

Vulcan 1.2 Readme file
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This readme file provides a short sketch of the Vulcan version 1.2 data product. It contains:

- 1) short description of Vulcan
- 2) Vulcan inventory caveats
- 3) Known errors
- 4) Citation information
- 5) Contact information

1) Description of Vulcan

The Vulcan fossil fuel CO₂ inventory was produced at Purdue University in conjunction with collaborators at Colorado State University and Lawrence Berkeley National Laboratory. This effort was made possible through support from NASA (grant CARBON/04-0325-0167 by the Office of Earth Science, National Aeronautics and Space Administration) and the DOE (Atmospheric Radiation Measurement Program, Office of Science, U.S. DOE, DE-AC02-05CH11231) under the auspices of the North American Carbon Program (NACP). Support was also provided by the Purdue's Showalter Trust and Knauf Insulation.

The Vulcan inventory version 1.2 and detailed documentation concerning the construction is available at www.purdue.edu/eas/carbon/vulcan. The Vulcan inventory represents the United States fossil fuel CO₂ emissions for the year 2002 at a spatial scale that is less than the county-level and hourly. The precise spatial and temporal scale varies by economic sector but a common 10 km/hourly product has been generated to facilitate atmospheric modeling research.

2) Vulcan caveats

The Vulcan inventory is a *data product*. It is based on a number of data sources but relies to a great extent on data collected by the EPA through the Clean Air Act legislation (we thank the EPA). The large volume of data used to construct the Vulcan inventory data product relies to a great extent on the QA/QC procedures and integrity of the EPA data and models. The Vulcan team cannot be held responsible for inaccurate reporting or errors in the QA/QC procedures. The Vulcan team performs some adjustment to the EPA data and this is documented in the Vulcan documentation. However, this is not comprehensive in nature and only occurs where obvious errors can be caught by the Vulcan team.

We WELCOME any information, corrections, suggestions that might improve our quantification effort. Please contact us (contact info below).

What version 1.2 does NOT contain:

- 1) Temporal structure for the industrial sector – this will be included in version 2.0. This means that roughly 0.29 GtC/year (out of the current 1.59 GtC/year) of the CO₂ emitted has no diurnal or seasonal variation. However, the remaining emissions do contain these variations either resident in the original data (as in the case of the power plant emissions) or included through other data sources and models (as in the case of the mobile emissions).
 - 2) Canada and Mexico
 - 3) Fugitive emissions
- 3) Known errors
- Currently, it appears that the Alabama residential sector emissions may be too large by roughly a factor of 5. This has been corrected as a statewide correction by /5. Other potential errors may exist in other Alabama sectors. This is currently under investigation.
- 4) Citing Vulcan
- The Vulcan inventory should be cited as:
Gurney, K.R., D. Mendoza, Y. Zhou, M Fischer, C. Miller, S. Geethakumar, S. de la Rue du Can (2009) The Vulcan Project: High resolution fossil fuel combustion CO₂ emissions fluxes for the United States, *Environ. Sci. Technol*, 43, doi:10.1021/es900,806c
- 5) Contact information
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