MOPITT V4 Level 3 Data Quality Summary

The following information applies to MOPITT level 3 (L3) data, Version 4 (V4; L3V2.0 or higher)
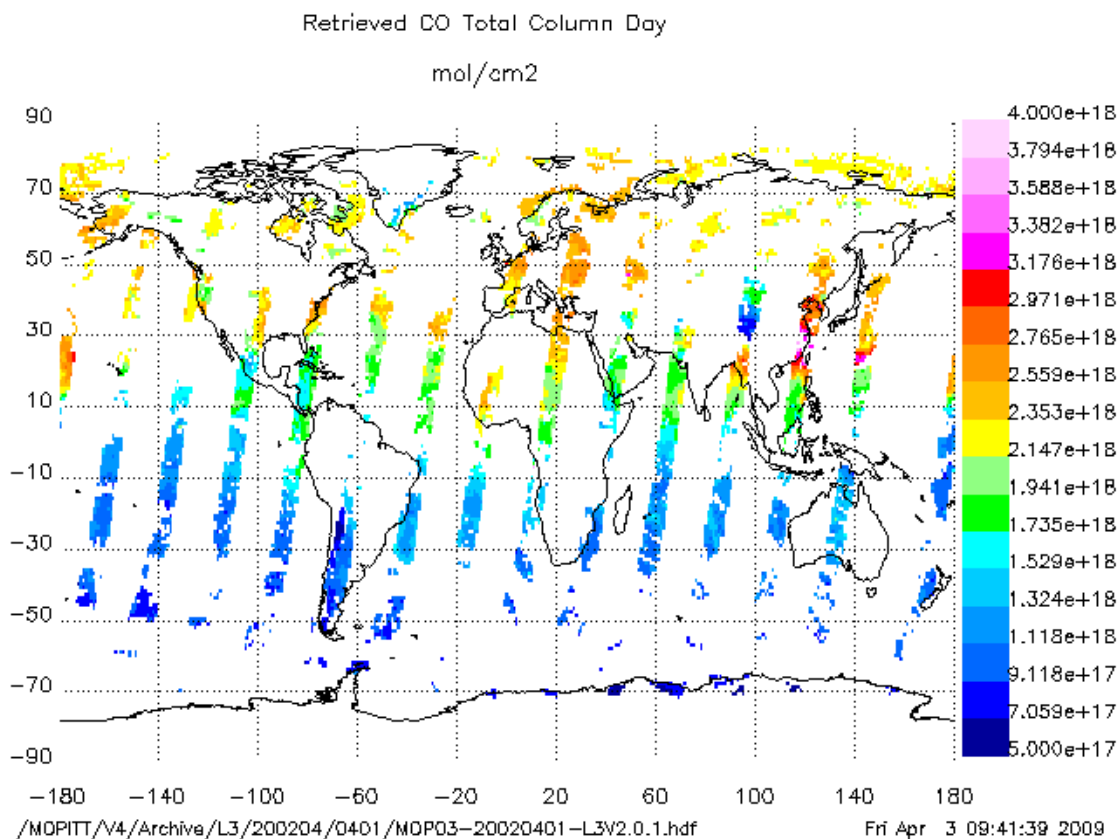**April 3, 2009**

Further details on MOPITT Data Quality (and recommended analysis methods) can be found in the V4 User's Guide available at the MOPITT Publications page.

Gridded CO Retrievals

MOPITT Level 3 data files are produced in HDF format for both individual days and individual months, providing daily-mean and monthly-mean CO distributions at a resolution of 1 degree (latitude and longitude) respectively. Daytime and nighttime MOPITT observations are processed separately in the Level 3 processing (based on solar zenith angle), and lead to separate daytime and nighttime products within each Level 3 HDF file. Retrieval sensitivity is generally greater for daytime overpasses than for nighttime overpasses, particularly over land. Generally, there exists a corresponding L3 product for each data field in the Level 2 Product. In addition, the number of Level 2 retrievals (or 'Number of Pixels') used as the basis of each Level 3 gridded value is also provided. Moreover, for each retrieved parameter, additional fields provide (1) the mean uncertainty of the Level 2 values and (2) the variability of the Level 2 values as represented by the standard deviation.

In rare special situations, quality-control considerations prevent inclusion of all the Level 2 data within a particular grid cell for producing Level 3 gridded values. For example, for grid cells overlapping coastline, Level 2 data within that grid cell will often include more than one surface type. Averaging Level 2 data characterized by significantly different averaging kernels, as would occur in this case, should generally be avoided. Other special cases are listed below, together with descriptions of the methods by which such data are processed. If any single surface type constitutes at least 75% of the Level 2 retrievals in a particular grid cell, only retrievals with that surface type are used as the basis of the Level 3 gridded value. If no single surface type constitutes 75% of the available Level 2 retrievals, all of the Level 2 data are retained in the L3 gridded value, and the surface index is set to 2 ('Mixed'). If the L2 retrievals in a particular L3 grid cell contain varying numbers of valid levels (usually because of varying topography), it is determined which case (i.e., number of valid levels) occurs most frequently. Only this subset of L2 retrievals are retained as the basis of the L3 gridded value.
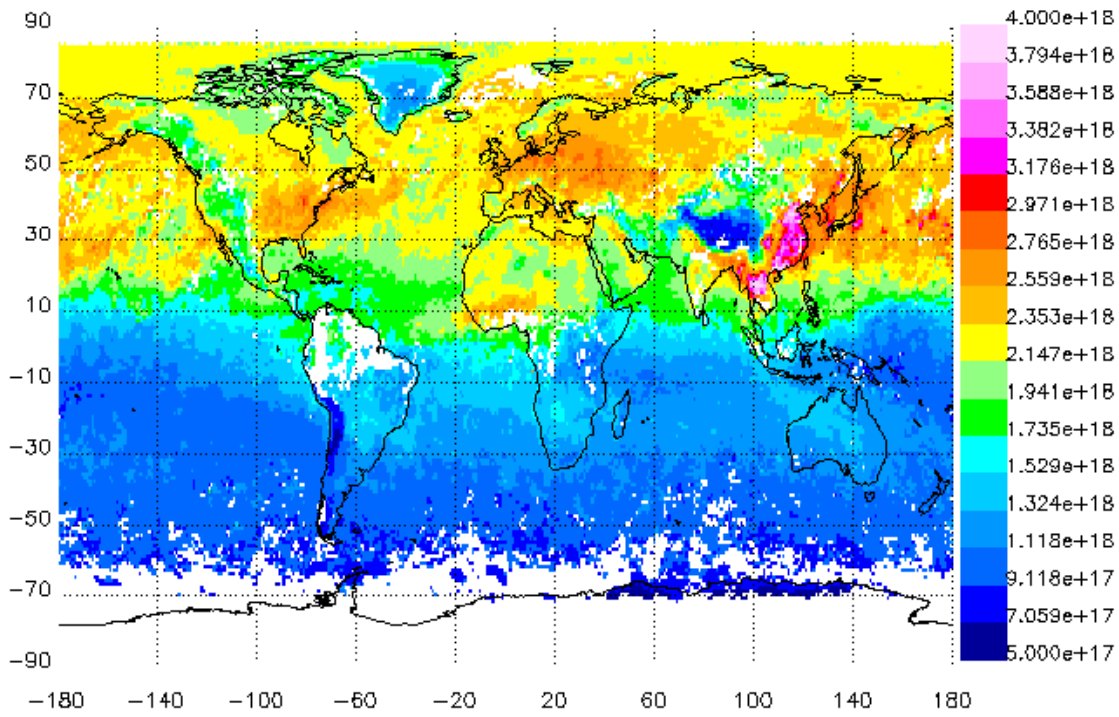
Daily and Monthly Examples

Daily Example (April 1, 2002)

Retrieved CO Total Column Day

mol/cm2

/MOPITT/V4/Archive/L3/200204/month/MOP03M−200204−L3V92.0.1.hdf   Fri Apr 3 09:43:32 2009

Monthly Example (April, 2002)

CH4 Products

Methane (CH4) retrievals are not available in this data version.