

# Preliminary Ed3 and Ed2 TOA Flux Comparisons for IGBP Surface Types

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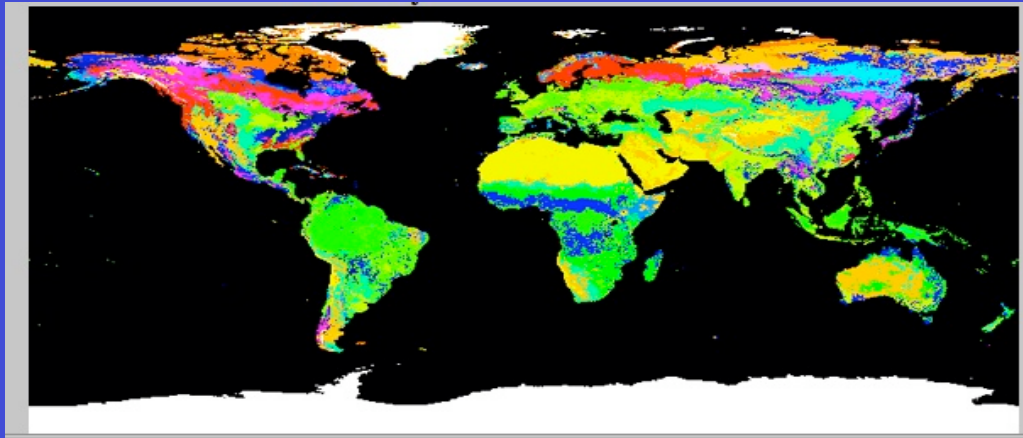
## OVERVIEW

- Direct comparison of monthly mean TOA fluxes from Terra (FM1) to assess impact of Edition 3 calibration changes for various surface types.

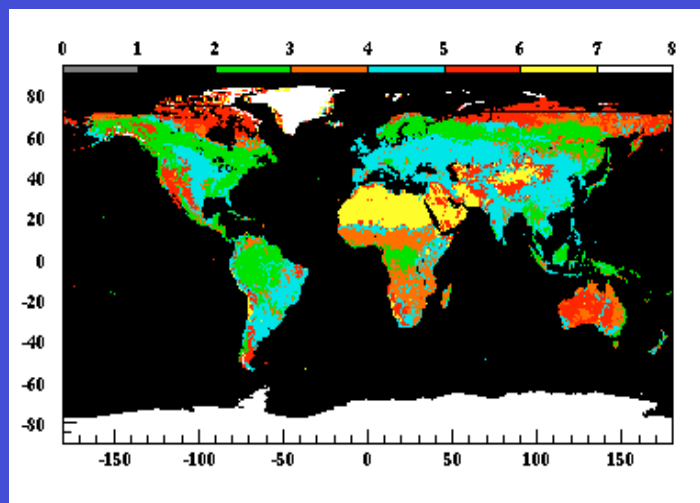
## DATA

- Terra FM1: March 2000 - December 2005
- Ed2B\_Rev1 vs. Ed3\_Beta7 (1°x1° regional monthly means)
- CERES cloud-free footprints only
- 7 IGBP subgroups

# IGBP Surface Types



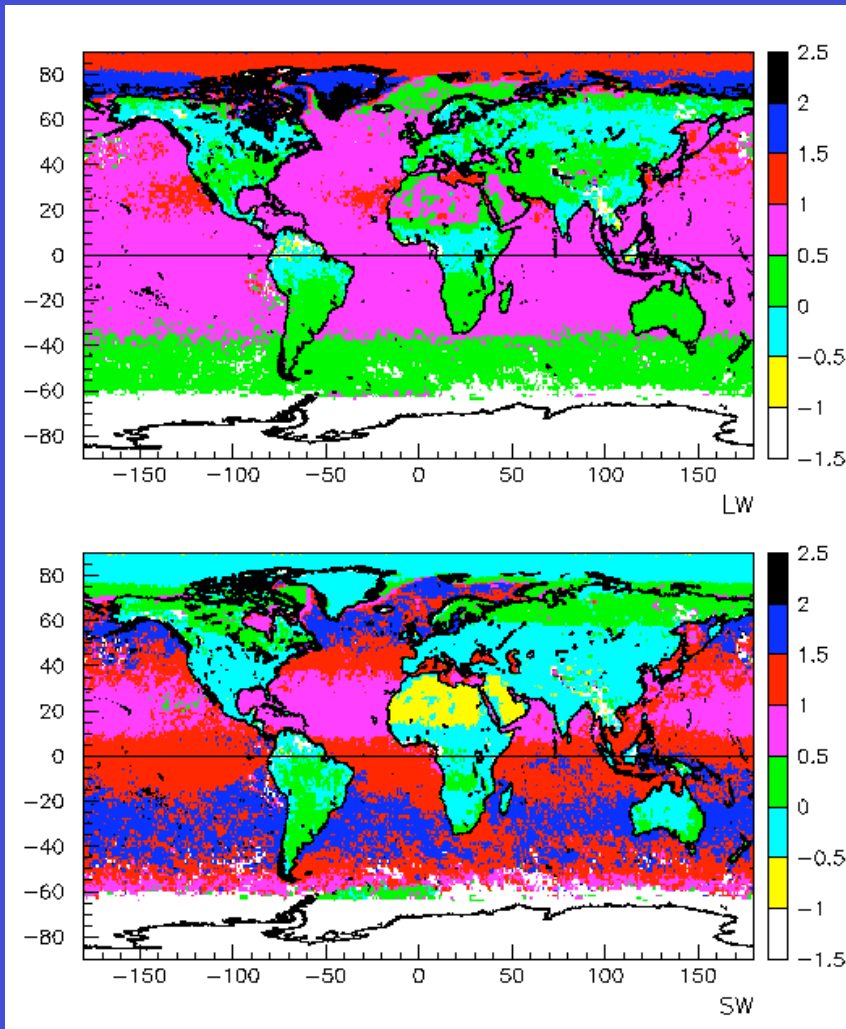
<input type="checkbox"/> 1. Evgrm. Needle For.	<input type="checkbox"/> 7. Open Shrubs	<input type="checkbox"/> 13. Urban
<input type="checkbox"/> 2. Evgrm. Broad For.	<input type="checkbox"/> 8. Woody Savannas	<input type="checkbox"/> 14. Crop/Mosaic
<input type="checkbox"/> 3. Decid. Needle For.	<input type="checkbox"/> 9. Savannas	<input type="checkbox"/> 15. Snow/Ice
<input type="checkbox"/> 4. Decid. Broad For.	<input type="checkbox"/> 10. Grassland	<input type="checkbox"/> 16. Barren/Desert
<input type="checkbox"/> 5. Mixed Forest	<input type="checkbox"/> 11. Wetlands	<input type="checkbox"/> 17. Water
<input type="checkbox"/> 6. Closed Shrubs	<input type="checkbox"/> 12. Crops	<input type="checkbox"/> 18. Tundra



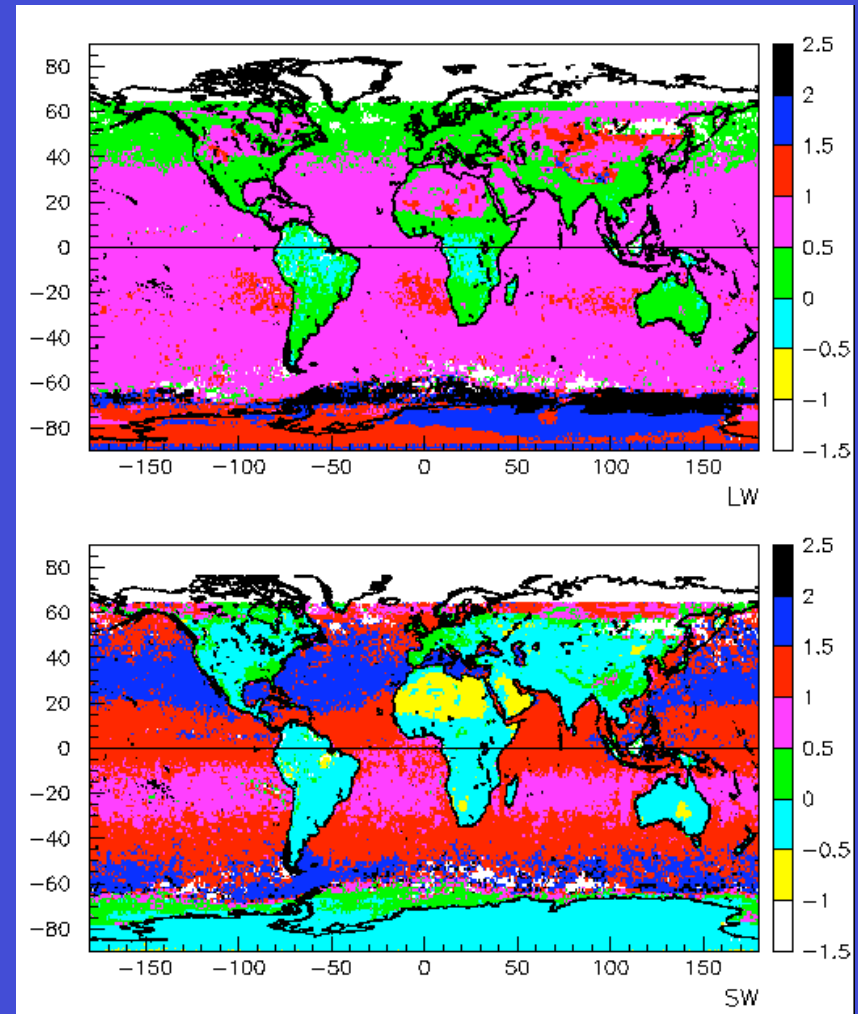
- 1: Water: 17
- 2: Forests: 1-5
- 3: Savannas: 8,9
- 4: Crop/Grass: 6,10-14
- 5: Dark Deserts: 7,18
- 6: Bright Deserts: 16
- 7: Snow/Ice: 15,19,20

# Relative Difference in Daytime TOA Flux for June and December

$(Ed3 - Ed2)/Ed2 \times 100\%$



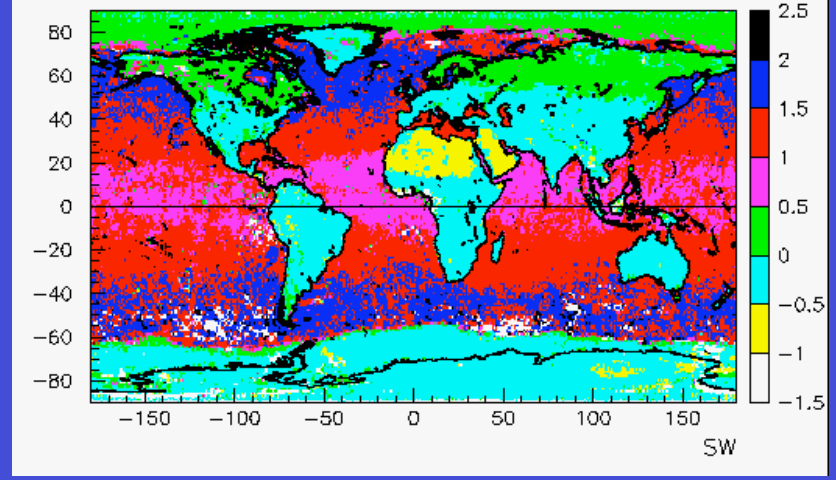
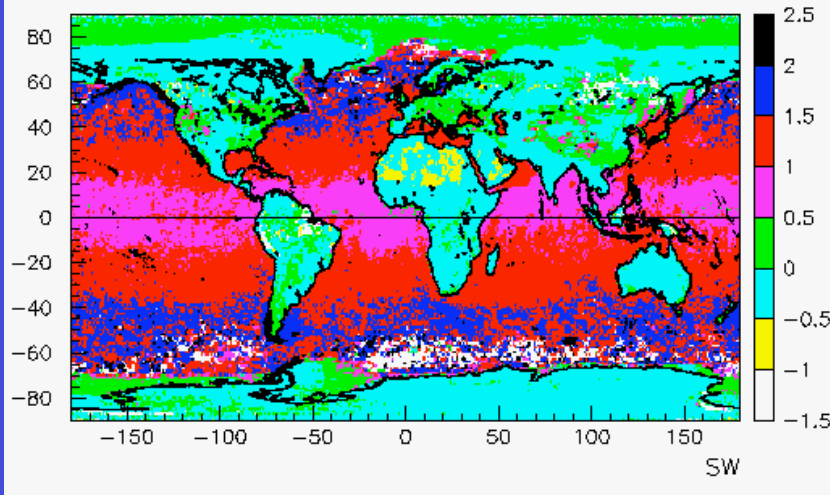
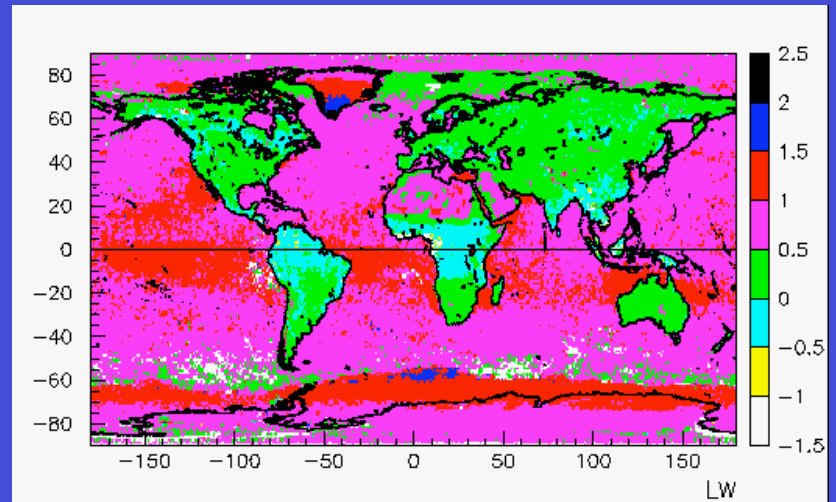
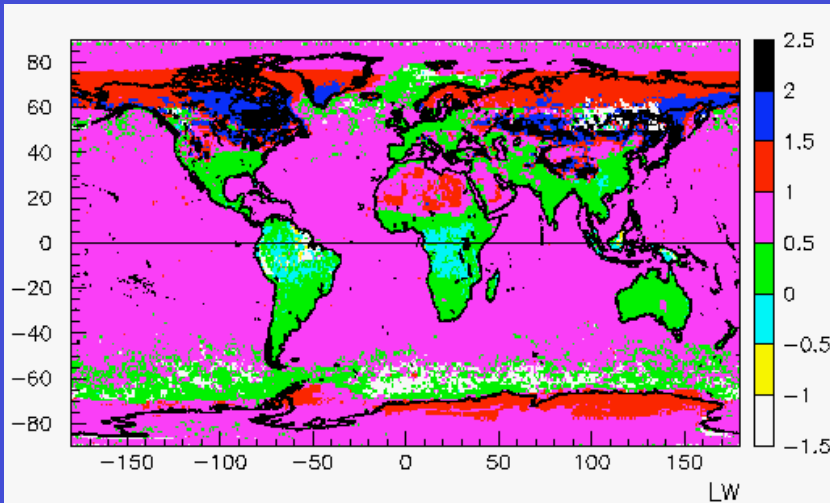
JUNE



DECEMBER

# Relative Difference in Daytime TOA Flux for March and September

$(Ed3 - Ed2)/Ed2 \times 100\%$

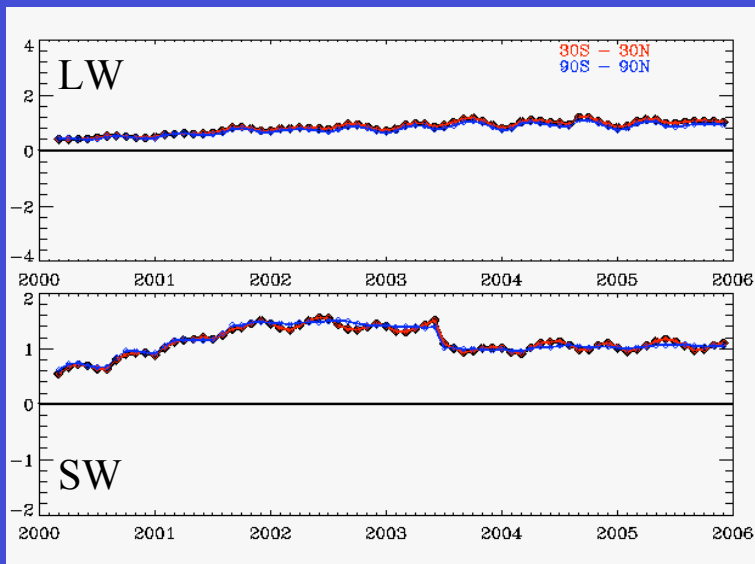


MARCH

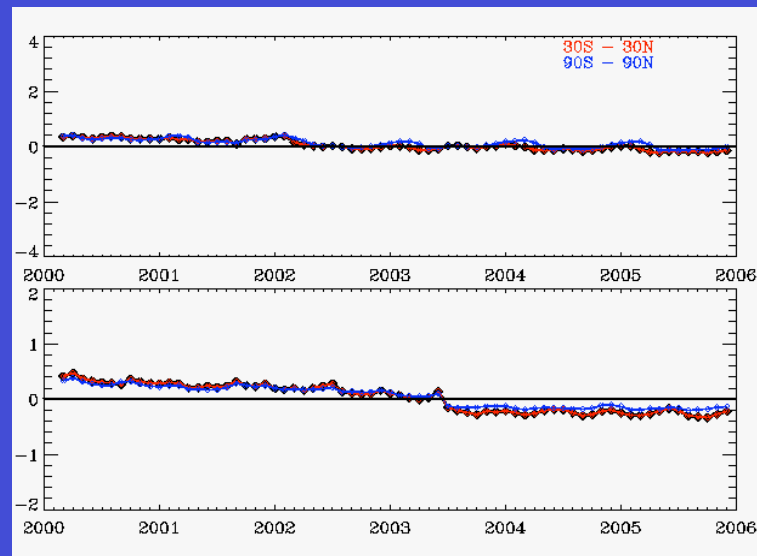
SEPTEMBER

# Relative Difference in Daytime TOA Flux

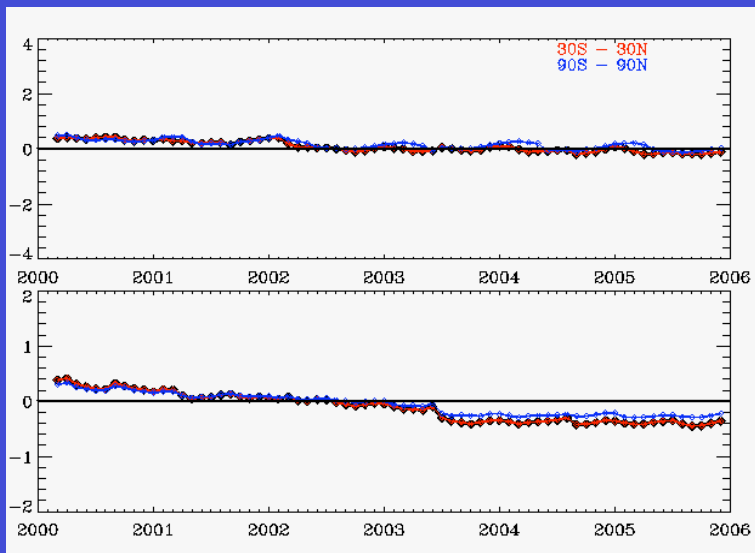
Relative Difference (%)  
 $(Ed3 - Ed2) / Ed2 \times 100\%$



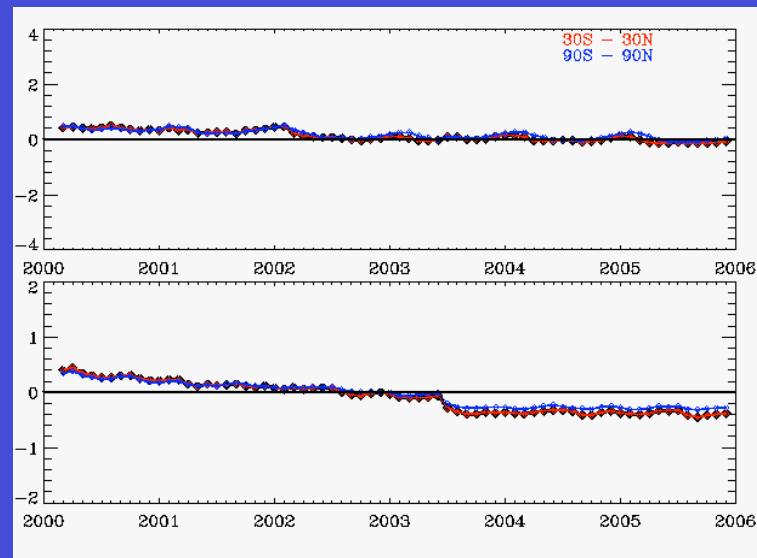
Ocean



Forests



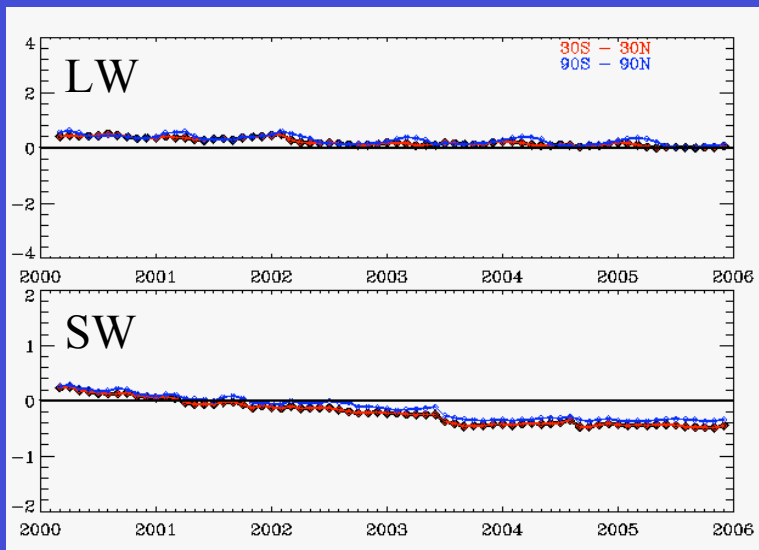
Savanna



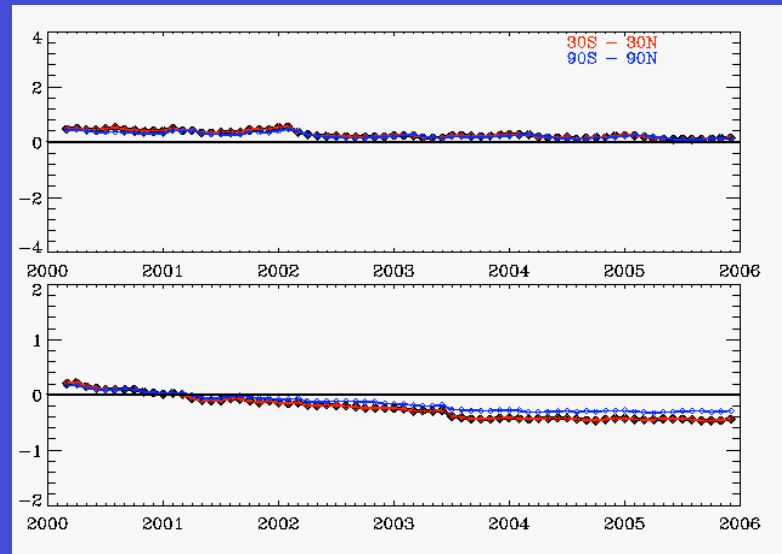
Grass/Cropland

# Relative Difference in Daytime TOA Flux

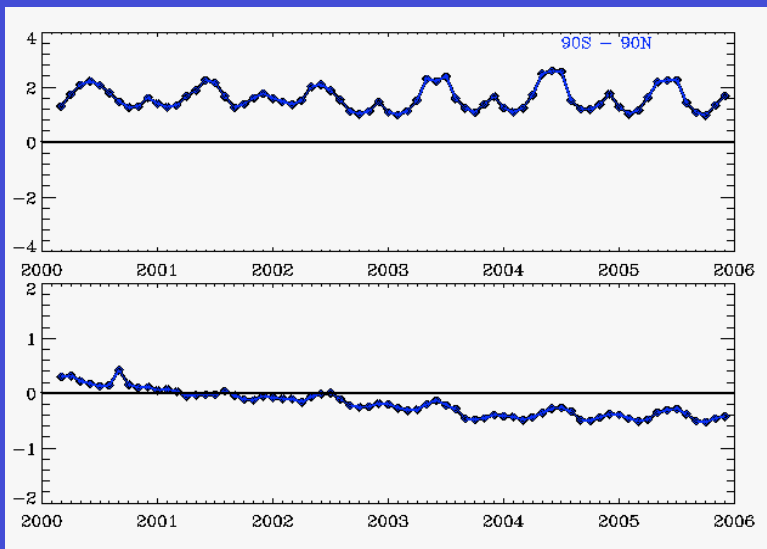
Relative Difference (%)  
 $(Ed3 - Ed2) / Ed2 \times 100\%$



Dark Desert



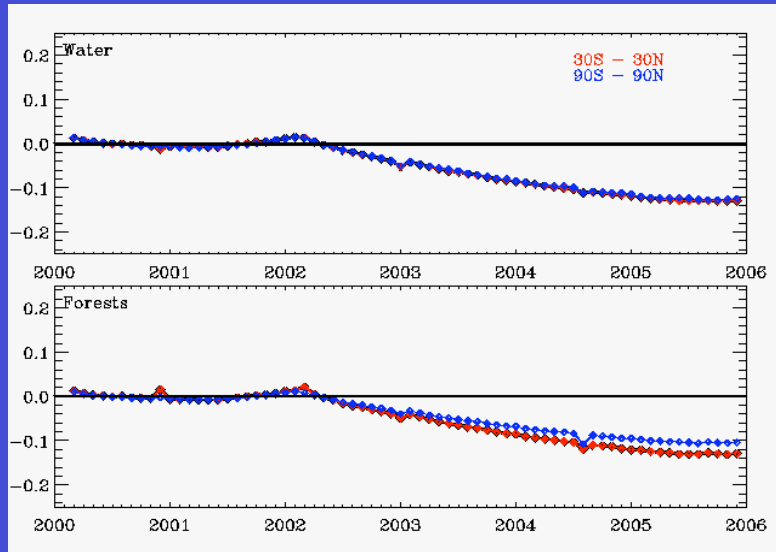
Bright Desert



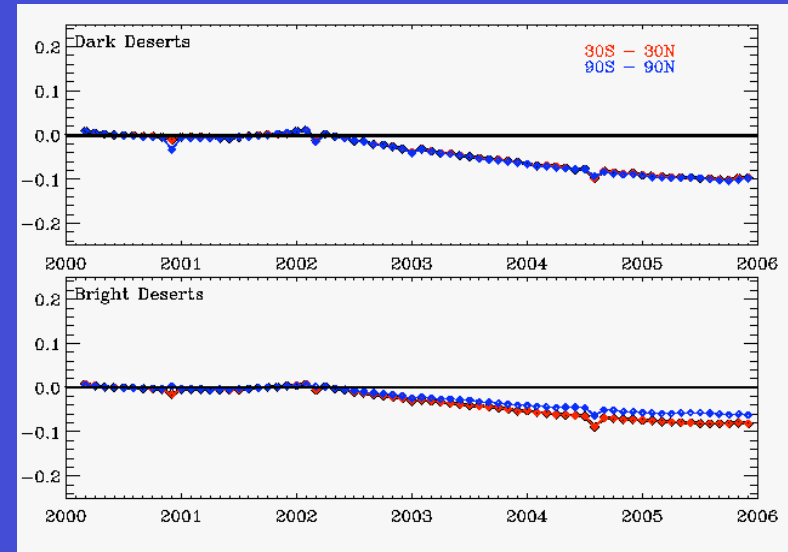
Snow/Ice \*

# Relative Difference in Nighttime LW TOA Flux

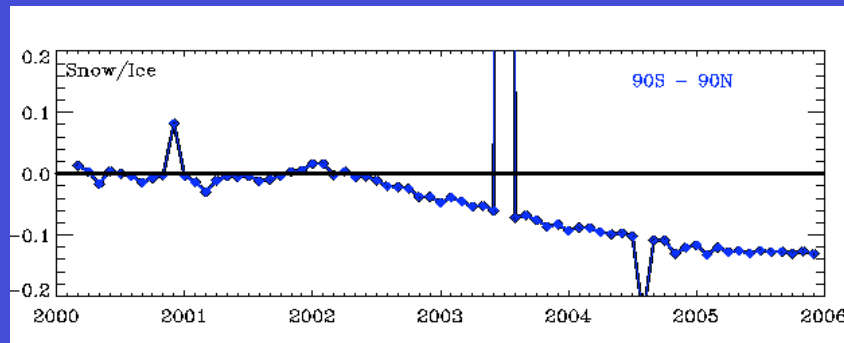
Relative Difference (%)  
 $(Ed3-Ed2)/EEd2 \times 100\%$



Ocean and Forests



Dark/Bright Desert

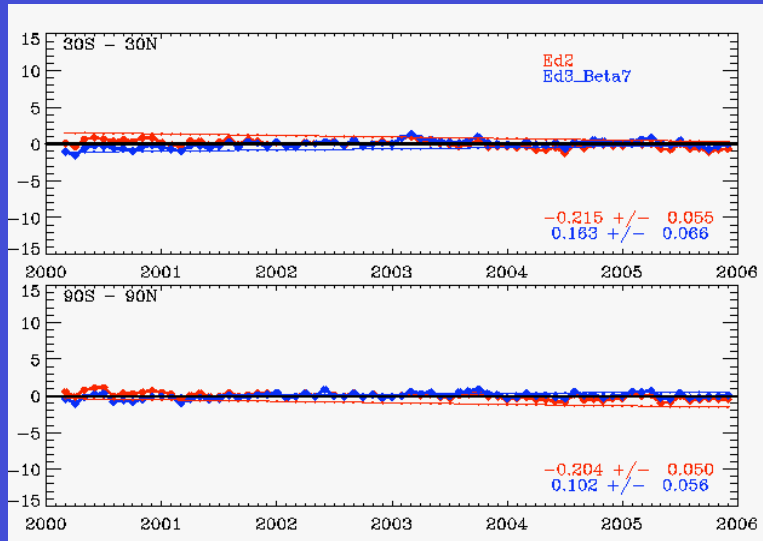


Snow/Ice

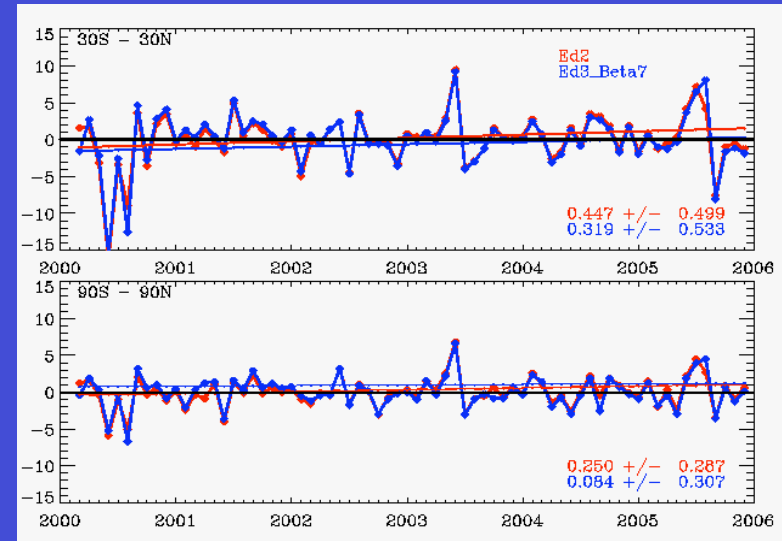


# Deseasonalized Anomalies in LW TOA

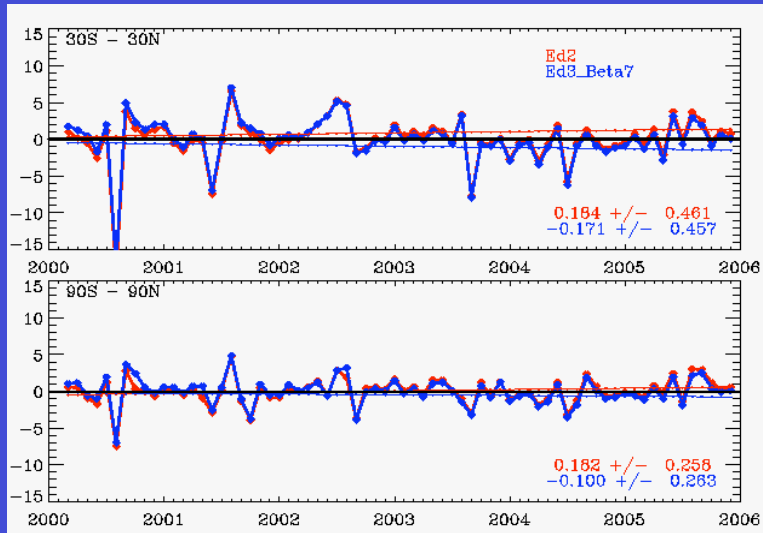
TOA Flux Anomaly (W/m<sup>2</sup>)



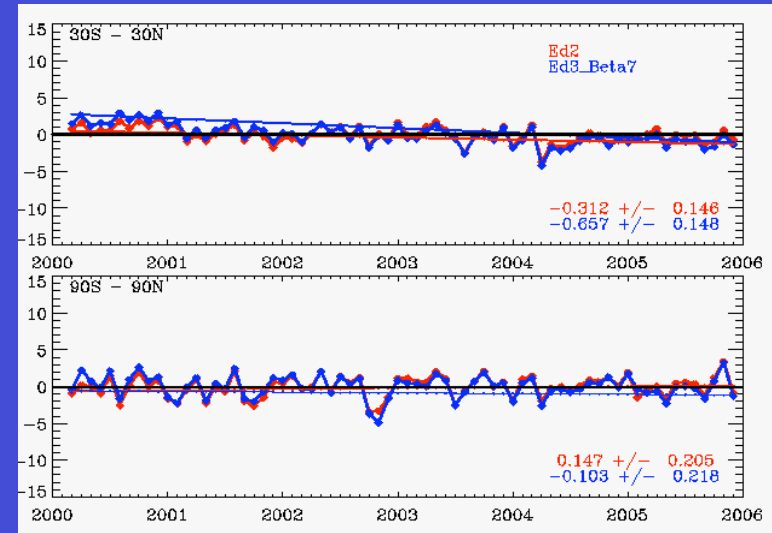
Ocean



Forests



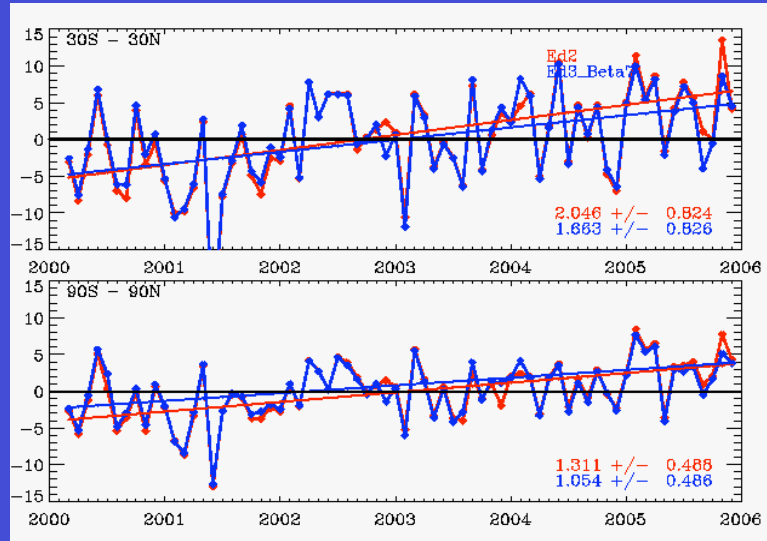
Savanna



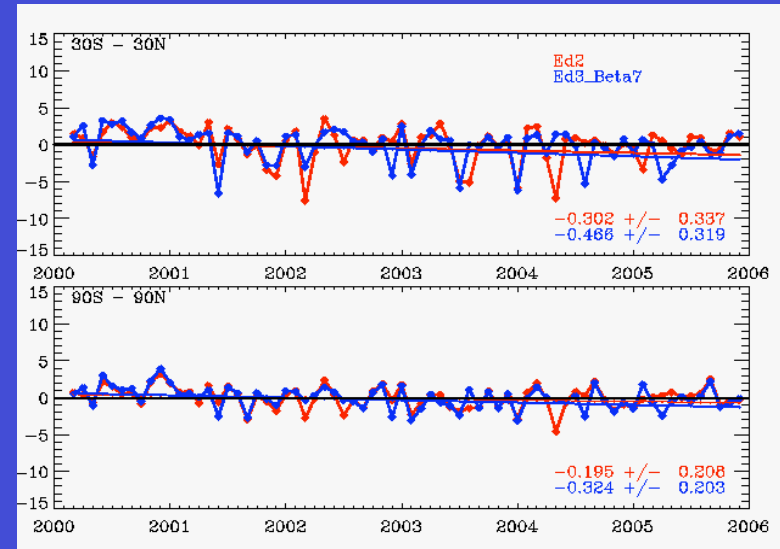
Grass/Cropland

# Deseasonalized Anomalies in LW TOA

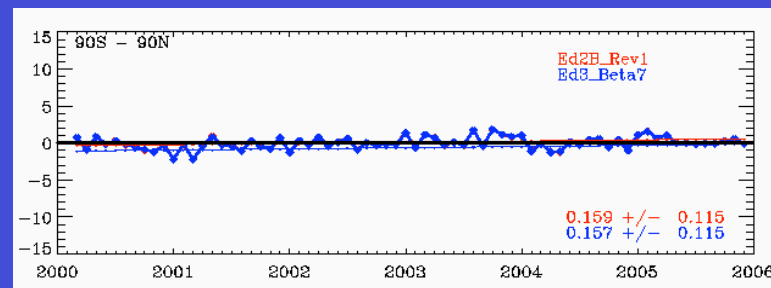
TOA Flux Anomaly ( $W/m^2$ )



Dark Desert



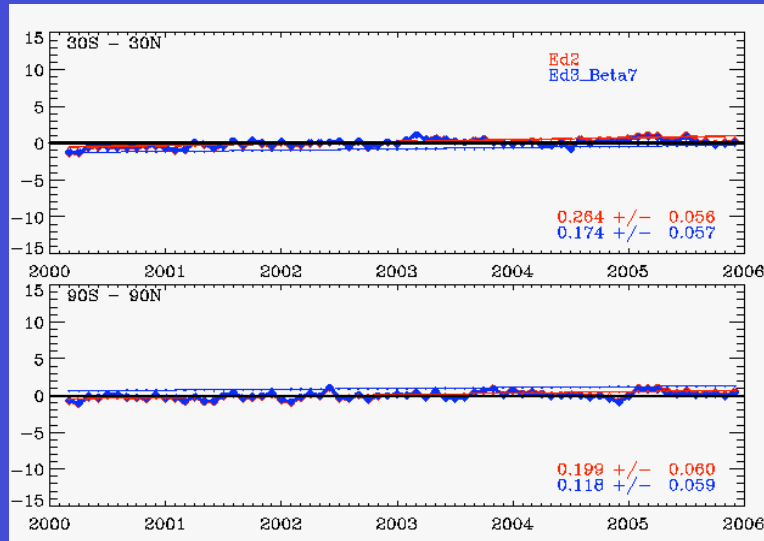
Bright Desert



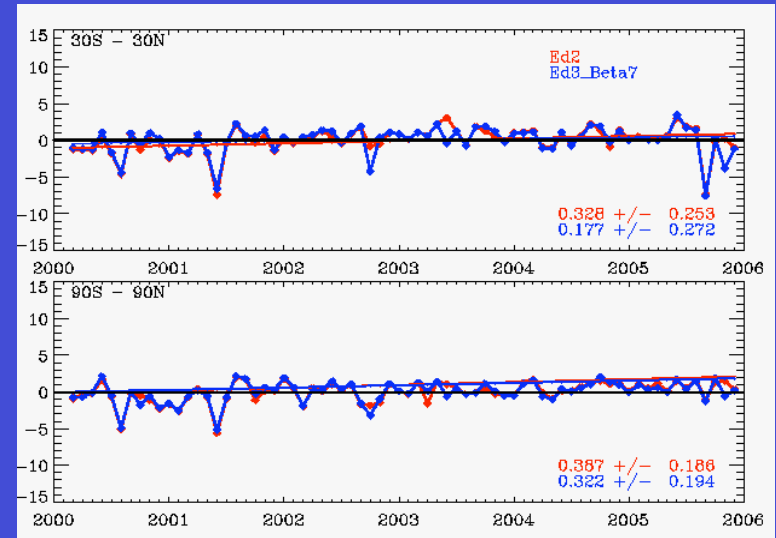
Snow/Sea Ice

# Deseasonalized Anomalies in Nighttime TOA Flux

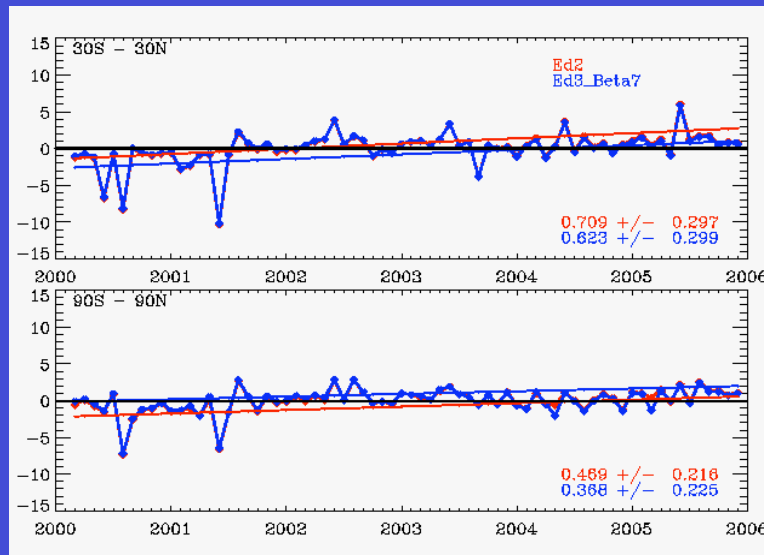
TOA Flux Anomaly (W/m<sup>2</sup>)



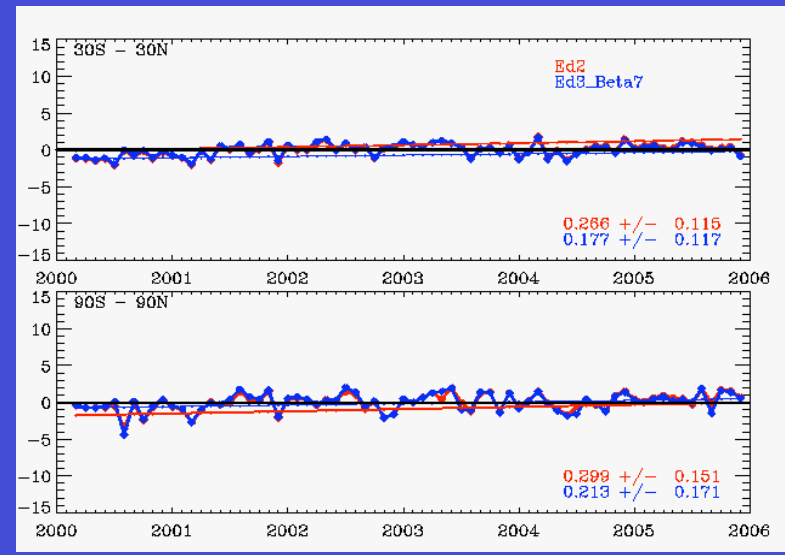
Ocean



Forests



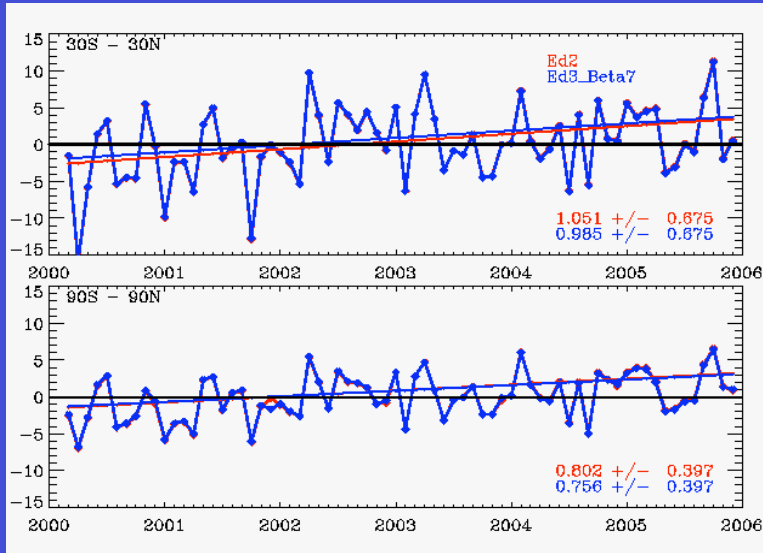
Savanna



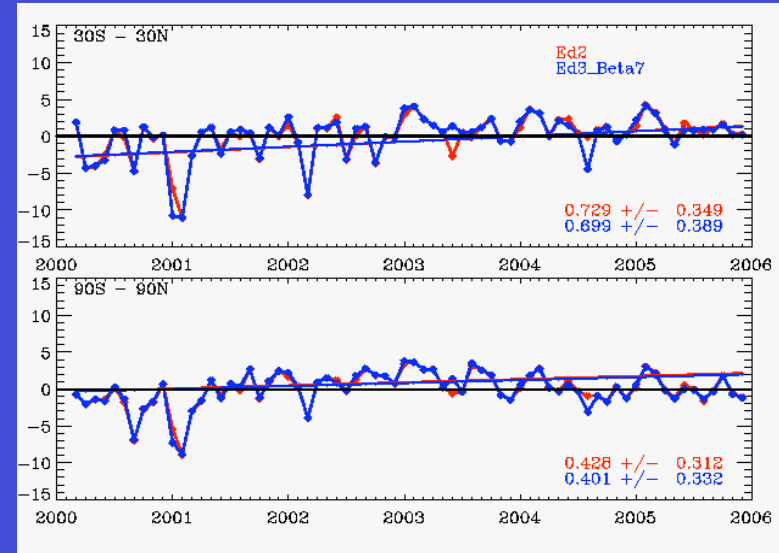
Grass/Cropland

# Deseasonalized Anomalies in Nighttime TOA Flux

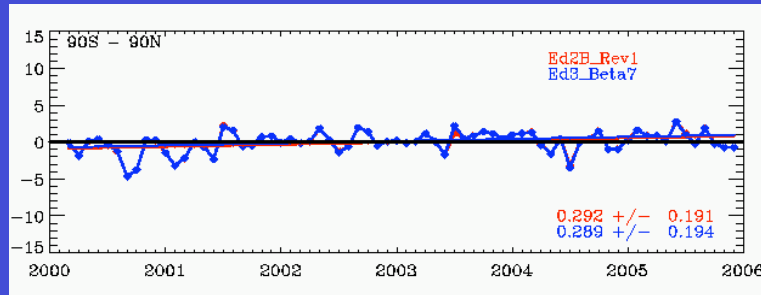
TOA Flux Anomaly ( $W/m^2$ )



Dark Desert



Bright Desert



Snow/Ice

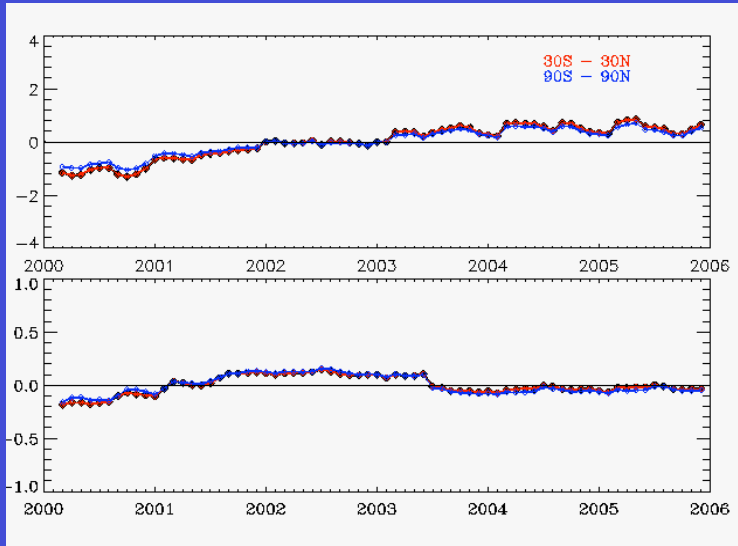
# Summary

- Direct comparison of TOA flux anomalies are performed for CERES Terra Ed2b\_Rev1 and Ed3\_Beta7 in a monthly time series for IGBP surfaces.
- Ocean daytime relative differences are in the order of  $< 1\%$ (LW) and  $1.5\%$  (SW).
- Land (non-snow/sea ice) daytime relative differences are similar for forests, savannas, grass/croplands and dark deserts and are in the order of  $\sim 0.5\%$  for LW/SW and within  $1\%$  for bright deserts.
- Snow/sea ice exhibit large flux relative differences in the order of up to  $2\%$ .
- Nighttime relative flux differences are in the order of  $0.2\%$ .
- Land scenes show larger LW flux anomalies (dark deserts) compared to ocean and snow/ice scenes. Ed3 flux anomalies generally smaller for Ed2.

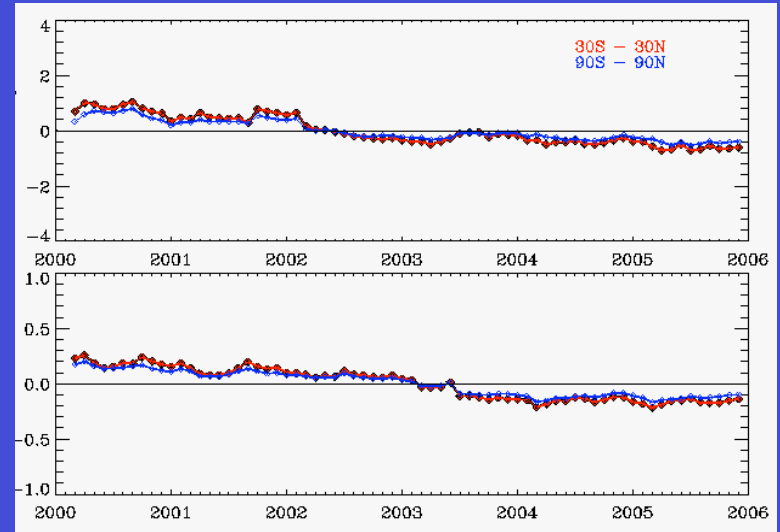
# BACK-UP SLIDES

# Anomaly in Daytime TOA Flux Difference (Ed3-Ed2)

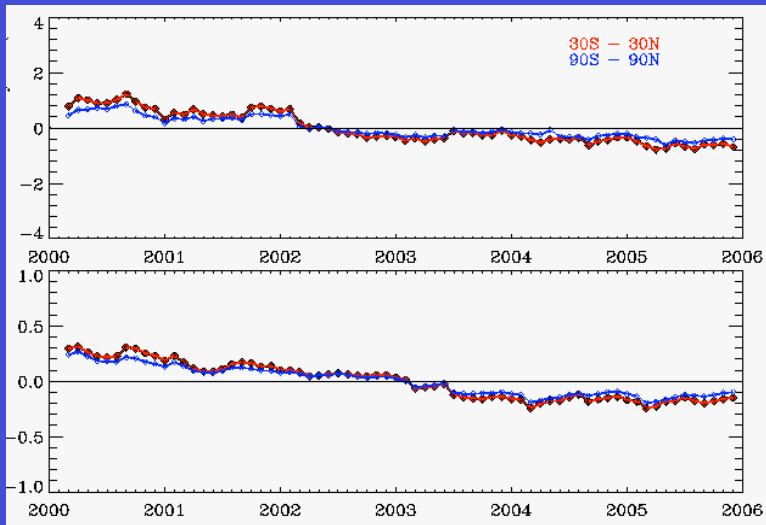
Ed3 - Ed2 Anomaly Difference ( $W/m^2$ )



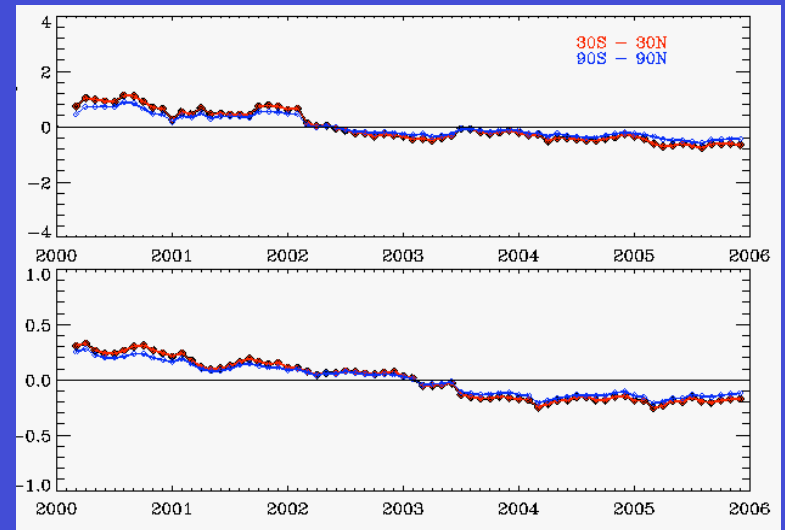
Ocean



Forests



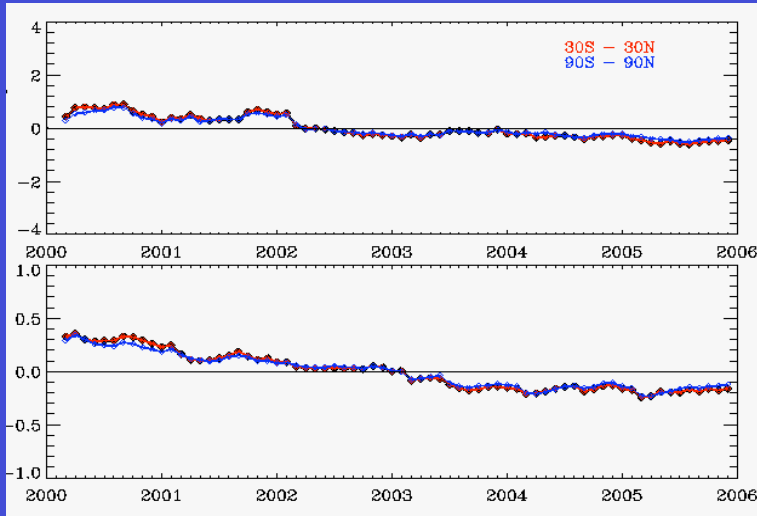
Savanna



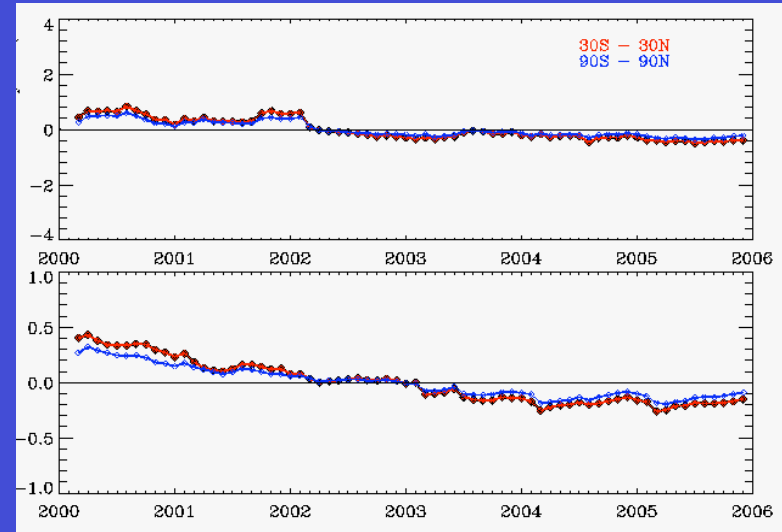
Grass/Cropland

# Anomaly Difference in Daytime TOA Flux (Ed3-Ed2)

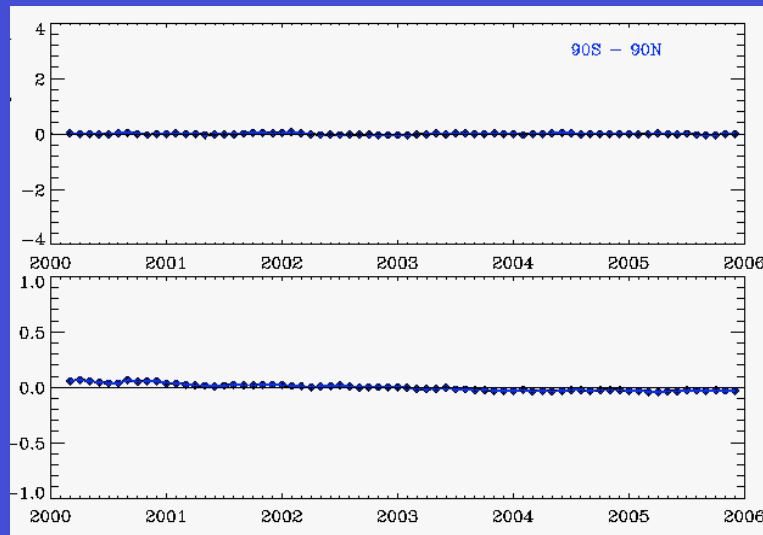
Ed3 - Ed2 Anomaly Difference ( $W/m^2$ )



Dark Desert



Bright Desert



Snow/Ice