Factors	Temperate estuaries	Tropical estuaries
Climate [a]	• Season: 4 seasons • Light: Variable • Temperature: Variable	• Two seasons: dry and rainy season • Light: Higher and relative constant • Temperature: Higher and relative constant
Hydrology [a]	• Discharge: More stable • Flushing capacity: More stable • Less mangrove system in temperate estuaries	• Discharge: Large seasonal variation • Flushing capacity: High variation • The strong impact of mangroves in downstream
Nutrient loads [a]	• Stable or decrease in recent years	• Increase by urbanization
Variables in water column [a]	• Silica: Can be limiting for production • Turbidity: more stable	• Silica: Less likely to limit primary production • Turbidity: high seasonal variation
Variables in bottom sediments [a]	• High organic carbon content	• Higher organic carbon and carbonate • High concentration of PO_4^{3-}
Seawater [a]	• Variable concentrations because of seasonal biological activities	• Seawater concentrations are more stable due to constant input of insolation (light, temperature) than temperate
Phytoplankton [a]	• Easier shift to non-silicious phytoplankton	• The dominant phytoplankton group is diatom
Biogeochemical process	• Reaction rates are lower [a, b] • There is a limitation of production in the cold period [b] • Nitrification is no longer a major factor because of the decrease of NH4 [d]	• Reaction rates: Higher biological uptake and excretion [a] • No temperature limitation for production [b] • Dominated by OM oxidation, nitrification, deposition [f,g,h]
Nutrient export to coastal zone, ocean	• Low nutrient retention rate. 75% of nutrients can be exported to the ocean. Less seasonal variation [c] • Less than 10% of nutrients were retained/buried in sediment [b]	• Similarly, retention of nutrients is low in the rainy season but much higher in the dry season, thus less nutrient export [f] • Higher phosphate retention (higher sorption), but small nitrogen burial (around 2.5%) in sediment [b]
Assimilation capacity	• Net removal of N and Si, but a source of P because of P desorption [c] • 30–65% N can be removed by physical, biological processes in estuaries [d]	• Act as a sink for OC, NH_4^+, PO_4^{3-} but a source for NO_3^- [g] • Higher N removal because of higher denitrification rate [b] • E.g., 50%, 37% and 11% C, N, P of external sources were removed by Pearl River in 1999 [g]
Climate change [b]	• Four seasons may become dry and wet seasons	• Greater contrasting seasonal behavior
a: Eyre et al., 1999 b: Tappin 2002	c: Romero et al., 2019 d: Nixon et al. 1996	e: McKee et al., 1999 f: Le et al., 2010, Trinh et al., 2010 g: Hu et al., 2009, h: Yu et al. 2019