

The ECOSTRESS Spectral Library

Susan Meerdink, Simon Hook,
Elsa Abbott, & Dar Roberts

ASTER



ECOSTRESS



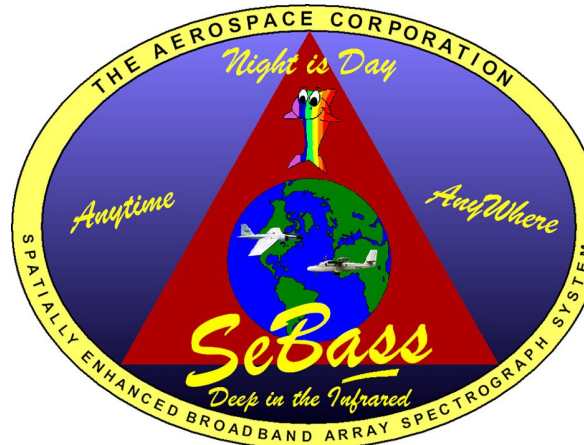
HyspIRI



HyTES



SEBASS

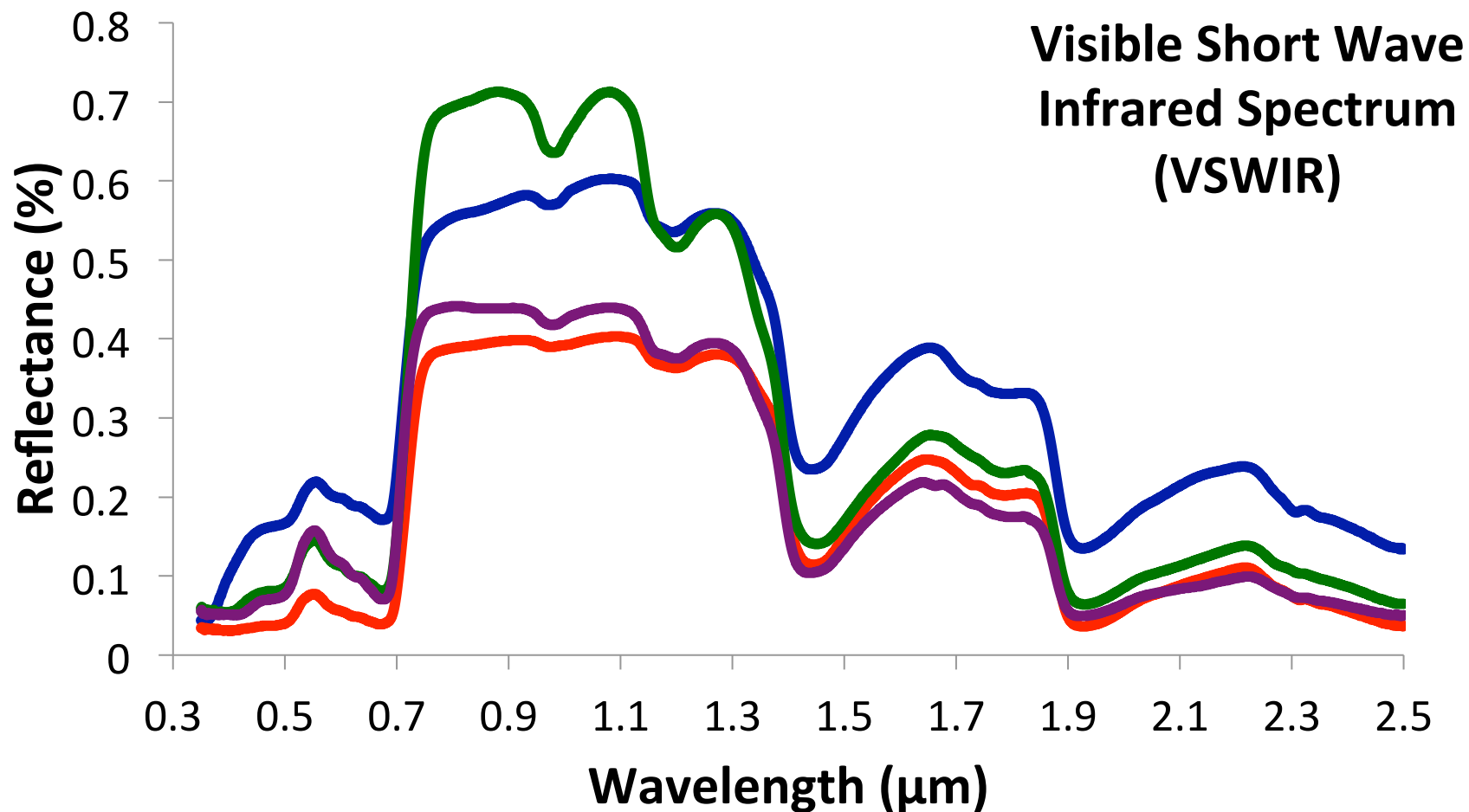


Specim



ASTER Spectral Library 2.0

- Available online: <http://speclib.jpl.nasa.gov>
- 2400 spectra of **laboratory** measured materials
 - Ice, lunar soils, manmade materials, meteorites, minerals, rocks, snow, and terrestrial soils
- Contains two wavelength regions:
 - 0.3 – 2.5 μm
 - 2.5 – 15.4 μm
- 7155 copies distributed worldwide
- Baldridge, A. M., Hook, S. J., Grove, C. I., & Rivera, G. (2009). The ASTER spectral library version 2.0. *Remote Sensing of Environment*, 113(4), 711–715.



Ponderosa Pine



Purple Sage



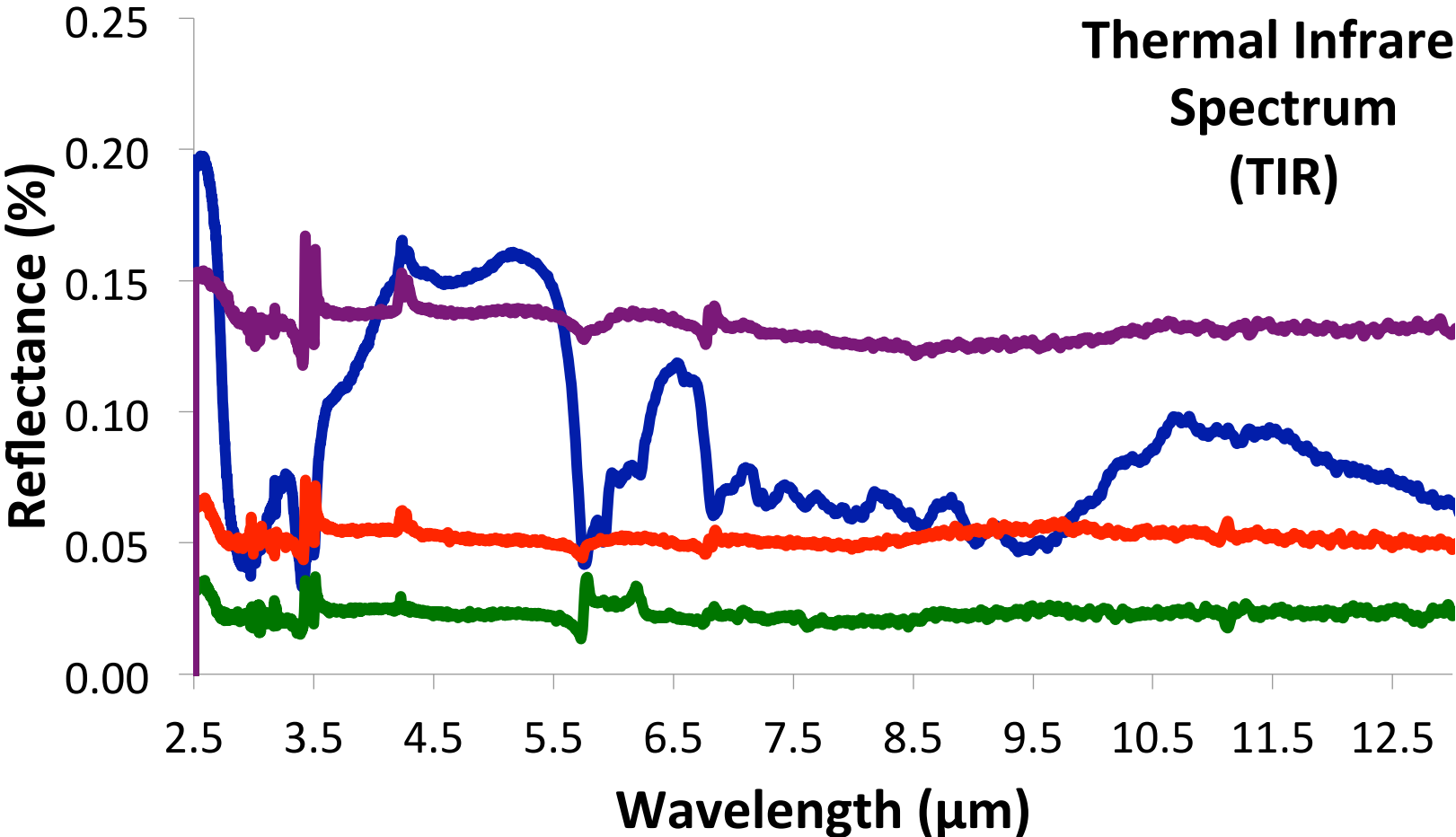
Manzanita



Coast Live Oak



**Thermal Infrared
Spectrum
(TIR)**



Ponderosa Pine



Purple Sage



Manzanita



Coast Live Oak



What has changed?

- ASTER Spectral Library to ECOSTRESS Spectral Library
- Addition of 540 vegetation spectra
 - 90 species
- Addition of 45 non-photosynthetic vegetation spectra
 - Bark, dry needles, lichen, & dry leaves
- Minor formatting updates

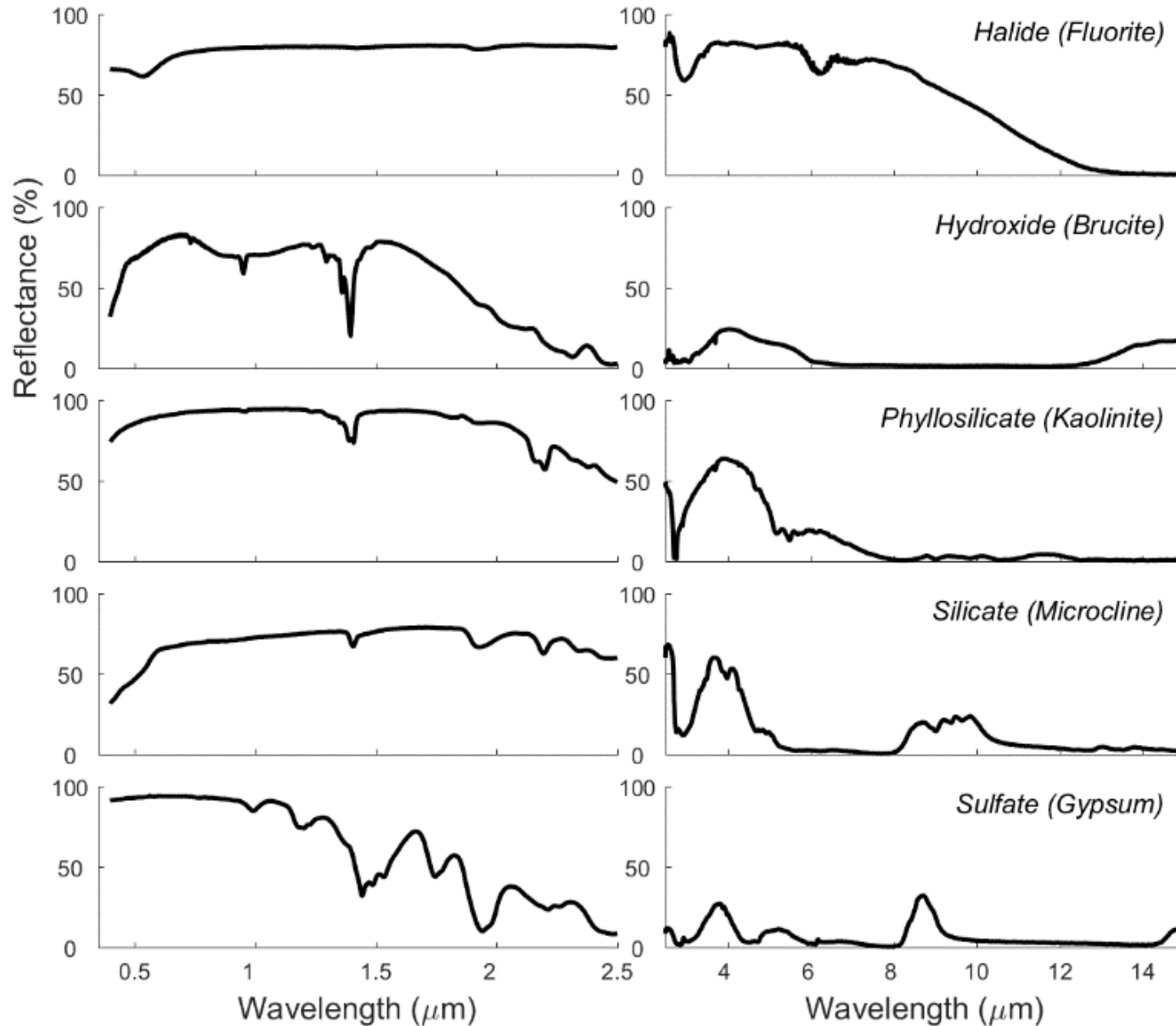
Library Format

- Each sample has 1 - 2 text files
 - Spectrum file (shown right)
 - Ancillary file (optional) contains additional information about sample
 - Files have unique names
- Ancillary Info Examples:
 - Leaf traits: nitrogen, water content, Leaf Mass per Area, etc.
 - Rock chemistry
 - Volatile analysis

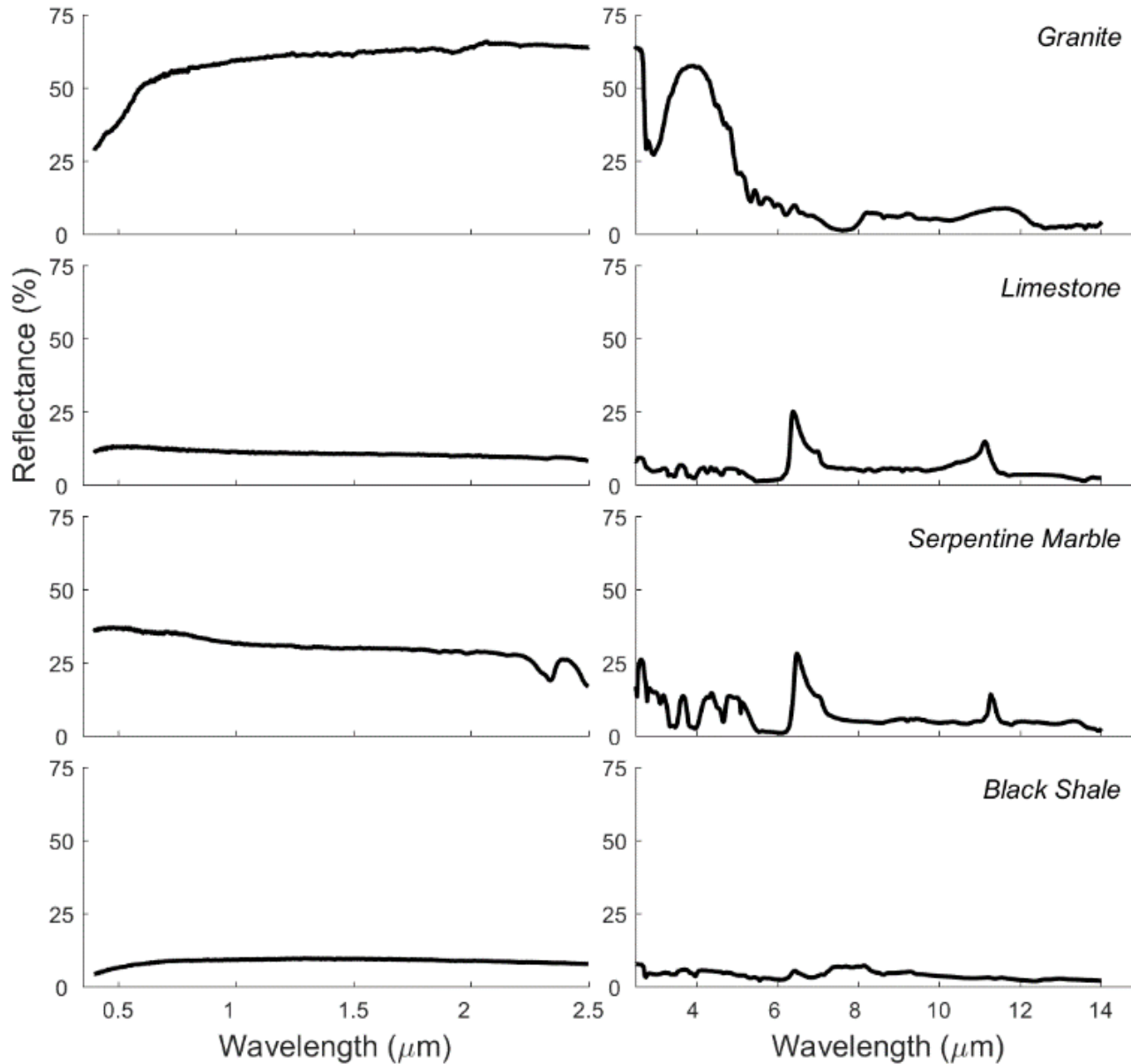
Line	Other Materials	Vegetation and NPV
1	Name	Name
2	Type	Type
3	Class	Class
4	Subclass	Genus
5	Particle Size	Species
6	Sample No.	Sample No.
7	Owner	Owner
8	Wavelength Range	Wavelength Range
9	Origin	Origin
10	Collection Date	Collection Date
11	Description	Description
12	Measurement	Measurement
13	First Column	First Column
14	Second Column	Second Column
15	X Units	X Units
16	Y Units	Y Units
17	First X Value	First X Value
18	Last X Value	Last X Value
19	Number of X Values	Number of X Values
20	Additional Information	Additional Information
21	Empty Space	Empty Space
22	Spectrum Starts	Spectrum Starts

1 Name: Quercus agrifolia 1
2 Type: vegetation
3 Class: tree
4 Genus: Quercus
5 Species: agrifolia
6 Sample No.: VH172
7 Owner: UCSB
8 Wavelength Range: All
9 Origin: 34.7153; -120.0601; WGS84
10 Collection Date: 6/9/2013
11 Description: Samples were collected as part of the HypsIRI Airborne Campaign. Samples were...
12 Measurement: Bidirectional and directional hemispherical reflectance
13 First Column: X
14 Second Column: Y
15 X Units: Wavelength (micrometers)
16 Y Units: Reflectance (percentage)
17 First X Value: 0.35
18 Last X Value: 15.3869
19 Number of X Values: 3889
20 Additional Information: ucsb.asdnicolet.vegetation.tree.quercus.agrifolia.vh172.ancillary.txt
21
22 0.350 3.041
23 0.351 3.266
24 0.352 3.250
25 0.353 3.153

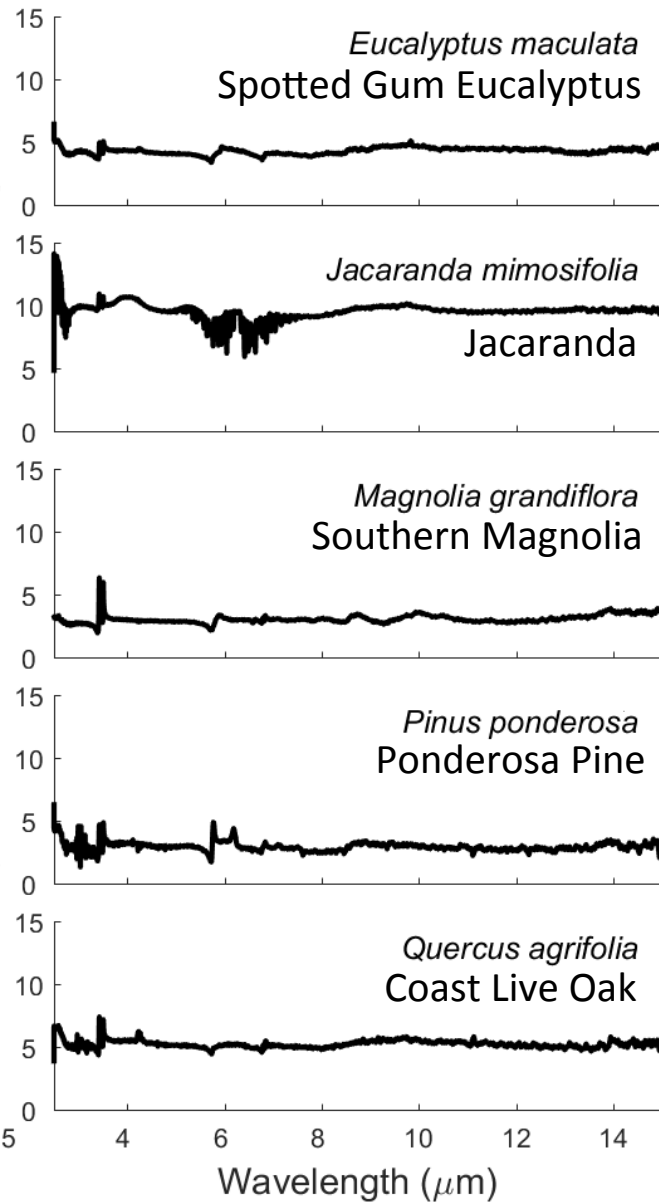
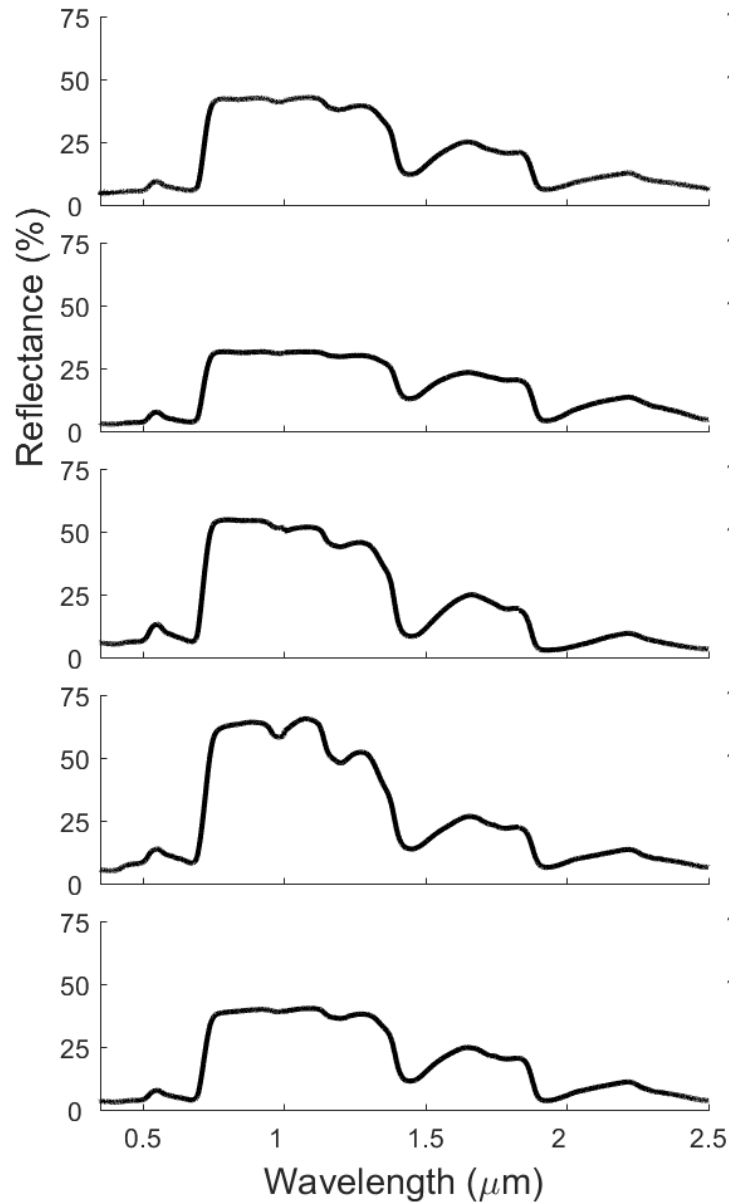
Mineral Examples



Rock Examples

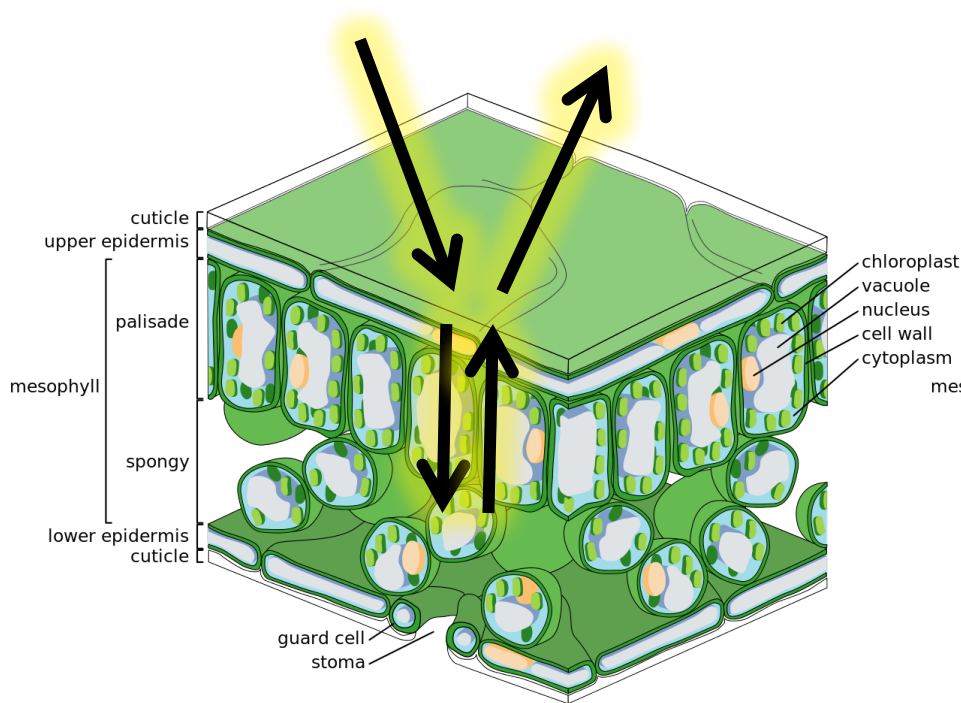


Vegetation Examples



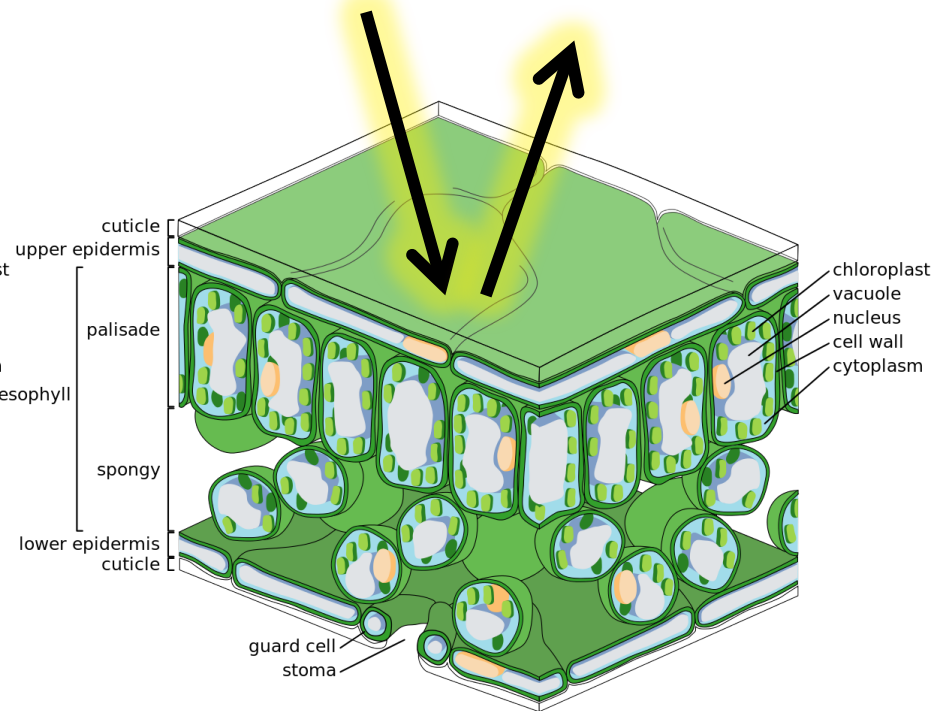
Visible Short Wave Infrared Spectrum (VSWIR)

0.35 – 2.5 μm

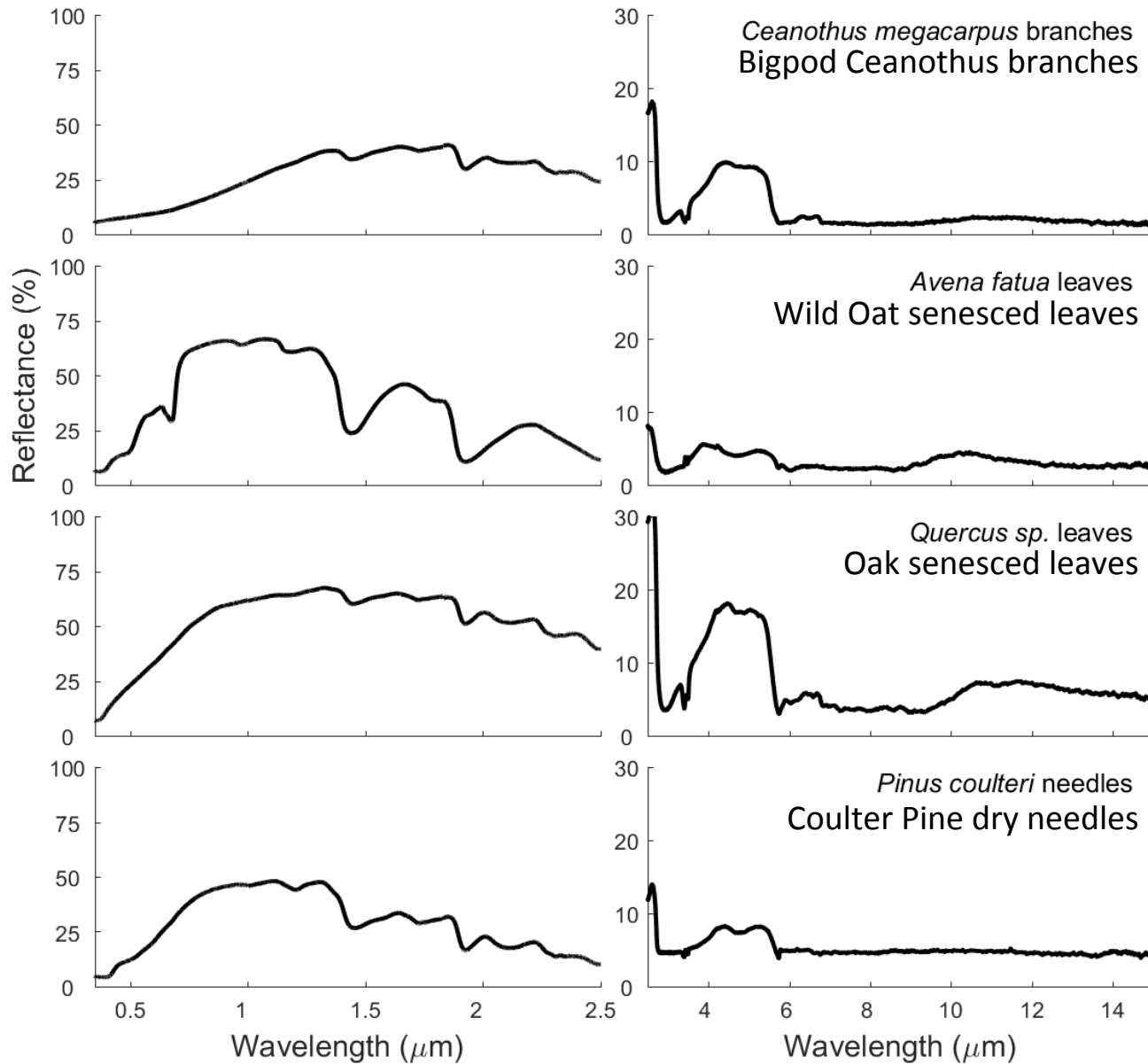


Thermal Infrared Spectrum (TIR)

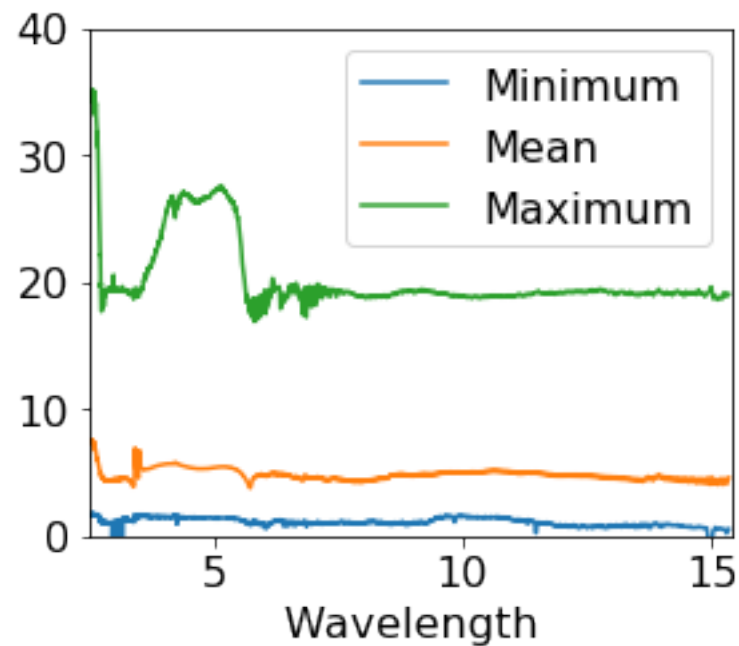
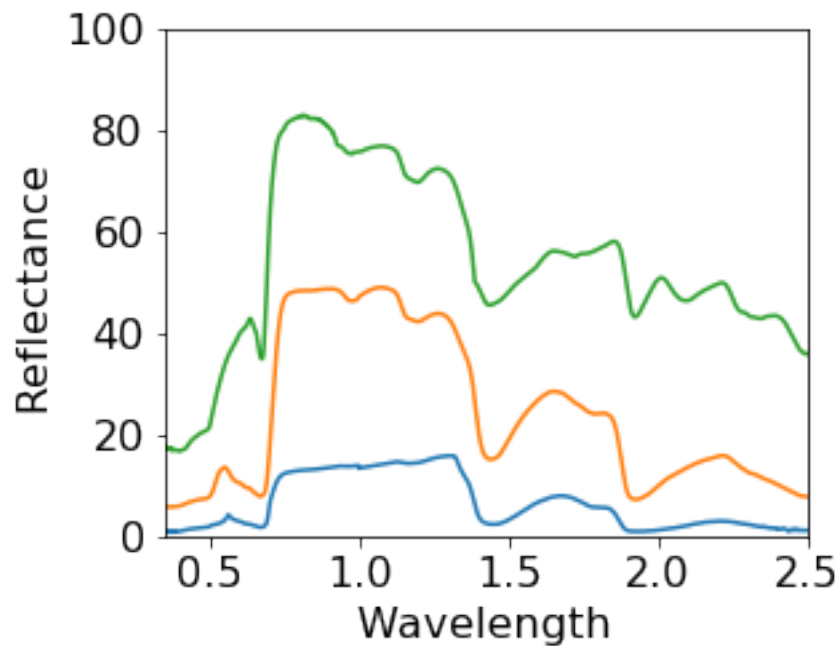
2.5 – 13 μm



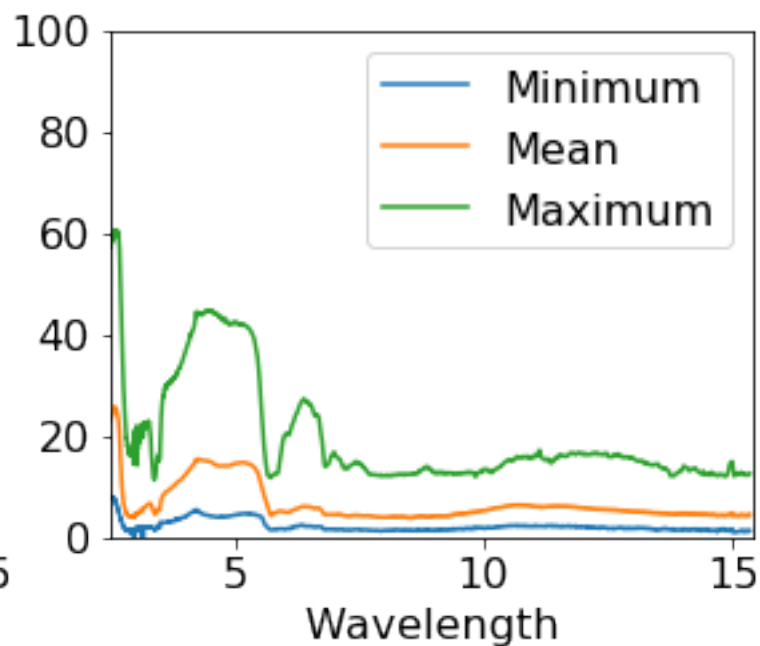
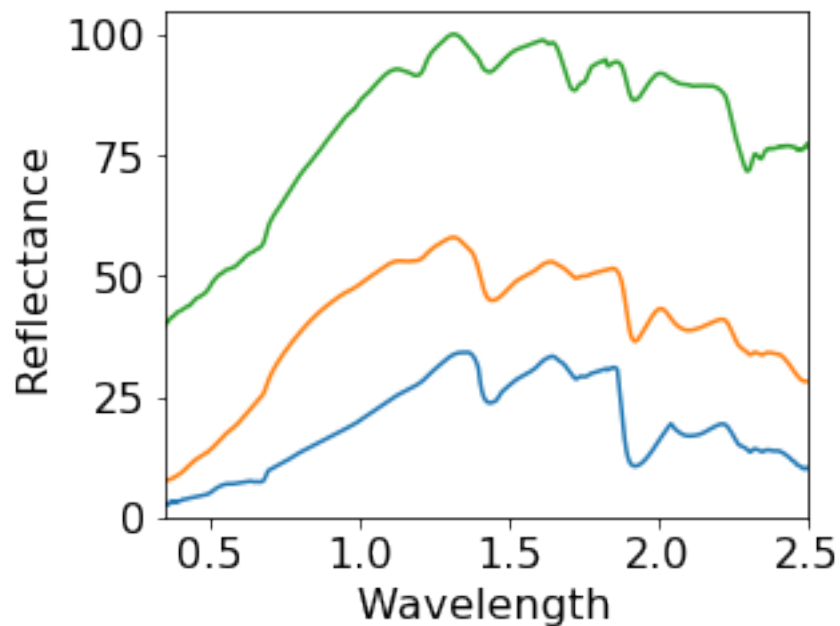
NPV Examples



Vegetation Samples



NPV Samples



ECOSTRESS Spectral Library

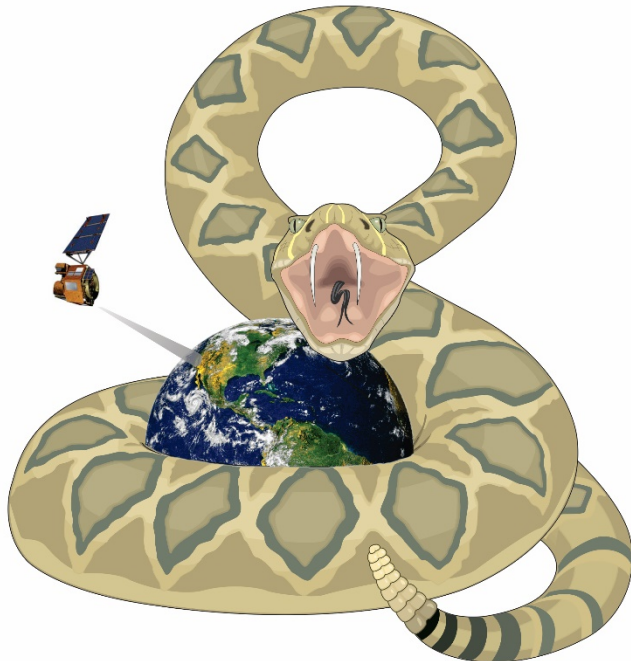
- 2800 + spectra
 - 1748 Minerals
 - 545 Vegetation
 - 473 Rocks
 - 84 Manmade materials
 - 69 Soils
 - 60 Meteorites
 - 45 Non-photosynthetic vegetation
 - 17 Lunar materials
 - 9 Water, snow, and ice
- Two wavelength regions: 0.3 – 2.5 μm & 2.5 – 15.4 μm
- Website updates and manuscript to come soon

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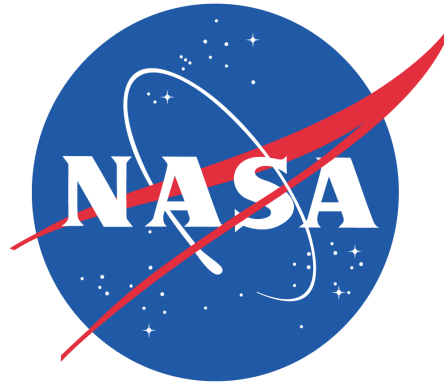
*susanmeerdink@geog.ucsb.edu

VIPER

Visualization & Image Processing for Environmental Research Lab



Department of Geography, University of California Santa Barbara



JPL
Jet Propulsion Laboratory

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