Exploring our planet with NASA's Next Generation Airborne Visible Infrared Imaging Spectrometer AVIRIS-NG

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California Institute of Technology

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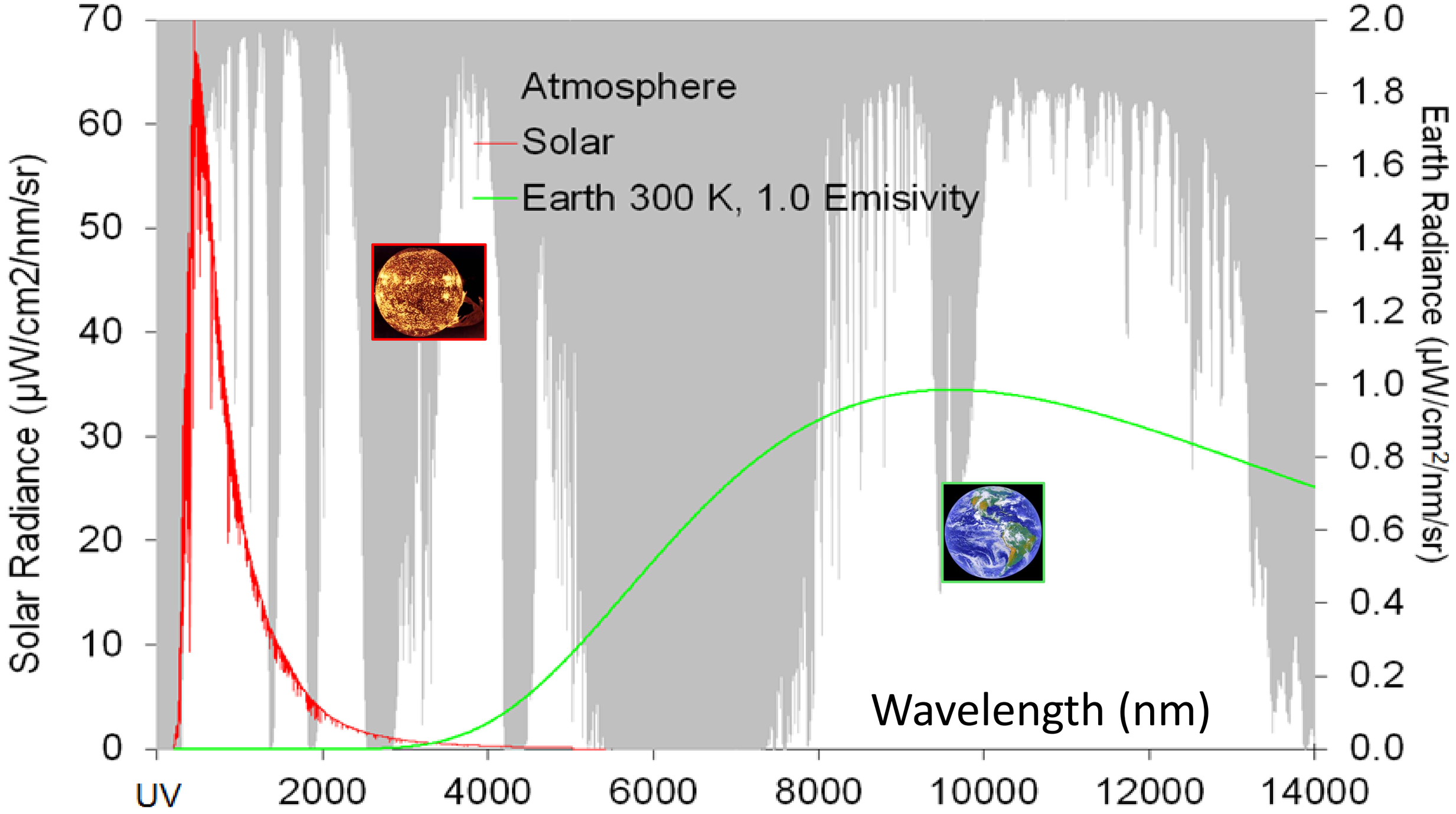
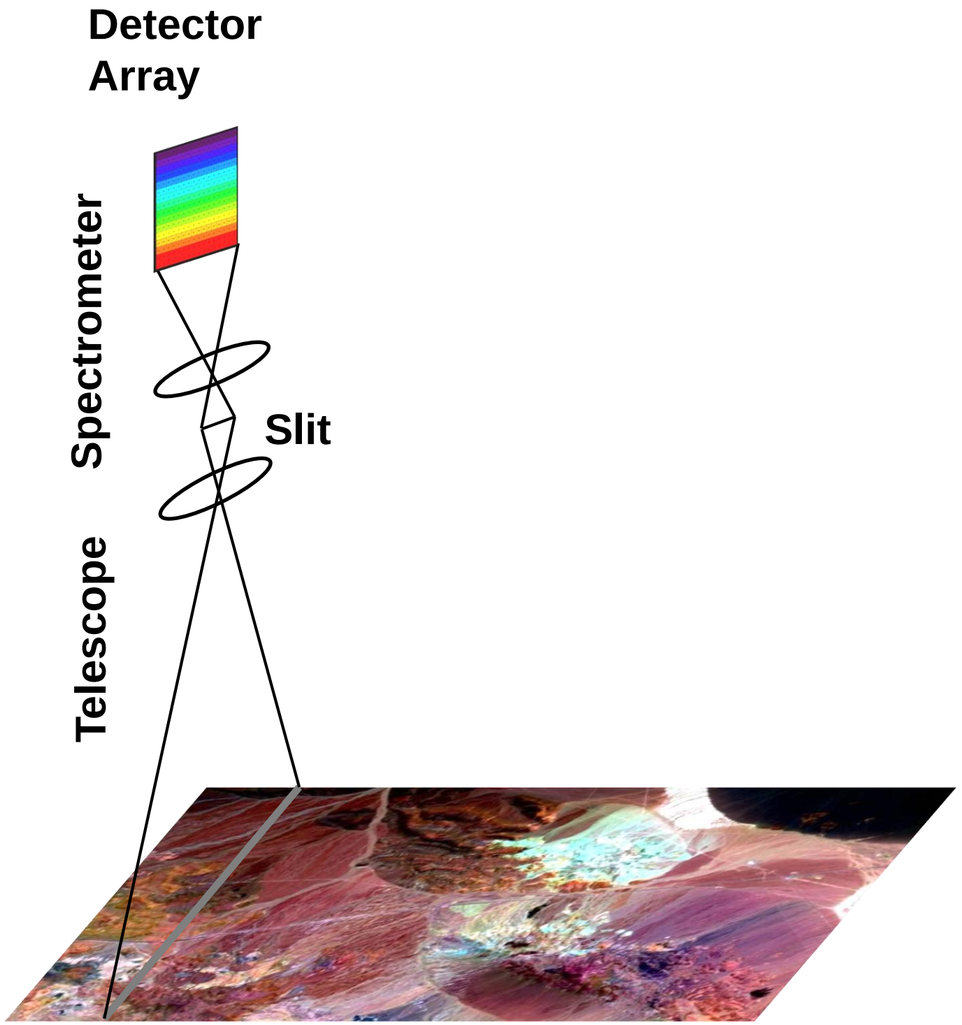
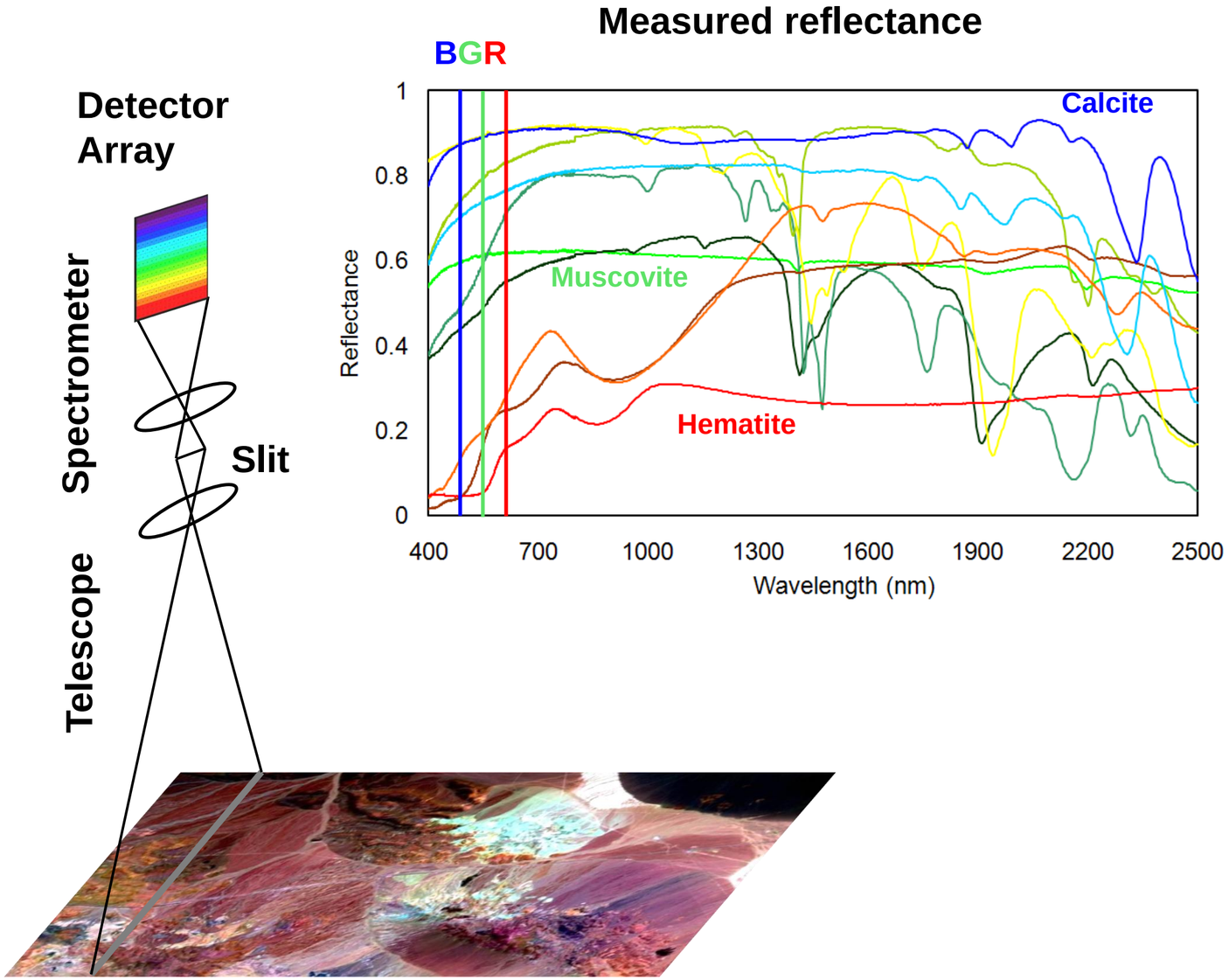
Government sponsorship acknowledged.

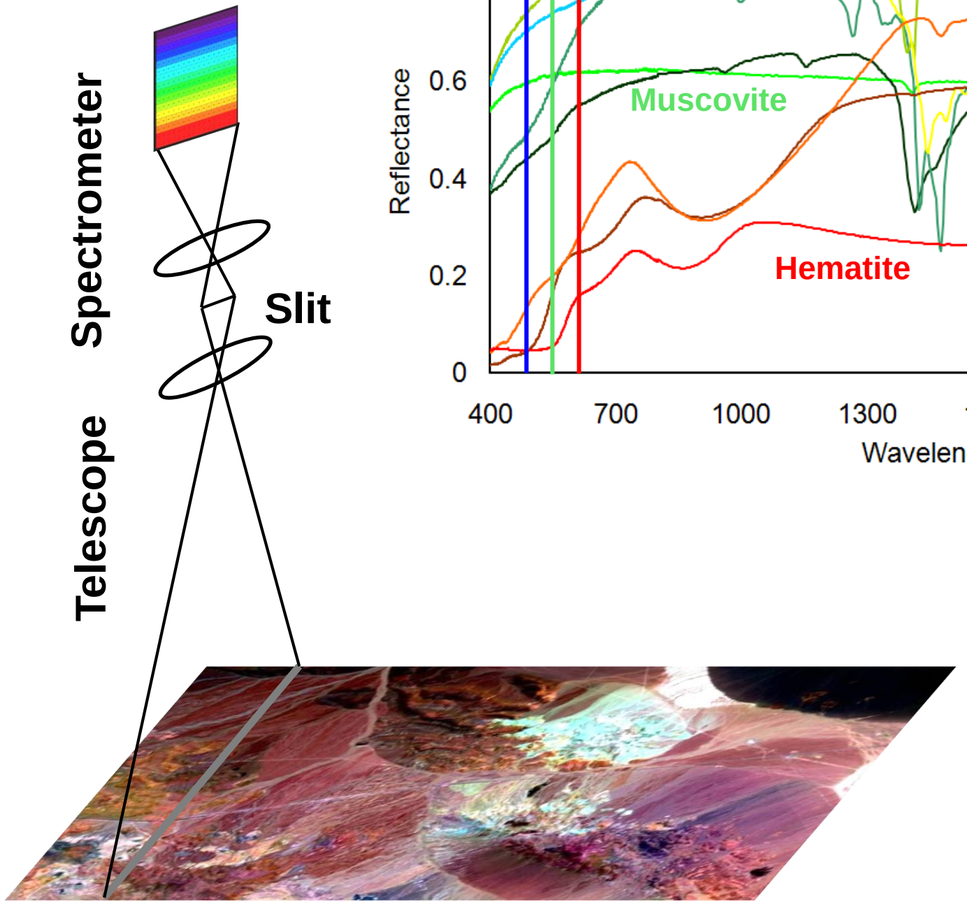

Atmosphere
Solar
Earth 300 K, 1.0 Emisivity
Solar Radiance (µW/cm2/nm/sr)
Earth Radiance (µW/cm²/nm/sr)
Wavelength (nm)
70
60
50
40
30
20
10
0
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
UV
2000
4000
6000
8000
10000
12000
14000

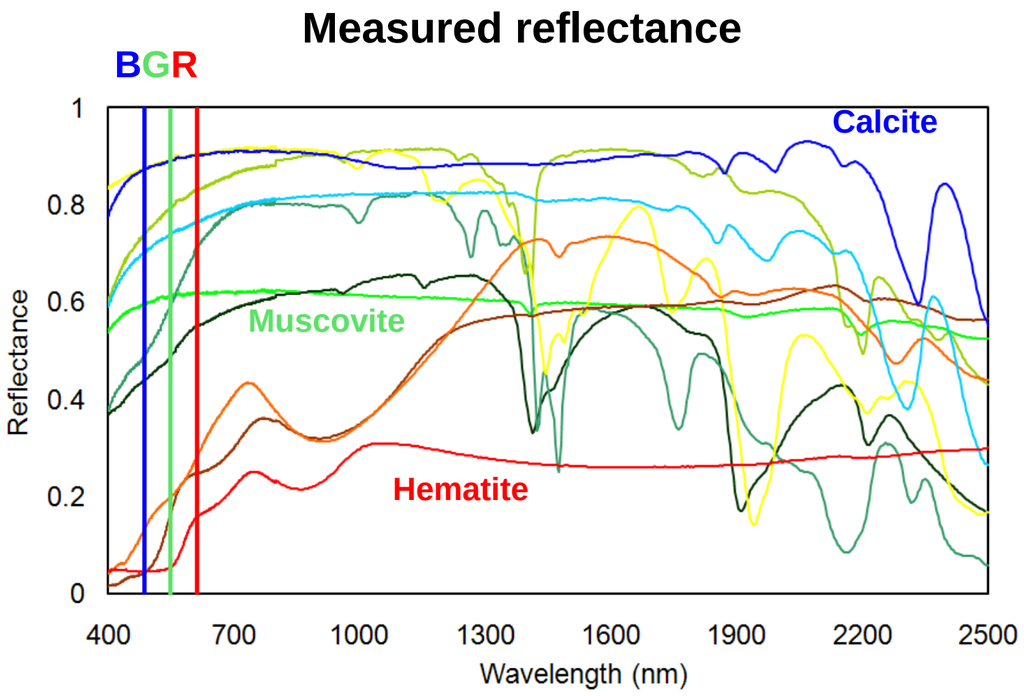
The Next Generation Airborne Visible Infrared Imaging Spectrometer (AVIRIS-NG)

Range: 380-2510 nm
Sampling: 5 nm
SNR: >500
GSD: 30 cm to 20 m
Optics: Offner,
Spectral Uniformity > 97%
iFOV Uniformity > 97%

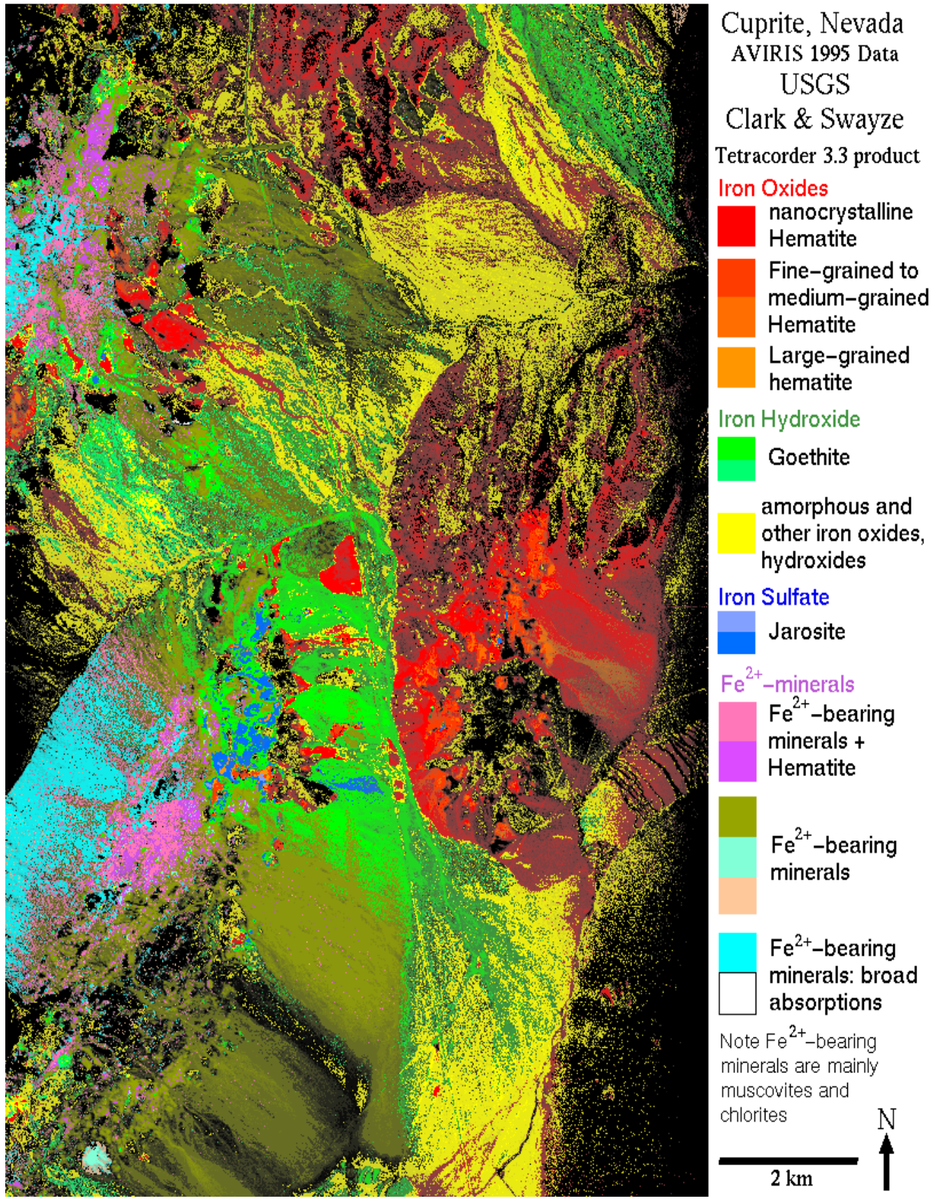

Detector
Array
Spectrometer
Slit
Telescope


Measured reflectance
BGR
Detector Array
Spectrometer
Slit
Telescope
Calcite
Muscovite
Hematite
Reflectance
Wavelength (nm)
0
0.2
0.4
0.6
0.8
1
400
700
1000
1300
1600
1900
2200
2500

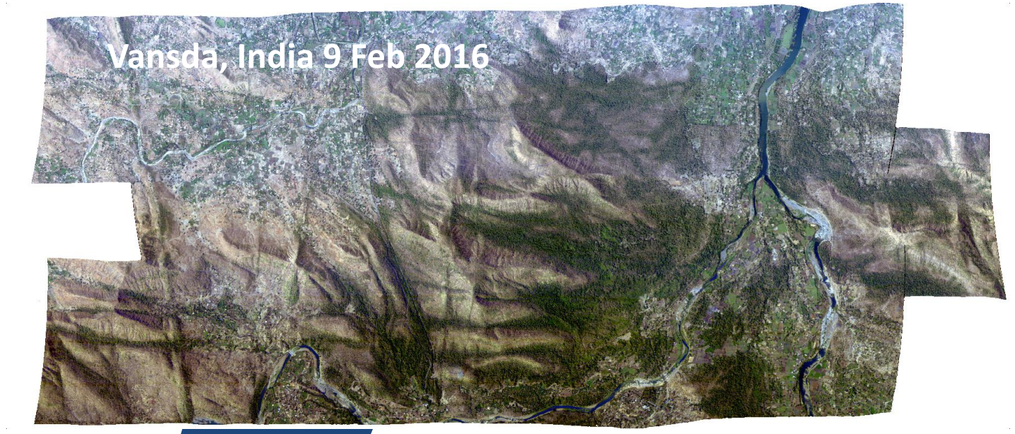


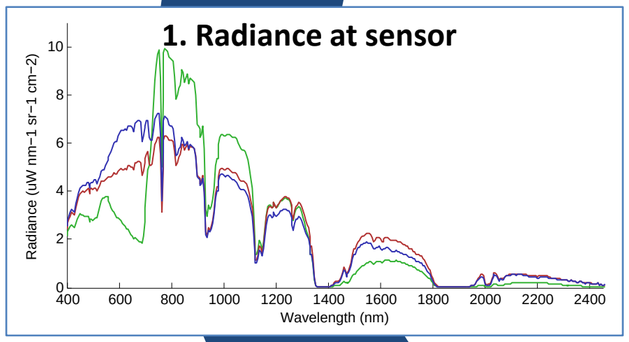


Material Map

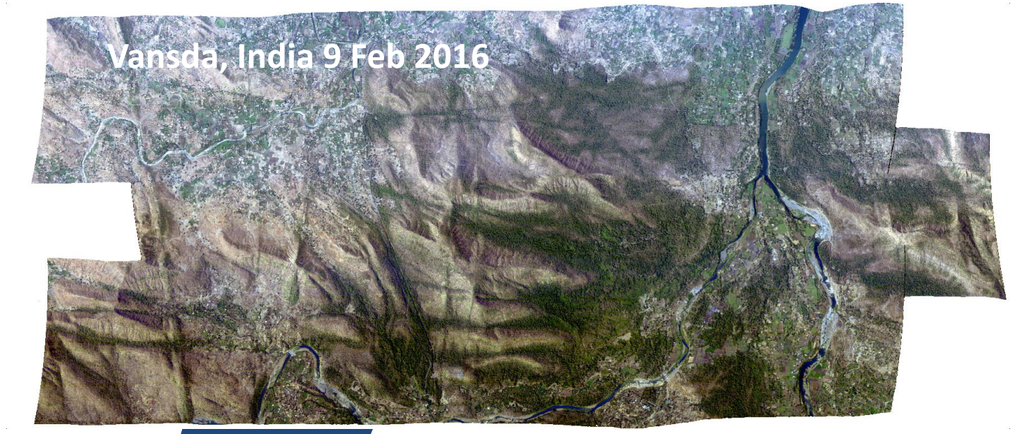


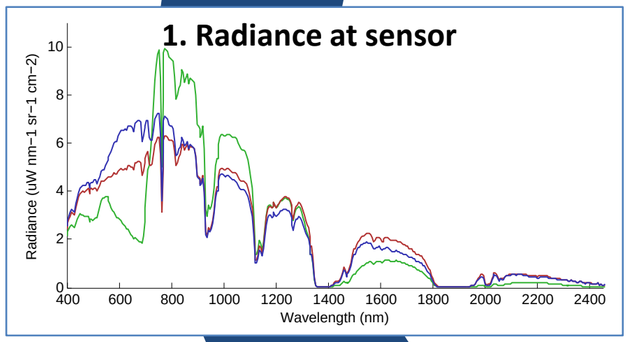
(Courtesy Clark, Swayze)



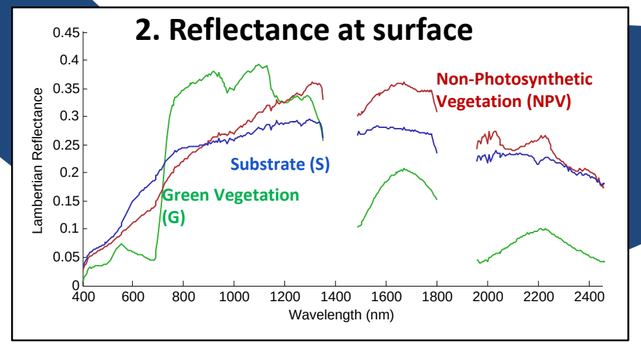


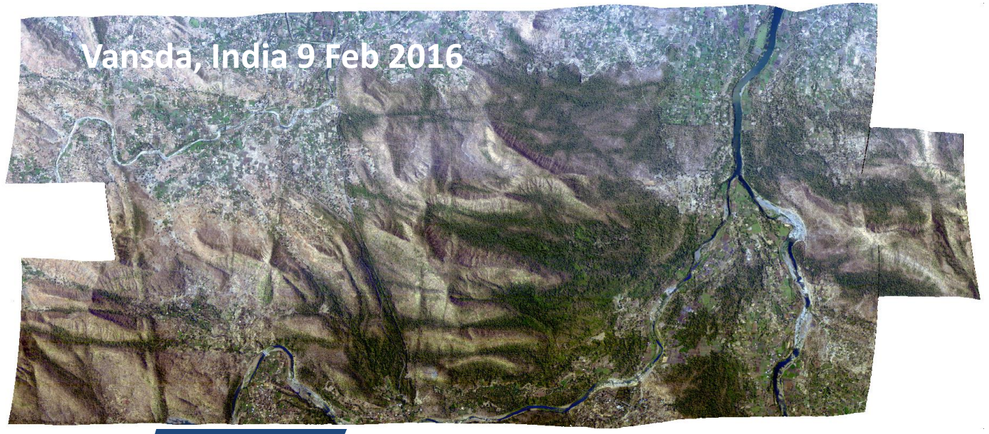
Distributed open data includes Radiance, Reflectance, and More

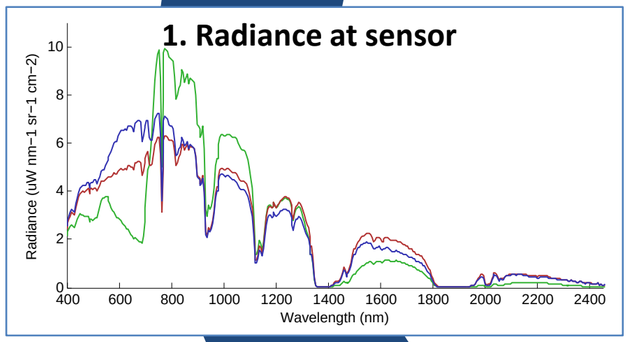




Distributed open data includes Radiance, Reflectance, and More







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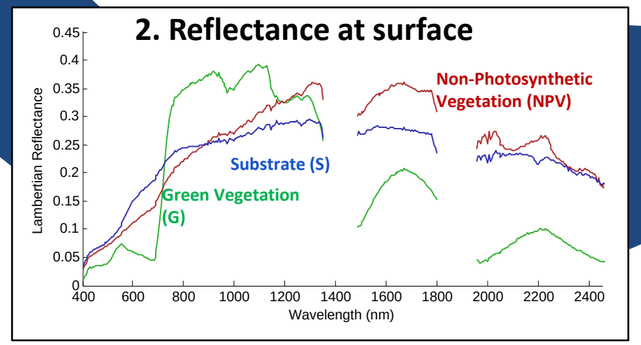
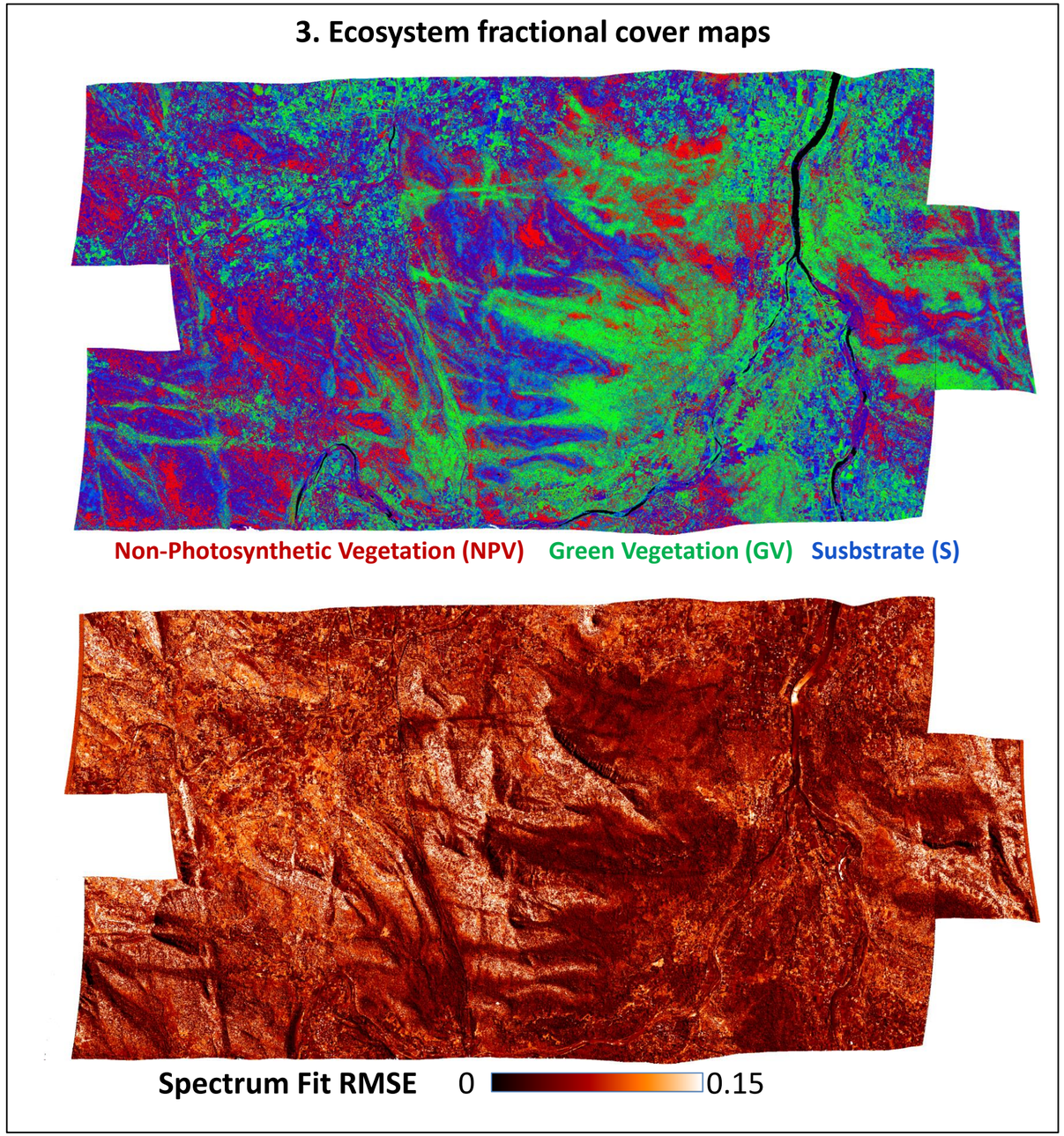
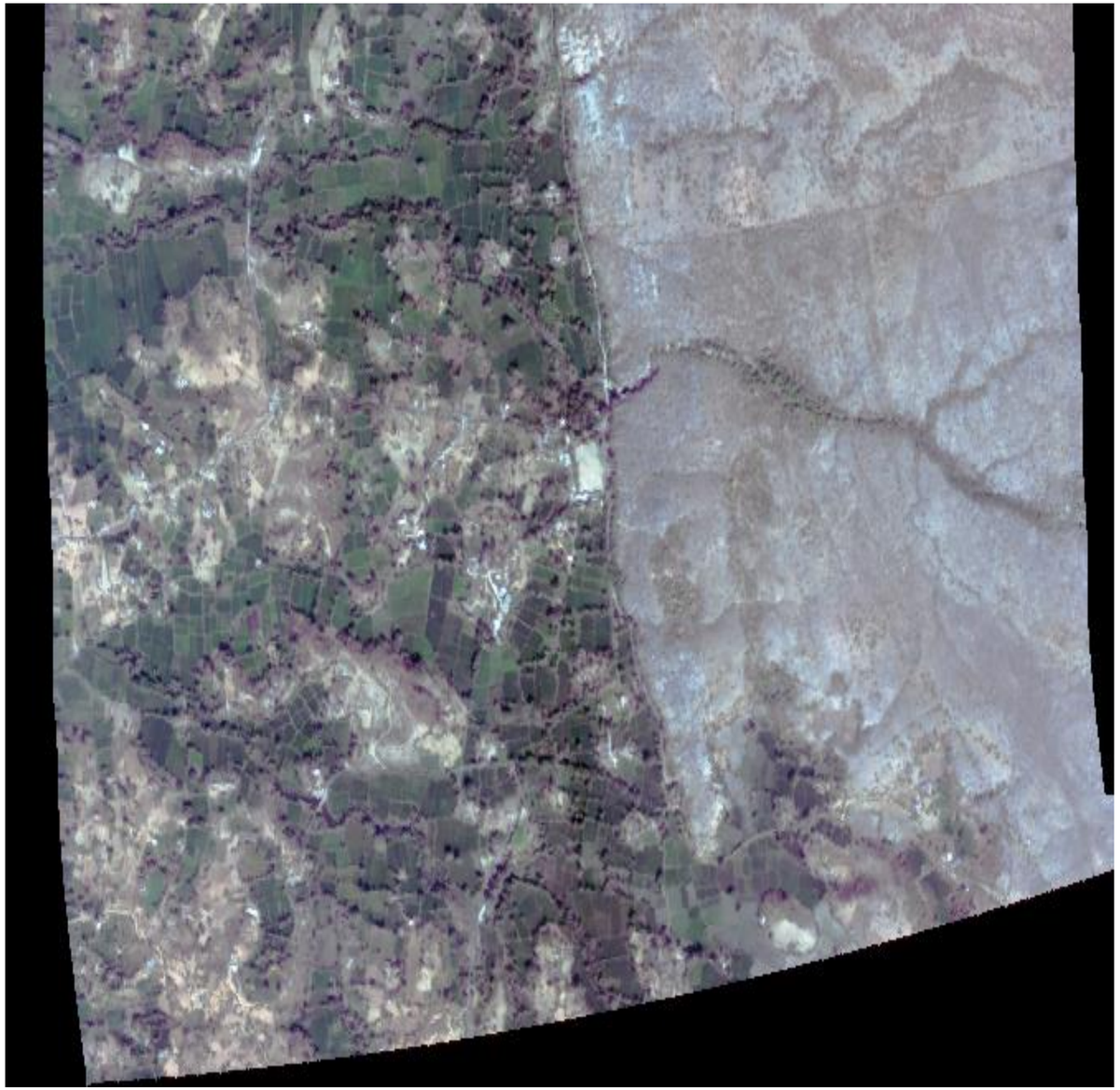
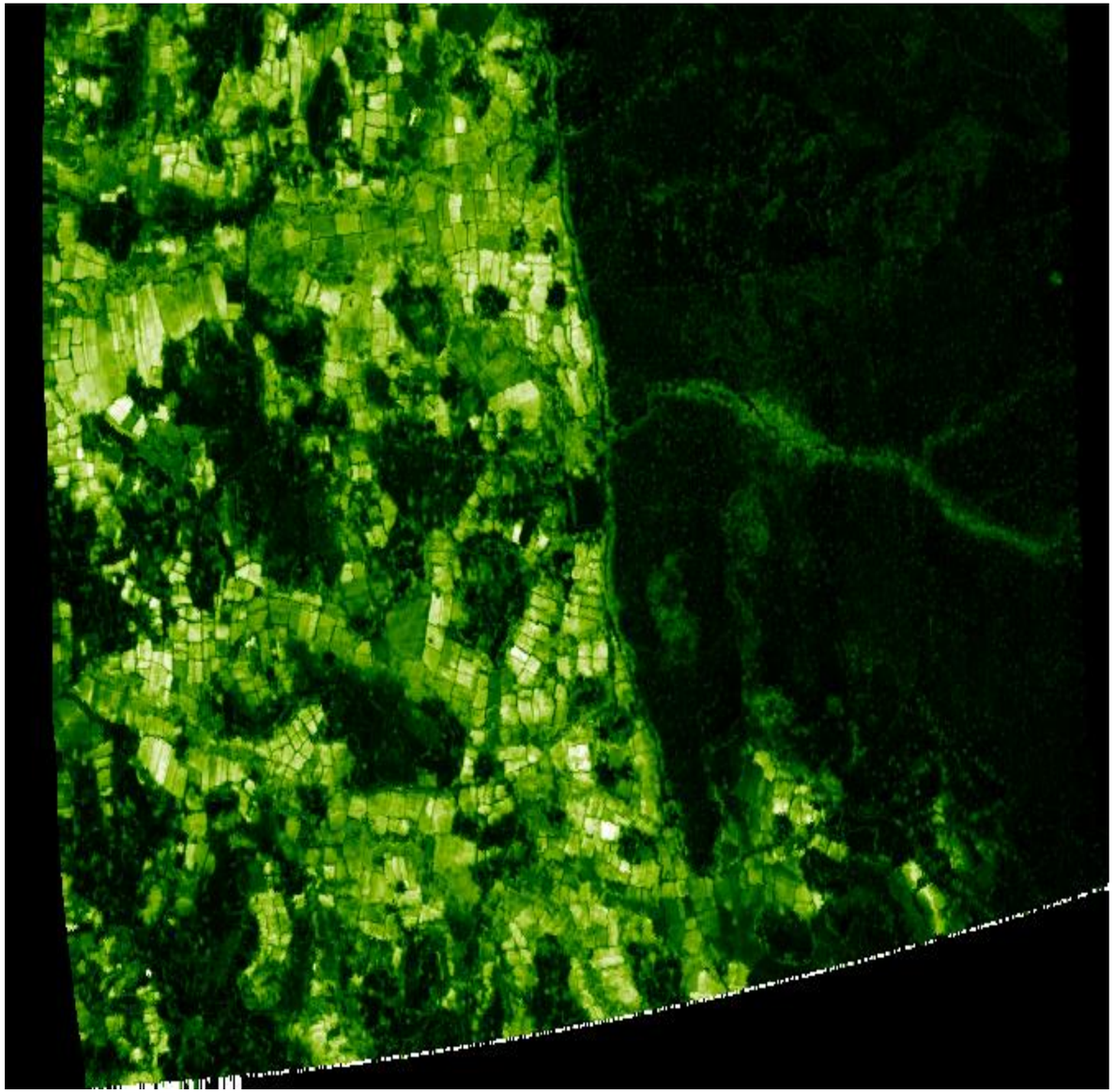




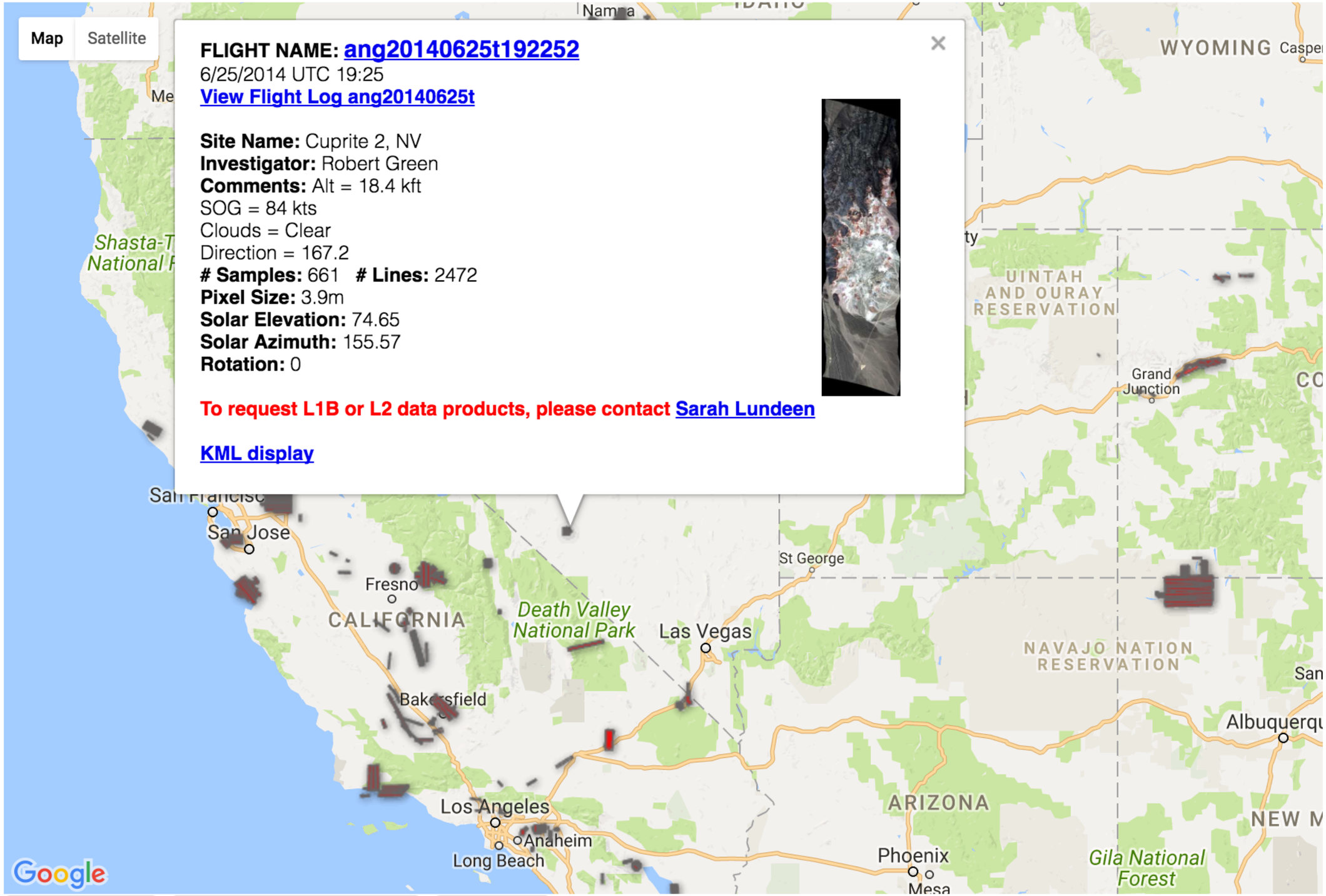
ang20160203t060655



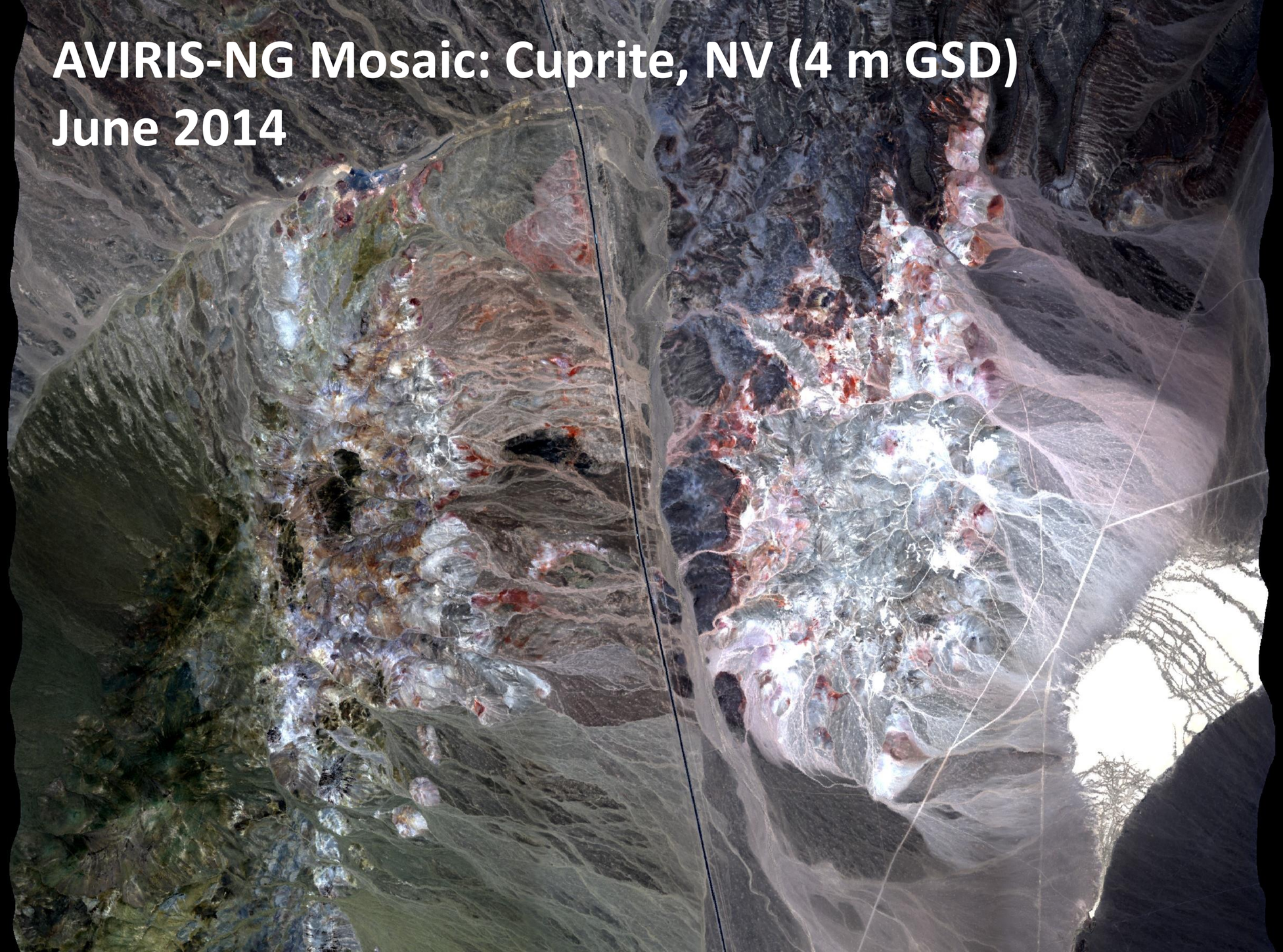
Equivalent water thickness (EWT)

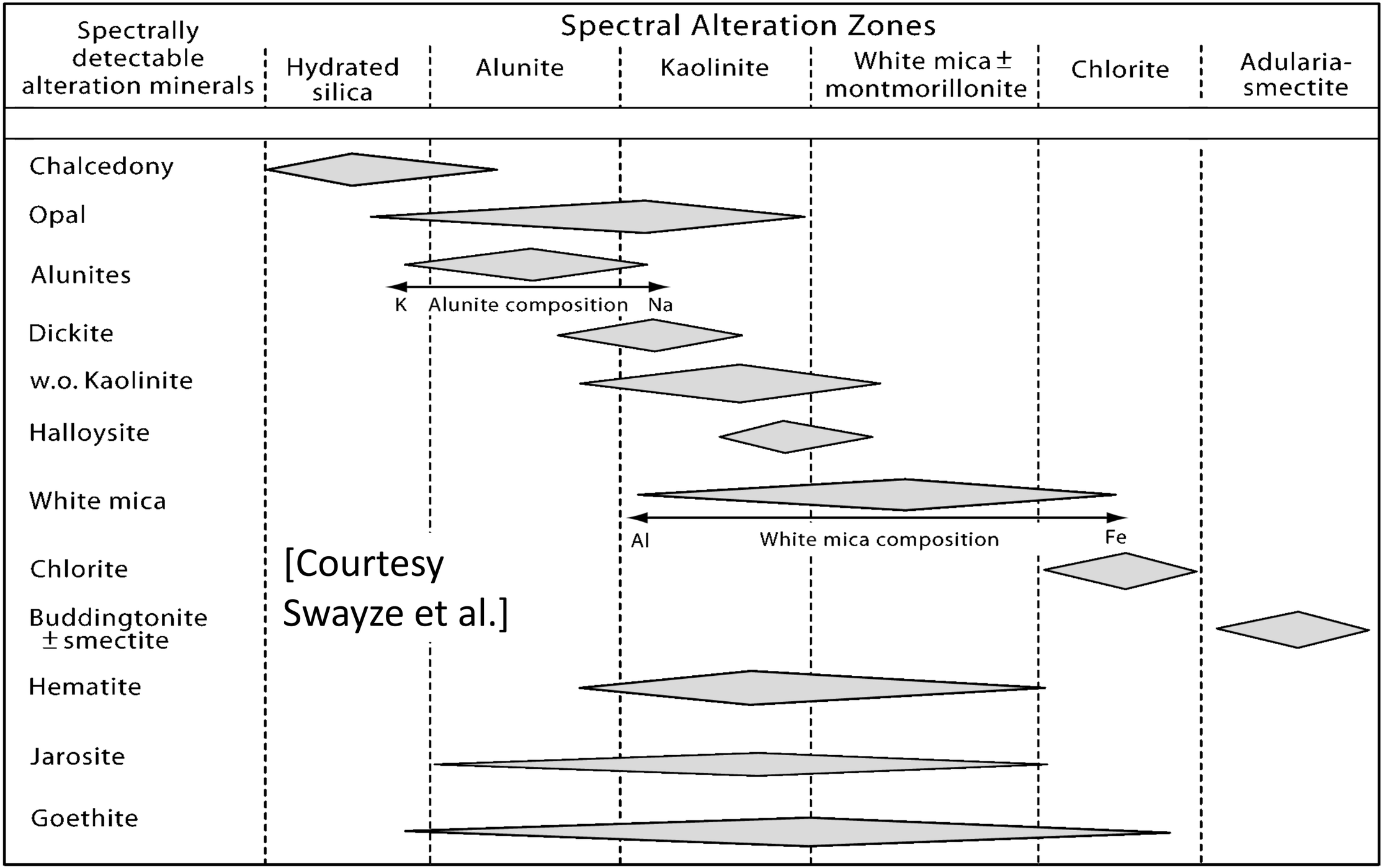


0 4 mm

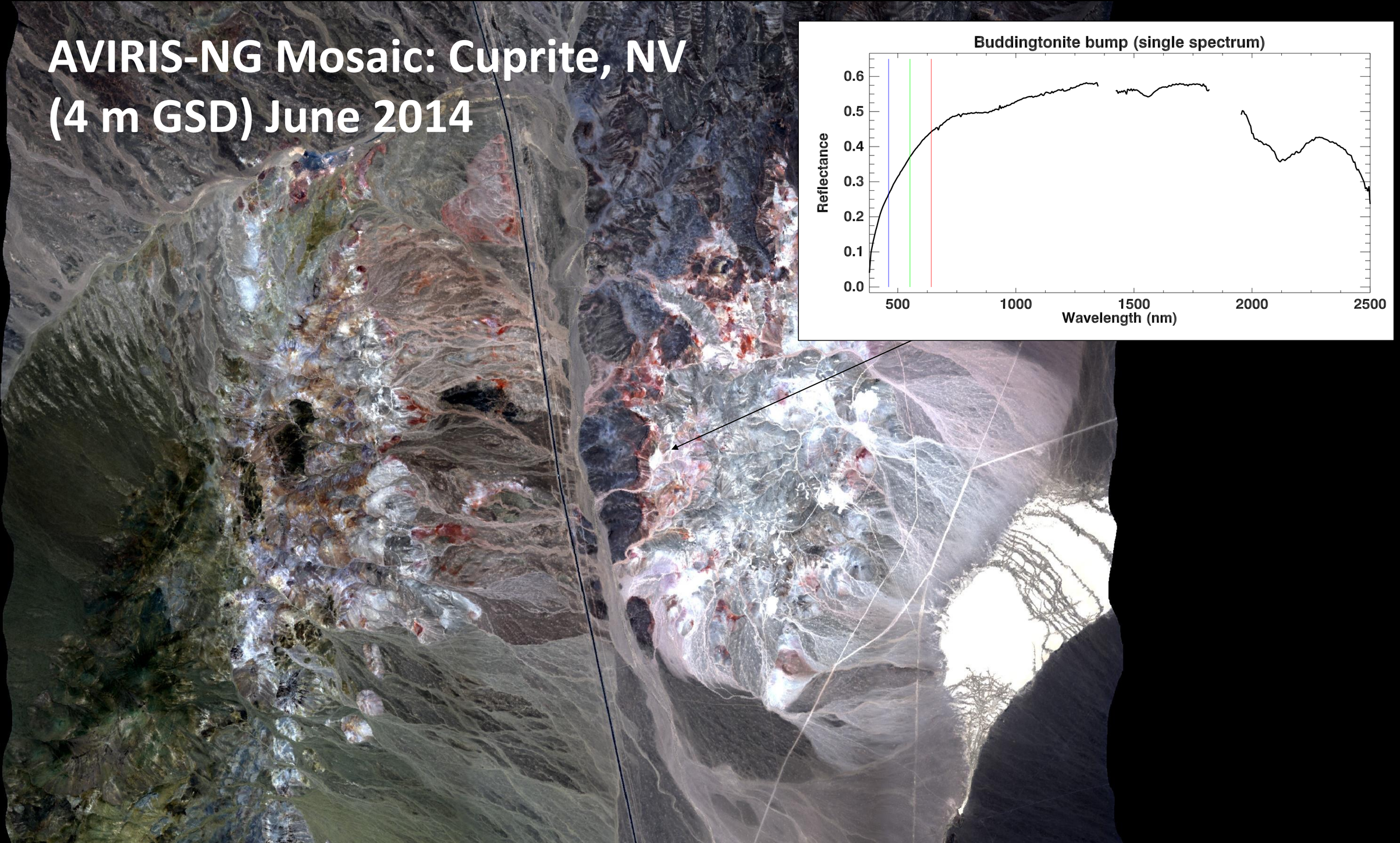

Map
Satellite
FLIGHT NAME: ang20140625t192252
6/25/2014 UTC 19:25
View Flight Log ang20140625t
Site Name: Cuprite 2, NV
Investigator: Robert Green
Comments: Alt = 18.4 kft
SOG = 84 kts
Clouds = Clear
Direction = 167.2
# Samples: 661 # Lines: 2472
Pixel Size: 3.9m
Solar Elevation: 74.65
Solar Azimuth: 155.57
Rotation: 0
To request L1B or L2 data products, please contact Sarah Lundeen
KML display
WYOMING
UINTAH AND OURAY RESERVATION
Grand Junction
St George
Fresno
CALIFORNIA
Death Valley National Park
Las Vegas
NAVAJO NATION RESERVATION
San Jose
Bakersfield
Albuquerqu
Los Angeles
Anaheim
Long Beach
ARIZONA
Phoenix
Mesa
Gila National Forest
NEW M
Shasta-T National F
Google

AVIRIS-NG Mosaic: Cuprite, NV (4 m GSD)
June 2014

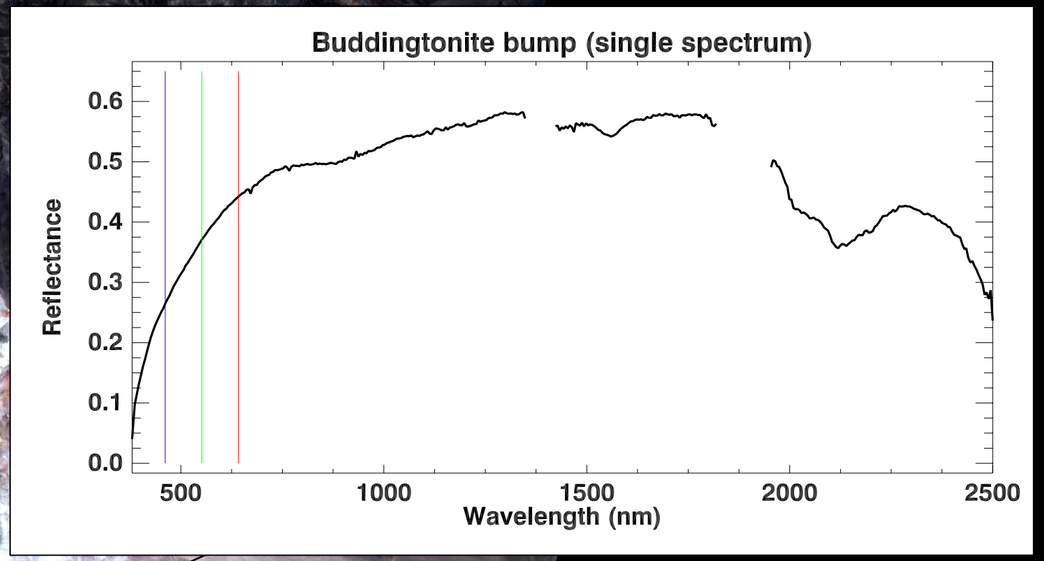



Spectrally detectable alteration minerals
Spectral Alteration Zones
Hydrated silica
Alunite
Kaolinite
White mica ± montmorillonite
Chlorite
Adularia-smectite
Chalcedony
Opal
Alunites
K
Alunite composition
Na
Dickite
w.o. Kaolinite
Halloysite
White mica
Al
White mica composition
Fe
Chlorite
Buddingtonite ± smectite
Hematite
Jarosite
Goethite
[Courtesy Swayze et al.]

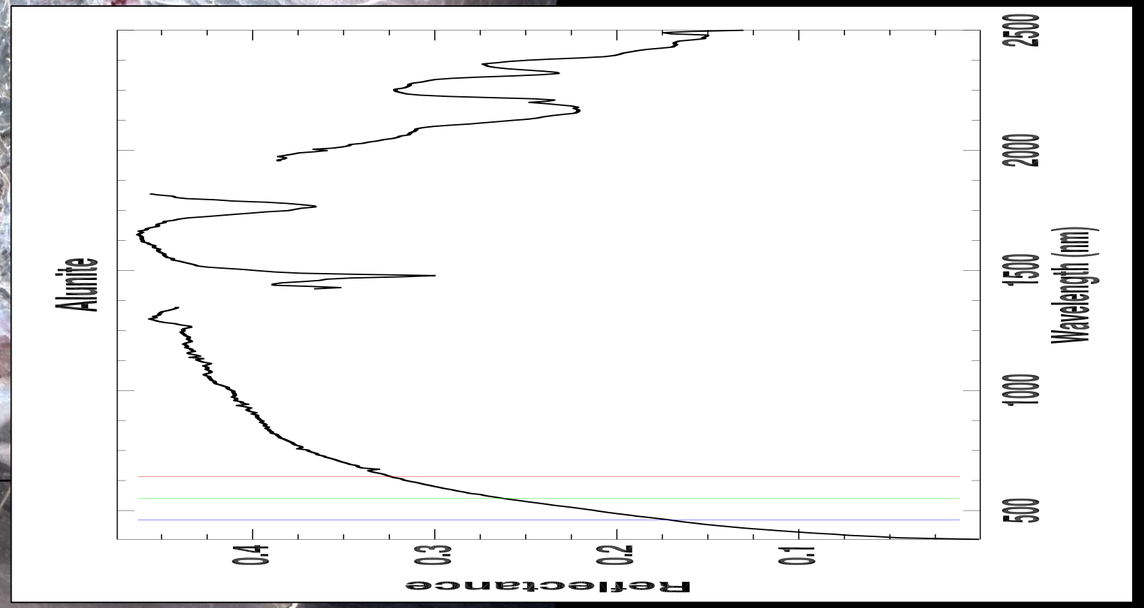
AVIRIS-NG Mosaic: Cuprite, NV (4 m GSD) June 2014



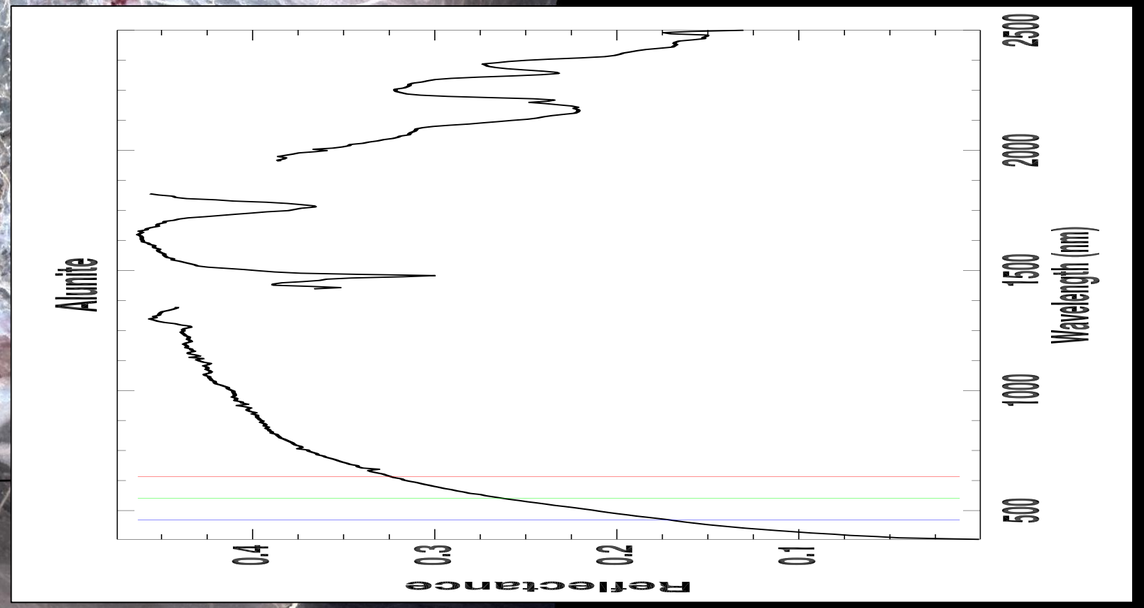
AVIRIS-NG Mosaic: Cuprite, NV (4 m GSD) June 2014



AVIRIS-NG Mosaic: Cuprite, NV (4 m GSD) June 2014



AVIRIS-NG Mosaic: Cuprite, NV (4 m GSD) June 2014



Map
Satellite
Greenland
Iceland
Finland
Sweden
Norway
Russia
United Kingdom
Canada
Poland
Germany
Ukraine
Kazakhstan
Mongolia
France
Italy
Spain
Turkey
China
North Atlantic Ocean
Iraq
Iran
Afghanistan
Pakistan
Algeria
Libya
Egypt
Saudi Arabia
India
Thailand
Mali
Niger
Sudan
Chad
Nigeria
Ethiopia
Mexico
Venezuela
Colombia
Kenya
DR Congo
Tanzania
Brazil
Peru
Angola
Bolivia
Namibia
Botswana
Madagascar
Indian Ocean
South Pacific Ocean
Chile
South Atlantic Ocean
South Africa
Argentina
http://avirisng.jpl.nasa.gov
Google

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Thanks!