Application Library: Nighttime Microphysics RGB

Improved fog analysis in data void regions

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Region:
Alaska South/Southwest

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Date:
5 October 2015

Product(s):
Nighttime Microphysics RGB

Application Area:
Aviation

Feature:
Fog analysis for vis/ceiling hazards

Instrument(s):
ABI, VIIRS, MODIS

Works well with:
Surface observations

Related Links:
SPoRT Quick Guide for NtMicro RGB

Aviation Forecasting with RGB Products: Alaska

Event Description: Plentiful moisture combined with slack winds/radiational cooling overnight provided ideal conditions for a widespread stratus/fog around the region. Fog and low stratus impacted TAF sites around Cook Inlet/Knik Arm and Anchorage area. Ceilings and visibility at these sites fell into IFR/LIFR conditions affecting aircraft operations

Product Impact: The imagery (Fig. 1) shows low clouds and fog with good contrast in places devoid of surface observations, and in places beyond the resolution of traditional satellite products. As the fog/low stratus was impacting aviation and public interests (morning commute), **the nighttime microphysics provided a good shot of areal coverage of fog, despite being obscured** in places by a mid-level cloud deck.

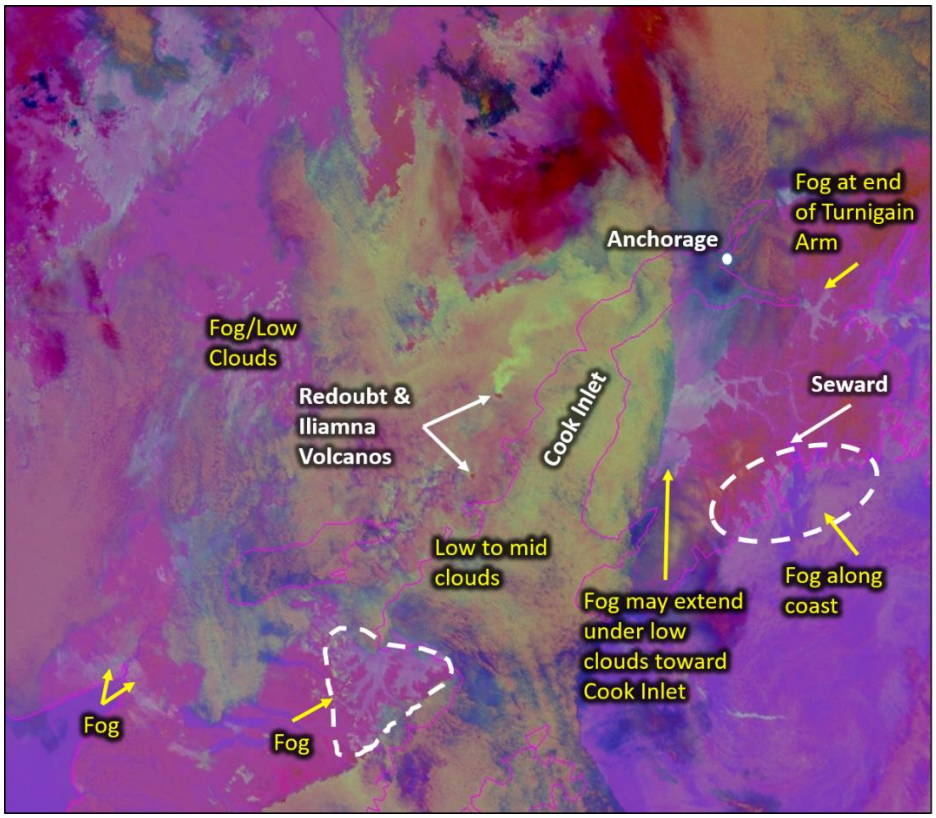

Figure 1. Nighttime Microphysics from VIIRS over the Anchorage and southern Alaska region. Fog annotated in yellow text and dashed white contours

Interpretation: Most of the clouds in this scene have some red and green contribution and less blue. This red/green results in tan colors. The red contribution indicates moderate thickness while the moderate green indicates that some water-based clouds exist. Therefore, the tans are low to mid, thick clouds that are water-based. The fog appears in gray to dull aqua shades. The fog and low clouds will have more blue contributions than the mid clouds, but thin fog can be influenced by cold surface emissions. Hence, thin fog sometimes has less intense blue than warm, low

clouds. In cold regimes the fog and low clouds have less blue contribution due to the colder thermal channel. Note that the hotspots from the Redoubt and Iliamna volcanos can be seen, and in fact the Redoubt volcano appears to be affecting the clouds as evidenced by the plume-like structure seen in the brighter greens to the north of the hotspot.