Nanosatellite clusters for multi-spectral, bi-directional reflectance distribution function estimations

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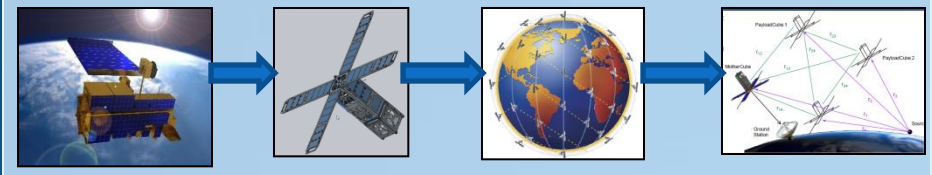
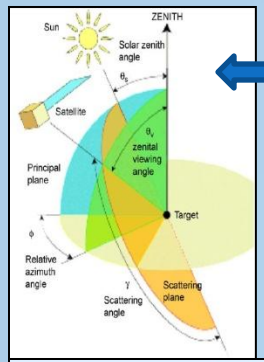
MOTIVATION

Bus-like satellites => Small satellites => Constellations => Clusters

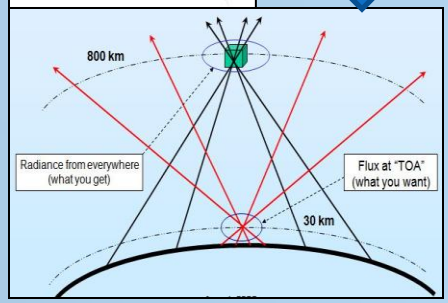


TERRA: 4,864 kg EOS Flagship | **MicroMAS:4 kg NanoSat** | **DOME: 4 kg ++ Constellation** | **MotherCube: 4 kg ++ Fractionated S/C**

Bi-Directional Reflective Distribution Function (BRDF)



BRDF geometry we need vs. what **one satellite samples**



Spaceborne gaps

1. Insufficient angles (ATSR, ASTER)
2. Low ground resolution (POLDER, CERES)
3. Low number of spectral bands (MISR, CERES)
4. Insufficient repeat (ASTER, SPECTRA)
5. No solar principal plane samples (MODIS)
6. ~All nearing end of life

Airborne gaps

1. Spatially local
2. Discontinuous data
3. High cost per unit area and per unit time

IMPLEMENTATION

Proposed Cluster Geometries (LVLH Frame)