Ecological conditions in coastal marshes range from marine to nearly terrestrial. A change in controlling factors, such as water salinity or tidal and wave energy, will cause a displacement in marsh zonation. Generally, coastal marshes are divided into low and high marsh based on their elevation relative to sea level (Redfield, 1972). Since marsh plants are attuned to particular mean water levels, a rise in sea level will shift the distribution of plant species proportionally landward. Beyond this response to variation in relative sea level, however, a more complex set of responses may occur, tied to the type of marsh considered. Thus, anticipated changes in coastal marshes must be assessed within the context of the basic marsh types that characterize the coasts. With respect to the future effects of a rise in sea level, coastal marshes may be broadly divided into backbarrier marshes, estuarine (brackish) marshes, and tidal freshwater marshes (National Research Council, 1987b).

Backbarrier marshes occur along the bayward sides of barrier systems of the Atlantic and Gulf coasts. Studies (e.g. Zaremba and Leatherman, 1986) show that these marshes are formed and destroyed rapidly in such dynamic environments. Maintenance of these marshes therefore appears to be more a function of barrier stability than of the pace of upward growth of the marsh surface, since sediment supplies are ample (Letzch and Frey, 1980). For barriers rapidly migrating landward, there may be a net decline in backbarrier marshes. This has been found to be the case at Assateague Island, Maryland, where sediment blockage by jetties has greatly increased the rate of landward barrier migration (Leatherman, 1983), and the same qualitative result could be anticipated as a result of accelerated sea level rise (National Research Council, 1987b).

Estuarine marshes embrace a wide variety of vegetative species in diverse geologic settings where salinities are less than approximately 30 ppt. These marshes, comprising integral components of major estuarine systems such as the Chesapeake Bay, occur in areas of quiescent waters and ample sediment supply. Accretionary budgets differ widely, as seen from Table 10.1 (Stevenson _et al._, 1986).

The data of Table 10.1 are plotted in Fig. 10.5 in terms of mean marsh accretion rate against relative sea level rise rate, both in mm/yr. It is noteworthy that with the exception of the three data points from Louisiana and