Purpose — To provide Green Vegetation Fraction (GVF) operational data product continuity by using the newly launched polar-orbiting satellite observations from NOAA-19

1. Background
   - GVF represents the fraction of a model grid covered by full green vegetation, while the "green" portion is assumed transpiring, versus the non-green portion which does not transpire.
   - GVF is required by NCEP/EMC weather and climate models.
   - NOAA Land Surface Model (LSM) uses GVF to determine the fraction of the model over which vegetation is transpiring and the fraction of soil surface exposed for direct evaporation.
   - GVF is produced by the Global Vegetation Processing System (GVPS) maintained by NESDIS/OSDPD/SSD, depending partially on outputs from the NOAA Global Vegetation Index (GVI) system, using NOAA polar-orbiting satellite GAC inputs from NOAA-7, 9, 11, 14, and 18.
   - With the launch of NOAA-19 (in February 2009), it is required to continue the GVF operational data product using this new satellite observations.

2. Processing Framework
   a. System Legacy and Processing Data Flow
      - GVPS is partially dependent on the Second Generation GVI (GV2, Kidwell [1997])

3. Preliminary Results from NOAA-19
   a. General Differences between NOAA-19 and Earlier NOAA Satellites
      - Equator Crossing Time
      - Sensor Response Functions

b. Comparison of Channel Counts, Reflectances, and NDVIs from NOAA-19 and NOAA-18
   - Global Field
   - Tropical Forest
   - Desert

4. Summary
   - Differences in sensor and observation characteristics lead to moderate to significant differences in channel reflectances and NDVIs from NOAA-18 and 19.
   - POST-Launch calibration to NOAA-19 based on longer period helps to reduce VIS and NIR channel reflectances and NDVI differences from those of NOAA-18.
   - Differences in GVFS are much less given they are calculated from the ACDF adjusted SMN.

5. Future Work
   - Comprehensive investigation on the causes of differences between NOAA-19 and 18.
   - Refine approaches to minimize systematic differences from NOAA-18.
   - Upgrade the GVPS operational system

6. Key References

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