

CGMS-XXIX  
USA-WP-04  
Agenda Item: B.2  
Discussed in Plenary

## **AVOIDING STRAY LIGHT IN THE CMA RADIOMETER**

The USA response to Action 28.01.

## **AVOIDING STRAY LIGHT IN THE CMA RADIOMETER**

### **1 INTRODUCTION**

CMA informed CGMS that on 25 June 2000 that the second Chinese geostationary meteorological satellite FY-2B was launched successfully. FY-2B has been located at 105°E and good VIS, IR and WV images have been received. The results of the check-out showed that all performances were the same as during the testing at the launch site before launch. So far, most of the whole ground system works well. CMA informed that there is still stray light affecting FY-2B VIS and IR images. WMO suggested that satellite operators provide related information to CMA on how to solve this problem. CMA expressed thanks to WMO and satellite operators. It is expected that from 1 January 2001 FY-2B will start routine operations.

### **2. USA Response and Recommendation**

ACTION 28.01 Satellite operators to provide information to CMA on avoiding stray light in the radiometer.

This is not a new problem. The VISSR design is Cassegrain, with poor straylight rejection to begin with. The pattern of stray light shows strong bounces within the telescope, probably due to use of reflective surfaces and poor baffling. In addition, the FY-2B radiometer may also have a hole in the secondary mirror to let some sun directly through, to provide "shortwave calibration" around equinox. The USA is motivated to respond to the announcement about stray light afflicting the Chinese meteorological instrument(s) because:

- GOES-8 Imager &/or Sounder experienced a stray light issue that washed out part of one near\_IR band. Slight modifications to the telescope design corrected this for GOES-10 (maybe GOES-9 as well);
- We have been analyzing a degradation throughput in the vis. band for GOES-8, 9 (a little) and for GOES-10 that we think is due to scan mirror coating degradation. Although this isn't a stray light issue per se, signal decreases of this kind are sometimes erroneously lumped together with stray light issues;
- Because the design of the Chinese sensor differs significantly from our Imager & Sounder telescope design, NOAA is not sure that our experience would be relevant, however, the USA is interested in considering the CMA issue since it could help the USA to avoid a similar problem as we progress toward GOES-R.

Provision of more technical specifics by CMA may enable the USA to assist CMA alleviate the stray light problems. At the very least, the USA would need a technical, quantitative description of what is meant by stray light. Is it solar intrusion? Does the CMA spacecraft experience the same coating degradation as GOES-8, 9 & 10? GOES has experienced scan mirror degradation and we believe that AVHRR is experiencing a similar problem with a similar mirror coating, but HIRS, in the same orbit as AVHRR (but with a different mirror coating), is not having the same problem. Does the CMA have an instrument contamination

problem that leads to droplet type condensation on their optics that manifests itself as stray light? Depending the technical specifics there may be other possible explanations as well.