

# Atmospheric Infrared Sounder (AIRS) Retrieval of Atmospheric Carbon Dioxide (CO<sub>2</sub>) in Three Layers

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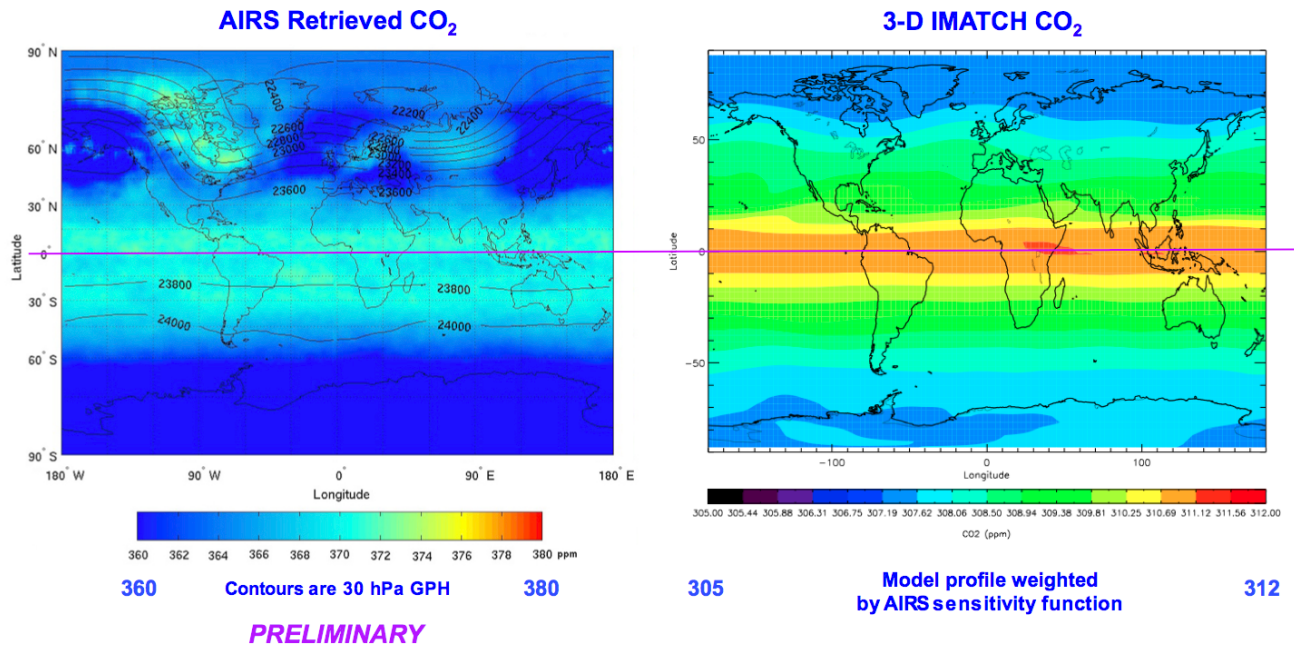
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The AIRS mid-tropospheric global CO<sub>2</sub> data product spanning September 2002 to the present may be freely downloaded from the Goddard Earth Sciences/Data and Information Services Center. Access links to the products are provided on the web page [http://airs.jpl.nasa.gov/AIRS\\_CO2\\_Data](http://airs.jpl.nasa.gov/AIRS_CO2_Data).

We present a monthly global climatology of the mid-tropospheric CO<sub>2</sub> for 60°S ≤ LAT ≤ 90°N. The AIRS mid-tropospheric data product is now being used by several groups in modeling efforts to understand the sources and sinks and the lifting of CO<sub>2</sub> from surface layers into the free troposphere.

We have retrieved Stratospheric CO<sub>2</sub> at 30 km altitude, and global maps show significant interaction between the stratosphere and troposphere beyond the tropical pipe. The latitudinal variation of CO<sub>2</sub> agrees well with the sparse *in situ* measurements but not with model results.

We are evaluating preliminary retrievals of lower-tropospheric CO<sub>2</sub>, between the surface and 2.2 km (775 hPa) and will show global maps of early results.



**Figure 1.** Left panel shows January 2003 monthly average of AIRS retrieved stratospheric CO<sub>2</sub> and right panel shows 3-D IMATCH stratospheric CO<sub>2</sub>. The model CO<sub>2</sub> profile has been convolved with the AIRS weighting function for this match. The tropical pipe is evident in both panels. The AIRS data show additional tropospheric intrusion at the high northern latitudes and a variation with latitude that is approximately a factor of four greater than in the model.