

**SMBO OUTREACH
TEACHER'S WORKSHOP, NOVEMBER 5, 2005**

TASK A: DIURNAL VARIATIONS

I.) In coastal areas, diurnal variations in atmospheric and oceanographic parameters are frequently observed. A typical meteorological phenomena in these regions is the land-sea breeze.

- a.) Produce a time-series plot of wind direction between July 18 and July 23 2001 (meteorological data set). Discuss during what time of the day the wind is blowing mostly off- or onshore. It might be helpful to choose one to three days out of this period and replot them as single days, to examine their diurnal cycle in greater detail.
- b.) Produce a time-series plot of windspeed for the same time period (meteorological data set). Estimate the maximum wind speed associated with the land-breeze.
- c.) What do you think drives the cycle of land and sea breeze? See also II.
- d.) What do you think is the effect of land sea breeze on cloud formation? Can you think of possible effects that connect land sea breeze to, e.g., air pollution?

II) Particularly during summer, high solar radiation can lead to an increase in air and sea surface temperatures (SST).

- a.) Produce a time-series plot of air temperature between July 18 and July 23 2001 (meteorological data set). Estimate the diurnal variations in air temperature, and check out at what time of the day the maximum is reached.
- b.) Produce a time-series plot of sea surface temperature between July 18 and July 23 2001 (CTD data set). Estimate the diurnal variations in sea surface temperature, and compare the plot with the one for air temperatures. Can you see in comparing these plots what time the land breeze should occur, and does it fit with the results from I ?