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README.imp07.txt

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Title:

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Barbour et al. (2004) model for isotopic composition of tree cellulose, parameterized for tropical environments (Evans, 2007 in press).

Contents of gzipped tarfile (<http://ic.ltrr.arizona.edu/imo.tar.gz>):

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0. README.txt: this file
1. README.pdf: this file
2. imp06r2.pdf: preprint of Evans (2007).
3. imc.m: main program reading meteorological data and parameters; with Monte-Carlo routine for parameter sensitivity estimation
4. ims.m: isotope model core, called by imc.m.
5. rimco.m: script for loading meteorological forcing data, running imc.m, plotting results (matlab only).
6. mc.dat: input data, described in Evans (2007).

Notes:

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Please see commenting within model and the references for additional information on the model coding. The code is released under Gnu Public License: you are free to copy, modify and distribute it, with the entire contents of the .tar.gz file. Please let me know of bugs you find and improvements you make.

The isotopic model has been tested in the following programming environments, x86_64 cpu architecture, linux operating system:

- Matlab v. 2007a (commercial: www.mathworks.com)
- Octave v. 2.9.9 (freeware: www.octave.org)

A database of model output for the tropics (30N-30S), based on the CRU [T,P,Td] dataset (New et al., 2000) version TS2.1, default model parameters, as from Evans (2007), and with random 0.3 permil observational error, is at:
[http://kalman.ldeo.columbia.edu:81/expert/\(/home/mevans/im7/im7.in\)/readfile/.o18c/](http://kalman.ldeo.columbia.edu:81/expert/(/home/mevans/im7/im7.in)/readfile/.o18c/).

References:

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Barbour, M.M., J.S. Roden, G.D. Farquhar and J.R. Ehleringer, Expressing leaf water and cellulose oxygen isotope ratios as enrichment above source water reveals evidence of a Peclet effect, *Oecologia*, 138, 426-435, 2004, DOI: 10.1007/s00442-003--1449-3.

Evans, M.N., Toward forward modeling for paleoclimatic proxy signal calibration: A case study with oxygen isotopic composition of tropical woods, *Geochemistry, Geophysics, Geosystems*, 8(1), 2007, DOI:10.1029/2006GC001406.

New, M., M. Hulme and P. Jones, Representing Twentieth-Century Space-Time Climate Variability, Part II: Development of 1901-1996 Monthly Grids of Terrestrial Surface Climate, *J. Clim.*, 13, 2217-2238.

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