

Development of FengyunCast

Summary and purpose of paper

In the CMA-WP-17 to CGMSXXXIII, CMA described the ShineTek DVB system developed to disseminate the meteorological satellite data received by China Meteorological Satellite Ground System. At the WMO December 2005 RARS Workshop, the Chinese delegate suggested that the ShineTek DVB system could be used for regional exchange of meteorological satellite data and products. However, the potential for regional use is limited by the coverage of Ku-band of Sina-1 satellite used by ShineTek DVB for data transmission. Hence, update for the ShineTek DVB system is being conducted. The new system uses the C-band of AisaStar-4 satellite at 122.2°E to transmit data; the coverage is therefore improved to include the west pacific. The new version of ShineTek DVB system is named as FengyunCast.

Development of FengyunCast

1. FengyunCast system and Data

The FengyunCast uses the Digital Video Broadcast (DVB) technology to disseminate the meteorological satellite data and products. FengyunCast is the update version of former CMA ShineTek DVB System developed by NSMC ShineTek Company.

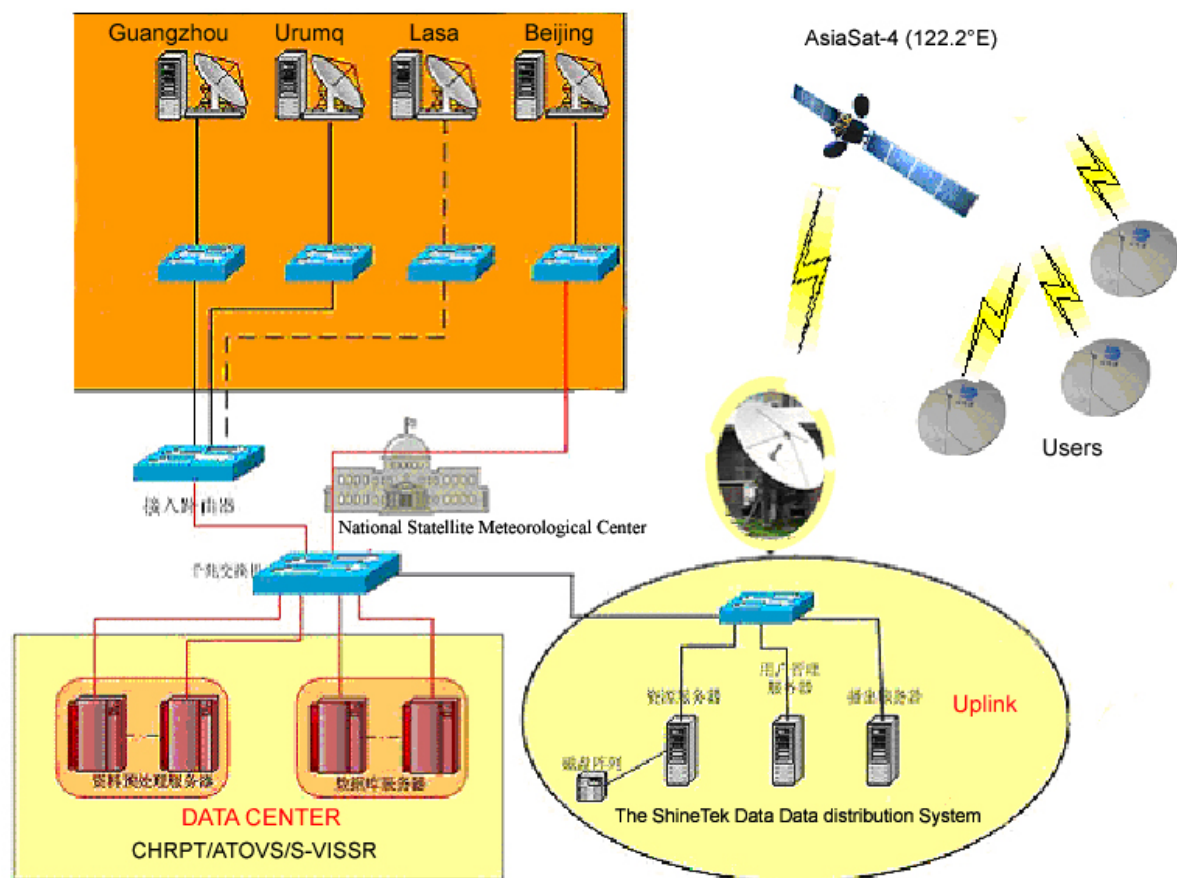


Figure 1. Schematics of FengyunCast System

Meteorological satellite data accessible to users through FengyunCast include:

- CHRPT data from FY-1D polar orbiting meteorological satellite data
- ATOVS data from EUMETCast
- S-VISSR data from FY-2C geostationary meteorological satellite at 105° E
- S-VISSR – data from FY-2 geostationary meteorological satellite at 86.5° E

Particularly, users get FY-2 geo-stationary meteorological satellite data in near real time -- to be delayed by 6 seconds with reference to the S-VISSR station users.

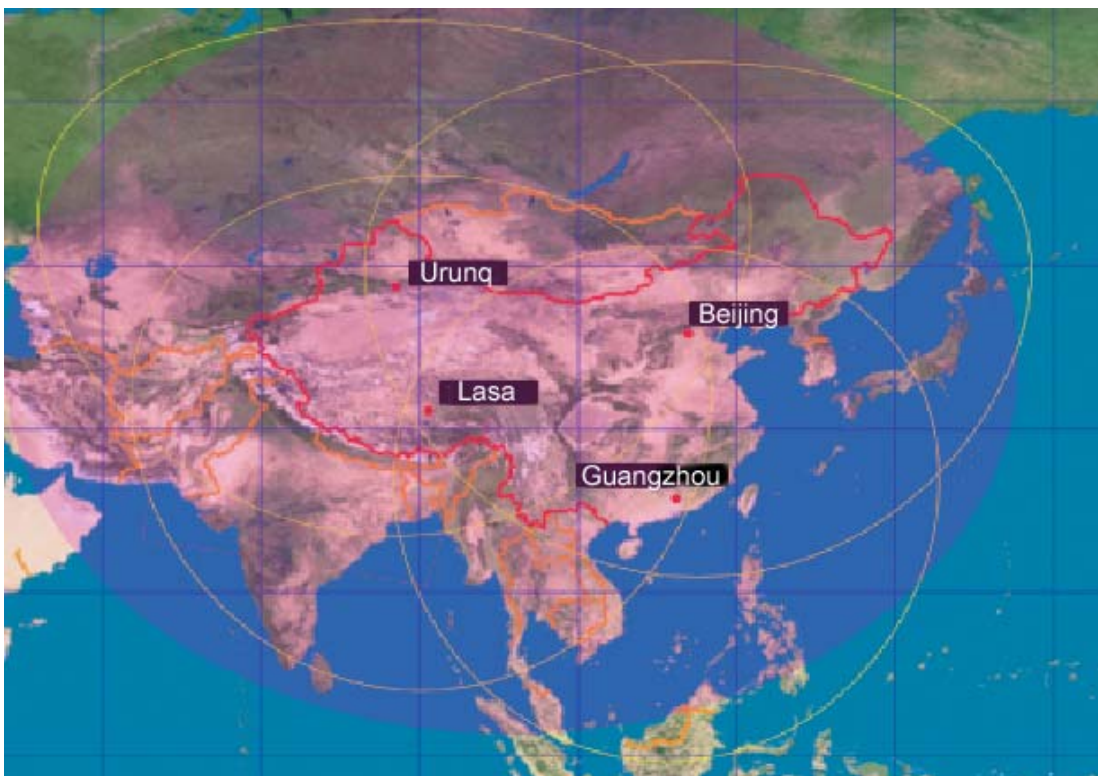


Figure 2. CHRPT data coverage from meteorological satellite receiving stations

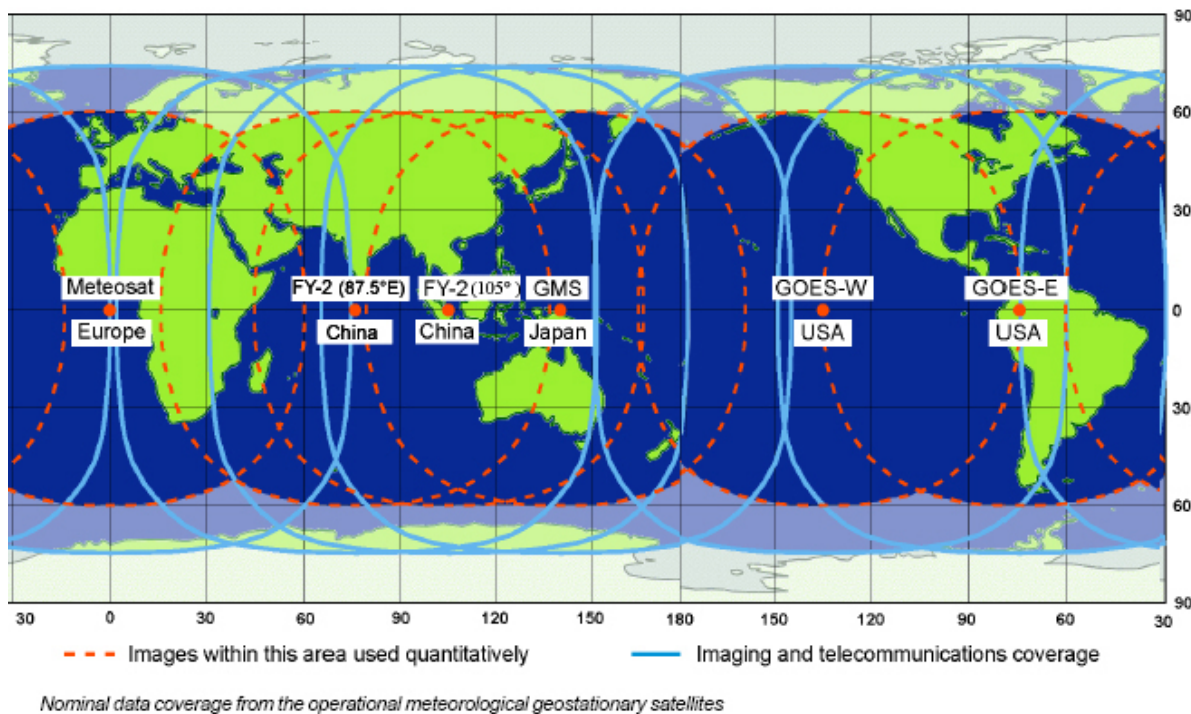


Figure 3. S-VISSR data coverage by FY-2 series

2. FengyuCast C-band Transmission Coverage

The footprint of DVB is determined by the spacecraft used and associated antenna beams. With current configuration, the FengyunCast system operates in C – band of Transmitter C11H on AsiaSat-4 Satellite at 122.2° E longitude. The downlink frequency is 4033.75MHz - 4041.75MHz (Horizon).

As shown in Figure 3 & 4, in current C-band operational configuration, the FengyunCast has a good coverage over China.

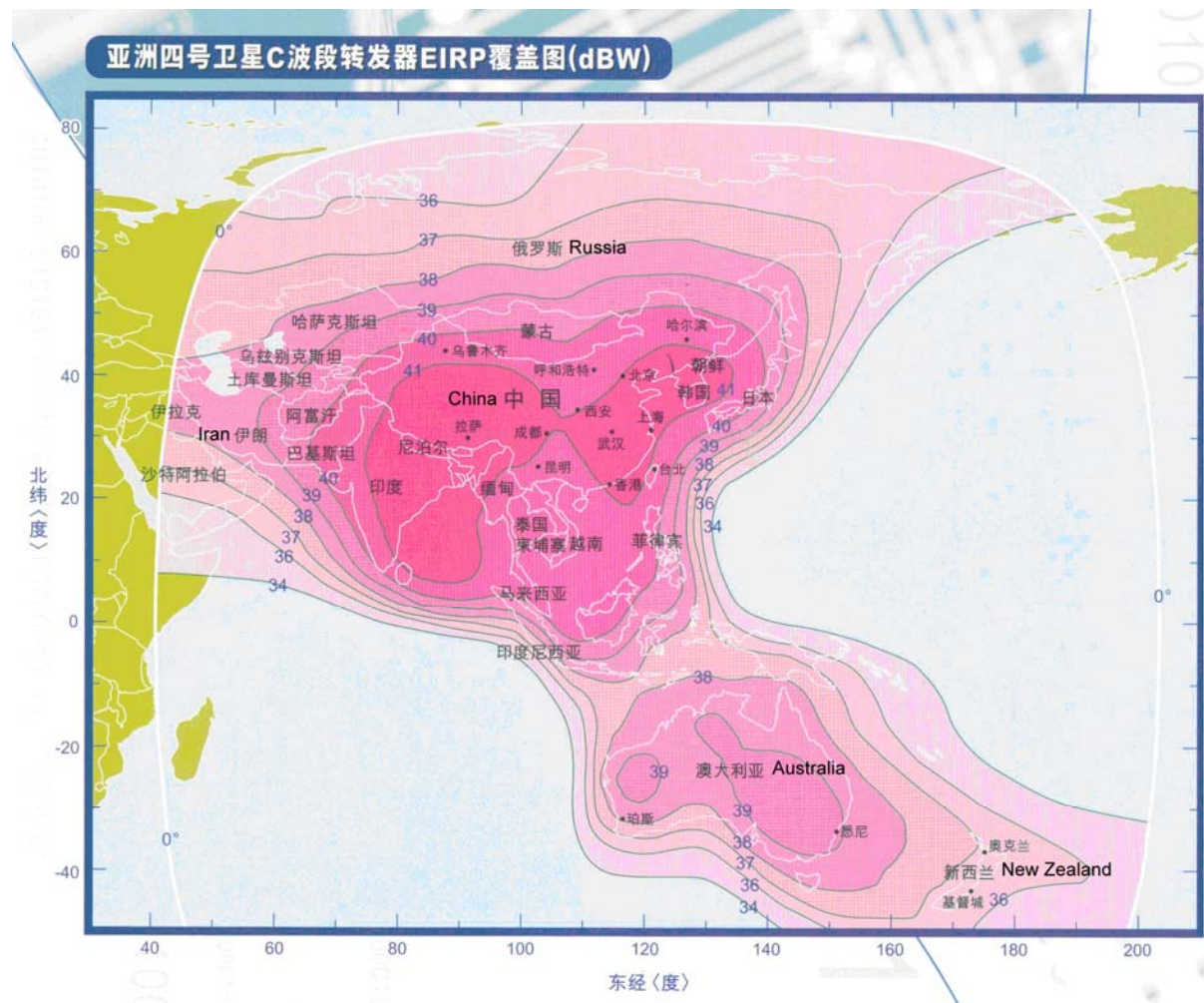


Figure 3. AsiaSat-4 Satellite EIRP Coverage

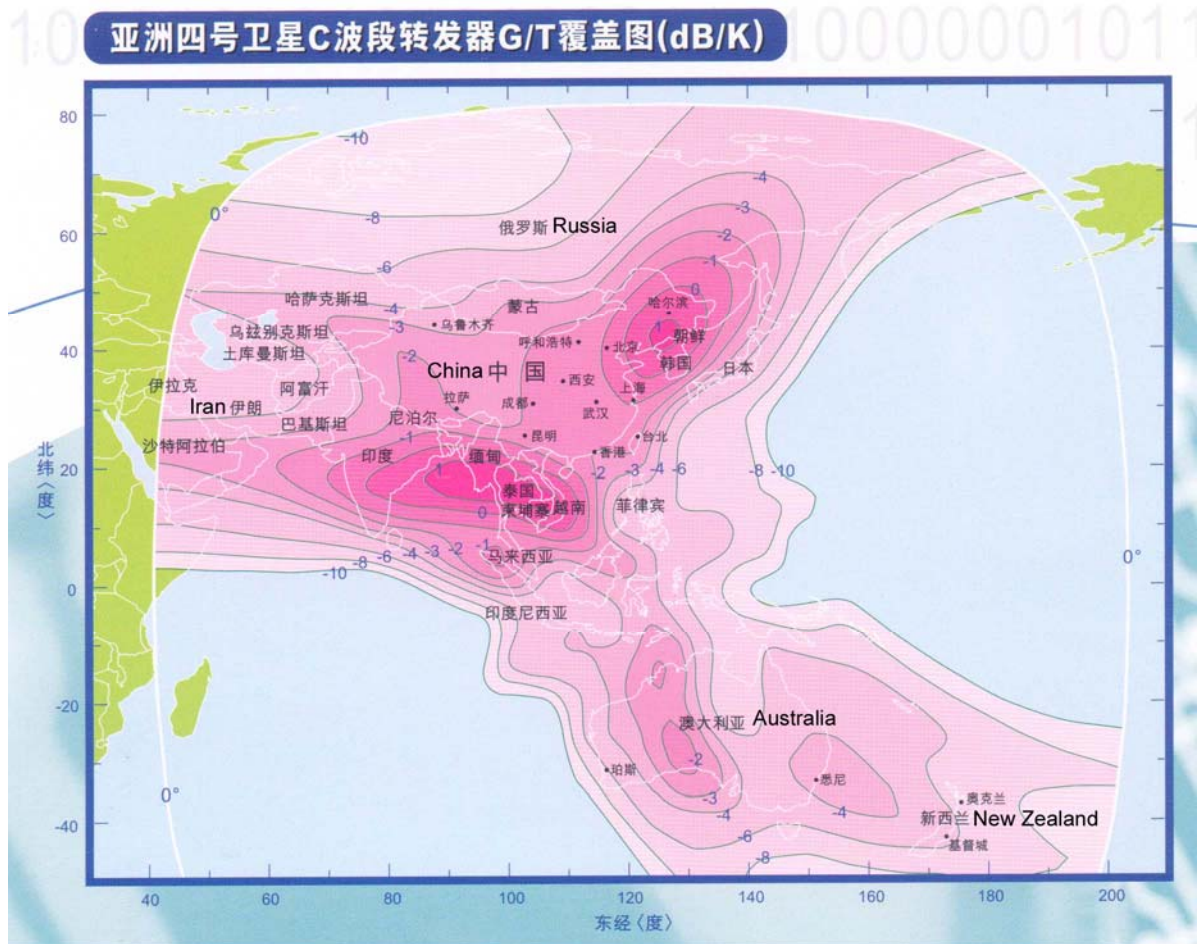


Figure 5. AsiaSat-4 Satellite G/T Coverage



Figure 6. AsiaSat-4 Satellite Frequency and Polarization Plan

3. FengyunCast User's Terminal

Configuration for FengyunCast user terminals is as follows.

- Antenna (1.8m or larger)
- A LNB
- A DVB PCI card
- Cable
- Two computers
- Two monitors
- A set of software

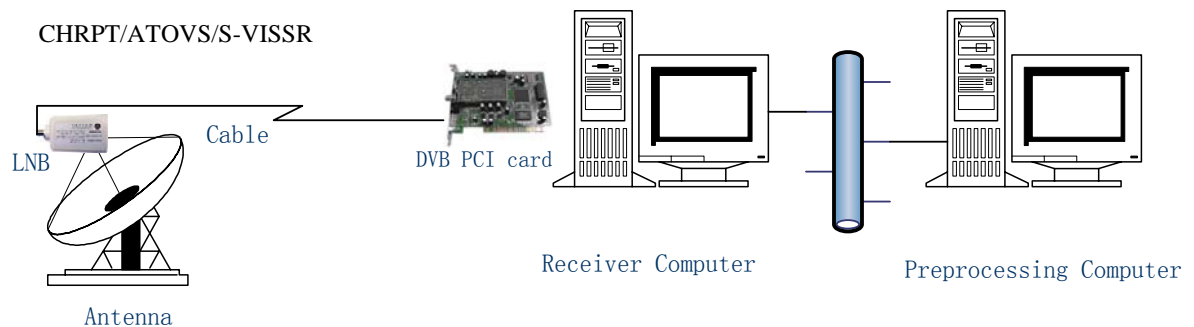


Figure 7. Schematics of FengyunCast User Terminal Configuration

PC Requirement

- 2.0GHz Pentium IV
- 1Gbyte RAM
- 80Gbyte internal disk
- 5 volt PCI bus (compatible with the recommended DVB PCI card)
- 100/10 Base Ethernet card
- DVB PCI card (5 volts)
- USB port for Key Unit
- Operating system requirement: Windows XP

Software to be required

The following software should be installed:

- The DVB-S Client Software
 - The DVB-S Client Software carries out the following processes:
 - decryption of data based on a key code
 - error correction and management of received data files
 - the client software is mandatory and a license is required for each user.
 - appropriate driver software for user DVB PCI card
 - Key unit driver
 - Quick view
- Processing Software
 - Include: CHRPT/ATOVS/S-VISSR preprocessing