



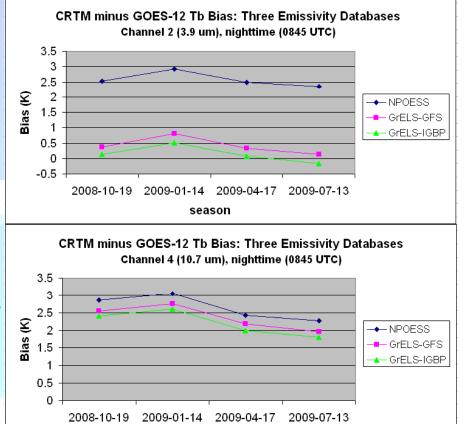
90th AMS Annual Meeting / 6th Symposium on NPOESS & GOES-R

A New Infrared Land Surface Emissivity Database for the Community Radiative Transfer Model

Ron Vogel, Quanhua Liu, Ben Ruston, Yong Han, Fuzhong Weng (STAR & NRL team)

Greenness-adjusted Emissivity for Land Surface (GrELS)

- Improves upon current NPOESS emissivity database for NCEP's satellite data assimilation
- Adds temporal dynamics, improves spectral resolution
- Uses same surface classification as GFS
- Method
 - Uses Green Vegetation Fraction (STAR) to add seasonal vegetation dynamics
 - Uses lab-measured reflectance from JPL Spectral Library for high spectral resolution emissivity
 - Incorporates GFS and IGBP surface classification schemes to meet needs of diverse users
- Results
 - Reduces CRTM-to-satellite bias by 94% for GOES 3.9um and 17% for GOES 10.7um channels, thereby permitting increase in number of satellite observations assimilated
 - Emissivity traceable to JPL Spectral Library reflectance
 - Other uses besides radiative transfer/assimilation:
 - Land surface temperature retrieval
 - Surface-atmosphere interaction
 - Earth radiation budget / surface energy balance



season