

***Interactive comment on* “Quantifying the impact of ocean acidification on our future climate” by R. J. Matear and A. Lenton**

R. J. Matear and A. Lenton

richard.matear@csiro.au

Received and published: 17 March 2014

New figures added to the paper to compare to the observations

Figure 1: thickness of suboxic water

Figure 2: surface phosphate concentrations

Figure 3: zonally averaged alkalinity and pre-industrial dissolved inorganic carbon

Figure 4: globally averaged profiles of a) pre-industrial dissolved inorganic carbon; b) dissolved oxygen and apparent oxygen utilization; c) phosphate and d) alkalinity.

Figure 5: Revised Taylor Diagram with additional diagnostics plotted. Taylor diagram of the comparison of the simulated fields with the observations for surface phosphate (1),

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



dissolved oxygen at 500 m (2), surface aragonite saturation state (3), lysocline depth (4), and the 3-dimensional alkalinity (5), pre-industrial dissolved organic carbon (6), dissolved oxygen (7), phosphate (8) and apparent oxygen utilization (9).

Revised table to go with Taylor Diagram

Interactive comment on Biogeosciences Discuss., 10, 17683, 2013.

BGD

10, C9270–C9277, 2014

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

C9271



Table 1. Summary statistics of the comparison of the REF 1995 simulated fields with the observations shown in Figure ??.

| Field | Observations versus REF simulation in 1995 | | | | | | | |
|-----------------------------------|--|-------------------|-------------------|------------|------------|------|----------|-------------------------|
| | Observed Average | Simulated Average | Observed σ | Mean Error | Normalized | | σ | Correlation Coefficient |
| | | | | RMS' | RMS | | | |
| Phosphate at 0 m () | 0.51 | 0.44 | 0.49 | -0.13 | 0.58 | 0.60 | 1.25 | 0.89 |
| Oxygen at 500 m () | 157.6 | 190.1 | 81.0 | 0.40 | 0.54 | 0.68 | 1.0 | 0.85 |
| Aragonite Saturation State at 0 m | 2.97 | 2.75 | 0.85 | -0.29 | 0.26 | 0.39 | 1.06 | 0.97 |
| Lysocline Depth (m) | 1024 | 1407 | 679 | 0.56 | 0.63 | 0.84 | 1.04 | 0.81 |
| 3-D Alkalinity () | 2418.1 | 2418.1 | 44.2 | 0.0 | 0.45 | 0.45 | 1.15 | 0.92 |
| 3-D pre-industrial DIC () | 2299.8 | 2285.6 | 93.8 | -0.15 | 0.50 | 0.52 | 1.19 | 0.91 |
| 3-D Phosphate () | 2.09 | 2.09 | 0.67 | 0.00 | 0.68 | 0.68 | 1.28 | 0.85 |
| 3-D Oxygen () | 172.4 | 191.6 | 64.5 | 0.29 | 0.52 | 0.60 | 1.04 | 0.87 |
| 3-D AOU () | 146.9 | 129.3 | 93.2 | -0.26 | 0.54 | 0.60 | 1.05 | 0.86 |

Interactive Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Interactive
Comment

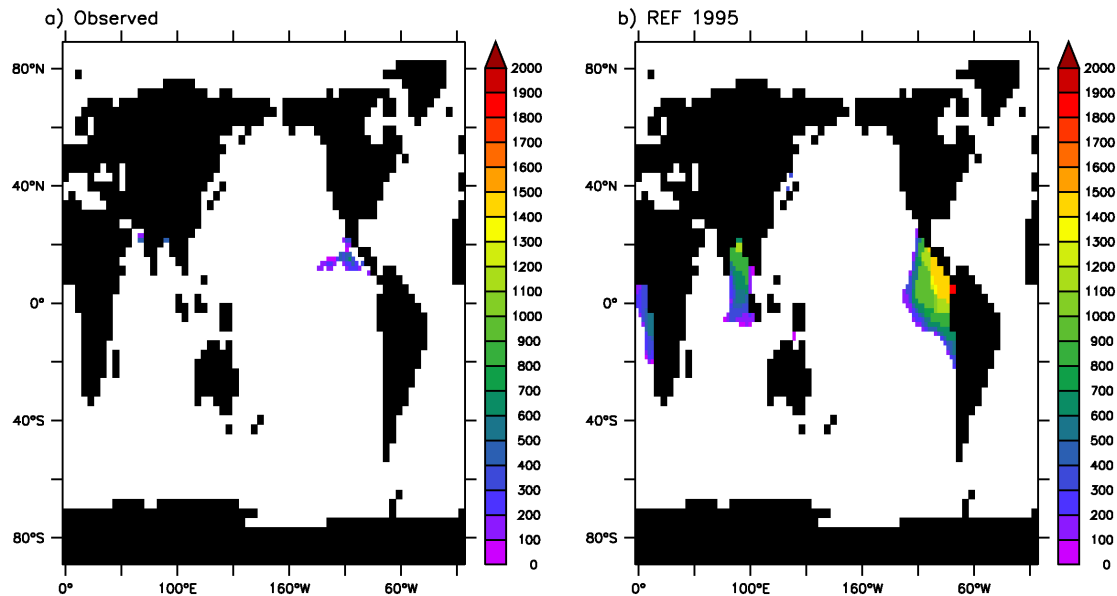


Fig. 1.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Interactive
Comment

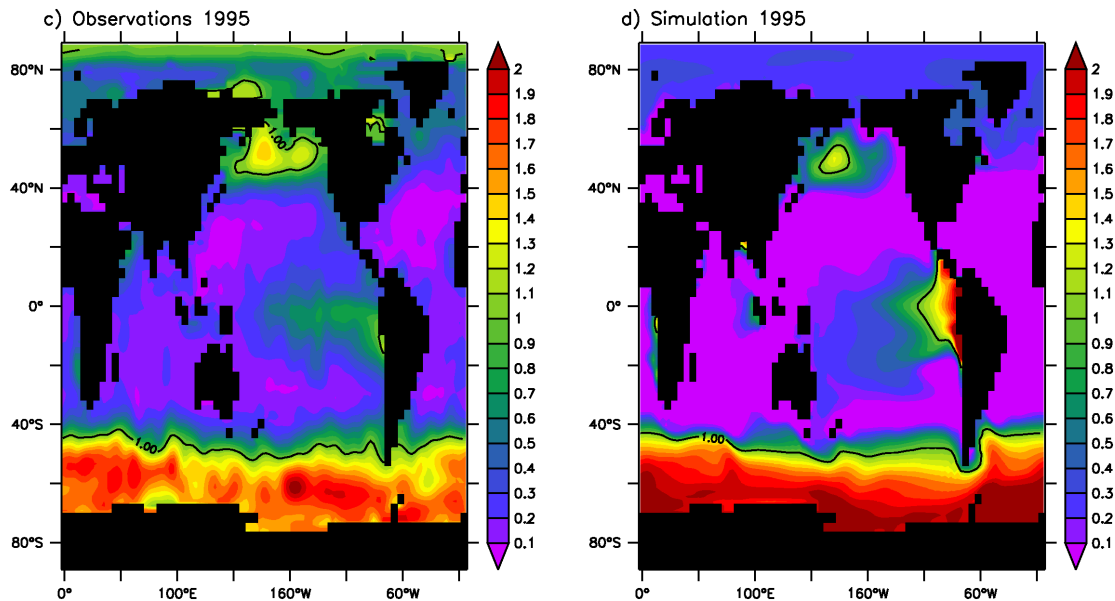


Fig. 2.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



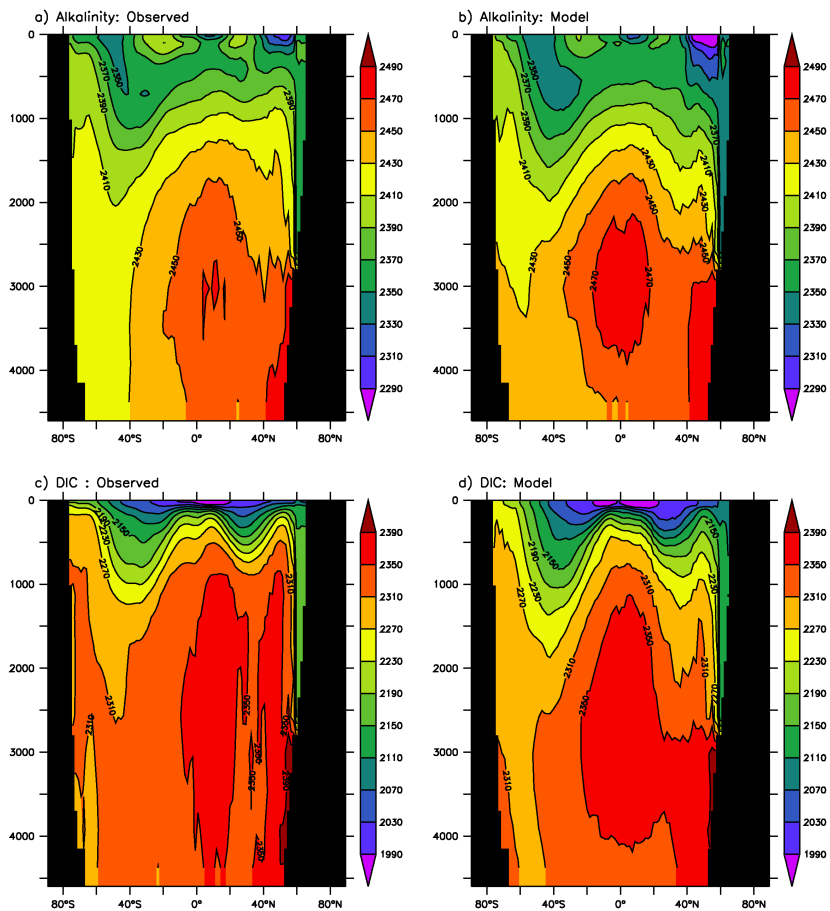


Fig. 3.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



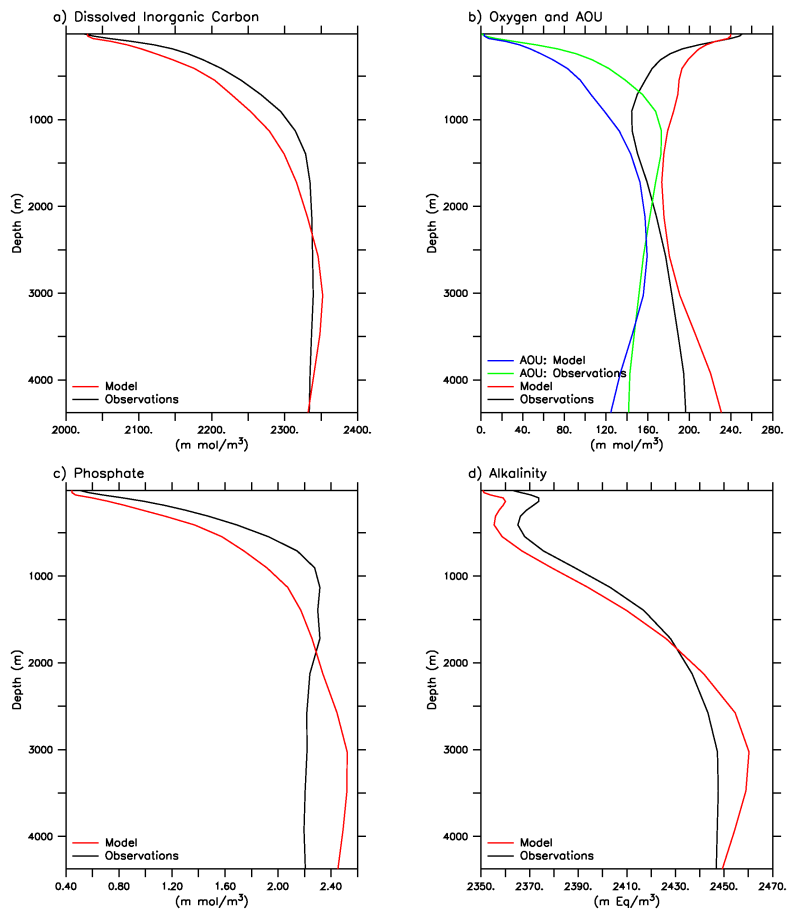


Fig. 4.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



Interactive
Comment

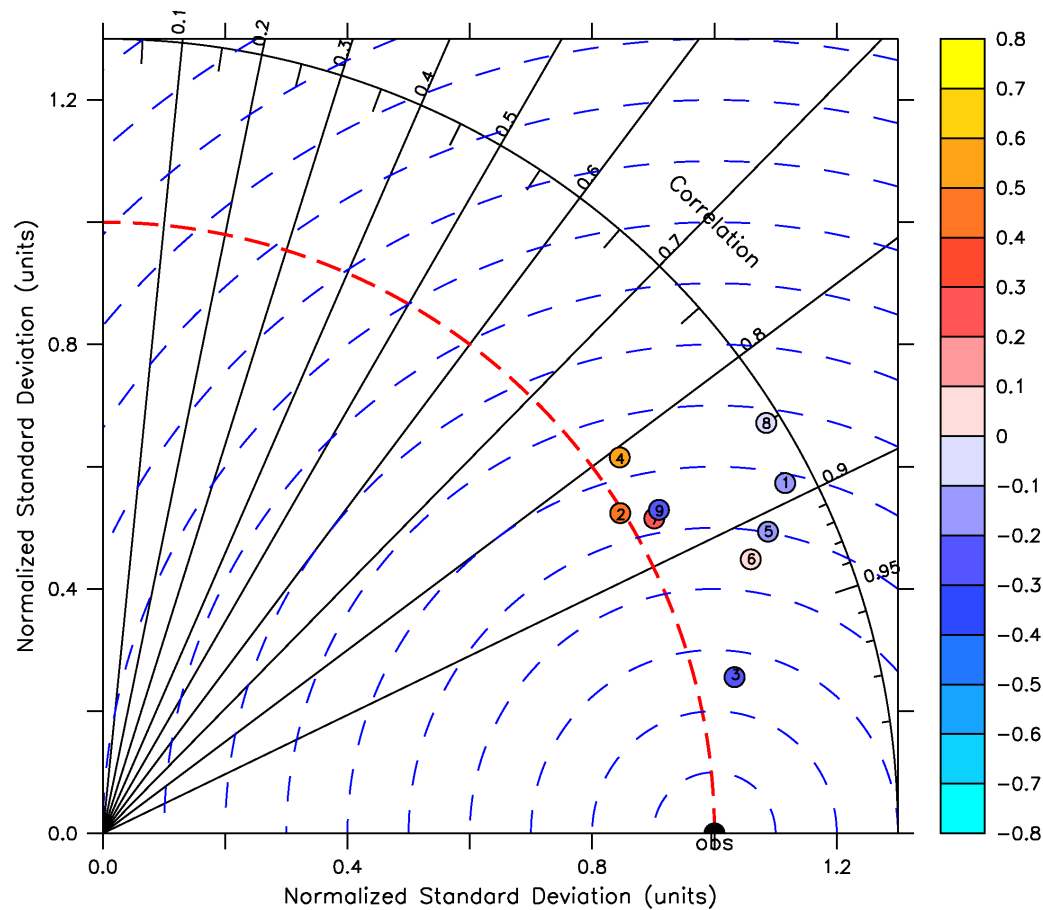


Fig. 5.

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

