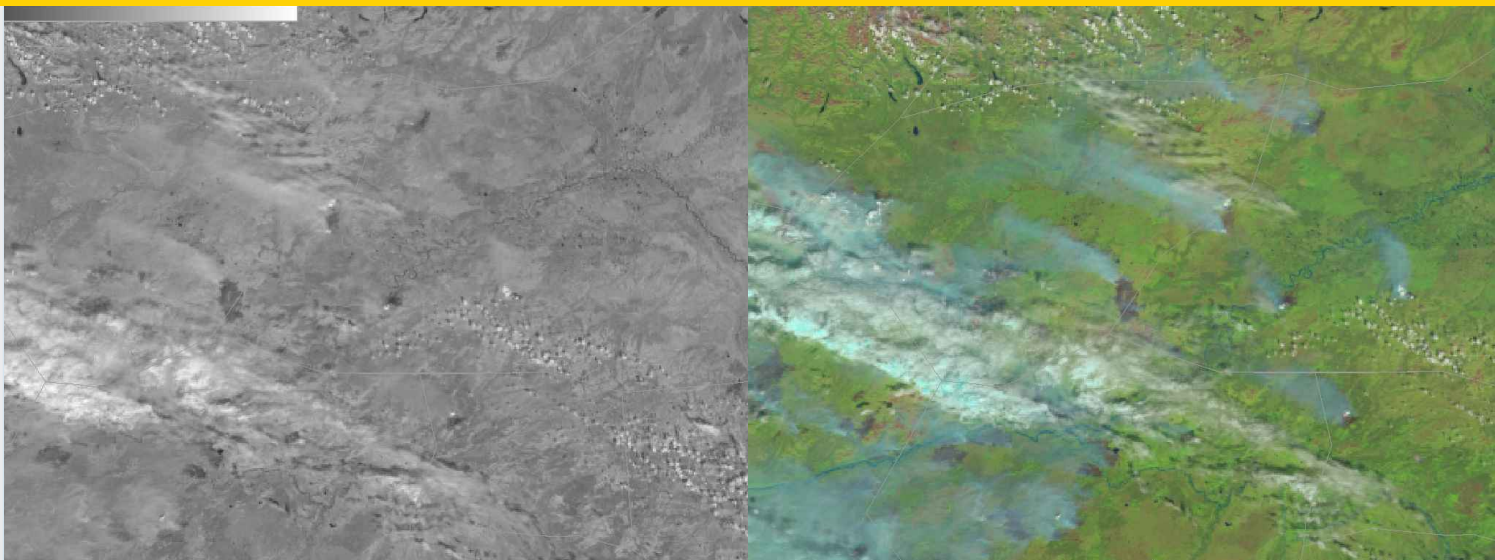


OVERVIEW

The visible light spectrum extends from 0.39 μm to 0.70 μm , which leaves the 0.86 μm channel just outside the visible range and into the near-infrared (IR) portion of the electromagnetic spectrum. The 0.86 μm band is particularly responsive to reflected sunlight coming from green plants, hence its nickname of “The Veggie Band.” This sensitivity to living vegetation makes the 0.86 μm wavelength ideal for detecting boundaries between areas that are well and poorly vegetated. For example, recent burn scars on the landscape are very evident at 0.86 μm , as are coastlines which include a sharp transition between the water and vegetated land. The normalized difference vegetation index (NDVI) relies heavily on the 0.86 μm wavelength.

Some of the 0.86 μm near-IR band’s weaknesses are characteristics it shares with its close neighbor, the 0.64 μm visible band: both bands rely on the reflection of incoming sunlight and thus will only work during the daytime. Also, neither band can see through clouds or thick smoke. Of course, if your objective is to identify clouds during daytime, then the 0.64 μm and 0.86 μm bands are quite useful.



OUCH, THAT’S GONNA LEAVE A MARK...

The images above are AWIPS screen captures over Alaska’s Interior from 2312Z July 6th during the great fire season of 2015. The image at left is the VIIRS I2 0.86 μm channel alone, and areas burned by wildfires appear dark gray or black. The image at right is an RGB comprised of the VIIRS I1, I2, and I3 bands. The I2 band’s contribution to the RGB is evident in the dark fire scars. This Natural Color RGB contains more information than the 0.86 μm channel alone, and offers a more definitive depiction of the smoke plumes advecting in the ambient wind.

FUN FACT:

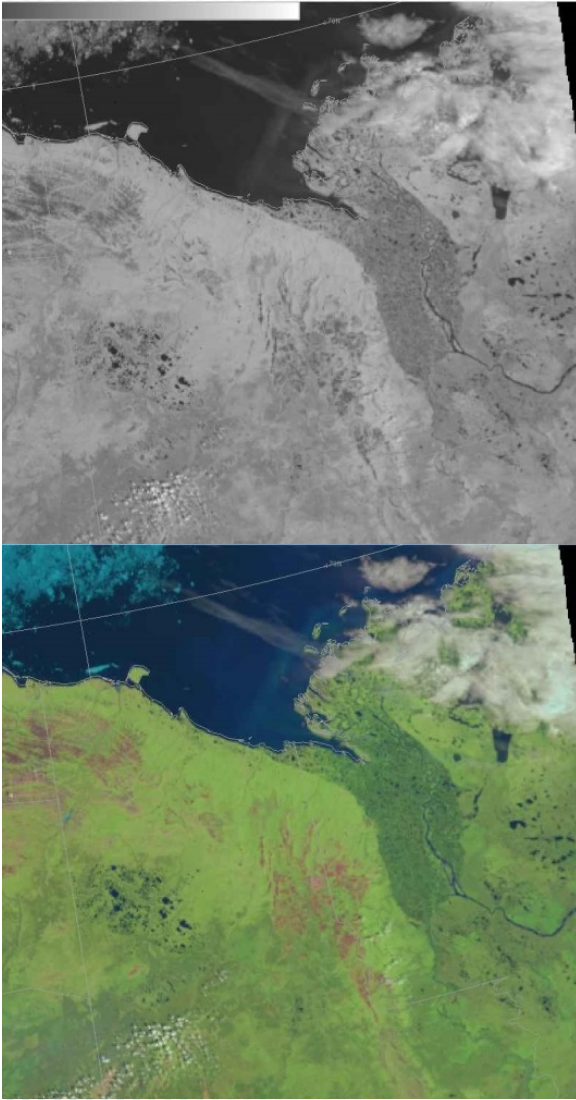
The USDA recommends all meteorologists get at least five servings of 0.86 μm imagery every day.



ADDITIONAL REFERENCES

Quick guides to channels on the GOES-R Advanced Baseline Imager (ABI). ABI Band 3 is centered at 0.86 μm
<http://www.goes-r.gov/education/ABI-bands-quick-info.html>

Eric Stevens: eric@gina.alaska.edu | Carl Dierking: cfwierking@alaska.edu | GINA Staff: www.gina.alaska.edu/people



THE VEGGIE BAND IS A HEALTHY PART OF AN RGB'S BALANCED DIET

The 0.86 μm near-IR band is not typically examined as a stand-alone product in AWIPS. Rather, the 0.86 μm band usually makes its contribution to meteorological analysis in more subtle ways as a component of a number of RGB composites. One commonly used RGB that includes the 0.86 μm is the Natural Color product.

At left are two AWIPS captures from the Suomi NPP pass captured on a mostly sunny afternoon over the Mackenzie Delta at 2312Z July 6, 2015. The top image is the VIIRS I2 channel alone, and the bottom image is the Natural Color RGB using the VIIRS I1 (0.64 μm), I2 (0.86 μm), and I3 (1.61 μm) channels as the red, green, and blue components, respectively. The land in the bottom image appears as varying shades of green, which is appropriate given that the 0.86 μm channel contributes the green component of the RGB, is sensitive to vegetation, and this is a time of year with maximum vegetative activity. The demarcation between land and water is very evident in both the stand-alone 0.86 μm image and in the RGB. The land from the delta itself upriver to the south-southeast has a darker shade of green due to the mix of standing water and vegetated land in the delta. Some of the land to the west of the delta is a very bright green, due to the absence of standing water and predominance of vegetation there.

Satellite(s)	Instrument	Band Name	Wavelength	Resolution at NADIR
Suomi NPP	VIIRS	I2	0.8655 μm	375 m
Terra and Aqua	MODIS	2	0.8585 μm	250 m
POES and METOP	AVHRR	2	0.8625 μm	1100 m

Table showing the various satellites that carry instruments generating imagery at roughly 0.86 μm . Note that, unlike the case with the 0.64 μm visible band, there is no 0.86 μm band on the DMSP satellites, and consequently DMSP does not appear on this table.

CONTACT

909 Koyukuk Drive
Suite 111 WRRB
P.O. Box 757275

University of Alaska Fairbanks
Fairbanks, Alaska 99775-7275

www.gina.alaska.edu | support@gina.alaska.edu

