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Sea surface temperature - Diurnal warming and SST fronts

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Diurnal warming tends to "cap" the upper ocean with a very thin (<1m) layer of relatively warmer water. The spatial distribution of these warm patches is in general determined by that of the atmosphere; i.e., diurnal warming regions are imprinted on the ocean surface by the atmosphere determined primarily by cloud cover and wind speed. This means that sea surface temperature (SST) gradients in these regions may be influenced by the atmosphere. In previous work we examined, for the Mediterranean in July, the degree to which SST fronts and gradients that exist at 500 local sun time (LST) are obliterated by diurnal warming and the degree to which SST fronts and gradients are created by diurnal warming. In this study, we extend these results to other months in the Mediterranean and to other regions in the world ocean. In particular, we compare the July Mediterranean results with those of January in the Mediterranean and those of July in the North Atlantic between the westerlies and the easterlies, a region that is relatively cloud free hence provides a reasonable statistical base. The objective of this work is to determine the generality of the results that we found in the previous work.