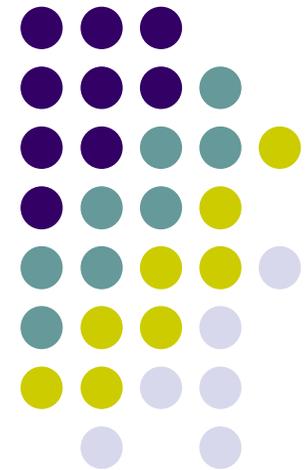


# Radiation Calibration Activity of Optical Remote Sensors in SITP

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WGCV-21, Beijing China  
15~17 Oct. 2003



# The main Space-bore imaging Sensors Done or being Done by SITP



| Sensor        | Satellite       | Bands          | Resolution        | Orbit type            |
|---------------|-----------------|----------------|-------------------|-----------------------|
| SRM           | FY-1<br>serials | 3,5,10         | 3km to<br>1.1km   | Polar-orbit           |
| SRM           | FY-2<br>serials | From 3<br>to 5 | 1.1km and<br>5km  | geo-<br>stationary    |
| CMODIS        | SZ-3            | 34             | 1km               | inclination-<br>orbit |
| COCTS         | HY-1            | 10             | 1.1km             | Quasi-<br>solar-sync  |
| SRM<br>CMRISR | FY-3            | 10<br>20       | 1.1km<br>1km 250m | Polar-orbit           |

# The laboratories and company of SITP

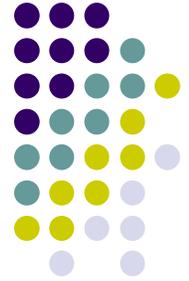


| Units type | Function in Sensors                 |
|------------|-------------------------------------|
| Lab. 1     | Filter maker                        |
| Lab. 2     | Detector maker                      |
| Lab. 3     | Cooler maker (Radiant and Sterling) |
| Lab. 4     | Sensor designer and constructor     |
| Factory 1  | Mechanical manufacture              |
| Factory 2  | Optical manufacture                 |
| Company    | Blackbody maker                     |

# Plans of Meteorological satellites in these years



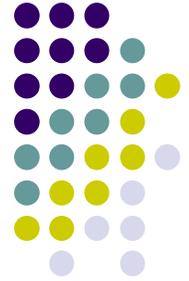
- The second FY-2B satellite will be launched next year
- The second-generation polar-orbit meteorological satellite FY-3 will be launched in 2006.
- The second-generation geo-stationary meteorological satellite FY-4 is under studying now.



# Lab. Buildings Condition

- The New Optical-electronic Lab. Building is finished now in SITP.
- The FY-3 Infrared Radiation Calibration Building now is under constructing in Shanghai Institute of Satellite Engineering.

# Calibration Laboratories plans

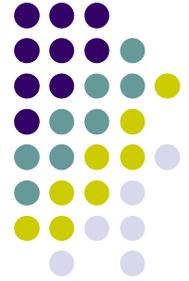


- Visible and Near IR range Radiation Calibrating lab.
- Sensors' Spectral Response Detecting Lab.
- Sensors' Characteristics Detecting Lab.
- Infrared range Radiation Calibrating lab.
- Optical alignment lab.
- Now these laboratories are not in good condition due to less of financial support



# Orbit Parameters of FY-3

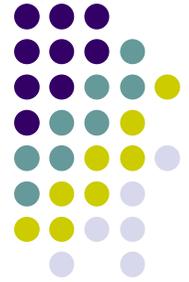
|                        |  |
|------------------------|--|
| <b>Satellite orbit</b> | <b>Solar synchronous near circle</b>                                       |
| <b>orbit height:</b>   | <b>836.4km</b>   |
| <b>Inclination:</b>    | <b>98.728°</b>   |
| <b>Period</b>          | <b>101.496 minutes</b>   |
| <b>Off circle rate</b> | <b>Near 0</b>  |
| <b>Launch windows:</b> | <b>Descending and ascending local time:<br/>10:00~10:20 or 14:00~14:20</b> |
| <b>Satellite life</b>  | <b>Above 2 years</b>   |



## Payloads in FY-3

- 8 kinds of payload total
- 5 kinds of them are optical remote sensors
- 3 payloads have TIR bands, and all using radiant cooler to cool

# Four payloads now are being done by SITP



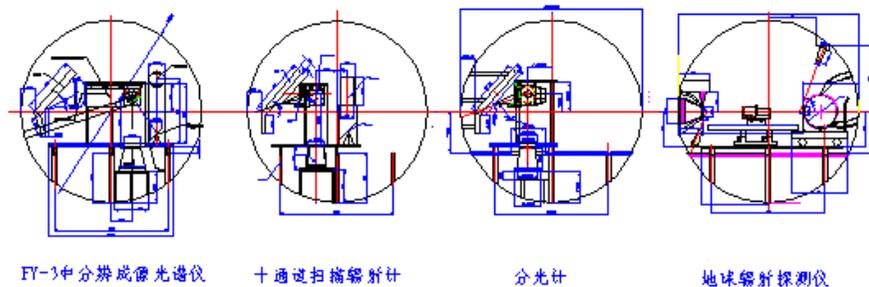
- Moderate Resolution Imaging Scanning Radiometer
- Infrared Filter Radiometer
- ERB
- Ten Channels Scanning Radiometer



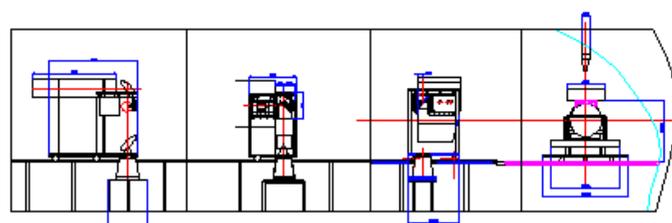
## Radiation calibration TIR bands

- Using kinds of blackbodies in a vacuum container with a diameter of 2.5X6 m, which is being made now.
- Using blackbody in orbit calibration

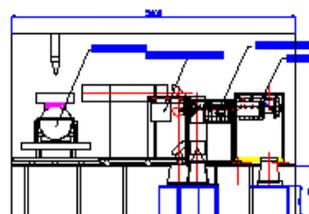
# IR bands Calibration of FY-3 in vacuum pipe condition



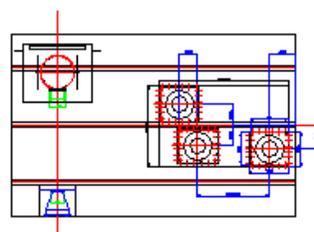
各载荷定标布局 (从罐口看)



各载荷定标布局 (从罐侧壁看)



罐内布局 (侧视图)

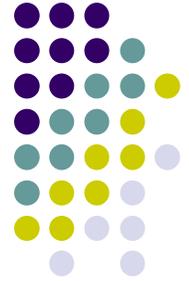


罐内布局 (俯视图)

# Hopes

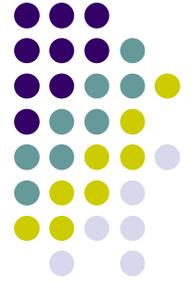


- Obtain helps in constructing calibration Labs from another colleagues.
- Enhance Cooperation with remote sensors' workshops all over the world.



# Goals

- To produce sensors with high performances, which can be used as payloads in meteorological and marine satellites
- To raise ability in weather forecast and in environment and natural disasters monitoring
- To make contribution to the monitoring of global environment and its changing



***Thank you!***