



90<sup>th</sup> AMS Annual Meeting / 6<sup>th</sup> Symposium on NPOESS & GOES-R  
**A New Infrared Land Surface Emissivity Database for the Community Radiative Transfer Model**

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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

