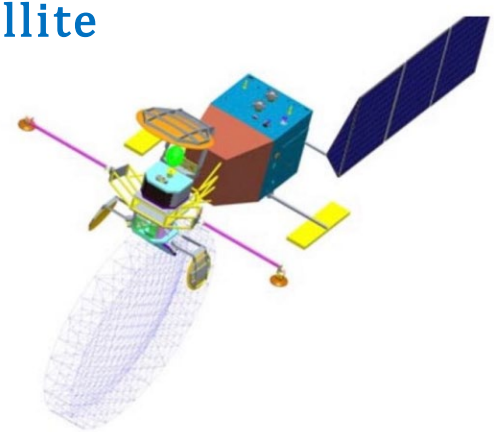
- Microwave Imaging Radiometer using Aperture Synthesis
- Multi-element Passive-Active Microwave Sensor

Future Satellite Development Plan–Ocean

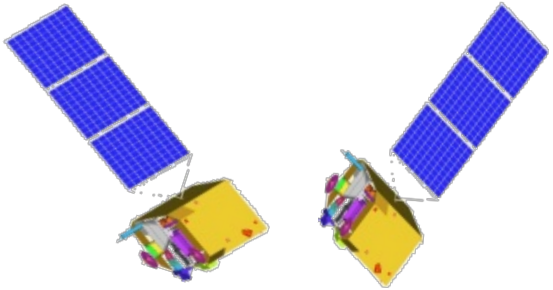
- GEO Ocean and Coastal Zone Monitoring Satellite



- New Generation Marine Dynamic Satellite

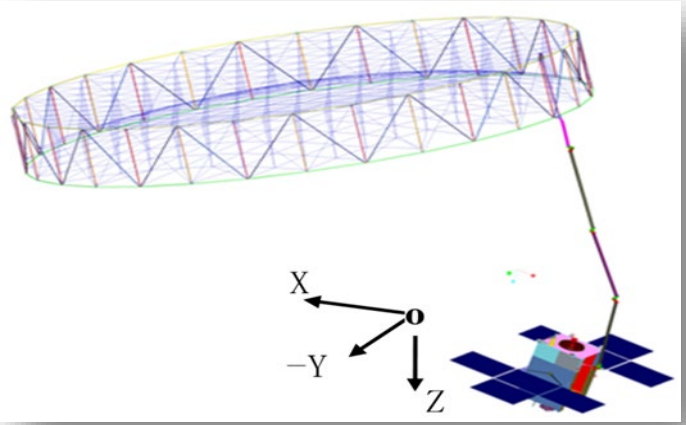


- HY-2E、HY-2F



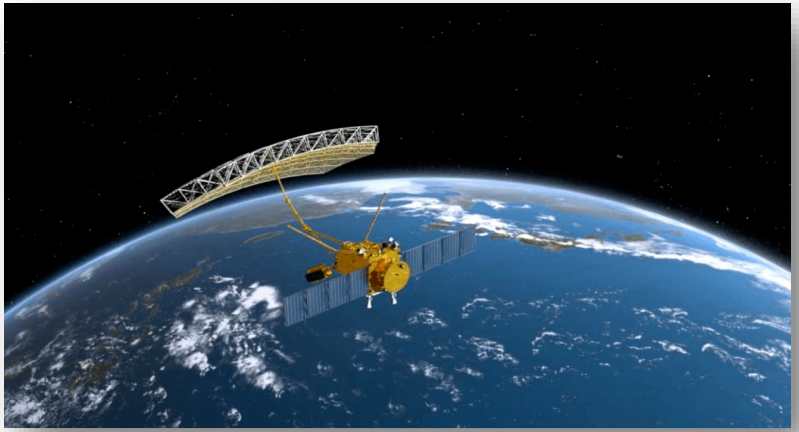
Future Satellite Development Plan–Land

◆ GEO SAR Satellite



（L-Band SAR）

◆Environmental Disaster Mitigation II-F Satellite



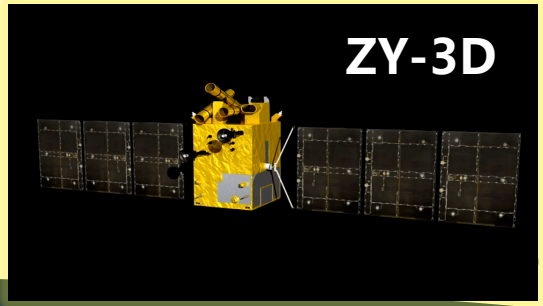
（Consistent with the technical state of II-E Satellite）

Scheduled to launch in the third quater of this year

Future Satellite Development Plan–Land

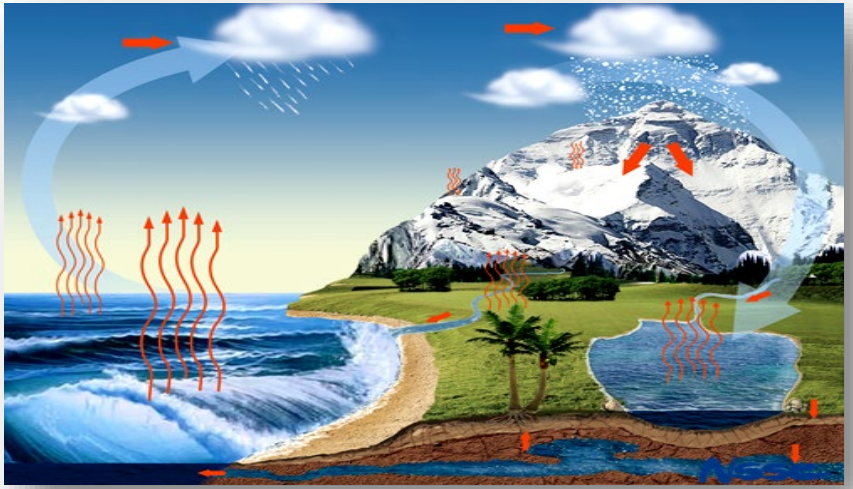
- Dual-antenna X-band Inter-ferometric SAR Satellite

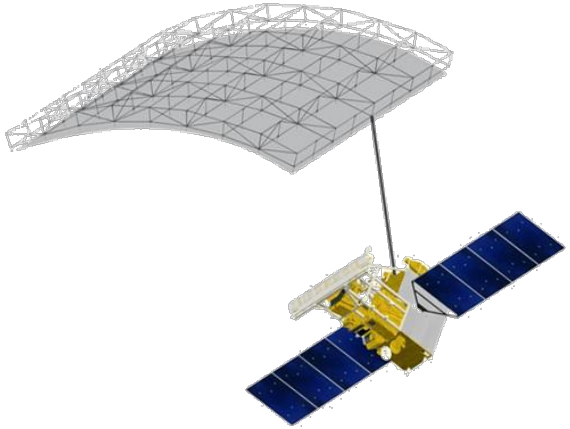
- GaoFen-4B (GEO Optical Satellite)
- GaoFen-7B (0.8-meter Stereoscopic Mapping Satellite)
- ZiYuan-3D (2.1-meter Stereoscopic Mapping Satellite)



Future Satellite Development Plan–Land

Water Resources Monitoring Satellite





Prospect of China Earth Observation

China will further promote the application of space information in important areas: sustainable economic and social development addressing climate change, disaster prevention, environmental protection, carbon peak and carbon neutrality, contribute to the realization of the United Nations 2030 Sustainable Development Goals, the peaceful use of outer space, and the building of a community with a shared future for mankind in outer space.

Thanks for your attention