

DESCRIPTION FOR GRIDDED K/A DATA.

Purpose

This readme file describes the latitudinal and longitudinal cross-sections displayed on these web pages. More specifically, the settings used in producing the plots as well as the manner in which the calculations are performed are discussed here.

Default program parameters

The horizontal grid spacing is set at 0.1° . The number of altitude levels used vary depending on cloud height. However, levels used correspond to altitude levels in the COAMPS model. They are as follows (in meters):

1820	920	220
1620	760	140
1420	600	90
1240	460	55
1080	330	30

Points plotted in the latitude cross sections have been averaged over all points in longitude and vice versa. For each grid point for which an average is calculated, a minimum number of points must lie within the grid box. If this minimum number of points does not exist no calculation is performed and a '+' is output for that grid point on the plot. The default value for the minimum number of points is equivalent to about 1 km of flight, but not necessarily contiguous.

Grid box size

Horizontally, the grid point lies in the center of the grid box. The program searches for all points that lie within half the horizontal grid space on either side of the grid point. For example, with a default horizontal grid space of 0.1° , the program searches for observations within 0.05 degrees on either side of the grid point.

Vertically, the same procedure applies, except at the highest and lowest altitude levels. At middle levels the program looks for observations between the midpoint between the layer of interest and the layer above and the midpoint between the layer of interest and the layer below. For example, if middle layers were 220, 330, and 460 meters, for the 330 m level data are accepted between 275 and 395 meters.

For the lowest altitude level, observations are included from between the midpoint between the layer and the one above it and 30 m AGL. For the highest altitude level, observations are included from the midpoint between it and the layer below, and the same distance above the level. For example if the top two levels were 600 and 460 m, the 600 m data includes observations between 530 and 670 meters.

Calculations:

The most parameters mean values are reported. However, to avoid strange values due to in-and-out of cloud points getting averaged, for liquid water content (from both the PVM and DMT probes) and for effective radius (also from the PVM probe), 90th percentile values are calculated.

The coefficient of variation is used to distinguish points of reasonable statistical significance from those that are too strongly influenced by patterns. Reported values are coded by this coefficient, which is defined as the standard deviation about the mean divided by the mean. A larger font size appears on the plot for grid points with coefficients of variation less than 0.1.

It should be noted that when the liquid water content values (from the PVM probe) are less than 0.04, those liquid water content and effective radius points are ignored.

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