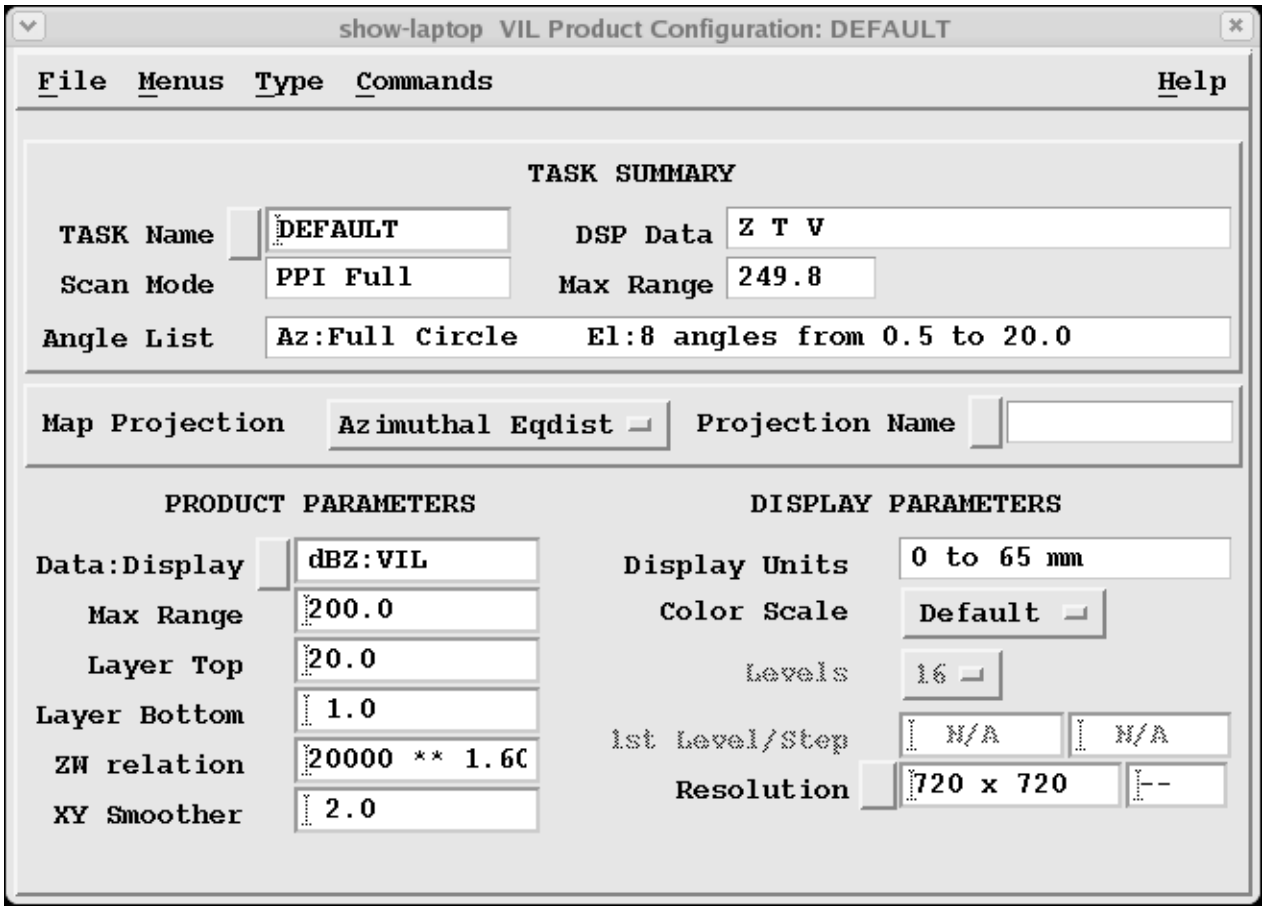
2.18 VIL: Vertically Integrated Liquid



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

- Task Summary area, Section 2.1.1.
- Map Projection Area, Section 2.1.2
- Product Parameters, see Section 2.1.3.
- Display Parameters area, Section 2.1.4.

The VIL product is another excellent indicator of severe storm activity, especially with regard to the rainfall potential of a storm. The output shows the estimated precipitation (in millimeters) contained within a user-defined layer. Because VIL can be set to integrate over the entire depth of the atmosphere, it is good at seeing precipitation aloft that is not reaching the ground—a case that can be missed by a PPI or CAPPI display.

If the layer height is above the freezing level, high VIL values are an excellent indicator of severe storms and hail. If the layer height extends from the surface up to 3 km, then the VIL values serve as a forecasting guide as to how much precipitation is likely to fall during the next few minutes.

The VIL algorithm first searches out all points in the VIL layer (accounting for earth curvature) over a given range and at a given azimuth. Points above and below the VIL layer are interpolated to define the reflectivity values on the layer boundary. Next, the algorithm converts the Z or T values to W values (here, W refers to water content) and integrates the values in the layer. Each data point is assigned a weighting corresponding to the height interval that it represents in the layer. The result is an intermediate PPI product that has the total water content as a function of surface range and azimuth. Finally, the intermediate product is converted to the appropriate levels and transformed into a Cartesian product stored with the product output files.

To open the VIL Product Configuration menu:

Choose **Type–>VIL** from the menu bar.

Data : Display

Z	VIL	The VIL product can be derived from either Z or T data. If Z is selected as the Product Data parameter, but at run time only T is available (or vice versa), the product runs with the available data parameter.
T	VIL	

Layer Top and Layer Bottom

Select the top and bottom heights of the VIL layer in kilometers and tenths of kilometers.

⚠ **Caution: The bright band biases the VIL measurements, so you should select the VIL layer to avoid the freezing level height.**

ZW Relation

Select the reflectivity-water content (Z-W) relationship. A default value for rain is provided. For snow, reduce the coefficient to a smaller value, such as 2000, to account for the lower reflectivity of ice.

VIL can function when only one angle is in the TASK, but this is not recommended for best results. If no angle in the associated TASK passes through the VIL layer, no VIL can be calculated.

For a VIL layer of 5 to 10 km, in the volume scan example in Figure 2–1, VIL cannot be calculated for ranges less than 5 km. In the resulting product display, black would be displayed in this region to indicate that IRIS did not even sample the region.