
Comparison of GERB with CERES Edition 2 products

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Overview

- ◆ Gerb-2/Gerb-1 comparison Aug. 2006
- ◆ Gerb-1/Ceres comparison March/April 2006
- ◆ Gerb-1/Ceres comparison July 2004

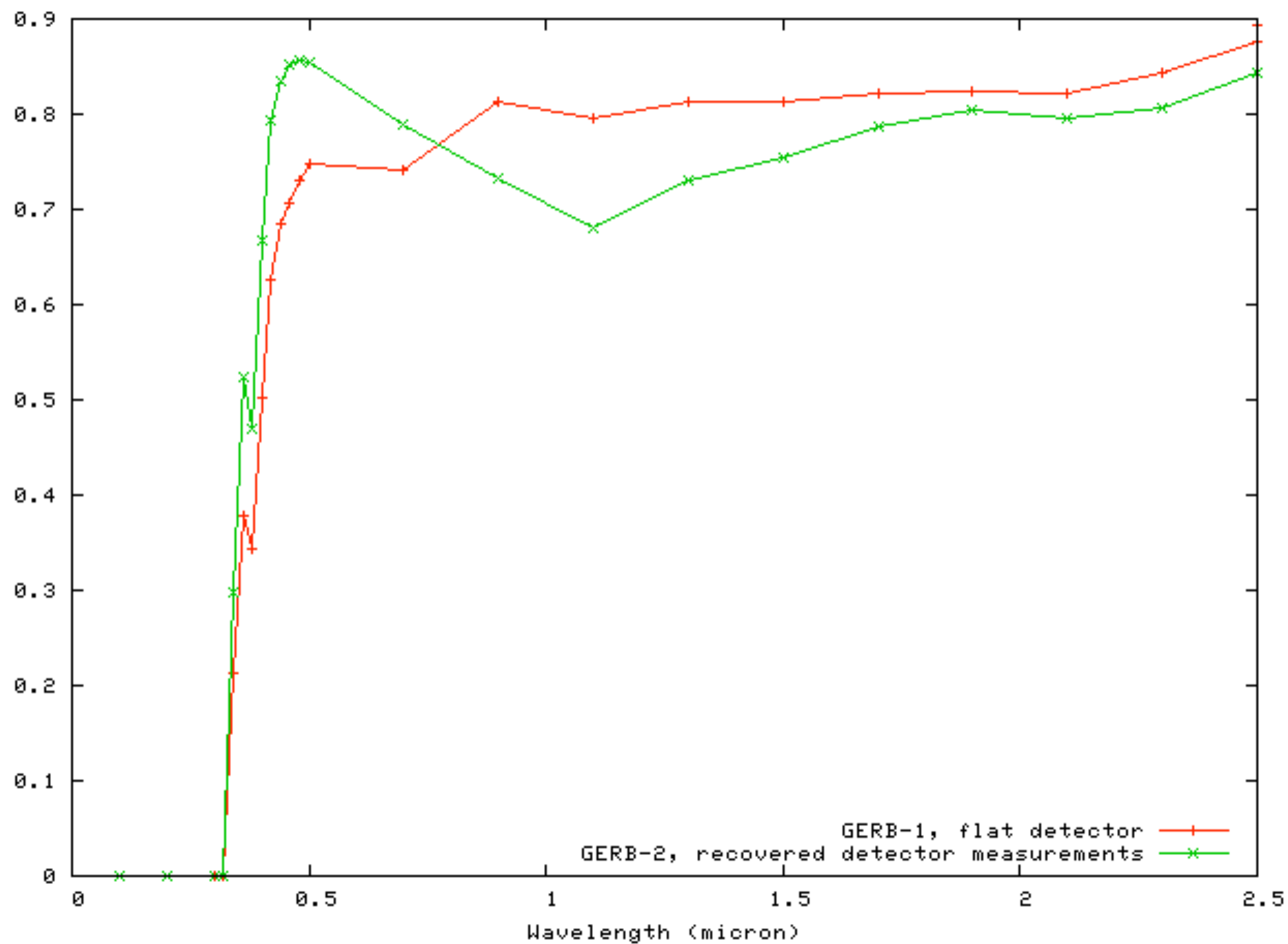
Outstanding problem

- ◆ Differences in reflected solar radiance between GERB and CERES are larger than allowed by target accuracies.
- ◆ Scene type dependent.
- ◆ Related to GERB spectral response.

GERB instruments

- ◆ Oldest GERB: GERB-2
 - Spectral response from ‘recovered’ detector measurements.
- ◆ New GERB: GERB-1.
 - ‘Dummy’ spectral response assumes spectrally flat detector.
 - Will become the prime instrument on 1/5/2007

GERB SW spectral responses



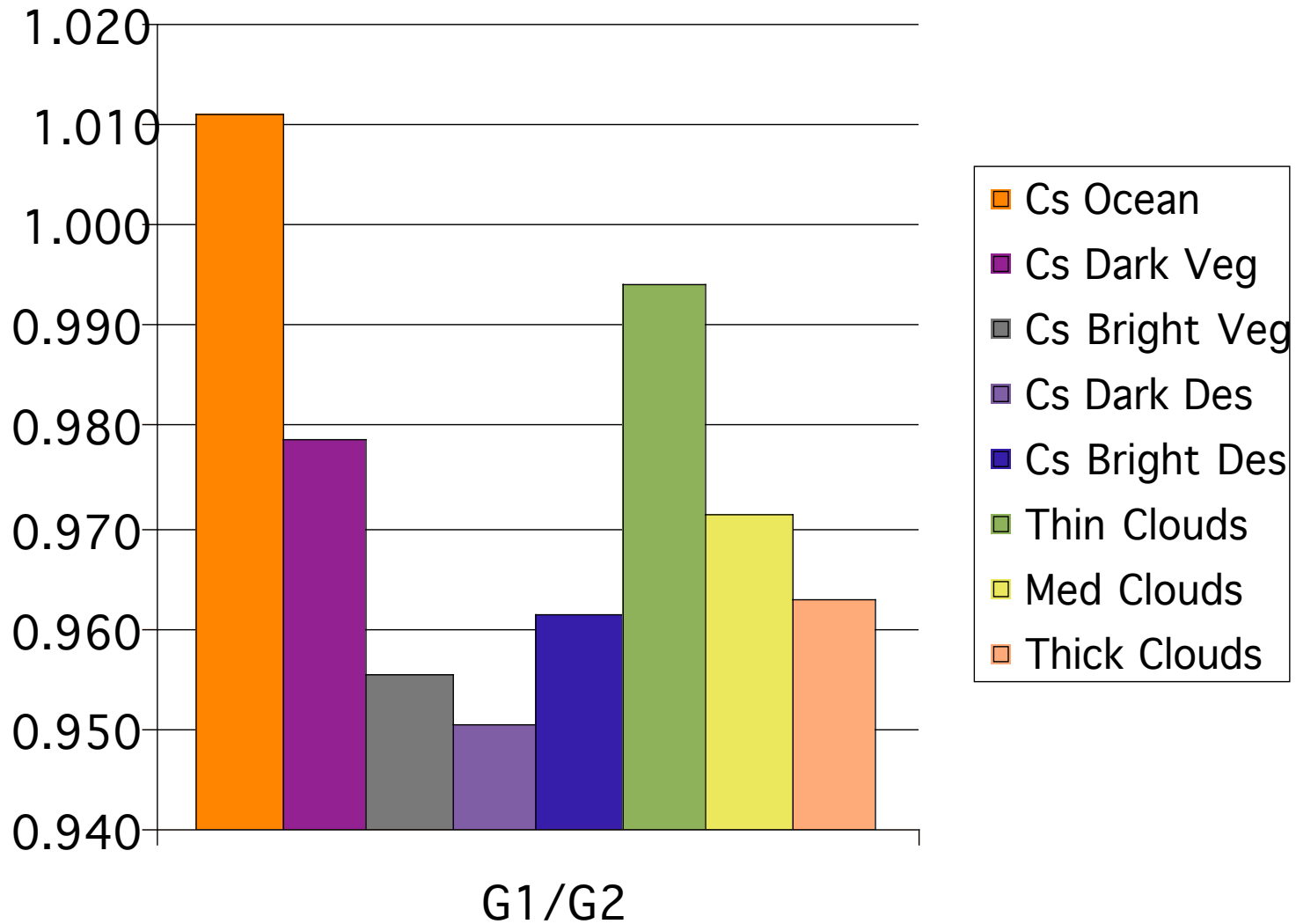
Comparison Gerb-1/Gerb-2, used data

- ◆ Reflected solar radiances only
- ◆ Basic product: ARG: GERB PSF (basic 45 km), 17'
- ◆ GERB-2, Edition 1
- ◆ GERB-1, V4: same software, adapted instrument parameters
- ◆ Time period: 1-17/8/2006

Scene type definitions

- ◆ Clear sky: $\tau < 1$
 - Ocean, Dark/Bright Vegetation, Dark/Bright Desert
- ◆ Thin clouds: $1 < \tau < 3.16$
- ◆ Medium clouds: $3.16 < \tau < 10$
- ◆ Thick clouds: $10 < \tau$

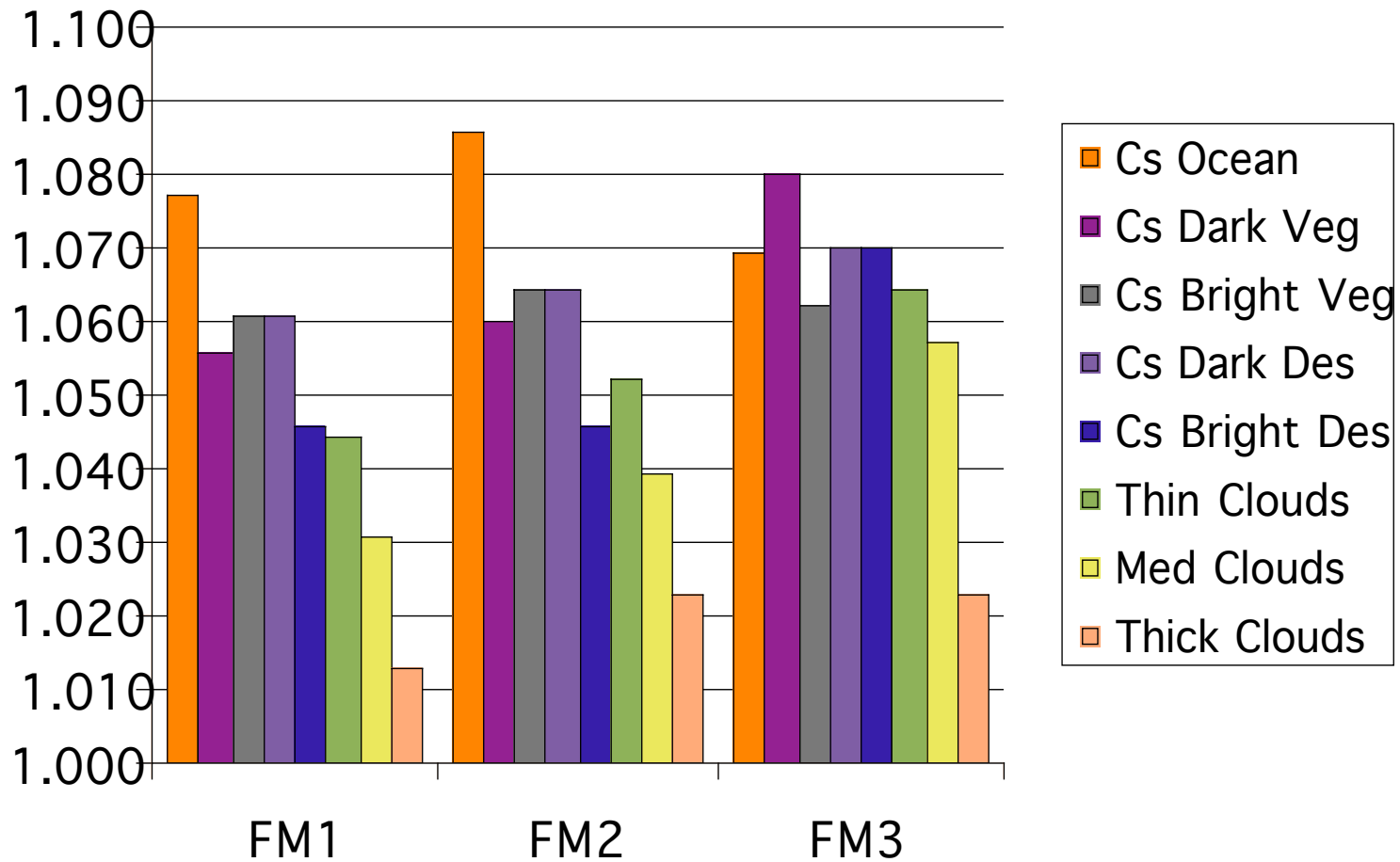
Refl. Solar Rad Gerb1/Gerb2



Comparison Gerb-2/CERES, used data

- ◆ GERB-2, Edition 1
 - ARG: GERB PSF (basic 45 km), 17'
- ◆ CERES, ES-8 Edition 1-CV + in-flight gain changes + Revision 1
 - FM1,FM2,FM3: All cross-track !
- ◆ Time period: 25/3-30/4/2006

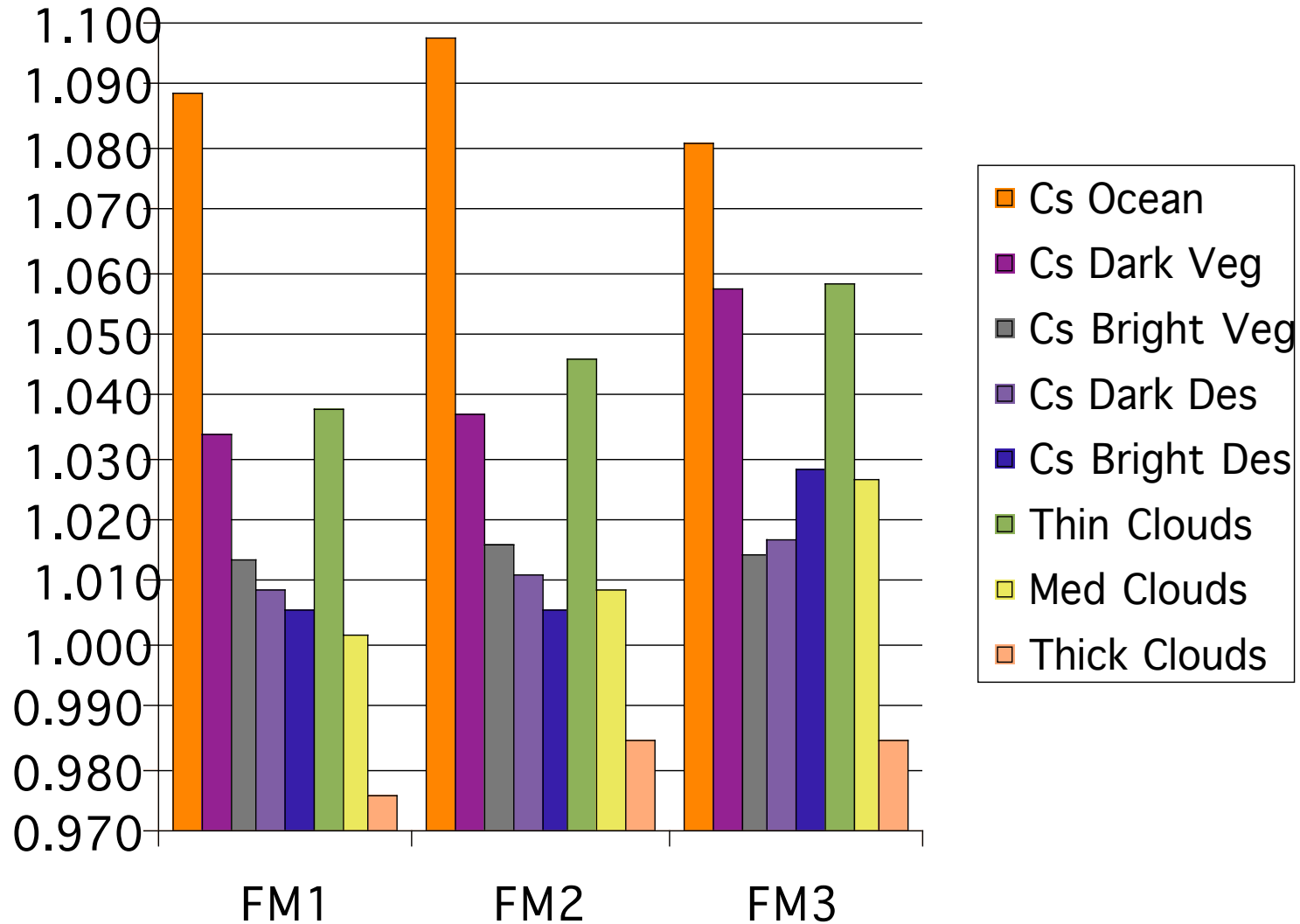
ARG Refl. Solar Rad. GERB-2/CERES



Estimation Gerb-1/CERES ratio

$$\left(\frac{Gerb-1}{Ceres} \right) = \left(\frac{Gerb-1}{Gerb-2} \right)_{8/2006} \left(\frac{Gerb-2}{Ceres} \right)_{4/2006}$$

3-4/2006: Gerb-1/CERES



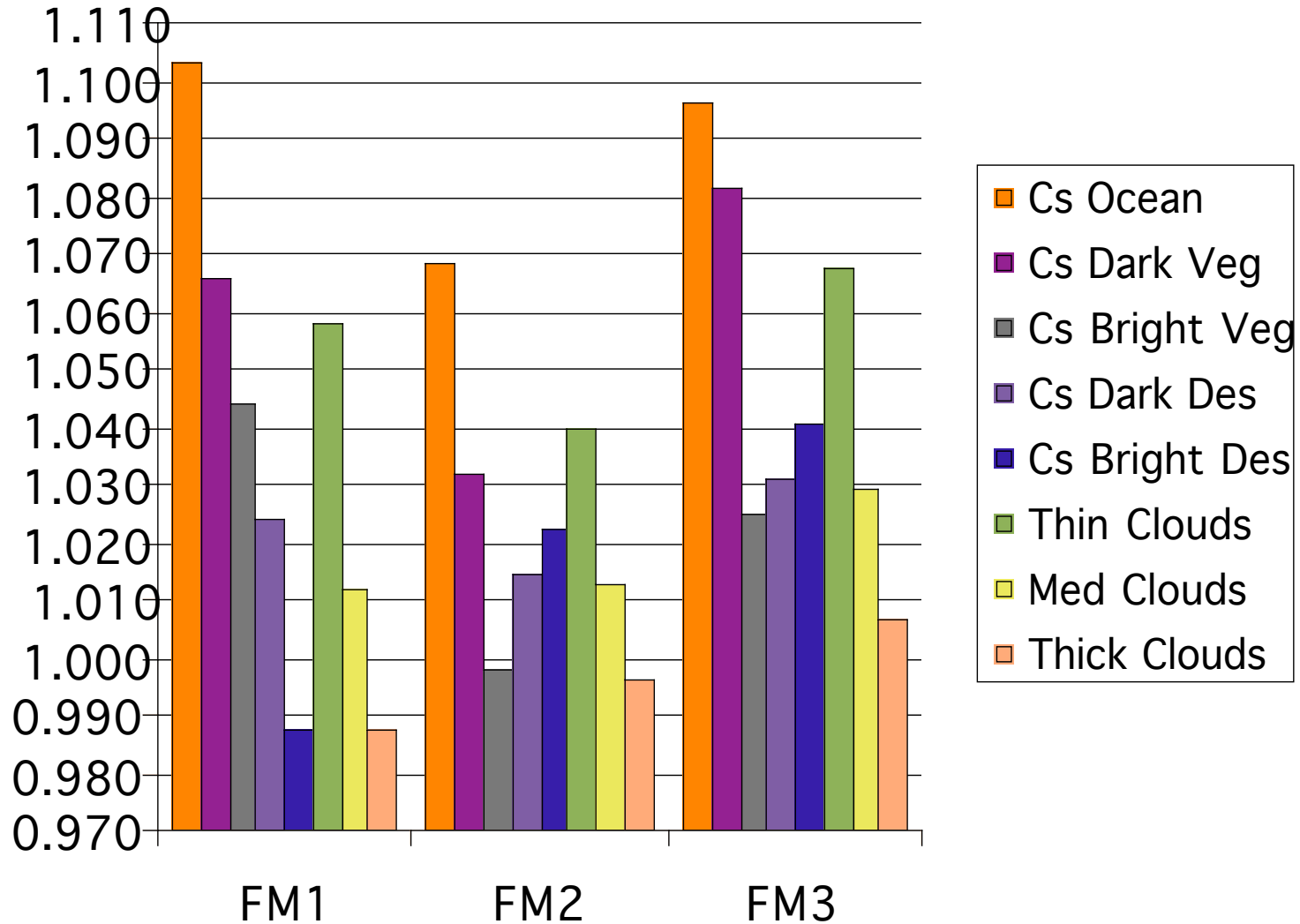
With flatter GERB spectral response

- ◆ Gerb/Ceres ratios are closer to 1.
- ◆ Best agreement for cs bright veg., dark desert, bright desert.
- ◆ Strong overestimation cs ocean, less strong overestimation cs dark veg., thin clouds.
- ◆ Underestimation for thick clouds

Older comparison Gerb-1/CERES, used data

- ◆ GERB-1, Edition 1
 - ARG: GERB PSF (basic 45 km), 17'
- ◆ CERES, ES-8 Edition 2 + Revision 1
 - FM1: cross-track
 - FM2: GERB scan/RAPS/desert aerosol scan
 - FM3: RAPS
- ◆ Time period: 7/2004

7/2004: Gerb-1/CERES



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- ◆ Ratios more or less comparable to 3-4/2006 comparison
 - ◆ Differences due to sampling ?

Conclusions

- ◆ With ‘dummy’ GERB-1 spectral response
 - the GERB/CERES ratios are closer to 1.
 - largest overestimation by GERB for clear sky ocean.
 - tendency for underestimation by GERB for thick clouds.
- ◆ To be discussed at next GIST meeting.