

In the rock record, bioturbation appears as an irregular mottling of the rock (either in color and/or in texture) and produces rubbly or bumpy weathered surfaces. Depending on the extent to which organisms reworked the sediment, primary sedimentary structures such as lamination may be entirely obliterated from the rock. Such rocks may have a mottled or even homogeneous structure -- many massively bedded muds and sands in the stratigraphic record probably owe their lack of lamination to the activities of burrowing organisms

Bioturbation of sediment is most complete in environments having low rates of sediment accumulation, giving organisms time to rework the sediment, and in quiet water environments where waves and currents capable of destroying biogenic structures are infrequent. Figure 19 illustrates progressive changes in the proportions of biogenic and physical sedimentary structures along an onshore-offshore gradient in wave and current energy. In onshore, high energy settings, physical reworking of the seafloor constantly erases any tracks and trails and burrows, whereas in offshore, deeper water settings organisms can rework the sediment with only occasional interruptions by stormy conditions.

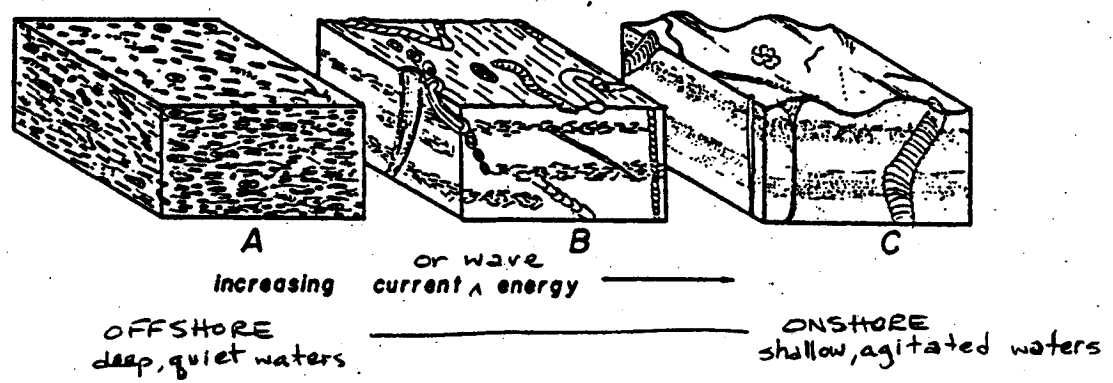


Figure 19. Onshore-offshore gradient in the relative proportions of physical and biogenic sedimentary structures, reflecting variation in the frequency and energy of seafloor reworking by waves and currents. Physical bedding can be totally obliterated in the quietest water settings; it is replaced by a mottled sedimentary fabric (illustrated above) or by a totally homogeneous and structureless sediment. Adapted from Howard (1966).