



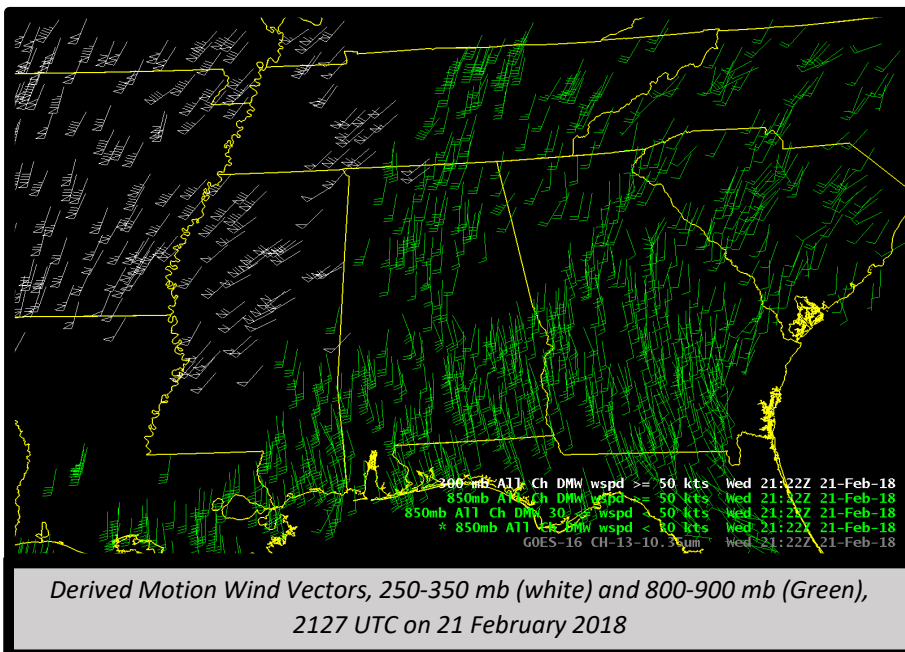
Derived Motion Winds

Quick Guide



Why are Derived Motion Wind Vectors Important?

Derived Motion Wind Vectors are produced using sequential ABI images. They can provide important information about winds at different levels during asynoptic times. Areas of wind shear or jet maxima can be identified. Wind vectors are computed using imagery at 0.64 μm , 3.9 μm , 6.19 μm , 6.95 μm , 7.34 μm and 11.2 μm . In the example at right, 850-mb winds are plotted all in green, and 300-mb winds are plotted in white. You can infer strong directional/speed shear over eastern Mississippi and northern Alabama.



Derived Motion Wind Vectors, 250-350 mb (white) and 800-900 mb (Green), 2127 UTC on 21 February 2018

Derived Motion Wind Vectors

GOES-R Domain	When are Winds output in Flex Mode / Continuous Full Disk
Full Disk	• Every 60 minutes / Every 15 minutes
CONUS	• Every 15 minutes / Every 15 minutes
Mesoscale sector	• Every 5 minutes / not computed

Impact on Operations

Primary Application: Identify regions of strong winds or wind shear to confirm model forecasts and/or to anticipate the result of strong winds or shear. For pressure level plots, vectors are plotted over a range of values centered on the pressure level. For Channels, vectors are plotted at different levels depending on the retrieved cloud top temperature (when cloud features are tracked) or observed temperature from water vapor channel (when clear-sky moisture gradient features are tracked).

Application: Infer Bulk Layer Shear by comparing surface wind observations to Derived Motion Wind vectors.

Application: Derived Motion Winds are one of the most important products assimilated into many Numerical Models.

Limitations

Limitation: The product requires features to track. Individual wind vectors are retrieved at a single level.

Limitation: The technique requires 3 sequential images.

Limitation: In Continuous Full Disk Mode, Mesoscale winds are not computed because Mesoscale sectors are not scanned.



Image Interpretation

1

Low-level winds in this plot are pink/red-hued. Note the circulation around the Subtropical High.

2

There are also strong low-level winds around an extratropical Low.

3

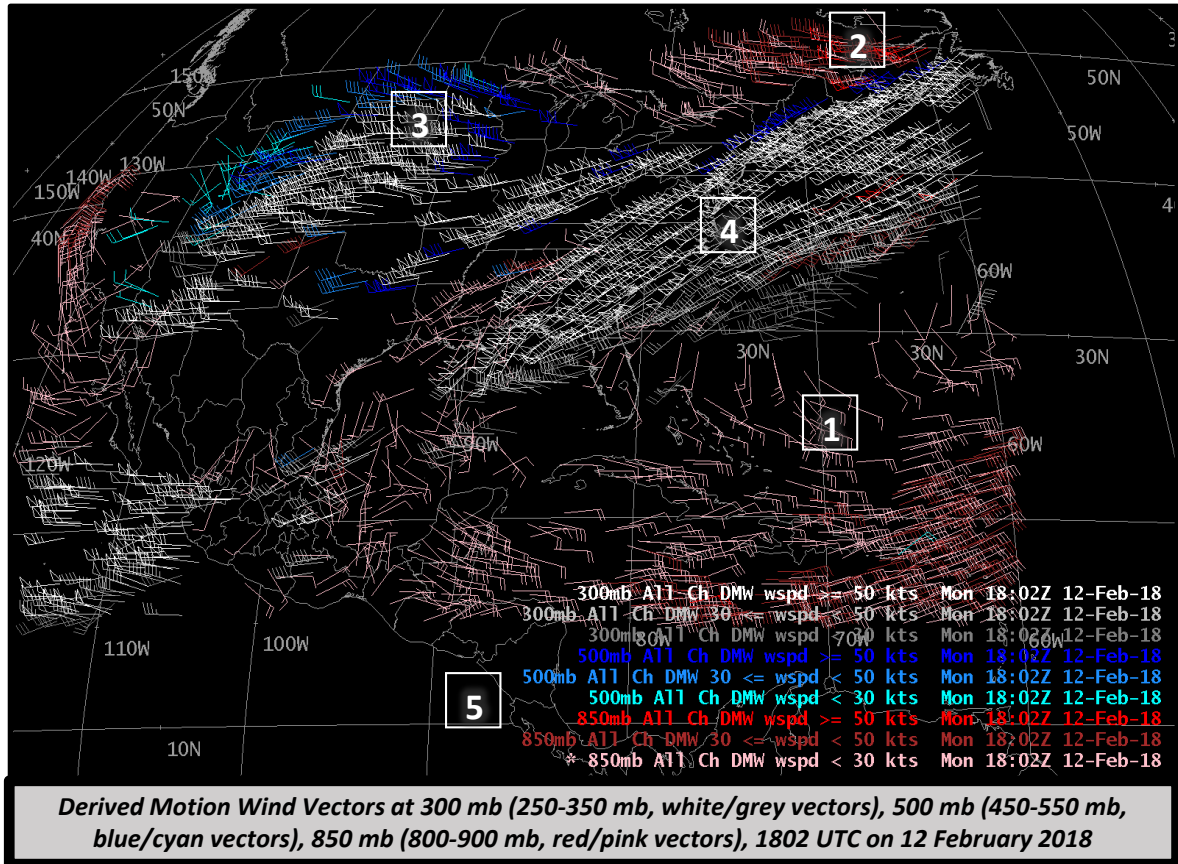
Mid-level winds in this plot are blue. A 500-mb ridge is apparent over the northern Plains.

4

Upper-level winds in this plot are grey and white. A strong jet is present along the East Coast of the United States.

5

All Ch DMW in the label means that wind vectors from all ABI Channels are plotted.



AWIPS Displays: This Product in AWIPS can be displayed at different pressure levels or for different bands. By default, vector plots for all levels are color coded by speed: Red (>50 knots), Yellow (30-50 knots) and Green (<30 knots). It's helpful to create a procedure that color-codes by level, as shown above, and on the first page, if multiple levels are loaded.

Resources

[ATBD on Winds](#)

[Satellite Liaison Blog Post with low-level wind vectors in blowing dust event](#)

[Satellite Liaison Blog Post showing Derived Motion Vectors with strong Nor'easter](#)

Hyperlinks are not active in AWIPS but they do work in the VLab