Both the BTM and HALE-ALOHA mooring time series programs have documented passages of mesoscale features with high nutrient and phytoplankton concentrations. For example, BTM time series (Figures 5 and 6) indicate 1) the passage of a major eddy and its impact on nutrients and phytoplankton biomass in July 1995 and 2) upper ocean response to Hurricane Felix which passed over the BTM in August 1995 (Dickey et al., 1998c). Interestingly, the July 1995 eddy was a "mode water" or second baroclinic mode eddy whose surface expression in satellite altimetry was an elevation (see McGillicuddy, 2001) implying an anti-cyclonic feature (belying the subsurface cyclonic feature). However, isotherms and isopleths of nutrients were uplifted at the eddy's center. The direct BTM measurements of nitrate and chlorophyll (Figure 6) indicate that this was perhaps the most productive eddy, which has passed the BATS, BTM, and OFP sites since initiation of the programs. A species succession was noted as diatoms dominated the phytoplankton community of the interior of the eddy. Recently, OFP data sets have been analyzed in conjunction with BTM data sets for the late fall to early winter period of 1996 (Conte et al., 2002). These records (indicated as Fall Bloom in 1996 in Figure 5) indicate the passage of a warm mesoscale feature that was accompanied by elevated chlorophyll and high and rapid mass flux to depth as inferred from BTM and OFP sediment trap data. Species succession was also recorded in the deep sediment trap. Similar time series collected by the HALE-ALOHA mooring in March 1997 have documented an important eddy bloom event in the subtropical North Pacific off Hawaii at the HOT site (Letelier et al., 2000). The examples presented by the BTM and HALE-ALOHA time series are not atypical and clearly emphasize the danger in over-reliance upon satellite derived products and the need for comprehensive *in situ* and satellite-based biogeochemical and physical data sets on a multiplicity of time and space scales.

3.2 ARABIAN SEA

JGOFS process studies were conducted in the Arabian Sea during the period 1994-1996 (Deep-Sea Research II, vols. 45(10-11), 46(3-4, 8-9), 47(7-8)). The Arabian Sea is an especially interesting study region. Prior to the JGOFS field programs, it was unknown whether the Arabian Sea was a source or sink of CO_2, and even the upper ocean physical and biogeochemical responses to monsoonal atmospheric forcing were undocumented. Interestingly, mesoscale processes turned out to be very important for this system, like the oligotrophic regions described in the previous subsection. The various Arabian Sea studies utilized ships (underway sampling (with ADCP current and acoustic backscatter data),