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Round: 10B

1. Human populations benefit from the ecosystem services provided by river deltas. Identify three (3) benefits for humans.

Accept any 3 of the following, 2 pts each, 6 pts total:

- *Deltas are areas of nutrient build-up, creating very fertile soils for agriculture*

- *Due to the high production ability of deltas, they can act as carbon sinks that are essential in combatting climate change.*

- *Deltas offer highly productive finfish and shellfish fisheries*

- *Deltas can act as storm buffers OR disturbance regulators, protecting communities from the destructive forces of hurricanes and other ocean storms (flooding, etc.)*

- *Deltas offer recreational value, with opportunities for boaters, wildlife viewing and recreational fishing.*

- *Large deltas can help protect against saltwater intrusion into freshwater sources as sea levels rise.*

- *Deltas can absorb agricultural runoff, preventing elevated levels of phosphorus and nitrogen from creating oceanic "dead zones" which harm marine fisheries.*

- *Deltas can provide a platform for wetland-based wastewater treatment.*

- *Deltas provide nursery habitat for juveniles of (commercially important) species.*

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2. Name four (4) human-induced changes that have impacted deltas worldwide and describe the impact of each change.

Any four (4) of the following (2 pts each, 8 pts total):

- *Increase in greenhouse gases,(1 pt) leading to global warming which leads to eustatic sea level rise (1 pt) due to ice melting and sea water expansion.*

- *Dam construction (1 pt) decreases the amount of sediment delivery to deltas, (1 pt) trapping the sediment in the resultant reservoirs.*

- *Artificial levees/shoreline armoring (1 pt) decrease sediment supply to deltas which forces sediment into the ocean. (1 pt)*

- *Resource extraction (such as oil and water), (1 pt) increase delta plain compaction (1 pt) which leads to sea level rise.*

- *Pollution from agricultural runoff (1 pt) resulting in eutrophication or dead-zones or hypoxia (1 pt)*

- *Extraction of water upstream (1 pt) reduces delivery of water to a delta (1 pt).*

3. Name three (3) U.S. rivers that flow into the Gulf of Mexico whose deltas display some or all of these impacts.

Any three (3) of the following (2 pts each, 6 points total):

Mississippi River
Atchafalaya River
Mobile River
Tombigbee River
Tallapoosa River