Geostationary Ocean Colour Radiometry

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GEO Products and Applications

Presentations
• J-K Choi: GOCI overview
• D. Doxaran: Dynamics of SPM in river plumes using GOCI
• R. Frouin: Estimating PAR from GOCI

Discussion:
• What new products can be derived from GEO OC data?
  – surface currents; sediment transport; particle tracking
  – Event tracking: oil spills, ship dumping, HABs, etc.
• What new processes can we describe?
  – Tidal dynamics, eddies, fronts
  – Diel evolution of traditional ocean color products
  – Direct NPP & NCP
  – Phytoplankton bloom dynamics
  – Exchange at land-sea interface; air-sea interface;
GEO data processing technique

Presentations
• (M. Wang) S. Son: GOCI Atmospheric Correction Applications
• C. Mazeran: Specificities in GEO OCR processing

Discussion:
What are new challenges for GEO data processing?
• Sun glint – minor issue
• Backscattering (sun behind sensor)
  – Limits to aerosol model selection & AOT (135° – yes; 163° – no)
  – <90° side & forward scattering
• GEO improves coverage (optimization for clouds)
  – >200 days/yr with ≥1 image; compared to ~100 d/yr for LEO
• Air mass fraction
  – High-viewing angle (<60-deg sensor view angle okay)
  – Atm. correction out of spec when AMF>4
  – Aerosols & trace gases from larger area with GEO than LEO
GEO data processing technique

• MTF – scale of details observable by sensor
  – Goal=0.3; manufacturers: 250m not possible; 500m possible (GOCI) – due to pointing stability

• Multi-temporal data processing?

• What is max AMF for Atm. correction?
  – What approach is best for high AMF: direct (Gordon-Wang) or indirect (e.g., neural network) methods?

• Can we correct for air-sea interface at high sun/viewing zenith angle? (wave shadows at high SZA)

• Can we correct for atmospheric “spherical shell” (earth curvature)?

• Is BRDF a problem or an opportunity?
  BRDF increases rapidly with viewing angle
GEO new missions and synergy

Presentations
• J-H Ryu: Korean Geo new mission synergy
• A. Mannino: NASA GEO-CAPE Status
• D. Antoine: European GEO - OCAPI
• Q. Vanhellemont: MODIS-SEVIRI Synergy Product

Discussion
• How should GEO and LEO be designed to optimize synergy?
• Do we need a global GEO constellation?
• Potential for synergy: GOCI-II + MI-II (met) + GEMS (atm profile)?
• Harmonization of multi-agency requirements bands, SNR, etc.?
Final thoughts

• Limitations to GEO requirements
  – trade off in spatial resolution, temporal resolution, SNR, spatial coverage, spectral resolution, etc.

• Sensor type
  – 2D frame capture multispectral (GOCI, SEVIRI, ABI...)
  – 1D - Single slit hyperspectral with very wide field of view
  – 1D - Multiple slits hyperspectral

• Need for more informative sessions on Geo
• Need for more extensive discussions