

## An Introductory Global CO<sub>2</sub> Model

G. W. Griffiths,<sup>a</sup> A. J. McHugh,<sup>b</sup> and W. E. Schiesser<sup>b,\*</sup>

<sup>a</sup>School of Engineering and Mathematical Sciences, City University, London, UK

<sup>b</sup>Department of Chemical Engineering, Lehigh University, Bethlehem, PA, USA

Note

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A new release of an Introductory Global CO<sub>2</sub> Model is now available. The model is intended to quantitatively introduce the CO<sub>2</sub> problem at a basic level, with particular emphasis on ocean acidification which has not received the same attention as global warming and climate change, but could be just as important.

The model is based on seven reservoirs: upper atmosphere, lower atmosphere, long lived biota, short lived biota, ocean upper layer, ocean deep layer and marine biosphere. Through the assumption of perfect mixing in each reservoir, the model consists of just seven, first order, initial value ordinary differential equations that are integrated numerically, typically over the interval 1850 (preindustrial) to 2100.

We have revised the model so that it now has the following features:

– Recalibration to more accurately reflect the current measured atmospheric CO<sub>2</sub> concentration.

– Carbon fluxes that are difficult to estimate are circumvented.

– Basic ocean chemistry has been added that highlights:

- Projections of ocean acidification.

- CaCO<sub>3</sub> dissolution (as in coral, for example).

– Projected anthropogenic CO<sub>2</sub> emissions can be conveniently studied.

The model is available as a set of Matlab routines on a CD, with related documentation, through a request directed to wes1@lehigh.edu. Please provide a postal mailing address. A small package will be sent by US First Class mail or international air mail.

Selected references include:

- Introduction to ocean acidification<sup>1</sup>
- Technical details about ocean acidification<sup>2–5</sup>
- Global carbon fluxes and sinks<sup>6</sup>

The full texts of these references are provided on the CD.

### References

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\* Author to whom correspondence should be addressed at wes1@lehigh.edu

