LAND SUMMARY-3 October 1991

MODIS-T and MISR for land: Multiangle Measurement

Discussion Issues:

(1) Global coverage need for -N products

(2) Utility of hotspot measurements

Global Coverage

1. Problem of tilt gap w/-T
2. Problem of useful atmospheric correction w/-T
3. Problem of contention w/oceans operation w/-T

Therefore MISR

Utility of Hotspot Measurements

1. -T gives hotspot, high angular look resolution
2. Problem of separating atmospheric hotspot from BRDF hotspot
3. Problem of accuracy of retrieval of structural parameters, given good atmospheric correction

Therefore need for MODIS-T is problematic

High hopes, but realistic view is: R&D topic

MULTIANGLE MEASUREMENTS FOR LAND

- Angular information is CRITICAL for global terrestrial studies
  - * Land surfaces are strongly anisotropic
  - * Single measurements can be difficult to interpret because of the various sources of anisotropy
    1. Phase functions of scattering elements
    2. Orientation and distribution of scatterers in medium
    3. Shadowing effects = surface structure
    4. Multiple scattering

(1) • Multiangle measurements are required to adjust global MODIS-N data products for the effects of anisotropy, atmosphere, and topography

(2) • Multiangle measurements are required for accurate global mapping of hemispherical albedo

(3) • Multiangle measurements have the potential to reveal information about the sources of anisotropy above, but...

  * Needs R&D, especially satellite sensing of surface structure

• Given the choice between MODIS-T and MISR, the Land Group would select MISR

RATIONALE

(1) MODIS-N Measurements and Products

*MISR - Frequent global coverage

*MISR - Continuous swath

*MISR - Adequate spectral resolution

- anisotropy
- atmosphere
- topography

(2) Mapping Albedo

*MISR - Frequent global coverage

*MISR - 9 angular measurements

(3) Anisotropy

*MODIS-T- Many look angles--including hotspot

*MISR - Frequent global coverage

*MISR - Adequate spectral resolution

Tradeoffs

- Lose spectrometry w/MISR

- Lose high angular resolution and hotspot w/MISR

+ No MISR problem with Ocean-Land scheduling priority

Future Issues

*1 km (250 m) resolution for MISR (data rate issue)

*MODIS-MISR Team Joint Working Group - BRDF, topography

Have-Cake-and-Eat-It-Too Scenario
(Late Discussions)

* MODIS-N + MISR @ 10:30

* MODIS-T @ 1:30 for local, regional BRDF

* Possible POLDER copy?