# CERES Edition 3 Plans
# Surface and Atmosphere Radiation Budget (SARB)
# Default: Require CERES to reference Flash Flux

Clouds and the Earth's Radiant Energy System (CERES)
Science Team Meeting at Hampton, Virginia (1-3 November 2005)


**T. P. Charlock** (NASA LaRC)
**Fred G. Rose** (AS&M) algorithm development
**David A. Rutan** (AS&M) CAVE validation
**Zhonghai Jin** (AS&M) coupled ocean atmosphere radiative transfer
. **Seiji Kato** (H.U.) , **Dave P. Kratz** (LaRC) - modification of LaRC Fu-Liou code
**Wenying Su** (H.U.) - surface UV and PAR algorithms
**D. Fillmore, W. Collins** (NCAR), **Greg Schuster** (LaRC) - aerosol assimilation

**Lisa H. Coleman, Thomas E. Caldwell, Scott Zentz** (SAIC) - Data Management


**www-cave.larc.nasa.gov/cave/ or goggle "CERES CAVE"**

**Black font: planned** **Red font: possible**

Clean-up IGBP map over coasts, elevation map USGS GTOP030

Advances to Fu-Liou code

- Resolve SW band (0.7-1.3 μm)
- Include variable GHC to SW (?)

Flux outputs written to archive:

- Remove "non-CERES window" for 70 hPa, 200 hPa, 500 hPa and "no-aerosol"
- Additional vertical levels (include untuned for NWP studies?)
- Add a few SW spectral outputs at TOA only
- FPAR in addition to current PAR (SYN)

Schuster help to Fillmore on next aerosol assimilation (internal mixture)

Add MODIS (GSFC) products to input stream for radiative transfer

- Land spectral albedo - 16 day cycle (huge 1 km data set)
- Daily 0.25 deg snow cover

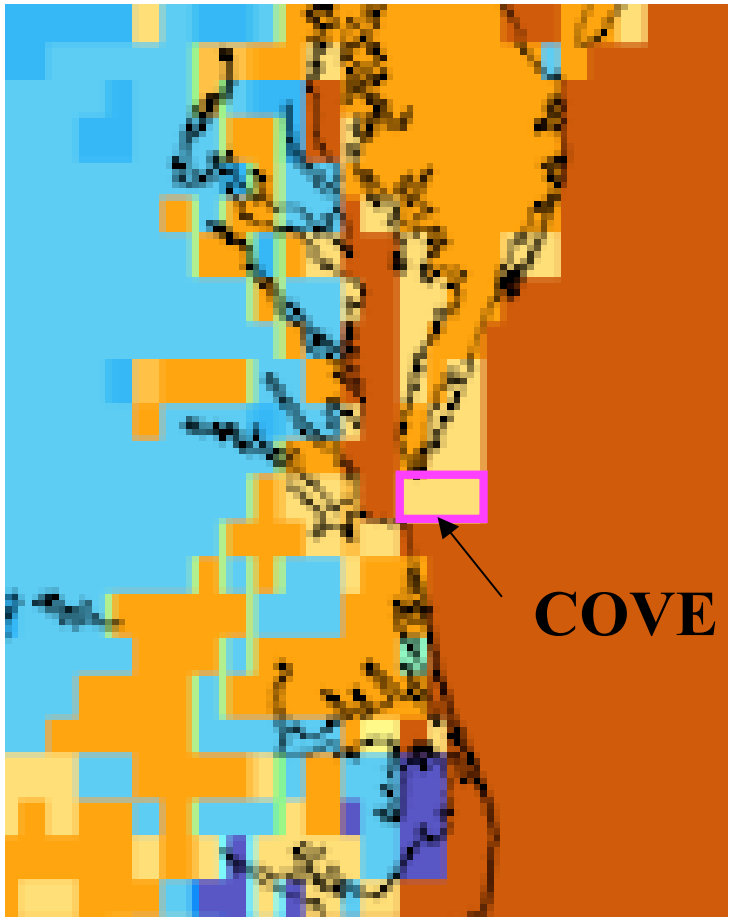
Suggest cloud retrievals account for space-time variability of aerosols

CRS includes SW downwelling at TOA. Let it vary with solar cycle.

# Misplaced IGBP map vexes validation at COVE  CRS Ed2B in 2002

Observed TOA SW = 222.6 Wm-2  Bias = 51.5 Wm-2

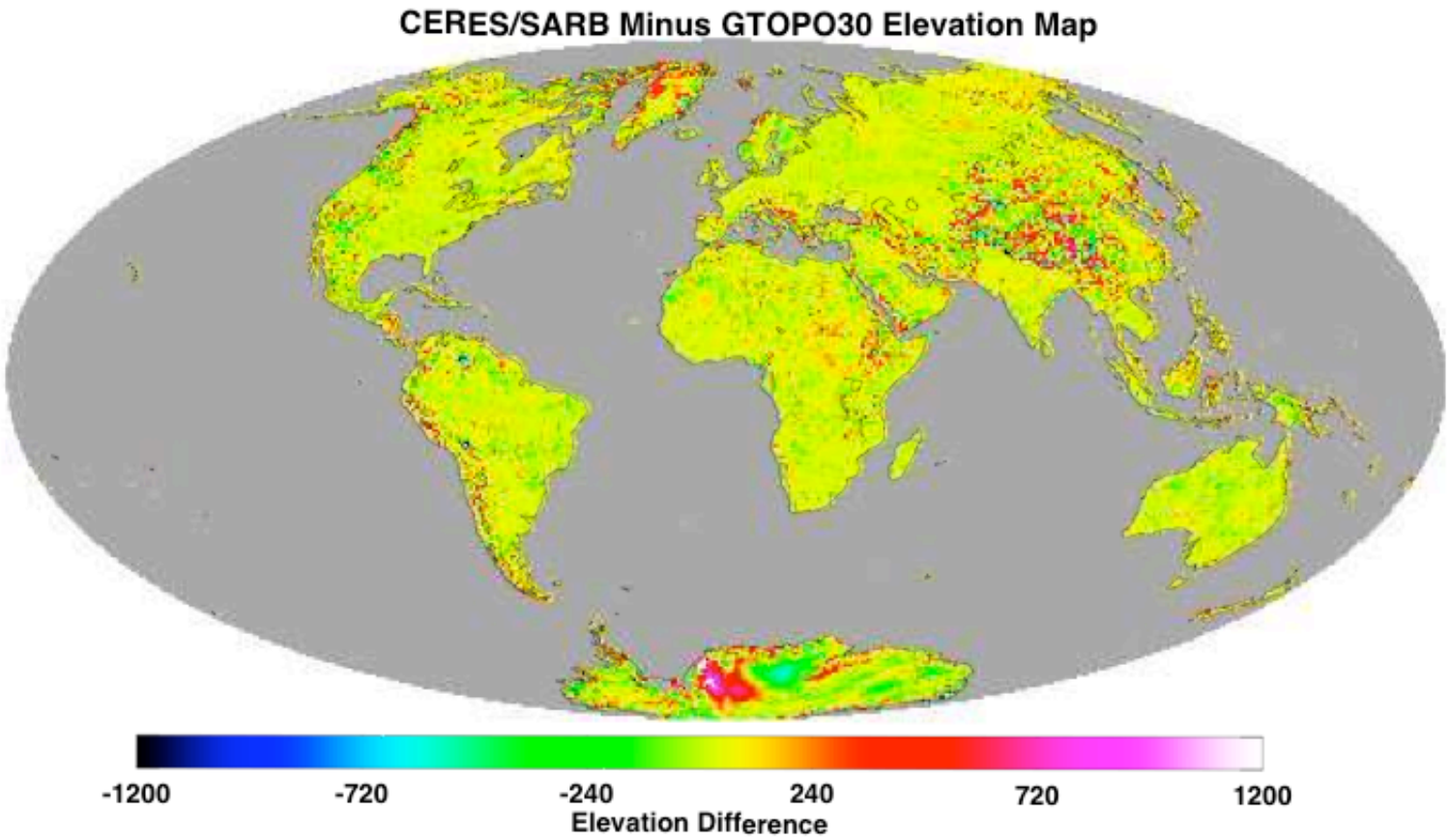
Observed Insolation = 552.7 Wm-2  Bias = 3.1 Wm-2

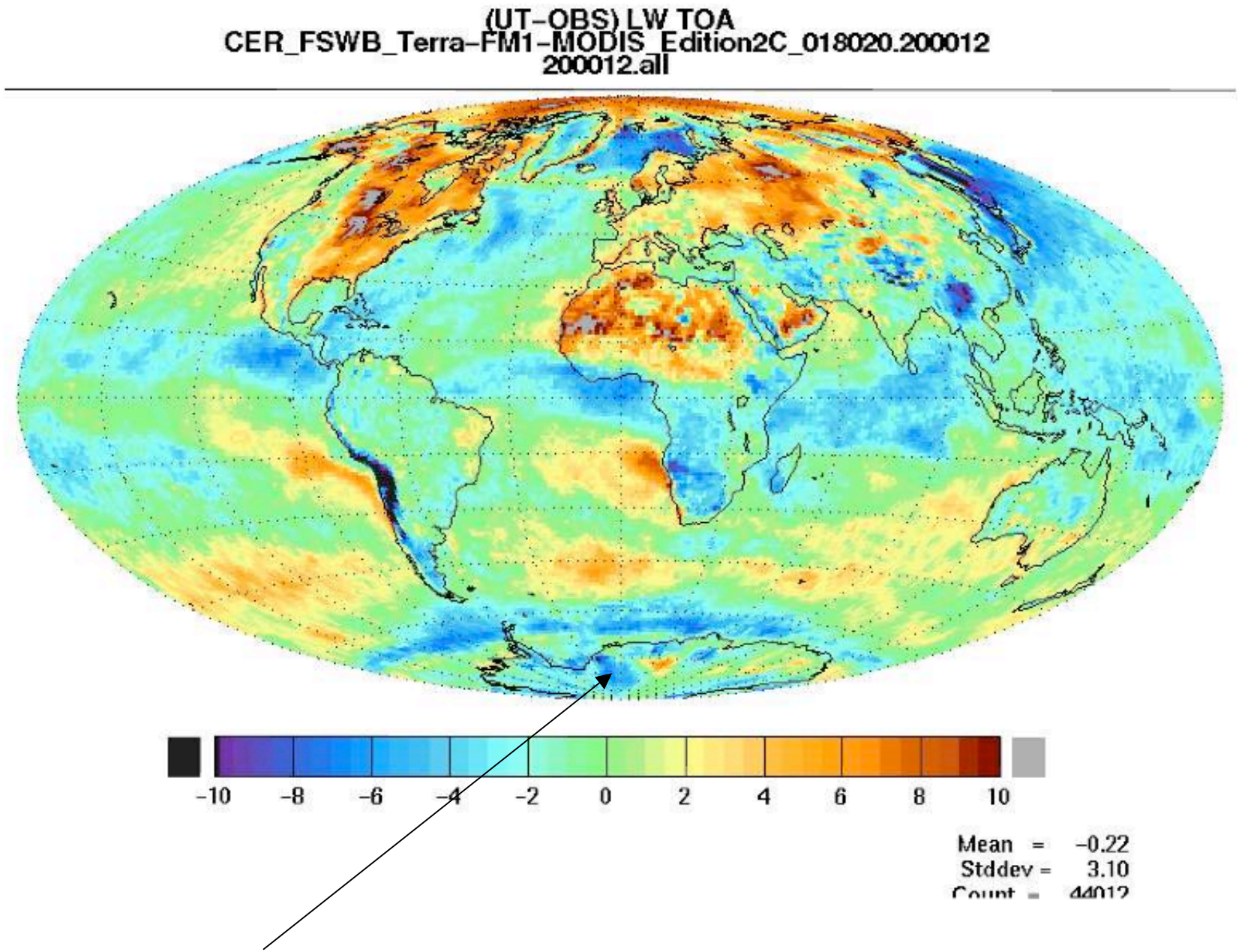



This is a CERES map of IGBP types near Tidewater, Virginia. A map with the degree scale is on the next page. The area within the magenta rectangle appears to contain 3 tiles (with each tile 10 minutes by 10 minute) of IGBP type 12 (cropland). **This wrecks CERES validation at COVE, which is the sole site with surface radiometers deployed over water.**

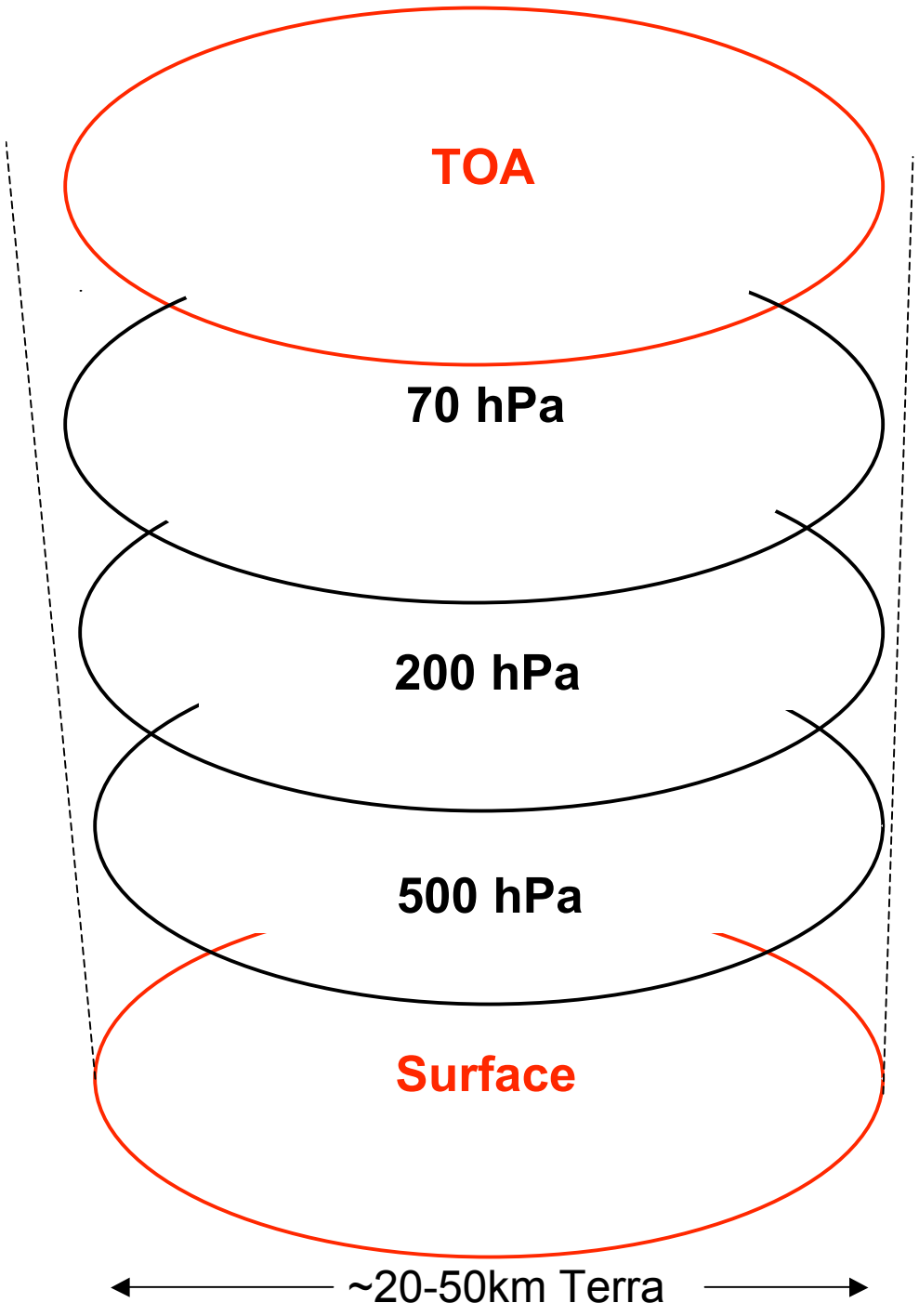
The magenta rectangle causes SARB to assign the wrong surface albedo for about half of the FOVs over COVE, making a mess of Terra CRS Edition 2B at the site. SARB has a surface albedo fix for a "validation subset re-run code", but this does not help the Terra CRS Edition 2B archive. The Cloud WG has confirmed that the same rectangle botches their retrievals (the SARB subset re-run does NOT fix this). It's possible that the magenta rectangle adversely affects the Inversion for TOA fluxes, too.

# Difference between two elevation maps






This local bias in OLR (calculated-observed) is obtained every month. Elevation is the culprit.




## CERES CRS: Surface and Atmosphere Radiation Budget (SARB) Product

Tuned fluxes at all 5 levels
All-sky & Clear-sky, Up & Down,
SW and LW

Surface & TOA also have Untuned fluxes
Fluxes with aerosols
Pristine fluxes (no aerosols)

**Aerosol forcing for all-sky & clear-sky**

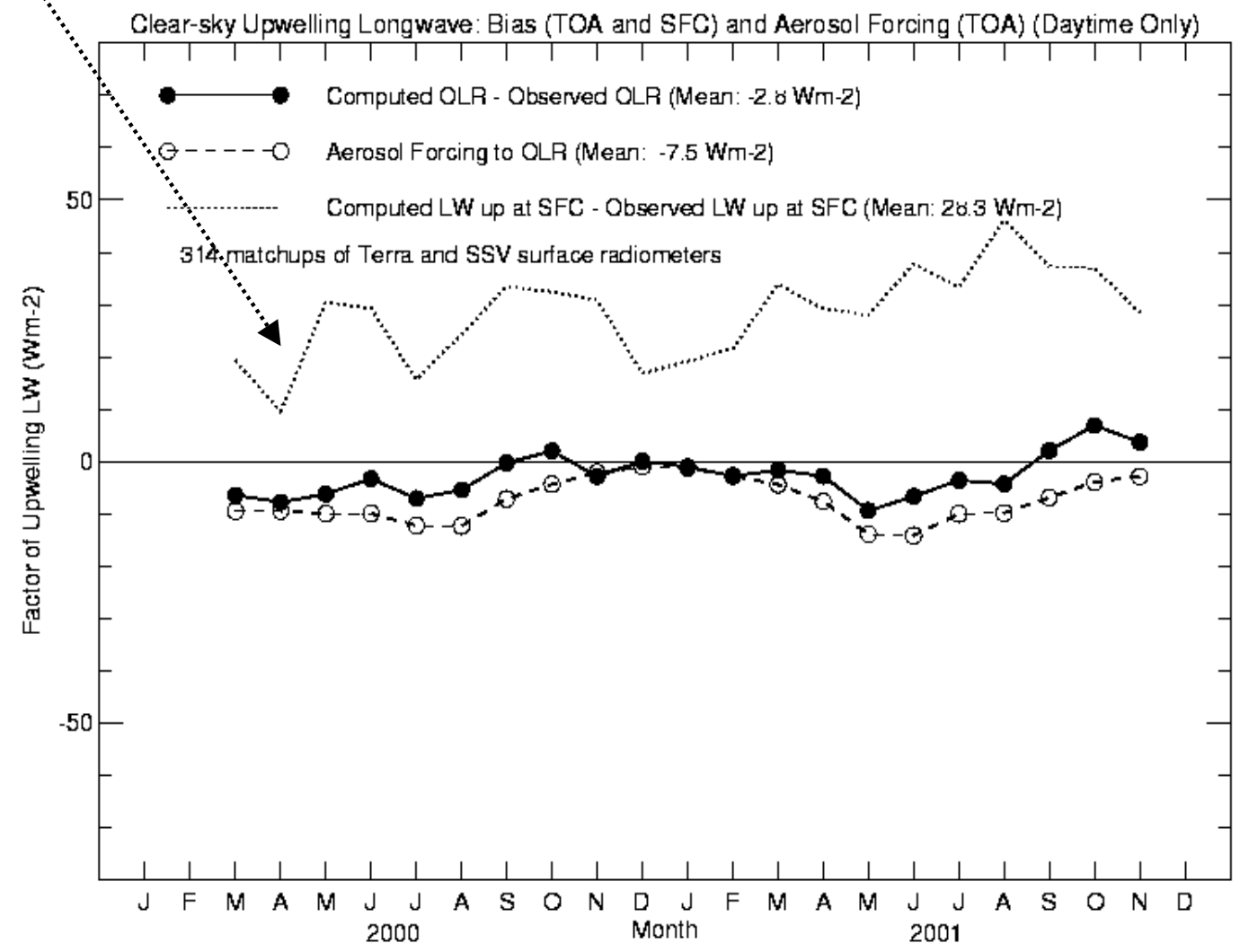
Tuning does NOT yield a perfect match to TOA observations.

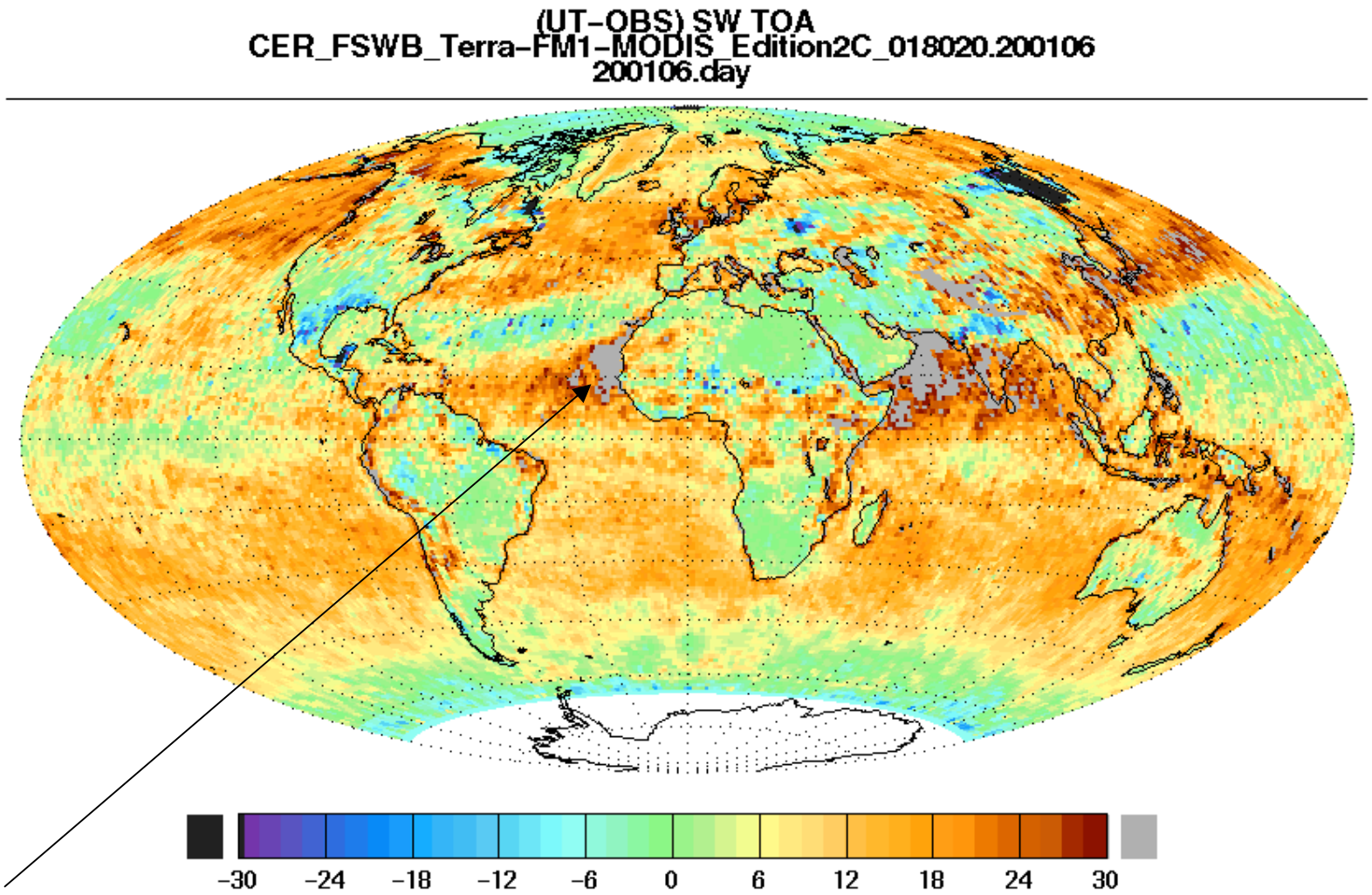
Parameters adjusted when clear:
Skin temperature, aerosol AOT, precipitable water (PW)

Parameters adjusted when cloudy:
LWP/IWP, cloud top temperature, cloud fractional area within footprint

**Clear-sky upwelling LW at Saudi Solar Village (2000-2001)**

Dotted line: Upwelling LW at surface (calculated-observed)






Larger bias in SW at TOA (calculated -observed) where aerosols effects are ascribed to clouds