

SUPPLEMENT

Figure 5. Wavelet time series analysis for yearly LBM outbreaks. a) The normalized time-series. b) Temporally-local wavelet power spectrum (dark red indicates the strongest periodicity while white indicates the weakest periodicity). c) Spatiotemporally-global wavelet spectrum. d) Time-series plot of spatial variance in outbreaks.

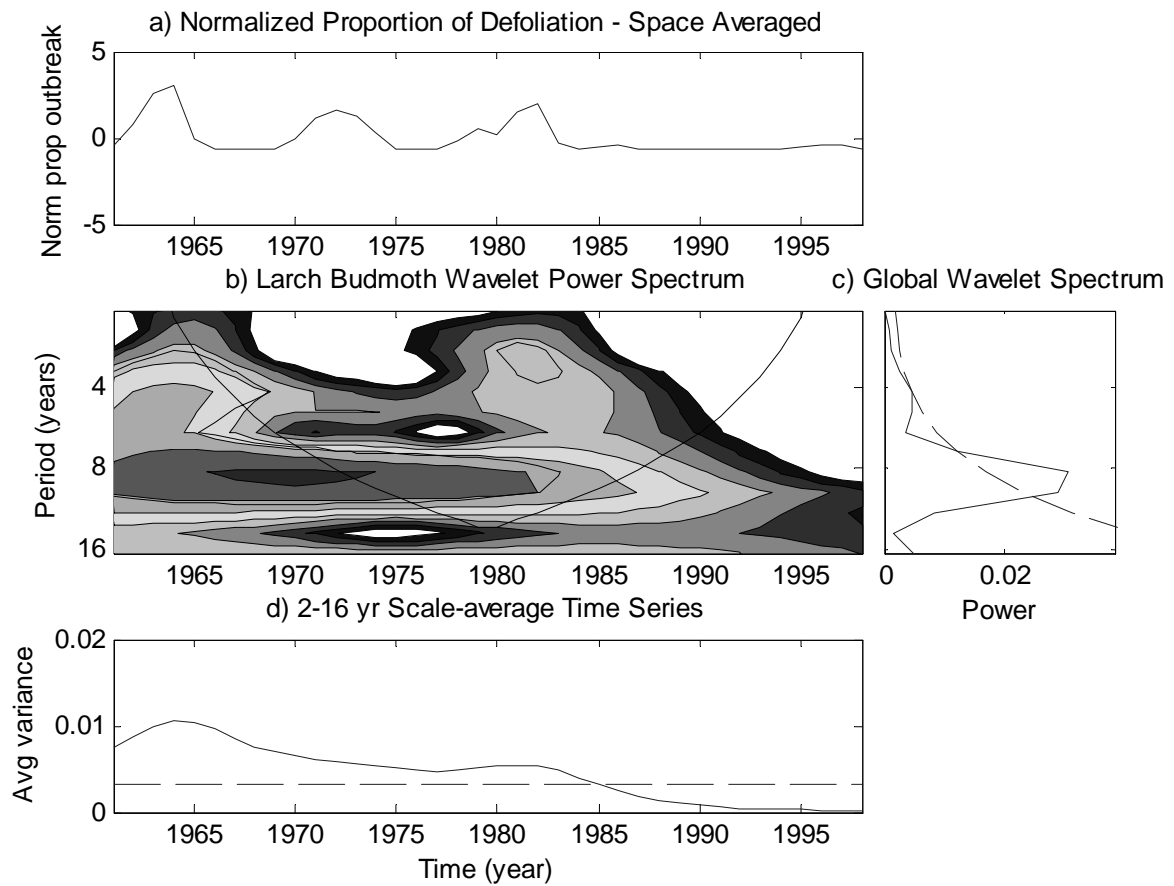


Figure 6. Relationship between the value of  $\alpha$  in the measure of connectivity and the  $r^2$  value of the correlation between connectivity and phase angle. The plot indicates the low sensitivity of the  $r^2$  to values of  $\alpha$  within the range of 15-60.

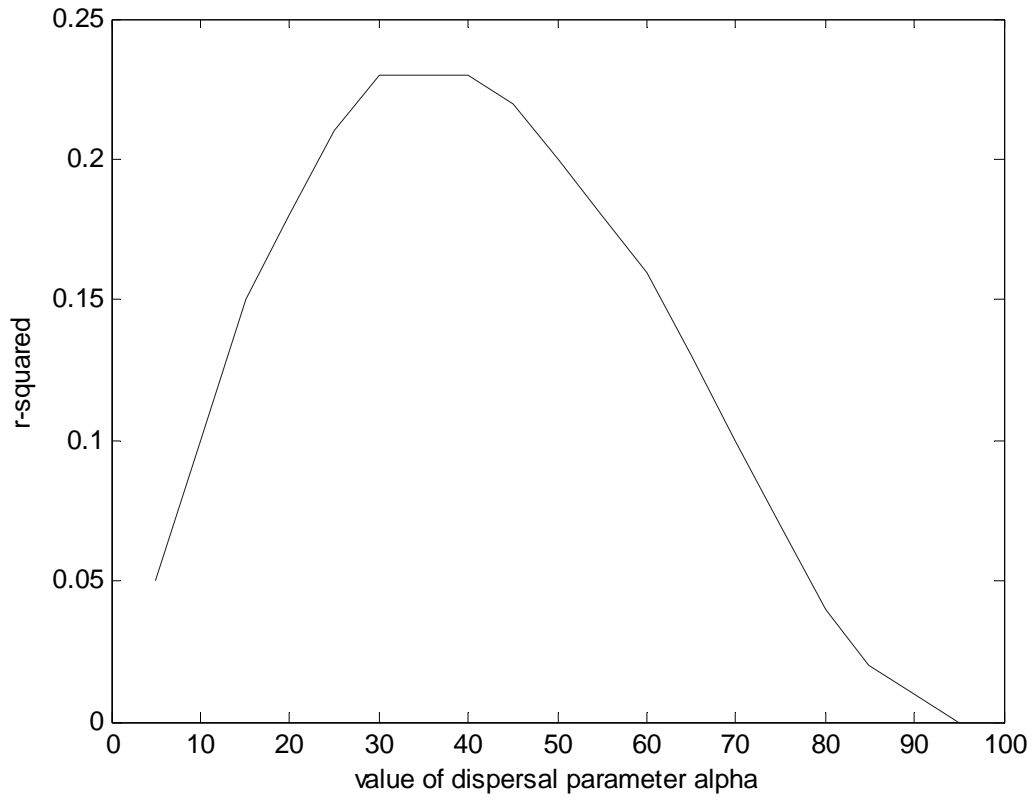


Figure 7. Mean phase angles relative to distance from the southwestern corner of larch budmoth habitat in the Alps. Graph 1 is the average phase angle from 1961-1998. Graphs 2-5 are mean phase angles from 1961-1968, 1969-1976, 1977-1984, and 1985-1992, respectively. Note locations that did not have an outbreak during the specified period were excluded from the analyses.

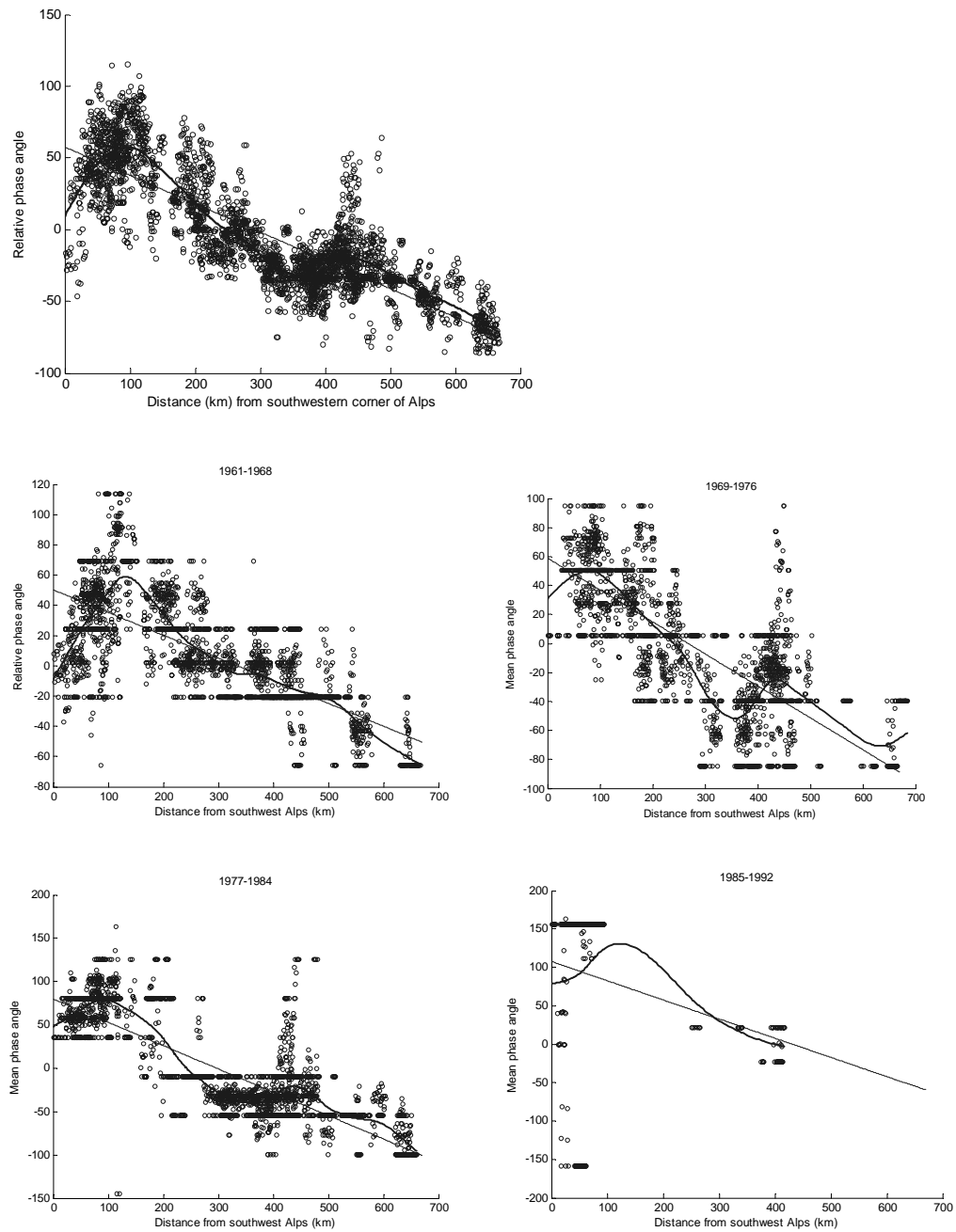


Figure 8. Distributions of theoretical patches with highest density in the center (A) and in the lower left corner (B). Simulations of tri-trophic LBM models with reflecting boundaries on these two distributions revealed a negative relationship between connectivity and mean phase angle in both habitat distributions (C and D correspond to A and B, respectively).

