



Figure 12. Squared coherence and phase function between (a) water temperature and c_{660} at 10-m depth, (b) c_{660} at 10- and 50-m depths, (c) water temperature and c_{660} at 50-m depth. These are estimates for the 10-day subset of the MLML data shown in Figure 9. Dashed line is a 95% cutoff value.

were able to simulate a similar pattern of intense diel changes with a 1-D mixed layer model. A full description of the model and numerical values of the parameters used for the calculations are given by *Stramska and Dickey* [1994]. The model was forced with the boundary conditions estimated from the meteorological and mooring data on days 125-137. The temperature and Chl *a* time series from this model simulation are shown in Figure 13. The behavior of the model resembles that of the experimental time series, which plausibly suggests that the variability of the biomass concentration may be attributed in large part to local processes. The model estimate of the phytoplankton export out of the euphotic waters (taken here to be 50 m deep) is shown in the bottom panel of the Figure 13. This is presented as the ratio of the net Chl *a* flux out of the euphotic waters to the total production in the water column,

both integrated over a day. The results shown in Figure 13 indicate the great importance of the increased mixing for the removing of phytoplankton from the surface. Because of the simplicity of the biological part of the model and the lack of in situ measurements for the biological parameters, the quantitative interpretation of these results must be done with caution. However, because the model did not take into account cell sinking, it underestimated rather than overestimated total export of the biomass to deep waters.

What is the fate of the cells which were mixed to deeper waters? According to the interpretation of some previous modeling results [e.g., *Woods and Onken*, 1982; *Lande and Wood*, 1987], the phytoplankton that were mixed down by the nighttime convection may be separated from the mixed layer by the daily thermocline. Cells would accumulate in a deeper layer