MODIS MOD43 Validation Core sites: Mongu/Skukuza

1. Dept. Geography, University College London, UK

2. Dept. Geography, University of Wales, Swansea, UK

3. Dept. Geomatic Enginerring, University College London, UK

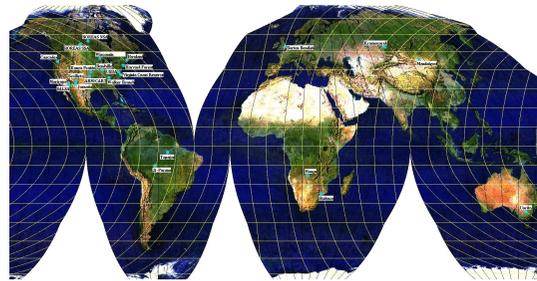G. Roberts[1], P. Lewis[1], L. Rebelo[1], M. Disney[1], G.Thackrah[1], M. Barnsley[2], T. Quaife[2] , J-P. Muller[3]

Purpose of Study

- Comparison of BRDF from independent datasets
  - AirMISR, MODIS
- Examination of BRDF parameter temporal trajectories
- Examine in context of change/burn detection algorithm
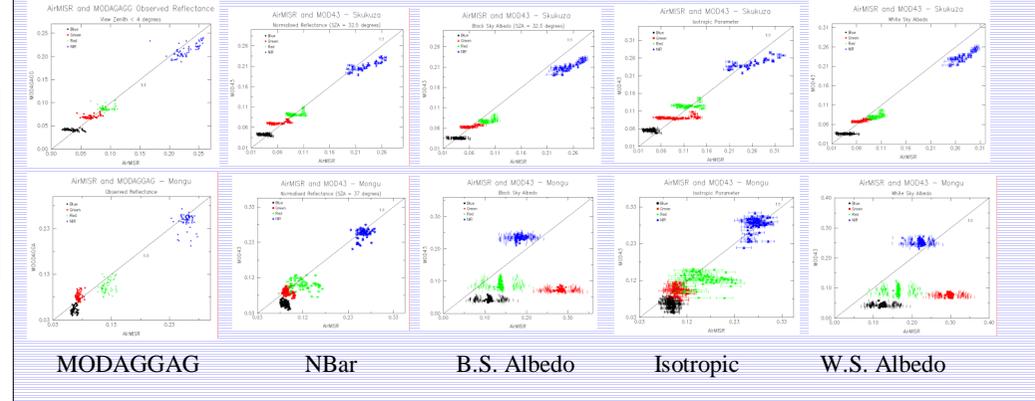
Airborne datasets

- Safari 2000 / SAVE
  - AirMISR 6-7th September 2000
    - ER2 underflight of Terra 20 km alt.
    - terrain-projected Georectified Radiance Product
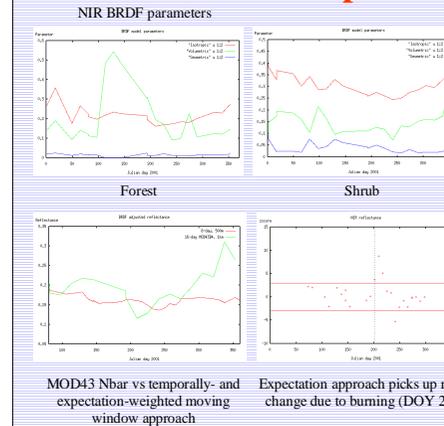 - Mongu, Zambia; Skukuza, RSA

MOD43-AirMISR Comparison

MODAGGAG   NBar   B.S. Albedo   Isotropic   W.S. Albedo

MOD43-AirMISR Comparison

- Mongu results poor: atmospheric correction issues
- Skukusa result: higher scatter on scaled AirMISR than MODIS: MTF effects?

MOD43 products: Mongu

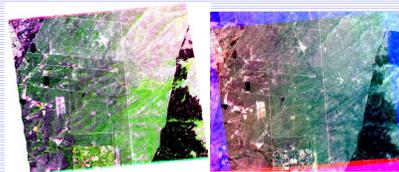NIR BRDF parameters

Forest   Shrub

BRDF parameters

- Consistent year-to-year
  - 2000-2002 (not shown)
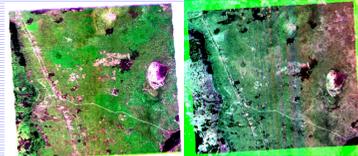- Cover type-dependent trajectory

Fires/Burns

- Extension of Burn scar detection work (Roy, Lewis, Rebelo) to temporally- and expectation-weighted moving window
- Small burn change in NIR shown in Nbar product
  - 16 day Window contains burn/noburn data
- Shown clearly as high Z-score in change detection algorithm

MOD43 Nbar vs temporally- and expectation-weighted moving window approach

Expectation approach picks up rapid change due to burning (DOY 201)

Skukuza

Bands 3,4,2, nadir view   MVA, 2,4,6 NIR

Blue   Green

Red   NIR

FCCs: Kernel-driven modelling : LiSparse, RossThick, Isotropic
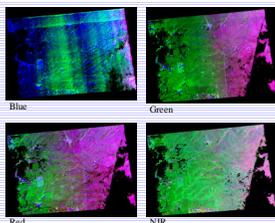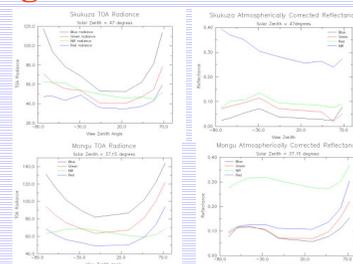
Mongu

Bands 3,4,2, nadir view   MVA, 3,4,6 NIR

Blue   Green

Red   NIR

AOT high for Mongu: 0.67
Atmospheric correction not reliable

Vegetation Reflectance data

Conclusion

- Somewhat disappointing comparisons with AirMISR, though magnitude of all parameters good for Skukuza (atmospheric problems for Mongu)
- Interesting BRDF model trajectories for different cover types
- Product has potential for fire/burn contamination
  - Moving window approach preferable?