**Historical Carbon Isotopes in Atmospheric CO2**

Contact:

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Available at: <https://pcmdi.llnl.gov/search/input4mips/>

Status: ready for use version: 1 (2017-01-05)

Further information/documentation: <http://c4mip.net>

* JONES, C. D. et al. 2016. C4MIP – The Coupled Climate–Carbon Cycle Model Intercomparison Project: experimental protocol for CMIP6. *Geosci. Model Dev.,* 9**,** 2853-2880. <http://www.geosci-model-dev.net/9/2853/2016/gmd-9-2853-2016.html>
* ORR, J. C. et al. 2016. Biogeochemical protocols and diagnostics for the CMIP6 Ocean Model Intercomparison Project (OMIP). *Geosci. Model Dev. Discuss*., in review. <http://www.geosci-model-dev-discuss.net/gmd-2016-155/>
* GMD manuscript on isotopic forcing data forthcoming in 2017.

Datasets:

* delta13C\_in\_air\_input4MIPs\_GM\_1850-2015.nc: Global-mean annual-mean δ13C in CO2
  + Data volume: 13 KB; 1 file; 1 variable
* Delta14C\_in\_air\_input4MIPs\_SHTRNH\_1850-2015.nc: annual-mean Δ14C in atmospheric CO2 for Southern Hemisphere (30-90°S), Tropics (30°S-30°N), and Northern Hemisphere (30-90°N)
  + Data volume: 21 KB; 1 file; 3 variables

Usage notes:

* These datasets provide historical δ13C and Δ14C in atmospheric CO2 to be used as boundary conditions for historical ocean and land model simulations of 13C and 14C.
* δ13C is reported relative to the VPDB standard, referenced to the CSIRO measurement scale.
* Δ14C is reported relative to the Modern standard, including corrections for age and fractionation following Stuiver and Polach 1977.
* Recent values of Δ14C are estimated from limited data (2013-15 for NH and SH, 2009-15 for Tropics).
* Primary source data for δ13C:

ALLISON, C. E., & FRANCEY, R. J. 2007. Verifying Southern Hemisphere trends in atmospheric carbon dioxide stable isotopes*. Journal of Geophysical Research: Atmospheres*, 112, D21304. doi:10.1029/2006JD007345. Data downloaded July 2016 from http://ds.data.jma.go.jp/gmd/wdcgg/cgi-bin/wdcgg/catalogue.cgi

KEELING, C. D. et al. 2001. Exchanges of atmospheric CO2 and 13CO2 with the terrestrial biosphere and oceans from 1978 to 2000. I. Global aspects. In: Scripps Institution of Oceanography References Series. Scripps Institution of Oceanography, La Jolla, CA, 1–89. Data downloaded July 2016 from http://scrippsco2.ucsd.edu/data/atmospheric\_co2

RUBINO, M. et al. 2013. A revised 1000 year atmospheric δ13C-CO2 record from Law Dome and South Pole, Antarctica. *Journal of Geophysical Research: Atmospheres,* 118**,** 8482-8499. Data updated September 2016.

VAUGHN, B. et al. 2004. Stable isotope measurements of atmospheric CO2 and CH4. In: Handbook of Stable Isotope Analytical Techniques (ed. P. A. D., Groot). Elsevier, Amsterdam, London, 272–304. Data downloaded July 2016 from ftp://aftp.cmdl.noaa.gov/data/trace\_gases/co2c13/flask/surface/

* Primary source data for Δ14C:

HOGG, A. G. et al. 2013. SHCal13 Southern Hemisphere Calibration, 0-50,000 Years Cal BP. *Radiocarbon,* 55**,** 1889-1903.

LEVIN, I. et al. 2010. Observations and modelling of the global distribution and long-term trend of atmospheric 14CO2. *Tellus B,* 62**,** 26-46. Data updated in 2014.

MANNING, M. R. et al. 1990. The Use of Radiocarbon Measurements in Atmospheric Studies. *Radiocarbon,* 32**,** 37-58.

REIMER, P. J. et al. 2013. IntCal13 and Marine13 radiocarbon age calibration curves 0–50,000 years cal BP. *Radiocarbon,* 55**,** 1869–1887.