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PLAN FOR DEVELOPING CHINESE FY-2C GEOSTATIONARY METEOROLOGICAL SATELLITE

Summary and purpose of paper

To inform CGMS that China is continuing with FY-2 satellite program. FY-2 C will be launched in 2003.

PLAN FOR DEVELOPING CHINESE FY-2C GEOSTATIONARY METEOROLOGICAL SATELLITE

1 Introduction?

The geostationary meteorological satellite FY-2C will replace FY-2B that was launched on June 25, 2000 and stationed at 105^0E. It is planned that FY-2C will be launched in 2003.

The mission of FY-2C is similar to FY-2B:

- acquiring visible, infrared and water vapor cloud images;
- re-transmitting S-VISSR images and low resolution images;
- data collection;
- space environment monitoring.

2 Major improvement for FY-2C

2.1 The number of spectral channels of Visible and Infrared Spin Scan Radiometer (VISSR) will be increased from 3 to 5.

- The infrared long wave window 10.5~12.5μm will be split into two channels:10.3~11.3μm and 11.5~12.5μm, so as to improve the capability of detecting and calculating water vapor contents, to support semi-transparent ice cloud detecting, and to have a better accuracy of atmospheric absorption correction in order to improve sea temperature estimation.
- To increase the temperature resolution of the infrared channels and the signal/noise ratio of the visible channels, and to support the application of the split window.
- To have an additional 3.5~4.0μm mid-infrared window channel. As this channel is less affected by water vapor contents, when it combines with IR long wave window channel, more accurate surface temperature can be acquired. The channel is sensitive to heat temperature therefore it is helpful for detecting warm targets on surface. It is also used to obtain information of low-level cloud and fog. It is a good help to distinguish low-level cloud and ice and snow coverage.
- The data quantization level of the IR channel will be increased from 256 to 1024, the WV channel remains 256.

2.2 Power supply of the satellite will be increased to support the eclipse management.

2.3 The S-Fax broadcasting function will be cancelled and the frequency of 1699.5 MHz will not be used.

2.4. WEFAX will be replaced by LRIT.

3. Specifications of VISSR of FY-2C

3.1 Spectral channels of VISSR are shown in table 1.

Table 1.The spectral channels of VISSR

Channel	Wavelength (μm)	
	FY-2 A,B	FY-2 C
VIS	0.50~ 1.05	0.50~ 0.75
IR1	10.5~ 12.5	10.3~ 11.3
IR2		11.5~ 12.5
IR3		3.5~ 4.0
WV	6.3~ 7.6	6.3~ 7.6

3.2 Major characteristics of VIS channels are shown in table 2.

Table 2. The characteristics of VIS channels of VISSR

Item	Characteristics	
	FY-2 A,B	FY-2 C
Wavelength (μm)	0.50~ 1.05	0.50~ 0.75
FOV(μr)	40	35
Space resolution (km)	1.44	1.25
Dynamic range	0~ 95%	0~ 98%
S/N	6.5 (2.5%)	1.5 (0.5%)
	43 (95%)	50 (95%)
Number of detectors	4 (main) + 4 (alternate)	4 (main) + 4 (alternate)
Quantization level	64	64
Calibration	cool-space images and solar image to realize in-orbit calibration	same as FY-2 A,B

3.3 Major characteristics of IR, WV channels are shown in table 3.

Table 3. The characteristics of IR, WV channels of VISSR

	FY-2 A,B		FY-2 C			
	IR	WV	IR1	IR2	IR3	WV
Wavelength(μm)	10.5~ 12.5	6.3~ 7.6	10.3~ 11.3	11.5~ 12.5	3.5~ 4.0	6.3~ 7.6
FOV (μr)	160	160	140	140	140	140
Space resolution(km)	5.76	5.76	5	5	5	5
Dynamic range	180~ 330 K	190~ 290 K	180~ 330K			180~ 280K
Temperature resolution	0.6K	1.0K	0.4~ 0.2K	0.4~ 0.2k	0.5~ 0.3K	0.6~ 0.5K
Number of detectors	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)	1(main)+1 (alternate)
Quantization level	256	256	1024	1024	1024	256
Calibration	On board blackbody calibration, once every 3 disks		The ground calibration accuracy is 1K.Cool space and planet calibration is used for on-board calibration, once every 2 disks.			

4. FY-2C is in Manufacturing

The manufacture of FY-2C has been carried out in full swing since May 2001. It is scheduled to leave the factory in October 2003 and to be launched in December of the same year.