Meteorological Satellite Data Archive and Reprocessing in CMA/NSMC

Summary and purpose of paper

The current amount of satellite raw data and products archived in CMA/NSMC exceeds 85TB. Data reprocessing began in 2004 at NSMC with efforts to store the data onto new media, check the quality, relocate and recalibrate data for each orbit. CMA/NSMC will use the reprocessed data to produce long time series TBB, OLR, SST, vegetation Index and so on. CMA/NSMC disseminates the data and products through DVB-S, internet, or deliver by special arrangement on the requests of users.

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1. Meteorological Satellite Data Archive in CMA/NSMC

From 1972, National Satellite Meteorological Center (NSMC) began receiving meteorological satellite data. In the past thirty years, NSMC has archived more than 85TB meteorological satellite data, including raw data and products. Geologically the data covers Chinese territory and neighboring countries.

Statistics of raw data archived

Satellite	Data Type	Size/Per Orbit	Total Size	Period
GMS-1/2/3	WEFAX	Positive or Negative	110,000	1978.1-1988.8
NOAA(4-7)	APT	Positive or Negative	12,000	1972.1-1985.6
FY-1A/1B	CHRPT	100MB	20GB	1988.09-1991.12
	GDPT	200MB	20GB	1988.09-1991.12
FY-1C/1D	CHRPT	200MB	4TB	1999.05-
	GDPT	300MB	2TB	1999.05-
NOAA(7-17)	HRPT	120MB	7TB	1984.05-
GMS-4/5	S-VISSR	100MB	8TB	1989.01-2003.04
FY-2A/B	S-VISSR	100MB	3TB	1997.09-2005.05
METEOSAT-5	HRI	40MB	1TB	1999.06-
EOS-AM/PM	MODIS	2GB	60TB	2000.12-

Totals	85TB	

NSMC uses different storage media to archive the data in different period.

- 1972—1988: Positive or Negative for image
- 1986—1988: 6250 Tape
- 1988—1999: 3480 Tape
- 1999—2002: STK SD3 Tape library
- 2002—2005: STK 9840 Tape library
- From 2005: IBM 3494 Tape library

2. Reprocessing the Historical Data and Future Plan

From 2004, NSMC began to reprocess the historical meteorological satellite data. Now NSMC has finished backup all the raw data from the old storage media to the new tape library or disk array, and began to check the data quality, re-locate and re-calibrate the data. We use landmark navigation to improve the location precision for each orbital data. And use long-term normalized coefficient to improve the calibration.

After finishing data reprocessing, we plan to use long-term series data to produce products such as TBB, OLR, SST, vegetation Index and so on.

3. Data and Products Distribution

NSMC distributes satellite data and products (including real-time and historical data) through three methods.

(1) DVB-S(Digital Video Broadcasting by Satellite): To disseminate the data received and processed by NSMC.

(2) Internet Website: Real-time and historical data are available for user to retrieve and download. The web site: http://satellite.cma.gov.cn

(3) Special service: At the user requirement to record large quantity data onto the media such as DVD-ROM，tape or hard disk.