

2.21 WIND: Wind Speed and Direction

wind WIND Product Configuration: DEFAULT			
File Menus Type Commands			Help
TASK SUMMARY			
TASK Name	<input type="text" value="PPI_VOL_A"/>	DSP Data	<input type="text" value="Z V W"/>
Scan Mode	<input type="text" value="PPI Full"/>	Max Range	<input type="text" value="256.0"/>
Angle List	<input type="text" value="AZ: Full Circle EL: 2 angles from 0.5 to 1.2"/>		
Min-Max Rng	<input type="text" value="5.0"/> <input type="text" value="200.0"/>	<input type="button" value="Defaults"/>	
Min-Max Height	<input type="text" value="0.5"/> <input type="text" value="1.5"/>		
Range Spacing	<input type="text" value="19.5 km"/>	Sector Length	<input type="text" value="19.5 km"/>
Azimuth Spacing	<input type="text" value="45.0 deg"/>	Sector Width	<input type="text" value="19.5 km"/>

The WIND product computes a 2-D array of horizontal wind vectors (the horizontal wind field) using the radial velocity information and the assumption that the wind is uniform over a limited sector (e.g., 10 km by 60 degrees). By computing the mean wind in a number of such sectors, an approximation to the 2-D field of horizontal winds can be made. Because the algorithm assumes uniform winds over a sector, it is sometimes referred to as the “sector uniform wind algorithm.” The algorithm can show gradual changes in the wind vectors over the radar coverage area. It cannot show sharp gradients such as fronts or microbursts.

The output can be displayed as wind barbs or wind strings as an overlay product. The mean wind can be subtracted at output so that the perturbation wind is displayed. These selections are made when the product is displayed in either the Quick Look Window or the Product Output Menu using the Output Options.

This section describes the fields of the Product Configuration menu that are unique to the WIND product. For general information, see these other sections of this chapter:

- Task Summary area, Section 2.1.1.
- Product Parameters, see Section 2.1.3.
- Display Parameters area, Section 2.1.4.

To open the WIND Product Configuration menu:

Choose **Type**→**WIND** from the menu bar.

Min-Max Rng

This field specifies the radius of the product, starting at some point close to the radar and ending at some distance away from the radar. Wind vectors are computed only within this range.

Min-Max Height

This field defines the layer from which the radial velocity information is taken to produce the wind vectors. Because vertical shear can be substantial, it is recommended that this layer be ~1 km.

Range and Azimuth Spacing

These fields define the resolution for computing the wind vectors in polar coordinates. For example, if the Range Spacing is set to 10 km and the Azimuth Spacing is set to 45 degrees, a wind vector is computed over the Min-Max Range every 45 degrees in azimuth and 10 km in range.

Sector Length and Width

Each wind vector is computed at the center of a sector which is defined by the Sector Length (or range) in km and the sector width (or azimuth) in degrees. The Range and Azimuth Spacing can be set so that the sectors overlap. It is recommended that the sector width be ~60 degrees.

Defaults

Click on this button to set all fields in this menu to their default values.

Note on Thresholding During Display

If there are insufficient radial wind points in a sector, the algorithm still computes a mean wind. However, the estimate is not reliable. For each sector, the total number of valid velocity range bins found is stored, as well as the total number expected for full coverage. When displaying the results, the output options allow thresholding by the percentage of coverage in a sector. Using this threshold reduces noisy values. A value of 40% areal coverage is a good starting point.