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Activities of FY-3 Products Development

Summary of the Working Paper:

The presentation shows several imagery and products obtained during the commissioning tests of FY-3A. It also introduces the ground segment of FY-3 system.

Activities of FY-3 Products Development

Zhang Peng

National Satellite Meteorological Centre
China Meteorological Administration

1. Abstract

Fengyun 3 series is a new Chinese meteorological polar orbit system. The first satellite of Fengyun 3 series, FY-3A, is experimental. It was launched successfully at 11 am on May 27, 2008.

FY-3A is under commissioning tests at the present (as of 27 October 2008). This ppt presentation introduces the FY-3A ground segment, several FY-3A images, and a few application examples during Beijing 2008 Olympic Games.

2. FY-3 instruments

There are 11 payloads on board FY-3A. They are Visible and InfraRed Radiometer (**VIRR**), InfraRed Atmospheric Sounder (**IRAS**), MicroWave Temperature Sounder (**MWTS**), MicroWave Humidity Sounder (**MWHS**), MEdium Resolution Spectral Imager (**MERSI**), Microwave Radiation Imager (**MWRI**), Solar Backscatter Ultraviolet Sounder (**SBUS**), Total Ozone Unit (**TOU**), Earth Radiation Measurement (**ERM**), Solar Irradance Monitor (**SIM**) and Space Environment Monitor (**SEM**).

The specification of these 11 payloads is listed in the following Table.

Table: Specification of FY-3A payloads

Name		Specification		Purpose
	VIRR	Spectral Range	0.43~12.5 μ m	Cloud Image, Cirrus and Cloud Phase, Vegetation, Sediment, Snow and Ice, Land Surface Temperature, Sea Surface Temperature, Water Vapor Content
		Number of channels	10	
		Scan Range	$\pm 55.4^\circ$	
		Spatial Resolution at nadir	1.1Km	
		Cal Accuracy in VNIR	5%-10%	
		Cal Accuracy in IR	1K(270K)	
		Quantization	10 bits	
V A S S	IRAS	Spectral Range	0.69~15.0 μ m	Atmospheric Temperature Profile, Atmospheric Moisture Profile, Total Ozone Amount, Outgoing Longwave Radiation
		Number of channels	26	
		Scan Range	$\pm 49.5^\circ$	
		Spatial Resolution at nadir	17Km	
		Cal Accuracy in VNIR	5%-9%	
		Cal Accuracy in IR	1K(270K)	
		Quantization	13 bits	
	MWTS	Spectral Range	50~57GHz	
		Number of channels	4	
		Scan Range	$\pm 48.3^\circ$	
		Spatial Resolution at nadir	50~75Km	
		Cal Accuracy	1.2K	
		Sensitivity (NE Δ N)	0.4-0.55K	
MWHS	MWHS	Spectral Range	150~183GHz	
		Number of channels	5	
		Scan Range	$\pm 53.35^\circ$	
		Spatial Resolution at nadir	15Km	
		Cal Accuracy	1.5K	

		Sensitivity (NE Δ N)	1.1-1.2K	
		Quantization	14 bits	
MERSI		Spectral Range	0.40~12.5 μ m	Ocean Color, Aerosol, Water Vapor Content, Cloud Properties, Vegetation, Surface Properties, Surface Temperature, Snow and Ice
		Number of channels	20	
		Scan Range	\pm 55.4°	
		Spatial Resolution at nadir	0.25~1Km	
		Cal Accuracy in VNIR	5%-10%	
		Cal Accuracy in IR	1K(270K)	
		Quantization	12 bits	
	MWRI		Spectral Range	
		Number of channels	10	
		Scan Range	\pm 55.4°	
		Spatial Resolution at nadir	15~85Km	
		Cal Accuracy	1-2.8K	
		Quantization	12 bits	
ERM	Spectral Range	Total Band	0.2~50 μ m	Terrestrial Radiation
		Solar Band	0.2~3.8 μ m	
	Number of channels	Narrow FOV	2	
		Broad FOV	2	
	Scan Range		\pm 50°(Narrow)	
	Sensitivity (NE Δ N)		0.4Wm ⁻² .sr ⁻¹	
	Cal Accuracy	Total Band	0.8%	
		Solar Band	1%	
Stability within 2 years		<1%		
SIM	Spectral Range		0.2~50 μ m	Solar Irradiation
	Sensitivity (NE Δ N)		0.2Wm ⁻²	
	Cal Accuracy		0.5%	
	Quantization		16 bits	
	Stability within 2 years		<0.02%	
SBUS	Spectral Range		0.16~0.4 μ m	Ozone Profile
	Number of channels		12	
	Spatial Resolution at nadir		200Km	
	Quantization		16 bits	
	Stray Light		10 ⁻⁶	
	Cal Accuracy		3% (160~250nm) 2% (250~400nm)	
	Cal Accuracy in diffuse reflection board		3%	
TOU	Spectral Range		0.3~0.36 μ m	Total Ozone Amount
	Number of channels		6	
	Scan Range		\pm 54°	
	Spatial Resolution at nadir		50Km	
	Quantization		10 ⁻³	
	Stray Light		12 bits	
	Cal Accuracy		2%	
SEM	Heavy Ions, High Energy Proton, High Energy Electron, Radiation Dose, Satellite Surface Charging Monitoring, Single Event Upset		Space Environment	

3. FY-3 Ground segment block diagram





4. Presentation of FY-3A images and products

Please see the ppt presentation.