

**Cloud identification over snow/ice  
surfaces from ERBE to CERES:  
Improvements and implications**

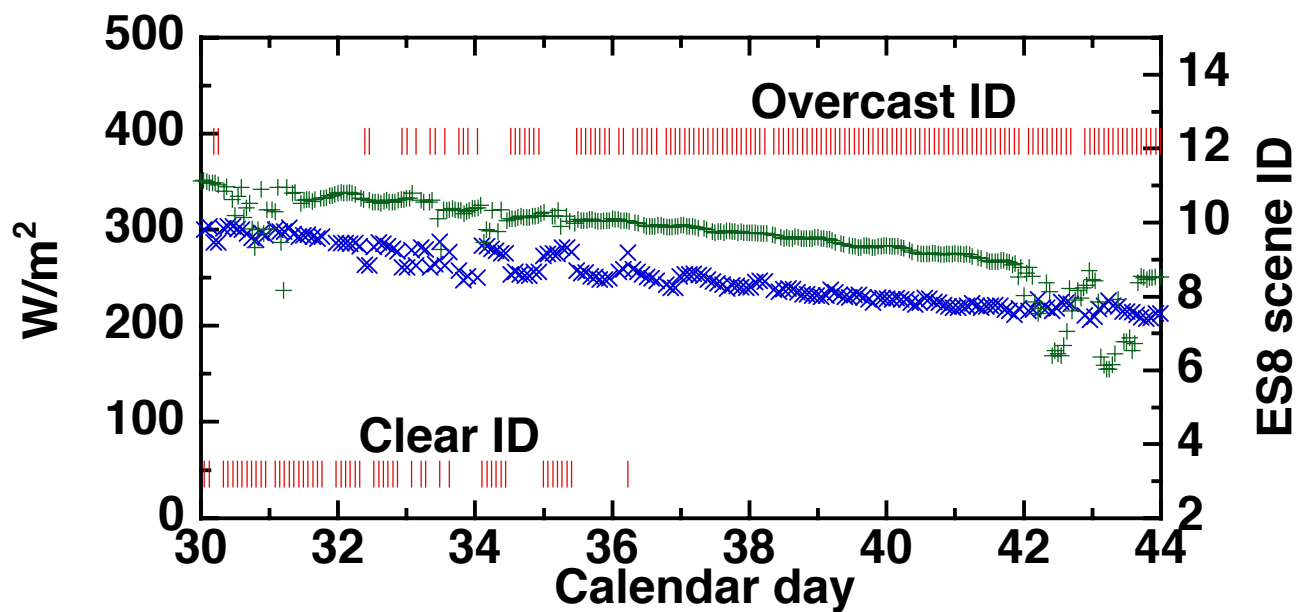
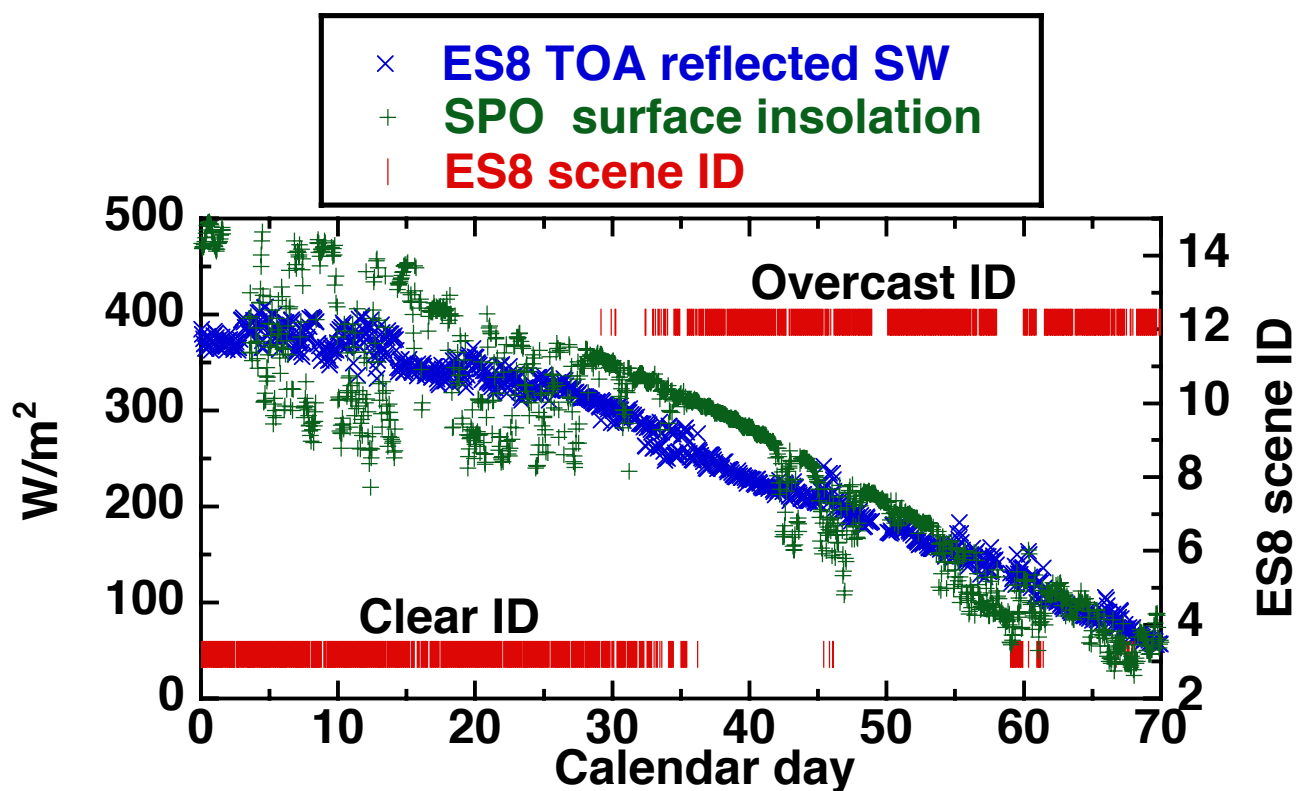
**Robert Cess and Moguo Sun  
Marine Sciences Research Center  
SUNY at Stony Brook**

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## **Data Sets:**

- 1. Hourly-mean surface insolation measurements made at the South Pole Observatory (SPO).**
- 2. CERES ERBE-like (ES8) TOA reflected SW and OLR, and cloud identification (clear or overcast over snow/ice).**
- 3. CERES SSF TOA reflected SW and OLR, and cloud identification (MODIS-derived cloud amount).**
- 4. Modis-derived skin temperature.**

**The CERES data refer to measurements made from the Terra satellite for the first half-year of 2002.**

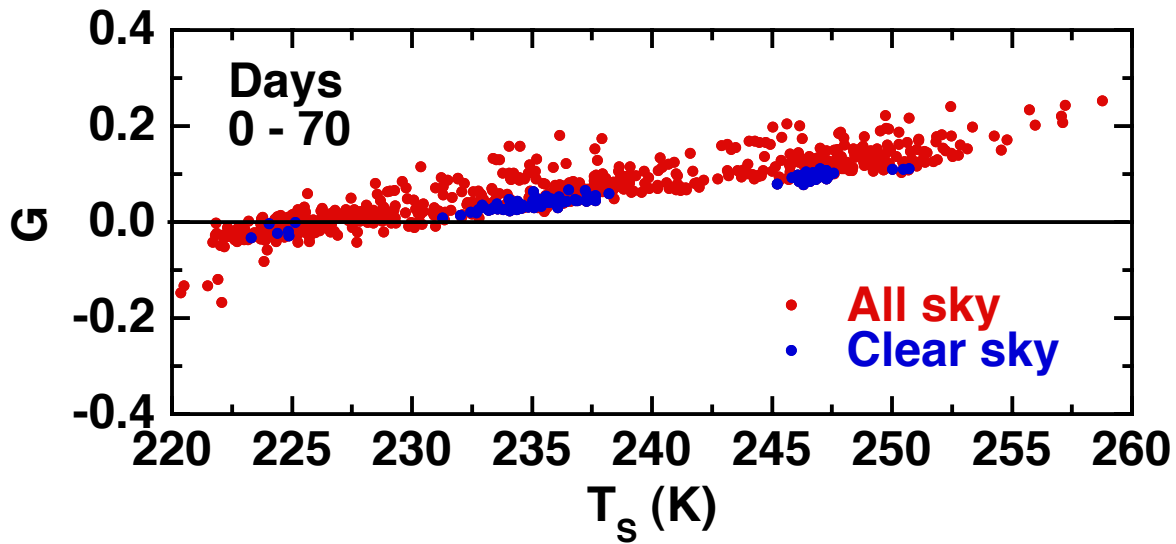
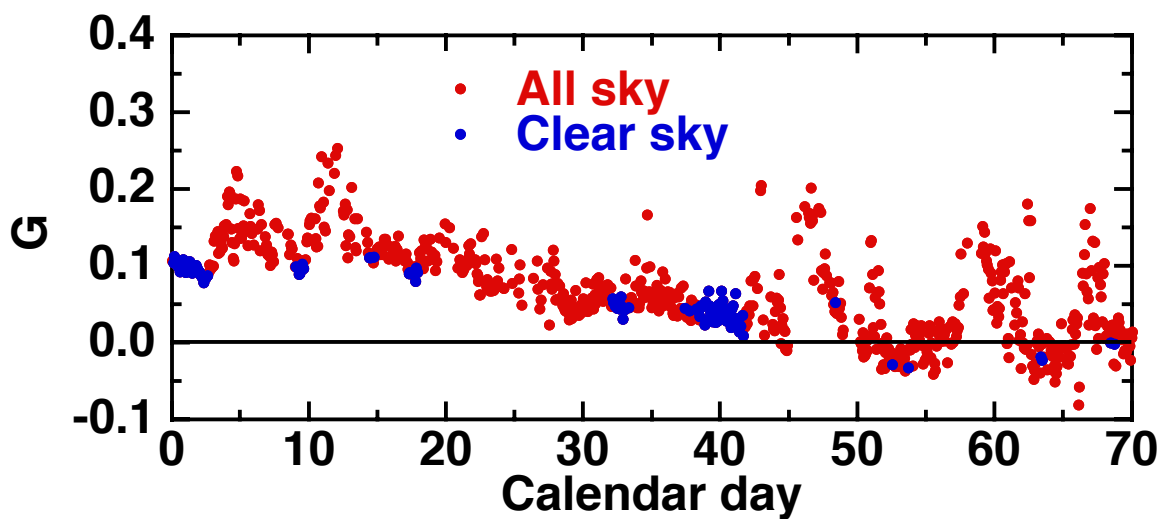
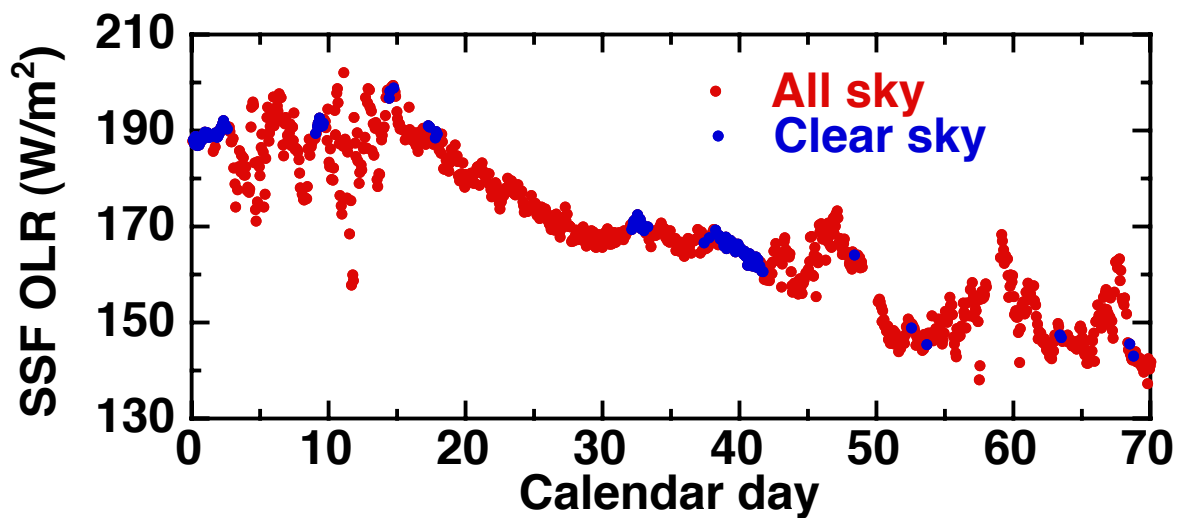


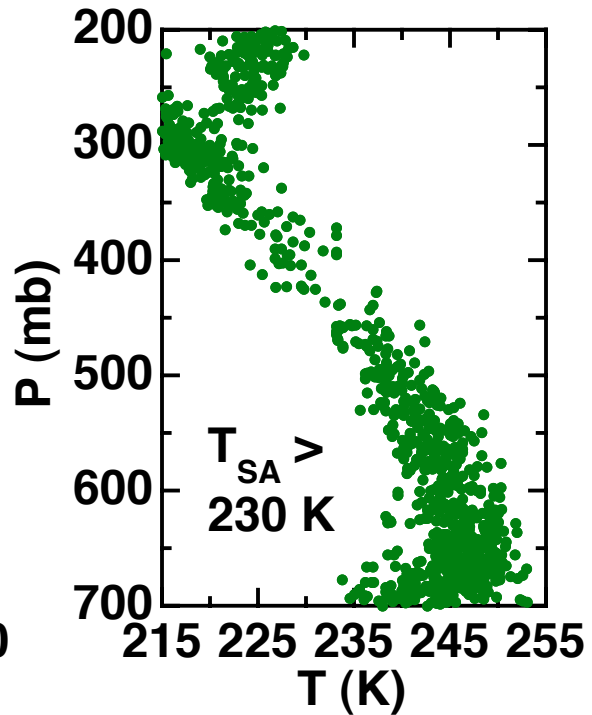
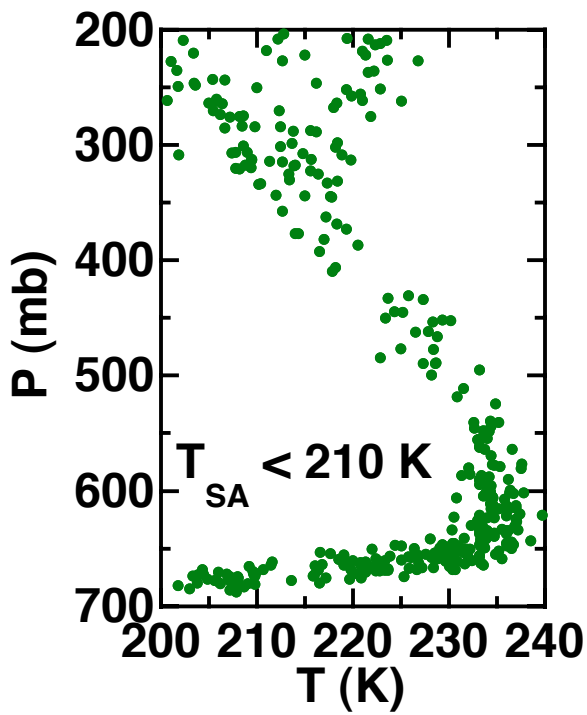
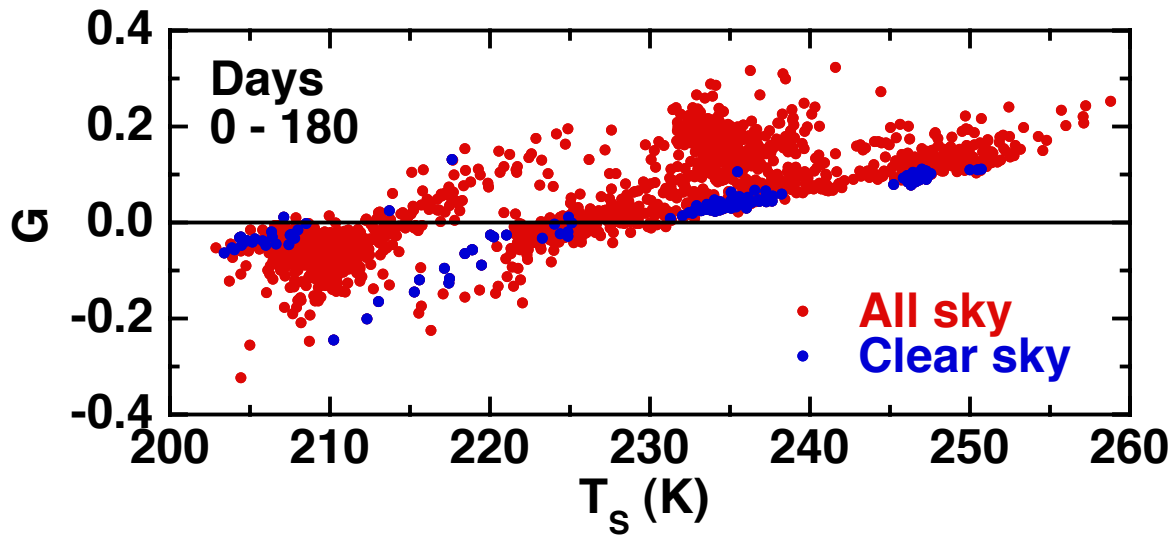


**Greenhouse parameter:**

$$G = 1 - (OLR/\sigma T_s^4)$$

**An increase in G denotes an increase in the greenhouse effect and vice versa.**





# Conclusions

This study clearly illustrates the improvement in the CERES SSF cloud identification, over snow/ice surfaces, relative to the MLE cloud identification that was employed in ERBE. And one would expect a positive greenhouse effect in the absence of a temperature inversion, but a negative greenhouse effect in the presence of an inversion, and this study quantifies that expectation.