Applications for Near-Real Time Satellite Cloud and Radiation Products

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Introduction
With increases in computer capabilities & satellite imager data availability, near-real time (NRT) products generated from satellite data are becoming more common & finding more applications. At NASA LaRC, we have been providing satellite-based cloud and radiation parameters in NRT for over a decade. As these analytical datasets become more widely known, researchers have been using them to improve their nowcasts and forecasts of weather and other atmospheric phenomena. The products, their availability and some of their current applications are summarized in this poster.

Availability
On the web: http://cloudsgate2.larc.nasa.gov

On smartphones: http://cloudsgate2.larc.nasa.gov

Products
All products are available at pixel level; some are also averaged to particular grids. Averaging is readily achievable.

**Standard, Single-Layer VISST/SIBT**

- 0.65, 1.68 μm Reflectances
- 3.7, 4.7, 10.8 μm Temp
- 12 or 13.3 μm Temp
- Optical Depth, BB emissivity
- Broadband Albedo
- Cloud effective particle size
- Liquid Ice Water Path
- Clear-sky Skin Temperature
- Effective Temp, height, pressure
- Top/ Bottom Pressure
- Pixel Lat, Lon
- N/A, VZA, RPA
- Overclouding tops (new)

**Multi-Layer Cloud (single or 2-layer)**
- Effective temperature
- Optical depth, thickness of ice or liquid water path
- Height, top/base height

**Other applications**
- NWP Model run support
- Cloud and radiation analysis
- Surface radiation budget
- Surface energy balance
- Cloud forcing study
- Aerosol forcing study
- MODIS Cloud Height Product
- GEOSat
- GEOS-5
- E1R
- E2R
- E1R

**Applications for Near-Real Time Satellite Cloud and Radiation Products**

**Nowcasting for Aviation Safety & Management**

Airframe Icing Potential

Convective & Lightning Initiation

Overshooting Tops

Assimilation & Forecasting

**NCEP/ESRL Rapid Refresh (RAP) Model**

**GFS**

**WRF Deep Convection**

**Remote Sensing**

**Reference**

Mecikalski et al. (2011)

Bedka et al. (2012)


Pinker et al. (2011)


LaRC Clear-sky Skin Temperature (K)

NOAA ESRL, Boulder, CO

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