

CURRENT STATUS OF FY-1D POLAR-ORBITING SATELLITE

Summary and purpose of paper

Currently, CMA/NSMC operates one FY-1 polar-orbiting meteorological satellites, FY-1D, which was launched in May 2002. The satellite has two years' design lifetime.

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Launch Time

Currently, CMA/NSMC operates one polar-orbiting meteorological satellites, FY-1D. FY-1D was launched in May 2002. It is three-axis stabilized with 2 year design lifetime.

Orbit Characteristics

The major orbital characteristics of FY-1D at the present are shown in table 1.

Table 1. Orbit Parameters of FY-1D satellite

Satellite	Orbit	Altitude	Inclination	Eccentricity	Descending Node
FY-1D	Sun-synchronous	866 km	98.80 ⁰ .	<0.005	7:50 am

Instrument Payload

FY-1D carries a multi-channel visible and infrared scan radiometer (MVISR) that has 10 channels including 4 visible channels, 3 near IR channels, 1 short wave IR channel and 2 long wave IR channels. The wavelength of each channel and primary usage is shown in Table 2.

Table 2. MVISR channels and primary use

Channel	Wavelength (μm)	Primary Use
1	0.58-0.68	Daytime cloud, ice and snow, vegetation
2	0.84-0.89	Daytime cloud, vegetation, water vapor
3	3.55-3.95	Heat source, night cloud
4	10.3-11.3	SST, day/night cloud
5	11.5-12.5	SST, day/night cloud
6	1.58-1.64	Soil moisture, ice/snow distinguishing
7	0.43-0.48	Ocean color
8	0.48-0.53	Ocean color
9	0.53-0.58	Ocean color
10	0.90-0.965	Water vapor

Transmission Mode

Real time picture transmission:

- CHRPT format: real-time transmission

Delayed picture transmission:

- GDPT format: daily global data coverage of 4 channels(0.58-0.68 μ m, 0.84-89 μ m, 10.3-11.3 μ m, 11.5-12.5 μ m) with 3.3 km spatial resolution.
- LDPT format: pre-selected local-area data coverage of 10 channels with 1.1 km spatial-resolution at nadir.

Status of Operation

FY-1D has been operating over 3 years, exceeding the design lifetime. It has sent back a large number of images which are used for meteorological and environmental applications.

MVISR Adjusted Calibration Coefficients

Updated calibration coefficients for MVISR instruments are given in Table 3.

Table 3. Calibration Coefficients for MVISR on FY-1D

Channel	Slope	Intercept
1	8.930 E-02	-1.0719
2	9.980 E-02	-1.1972
6	8.310 E-02	-2.4113
7	4.230 E-02	-0.5498
8	6.310 E-02	-0.757
9	8.170 E-02	-1.0624
10	8.920 E-02	-1.2486

Calibration coefficients for MVISR on FY-1D are adjusted with the measurements at the calibration site and this work is performed every year.