

CURRENT STATUS OF FY-1D METEOROLOGICAL SATELLITE

Summary and purpose of paper

FY-1D launched in May 2002 is in operation now. This paper provides information on FY-1D satellite as of September 30, 2003. The satellite is working well since launch time. Calibration coefficients are updated and presented.

Status of FY-1D Meteorological Satellite

Launch

The polar orbiting meteorological satellite FY-1D was launched at 9:50 (Beijing Time-BT) on May 15, 2002 from TAIYUAN Satellite Launch Center. At 10:35 (BT), the Urumuqi Meteorological Satellite Ground Station received the first image from FY-1D.

After in-the-orbit check, FY-1D became fully operational. The satellite is working well up to now.

Transmission Mode

As the one of satellite in FY-1 series, FY-1D is similar with FY-1C in terms of transmission.

FY-1D transmits CHRPT to world users. FY-1D also transmits GDPT and LDPT, which are received only by CMA/NSMC.

CHRPT Transmission

Carrier frequency (MHz):	1700.40
Data bit rate:	1.3308Mbps (Phase modulated split phase)

Major Orbital Parameters

The major orbital parameters of FY-1D are shown in Table. 1.

Table 1. Major Orbital Parameters of FY-1D

Orbit altitude	866 km
Inclination	98.80°
Eccentricity	Less than 0.005
Orbit period	102.3 minutes
Descending node	8:30 am

Primary Instrument

The Multi-channel Visible and IR Scan Radiometer (MVISR) is the primary sensor of FY-1D, the characteristics of which are given in Table 2.

Table 2. Wavelengths of the channels and primary use of MVISR

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

Calibration accuracy

Visible / near IR channels:	5—10% albedo
IR channels:	$\pm 1\text{K}(270\text{K})$
IR calibration range:	200—320K
A / D output:	0—1023 count

Adjusted Calibration Coefficients

The signals of each channel of MVISR attenuate with time. Therefore the calibration coefficients are adjusted using the measurements of the calibration field. The updated calibration coefficients are given below.

Adjusted Calibration Coefficients

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