

Shortwave reflected energy from an **EPI**
compared with **CERES** an

Road Map

Use spectral information from AVIRS aircraft observations

- 1 For each EPIC pixel choose a high resolution AVIRS spectrum
- 2 Construct a composite high resolution spectrum that fits
Mixture of spectra from solid cloud and spectrally clear sky
- 3 Spectrally integrate to produce SW energy from composite spectrum

Comparison

- 1 Pixel level comparison EPIC SW energy with CERES SW energy
up to 30 minutes time difference

High Spectral Resolution information

SCIAMACHY versus AVIRIS

SCIAMACHY: 275nm
parts of spectra sampled at

AVIRIS (ER-2): 365nm
Full complete Spectra at

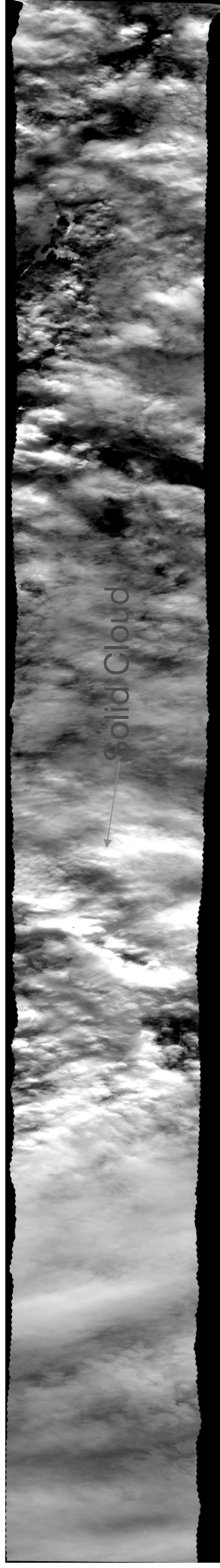


AVIRIS

Airborne Visible / Infrared Imaging Spectrometer



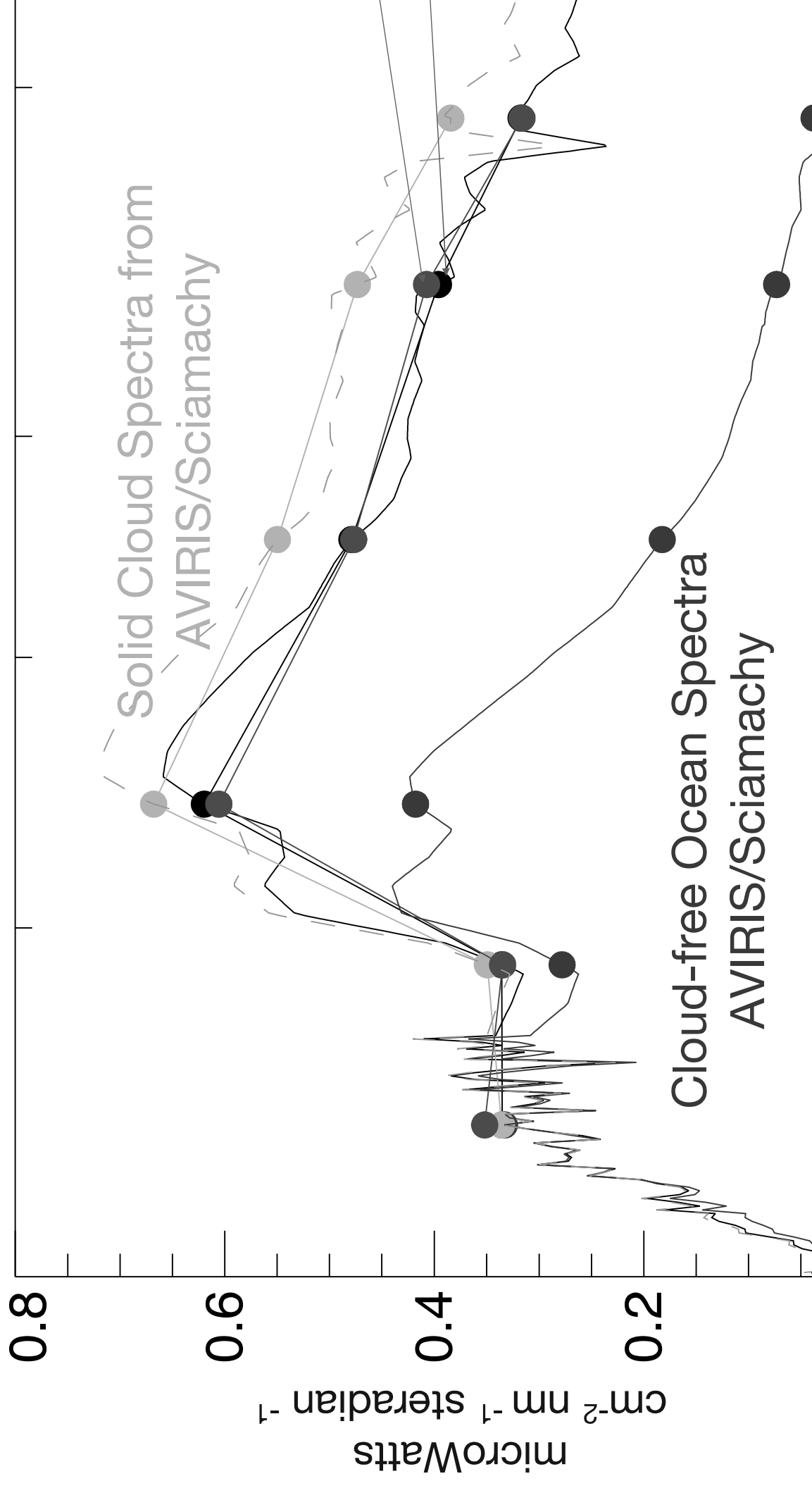
224 channels between .365 and 2.5 microns



Composite Spectra = Open Ocean * fraction + Cloud * (1

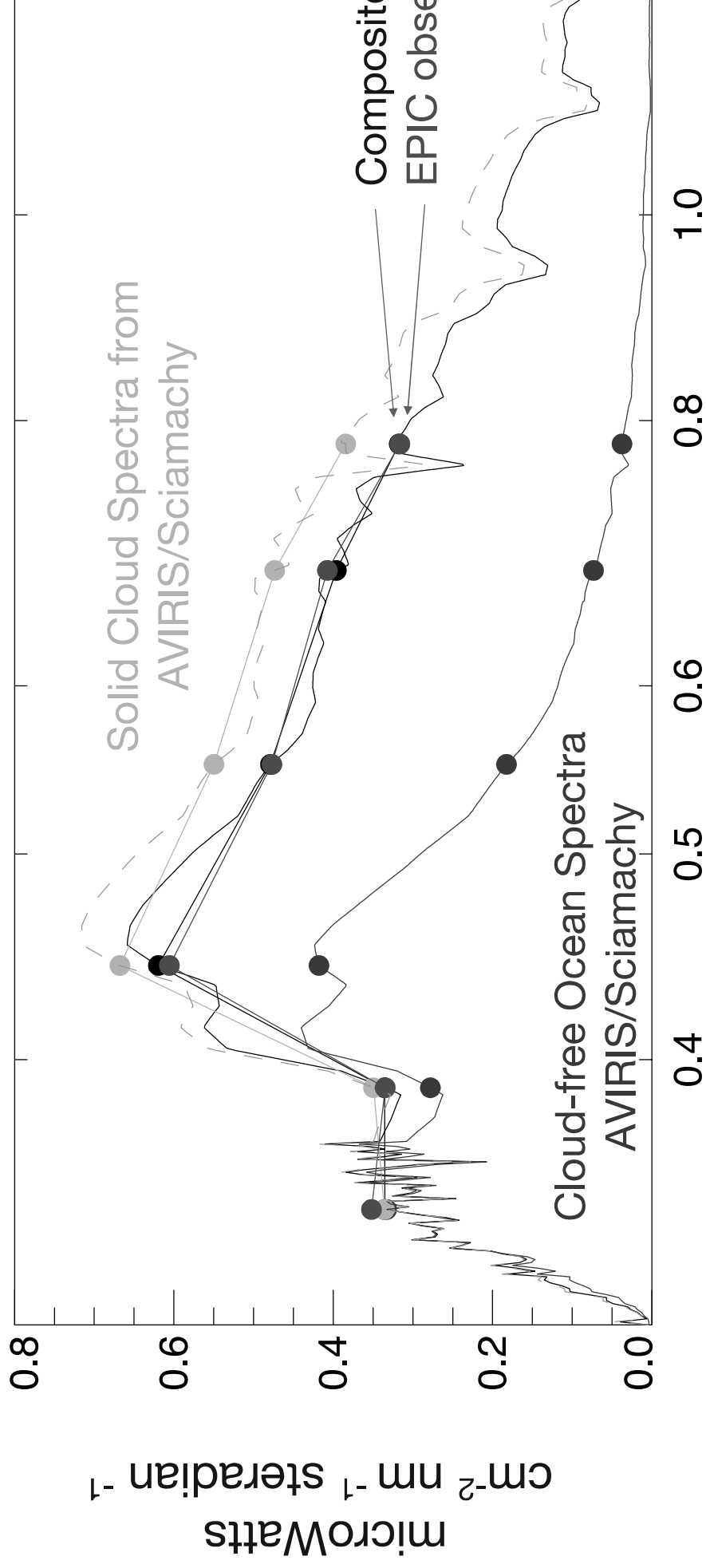
Cloud over Ocean

Ocean fraction 0.193 COD=40.000



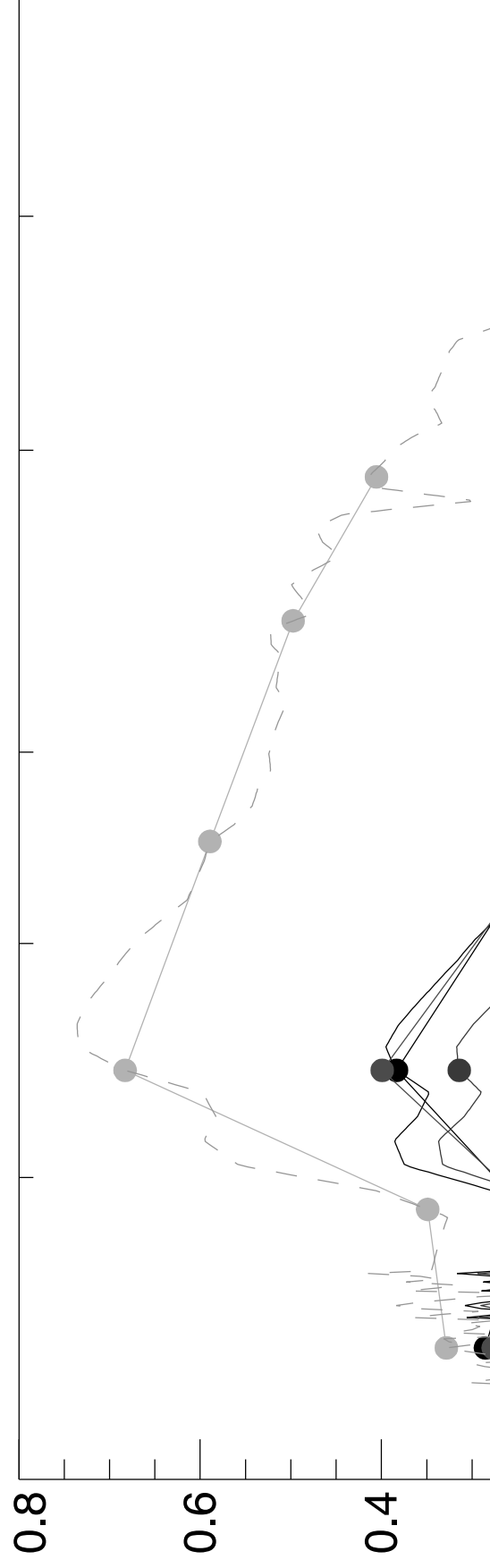
Ocean fraction 0.193 COD=40.000

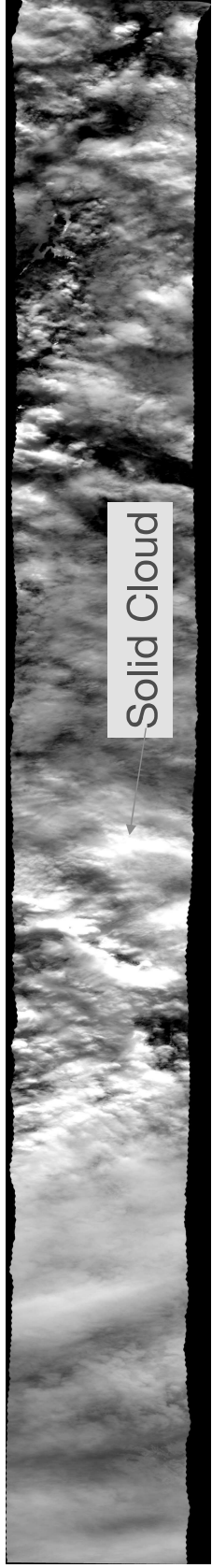
Frac error=0.06



Ocean fraction 0.812 COD=40.000

Frac error=0.0



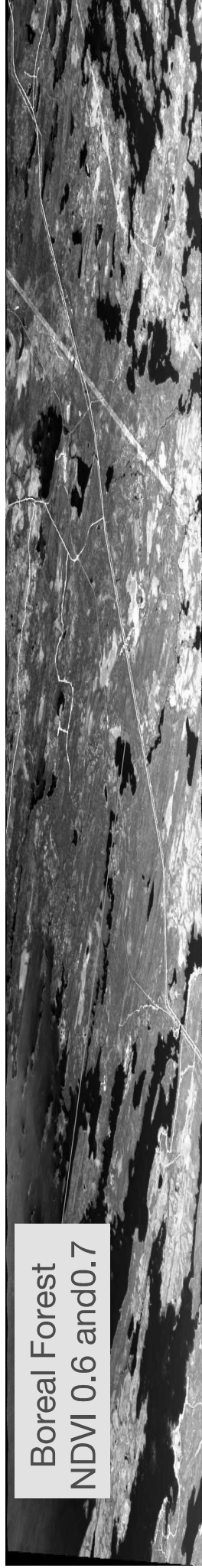


Solid Cloud

Possible Land surfaces



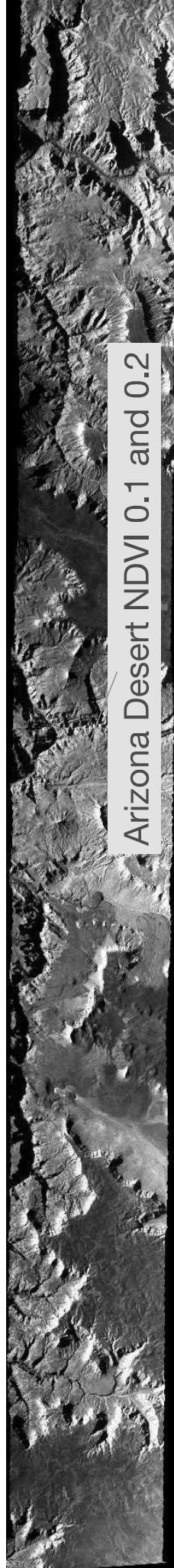
Topical Forest NDVI 0.8



Boreal Forest
NDVI 0.6 and 0.7



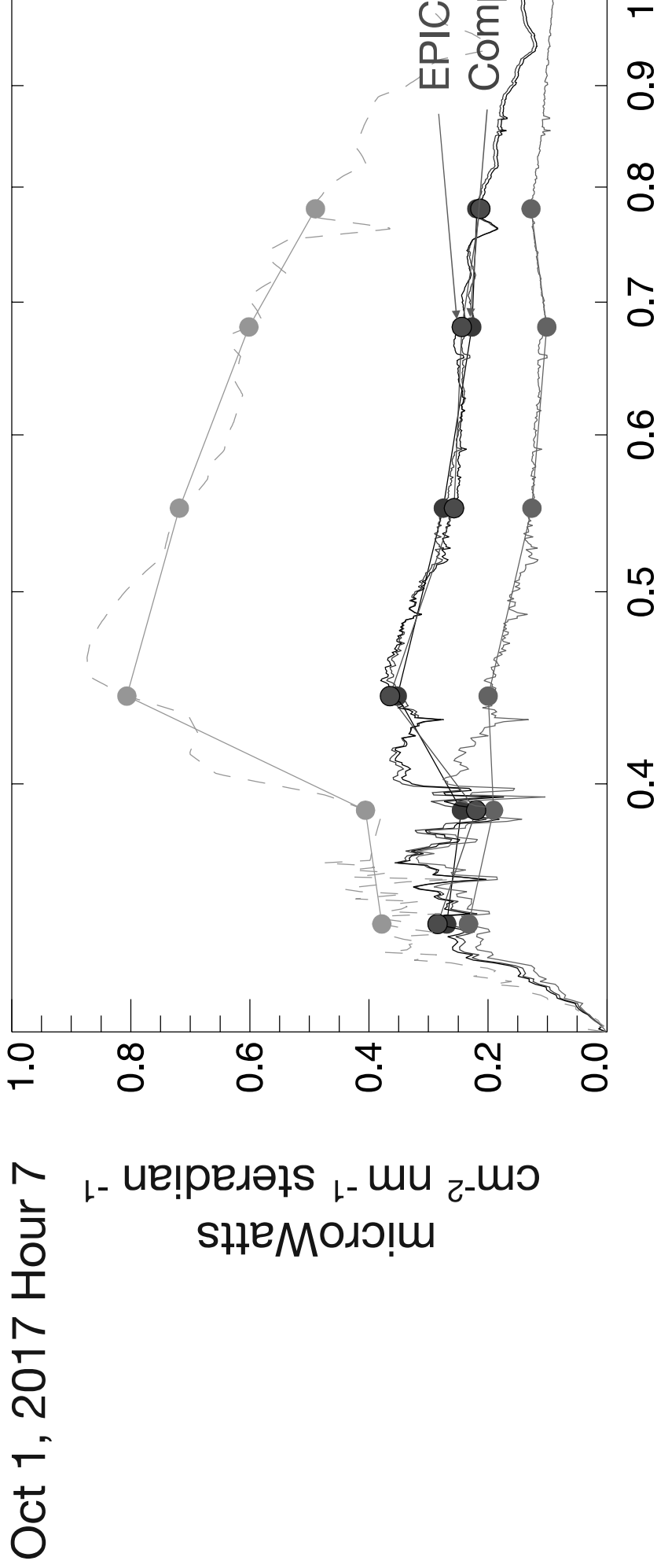
Grassland and Savana NDVI 0.3



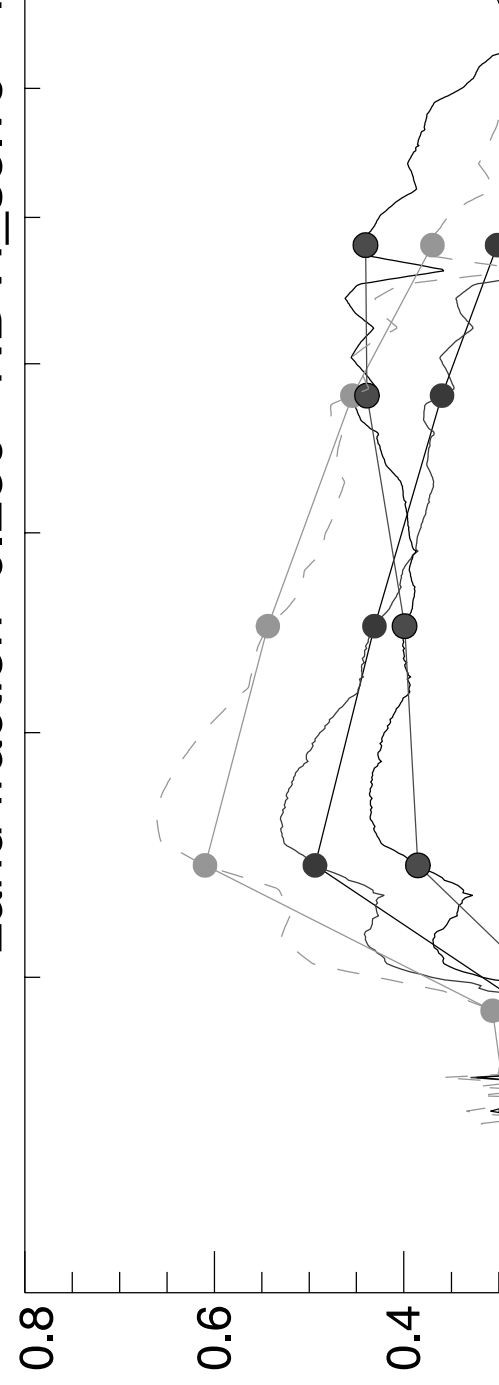
Arizona Desert NDVI 0.1 and 0.2

AVIRIS spectra Watts per m2 per nano meter SZA= 39

Land fraction 0.749 NDVI_solve= 1



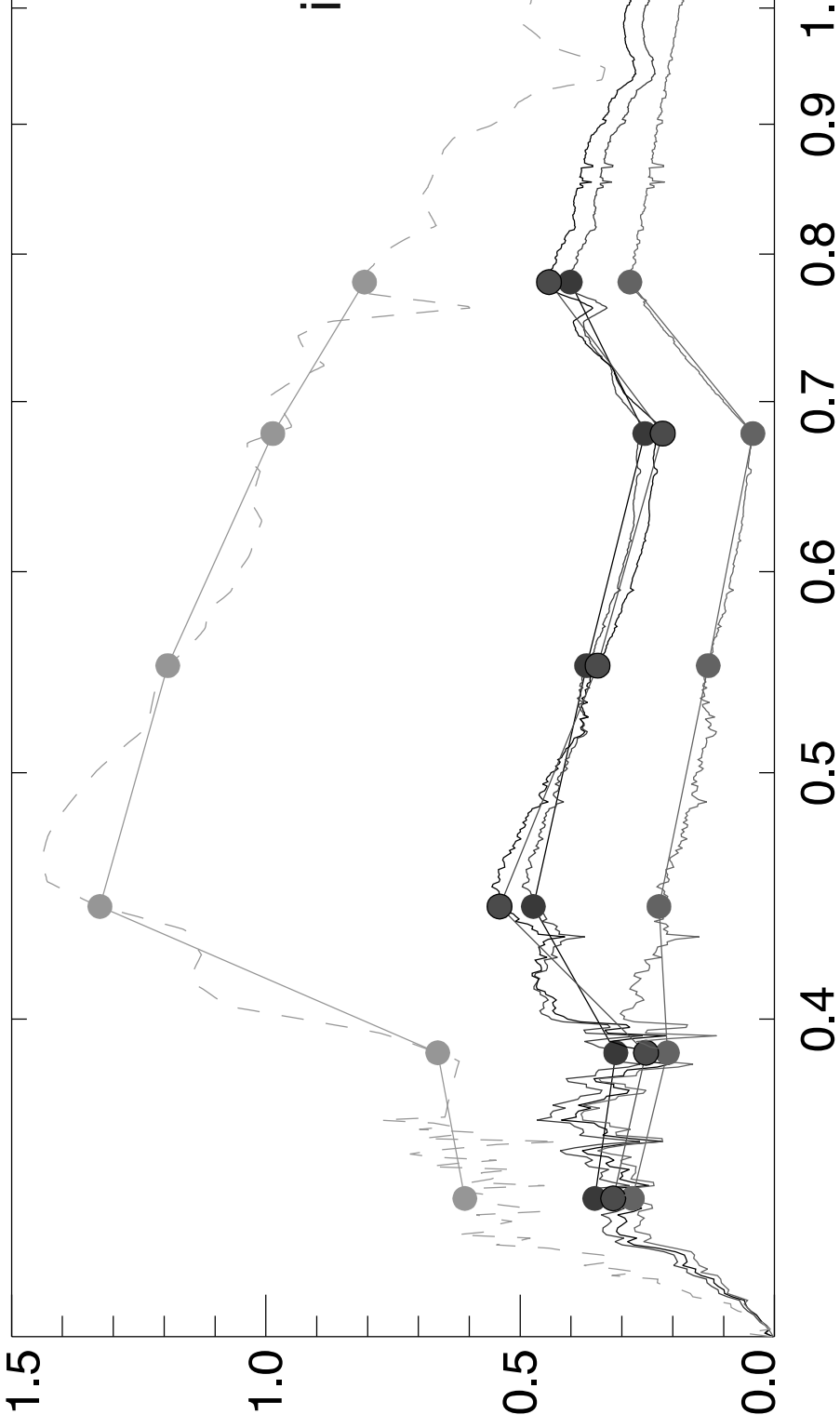
AVIRIS spectra Watts per m2 per nano meter SZA= 39
Land fraction 0.250 NDVI_solve= 1



Oct 1, 2017 Hour 7

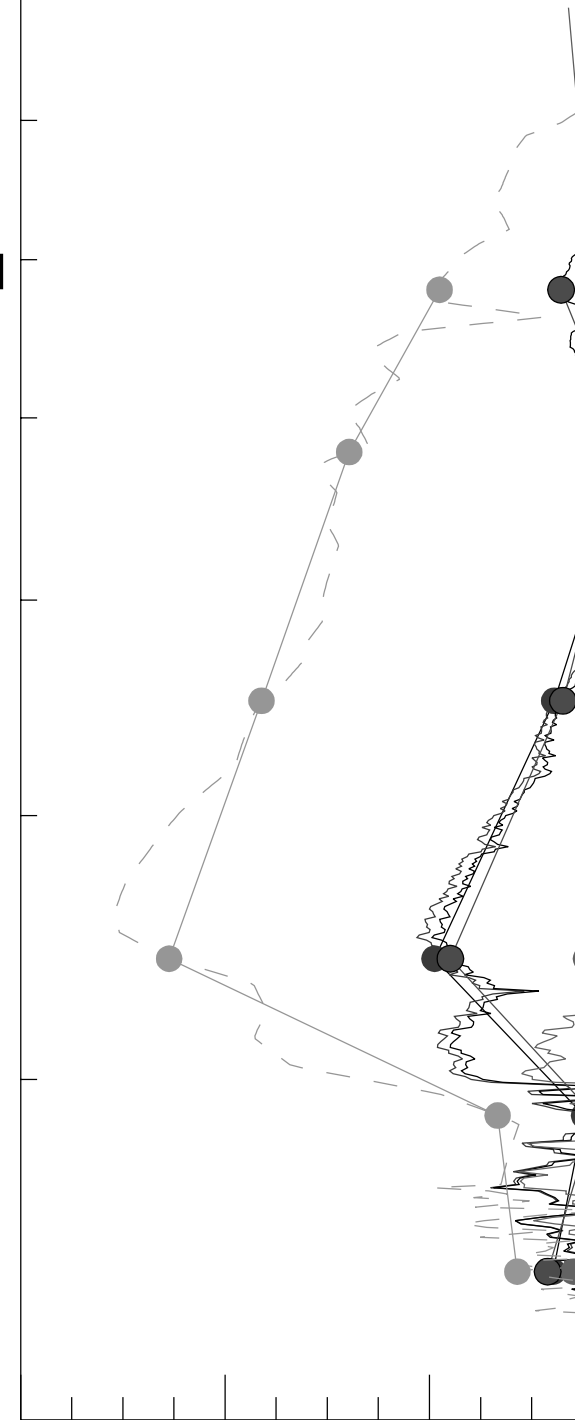
Land fraction 0.775 NDVI_solve= 7

microWatts
 $\text{cm}^{-2} \text{nm}^{-1} \text{steradian}^{-1}$

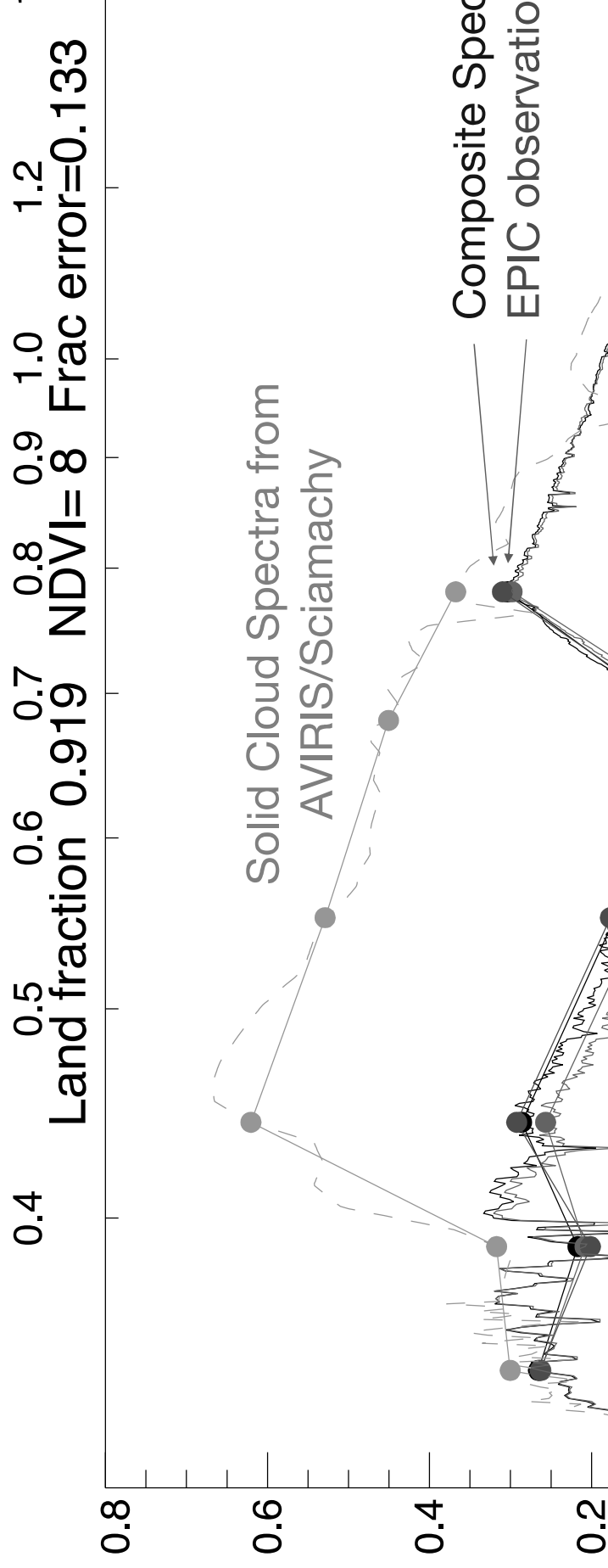
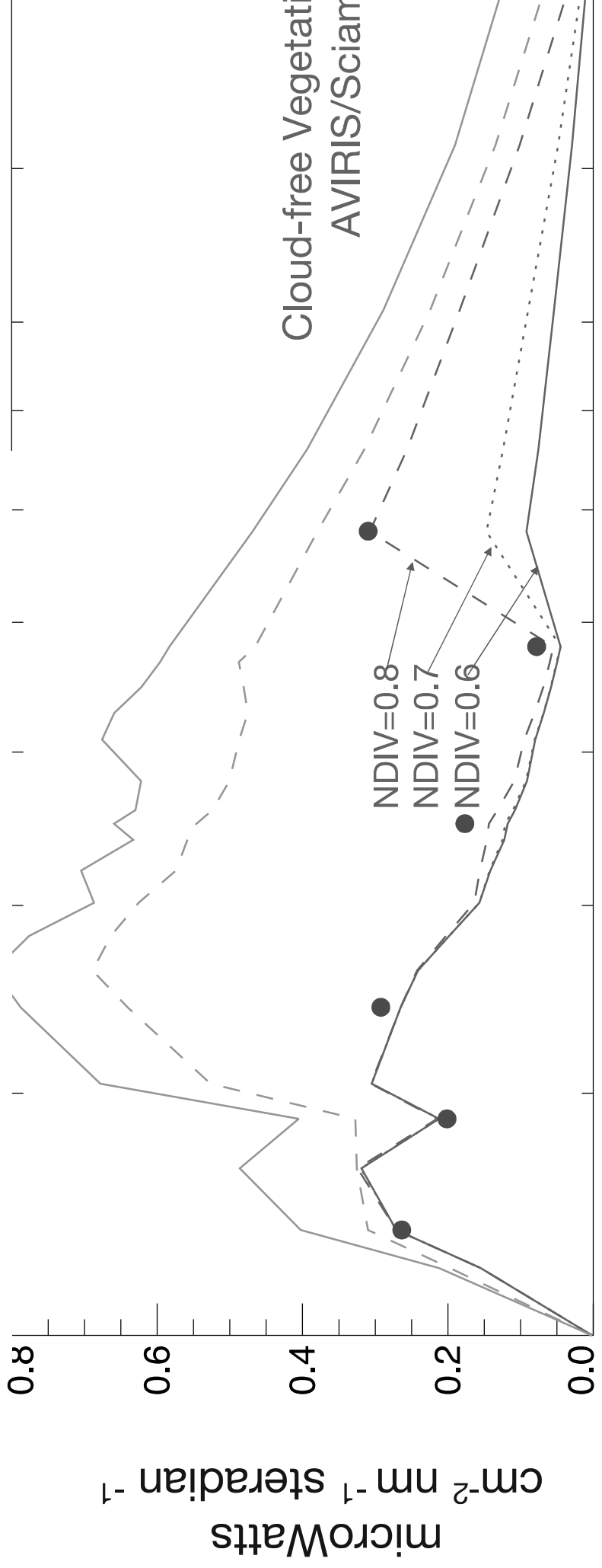


Land fraction 0.637 NDVI_solve= 7

0.8
0.6
0.4

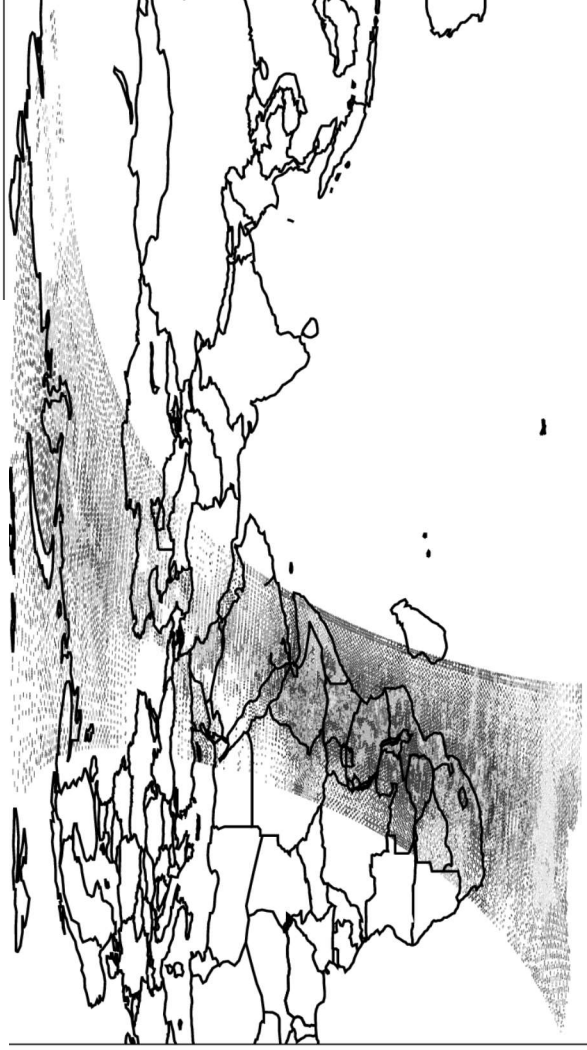


SZA= 59.6 Lat= 3.4

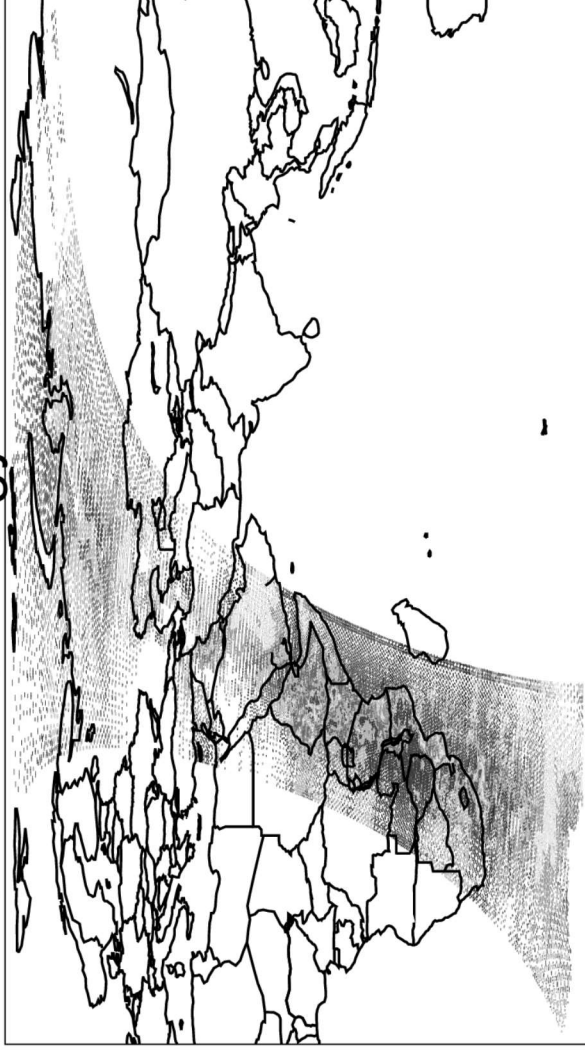


Land fraction 0.919 NDVI= 8 Frac error=0.133

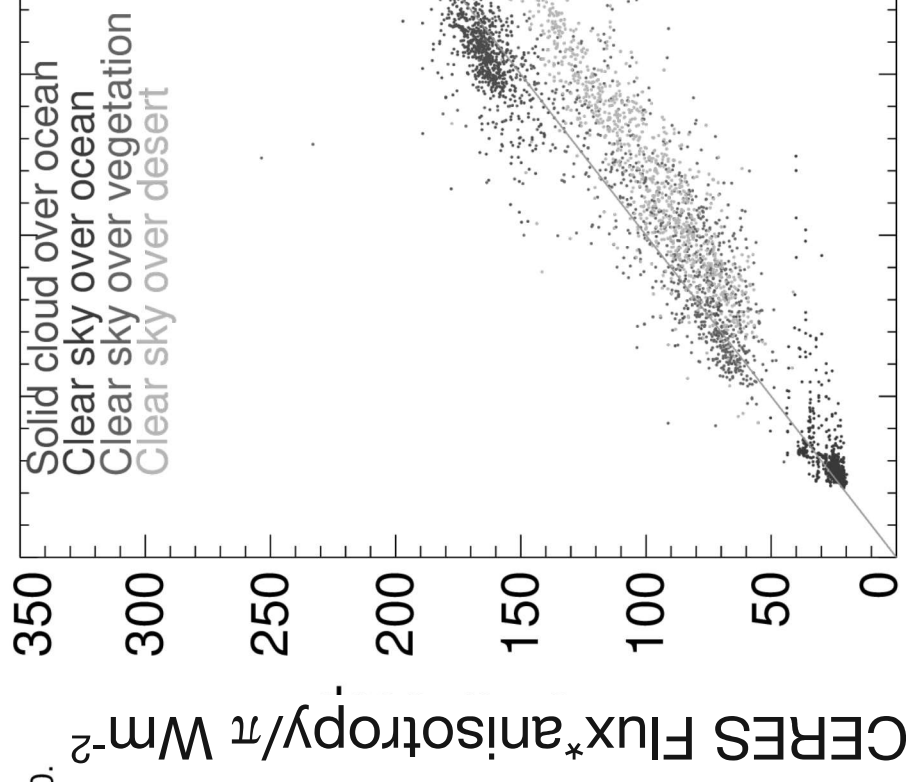
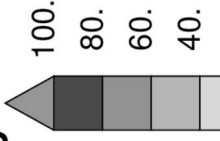
CERES Flux*anisotropy/ π Wm^{-2} Mean= 290.4



EPIC AVIRIS Energy Mean= 312.6



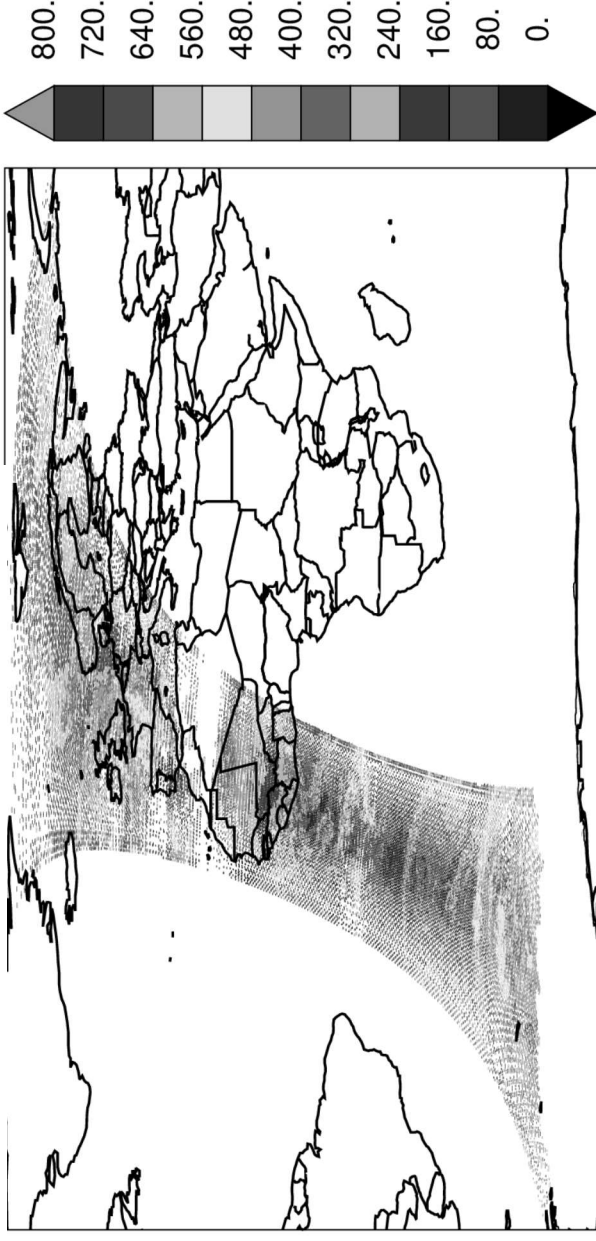
EPIC AVIRIS minus CERES SSF Energy



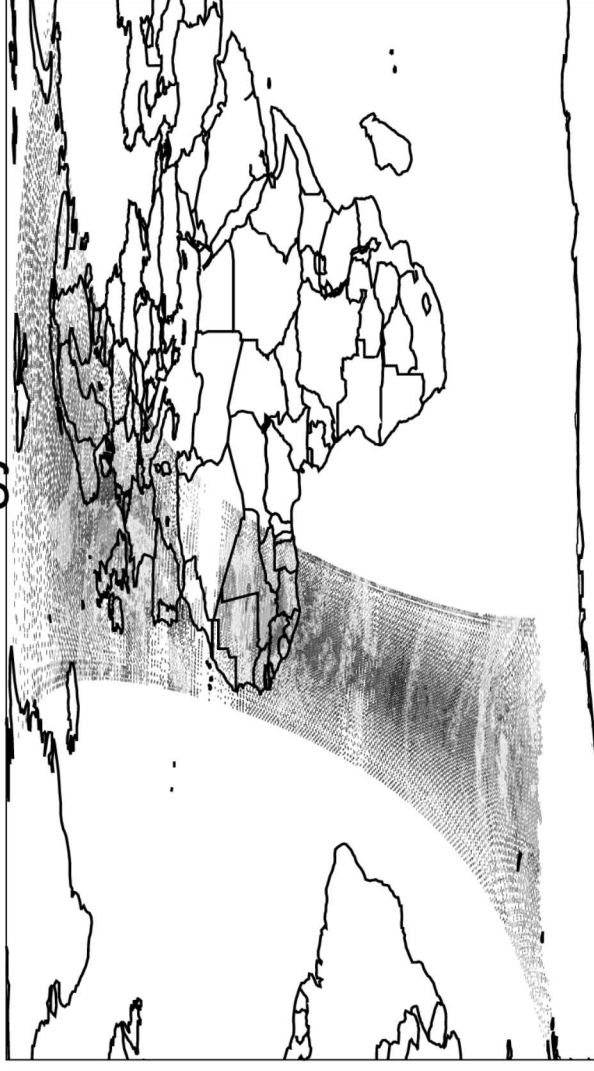
EPIC/AVIRIS



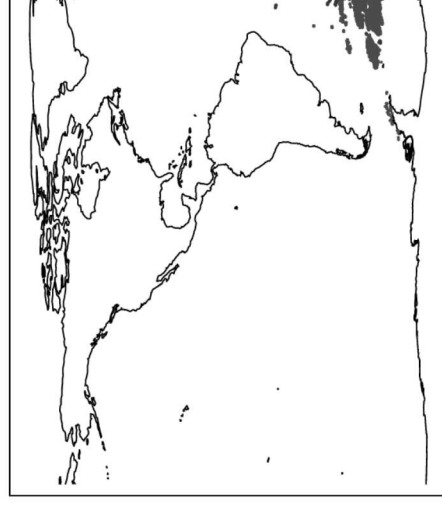
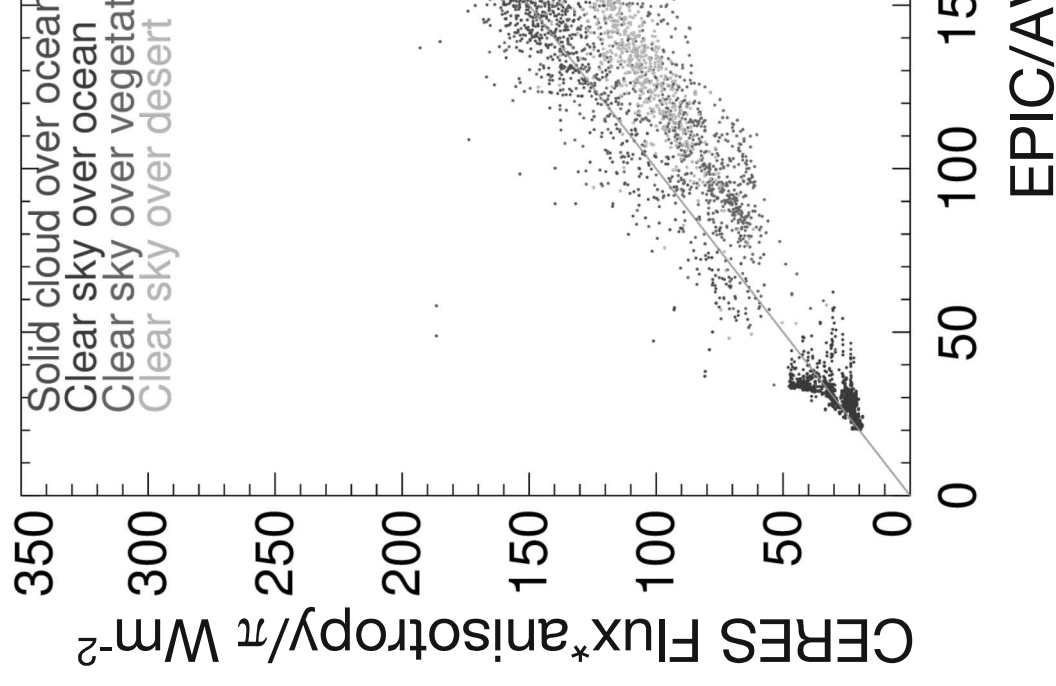
CERES Flux*anisotropy/ π Wm^{-2} Mean= 284.8

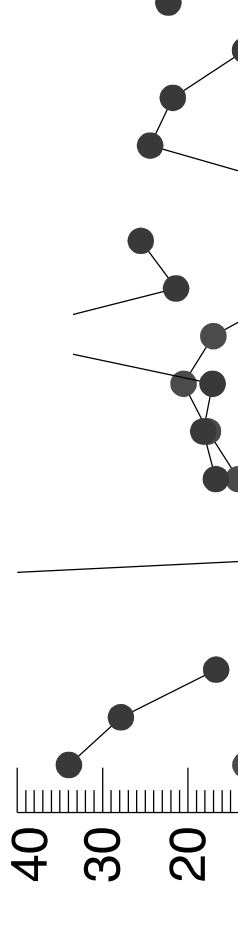
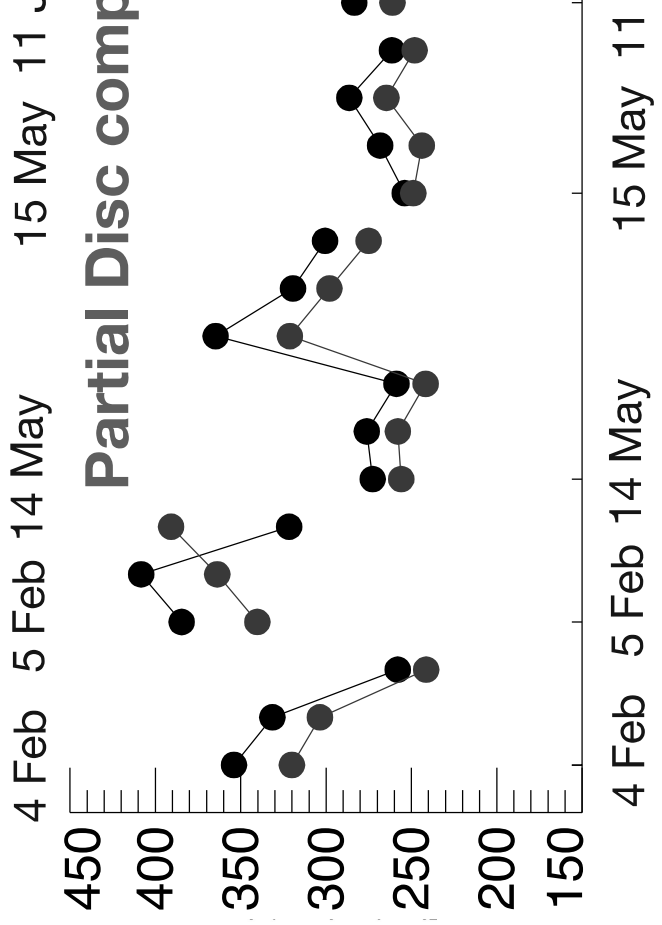
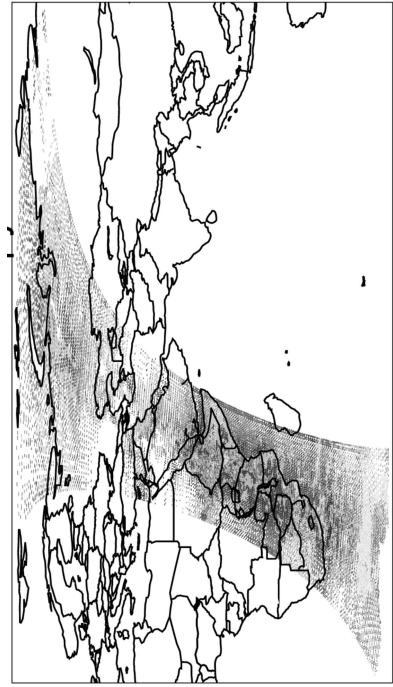
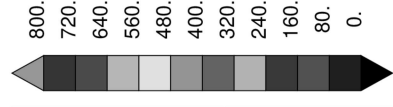
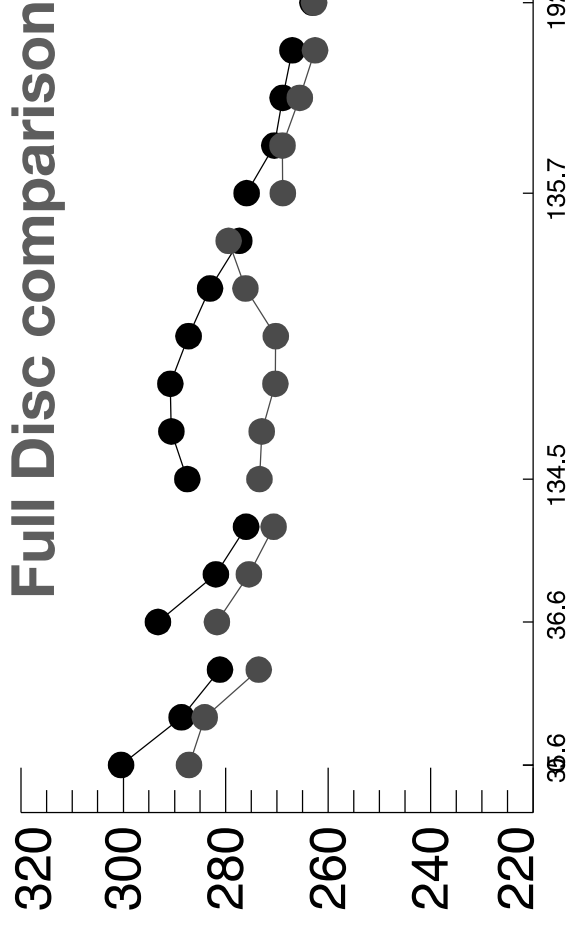
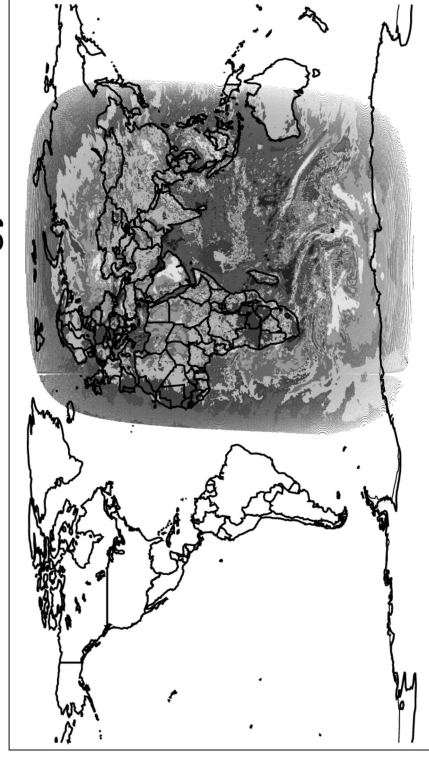


EPIC AVIRIS Energy Mean= 305.4



EPIC AVIRIS minus CERES SSF Energy





Mean (EPIC/AVIRIS - CERES SW) =
15.54 Wm⁻²

To speed up process EPIC images we are setting up process

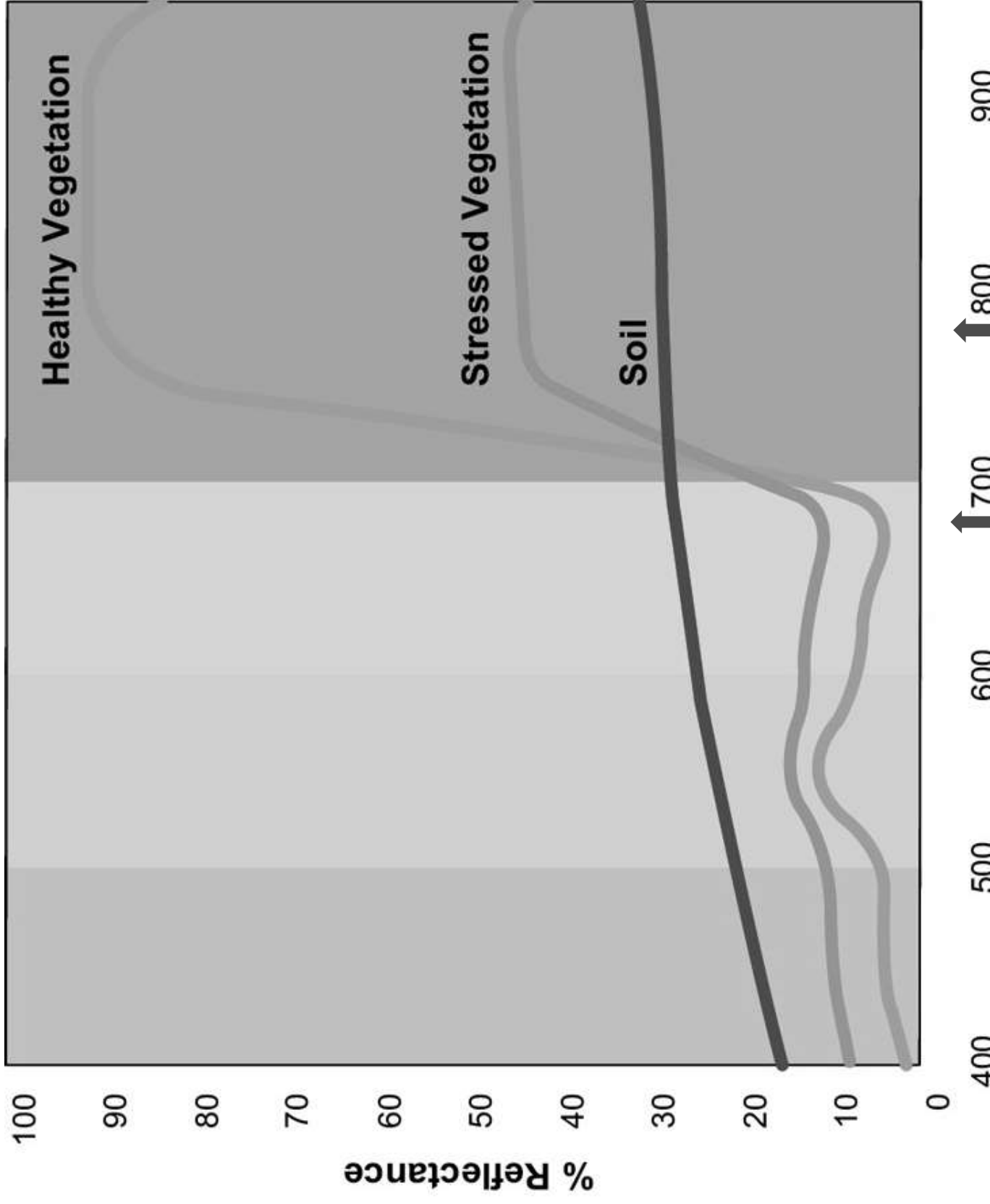
But so far..

The EPIC/AVIRIS Short wave reflected energy estimates

are within 5 Wm^{-2} of NISTAR band B observation

agree with CERES SSF estimates for Ocean and

but disagree with CERES SSF estimates over For



HEA

50% NIR



NDVI

