



Figure A1. Cross-spectral coherence and phase estimates between $(-1 \times \text{June } 65\text{N})$ insolation) and the SPECMAP (panels a and c) and the HW04 (panels b and d) reconstructions of global ice volume for the last 750 kyr. A positive phase implies insolation variations lead dV/dt . The vertical bars denote the frequencies of the obliquity (2.5 cycles per 100 kyr), and climatic precession (4.3 and 5.3 cycles per 100 kyr). Shaded regions indicate approximate 95% confidence bounds on the phase. A periodogram estimate using a Hanning window with 20 degrees of freedom was used. 95% confidence estimates on the coherence (dashed line) and coherence and bandwidth ranges (blue cross) are shown in panels a and b. In panels c and d, the grey shaded region gives the 95% confidence estimates for the phase range. At higher frequencies the absence of coherence together with a noisy phase relationship suggests no connection between the records there, nor would one be expected.