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Estuarine and nearshore sediments: biogeochemical hot spots in the coastal zone

Through the microbial communities they harbor, estuarine and nearshore sediments function as biocatalytical converters at the land ocean interface. Light, temperature and salinity generate reaction zones characterized by rapid changes and steep gradients. Tides, waves and currents modulate transport, thereby imposing additional temporal patterns of different distinct frequencies on biological behavior and biogeochemical reactions. These patterns provide numerous niches for life forms with different requirements in close proximity. The diversity enhances resilience, but global trends signal profound influences of the human activities in the coastal zone. This presentation outlines some of the mechanisms that control the functioning of estuarine and nearshore ecosystems with emphasis on the benthic environment.