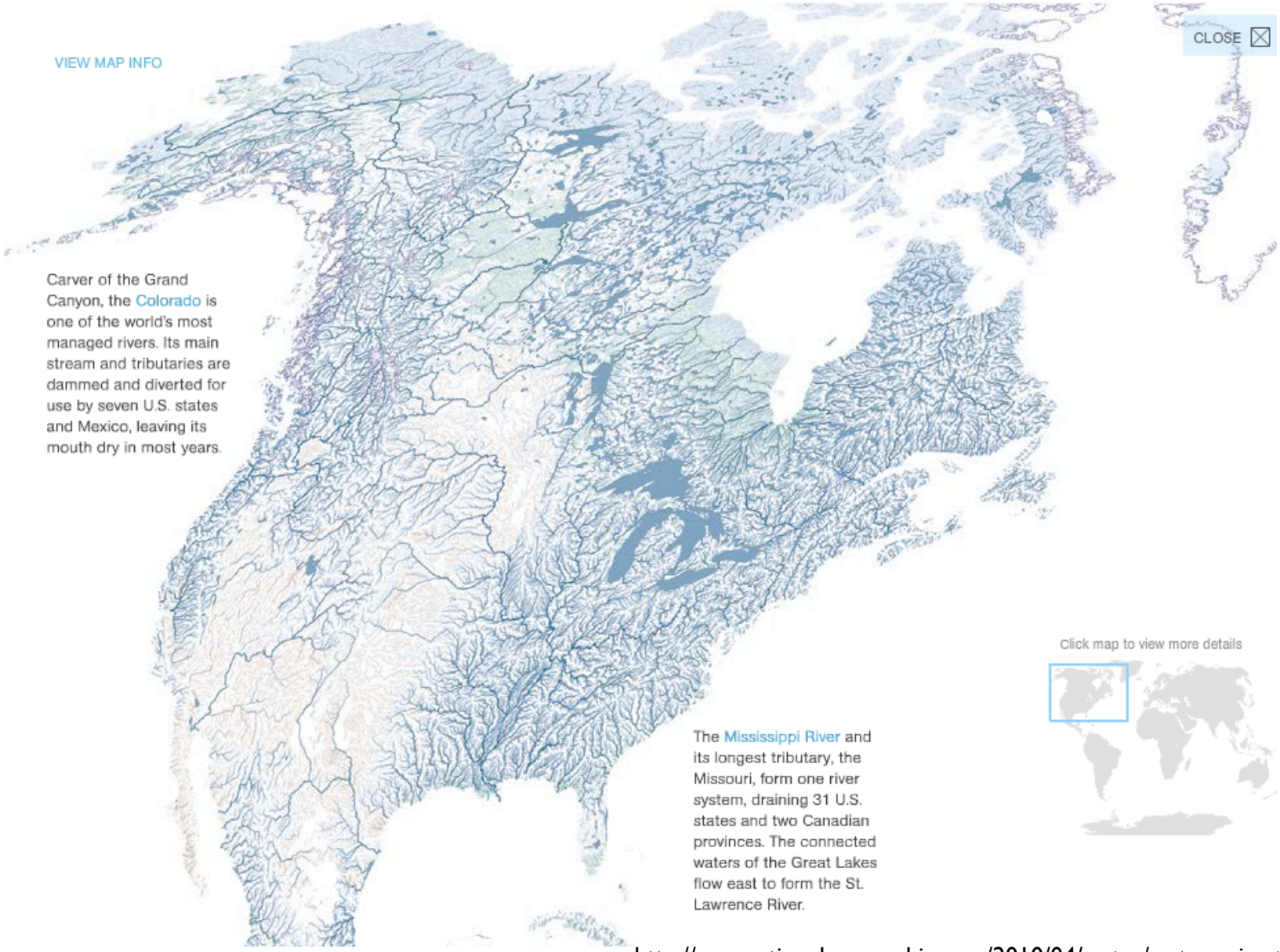
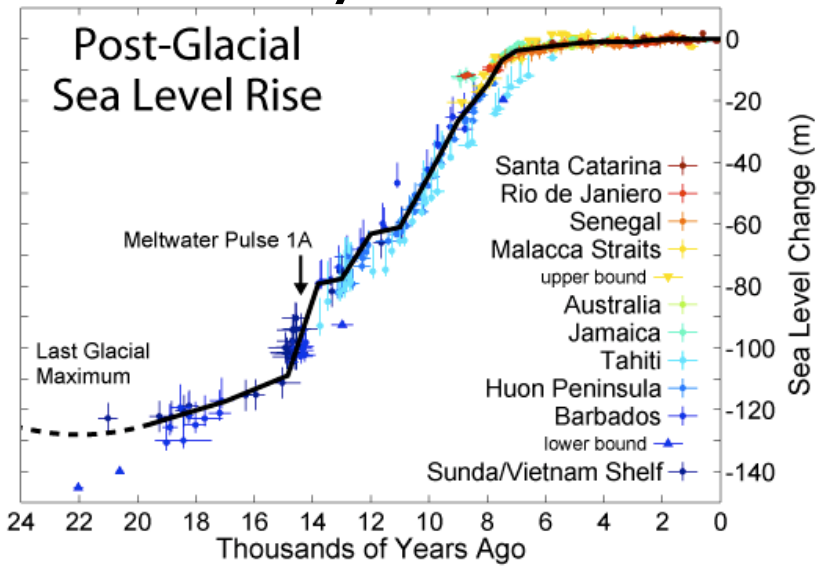
There are a lot of estuaries



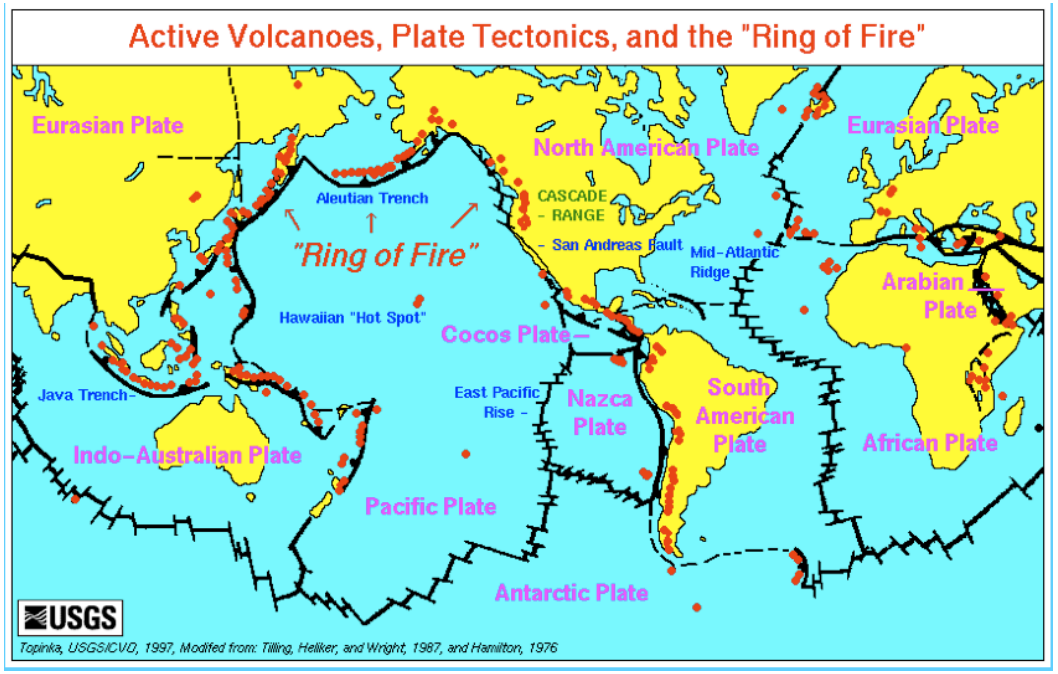
http://ngm.nationalgeographic.com/2010/04/water/water-animation

1. Drowned river valleys

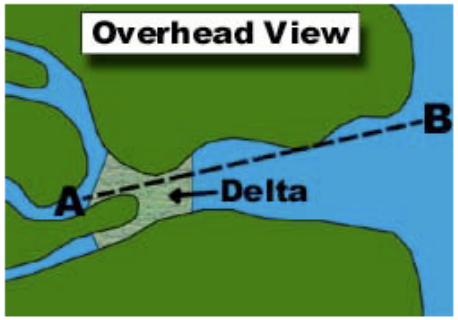


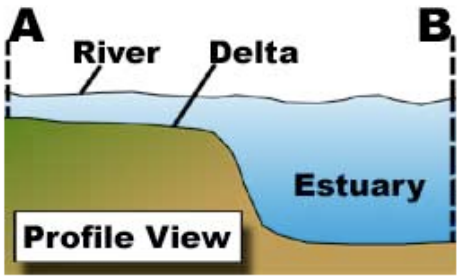
Albion R. Est., CA

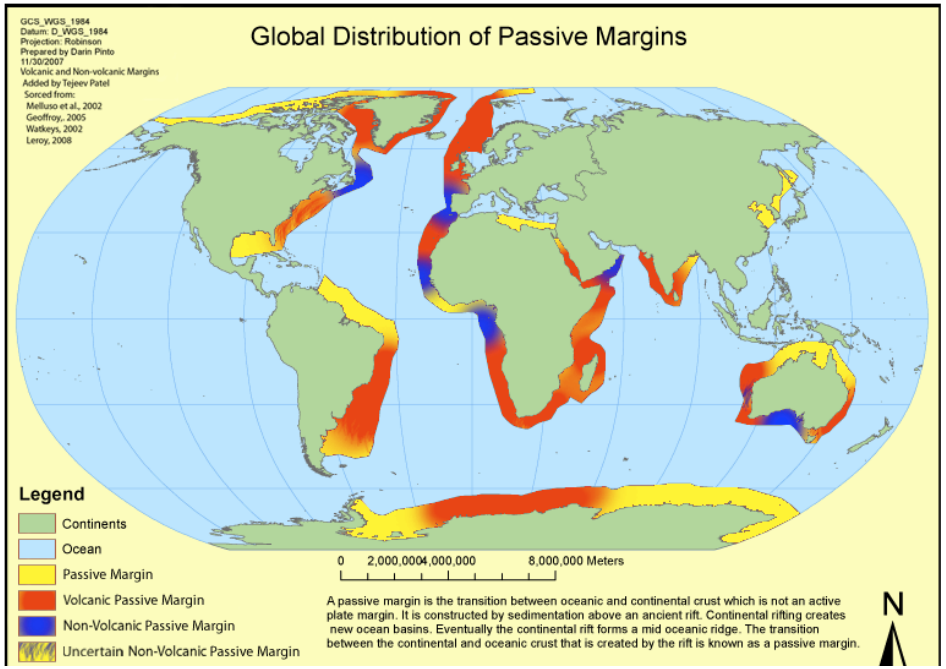
http://www.gualalariver.org/photo/albion-aerial.jpg

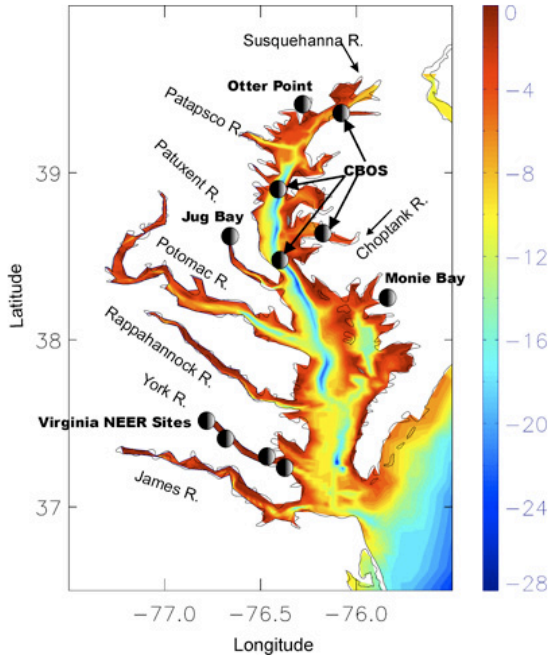


1. **Coastal Plain Estuaries** are formed by the sea level rising and filling an existing river valley. Examples of this are the Chesapeake Bay in Maryland and the harbor in Charleston, South Carolina

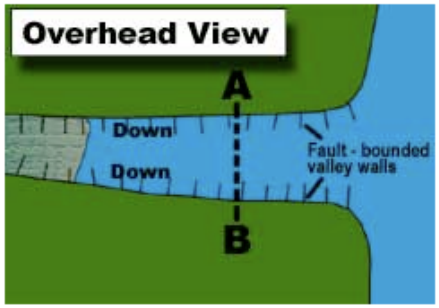


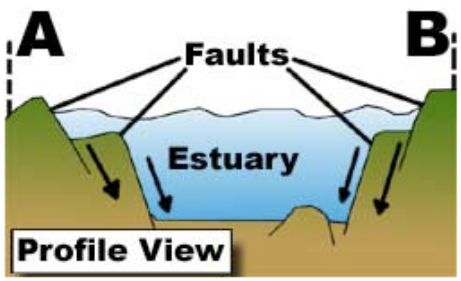


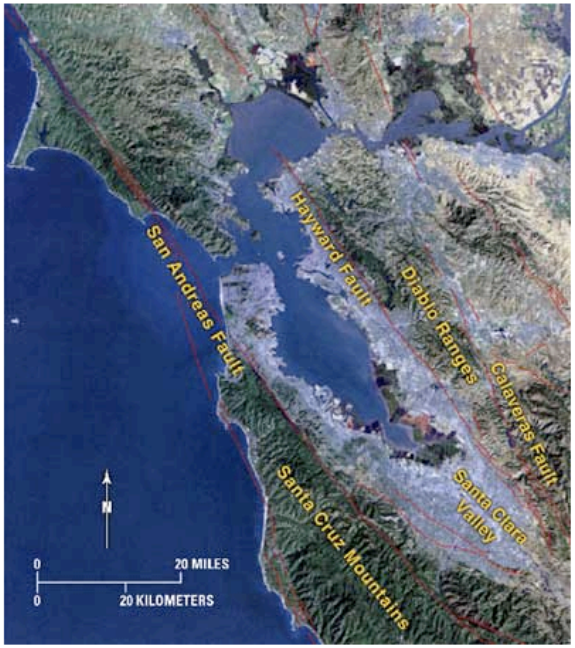




2. **Tectonic Estuaries** are caused by the folding or faulting of land surfaces. These estuaries are found along major fault lines, like the San Francisco Bay area in California.



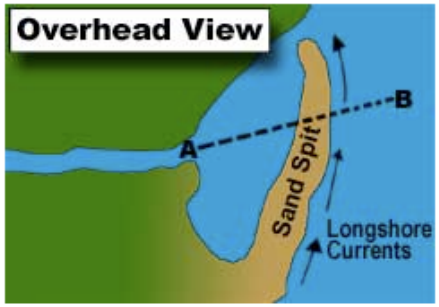


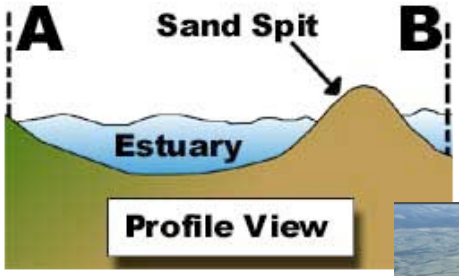


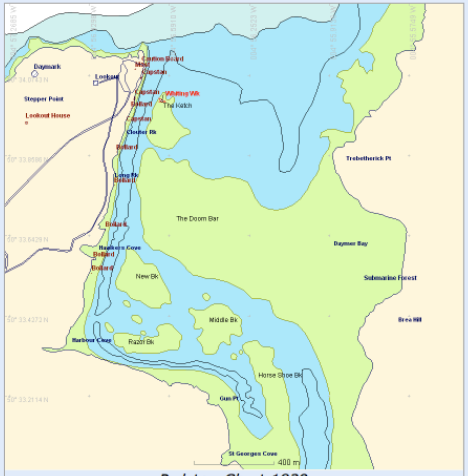
Satellite image of San Francisco Bay area showing the major faults and geographic features.

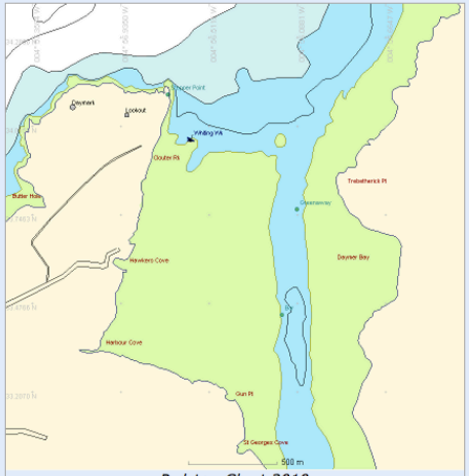
Source: ***Geology of the Golden Gate Headlands*** **by Elder, W., (2001). In: Stoffer, Philip W. and Gordon, Leslie C. 2001 (eds.). Geology and Natural History of the San Francisco Bay Area, A Field-Trip Guidebook. U.S. Geological Survey, Bulletin 2188. Field Trip 3, pp. 61-86. (Fig. 3.1)**

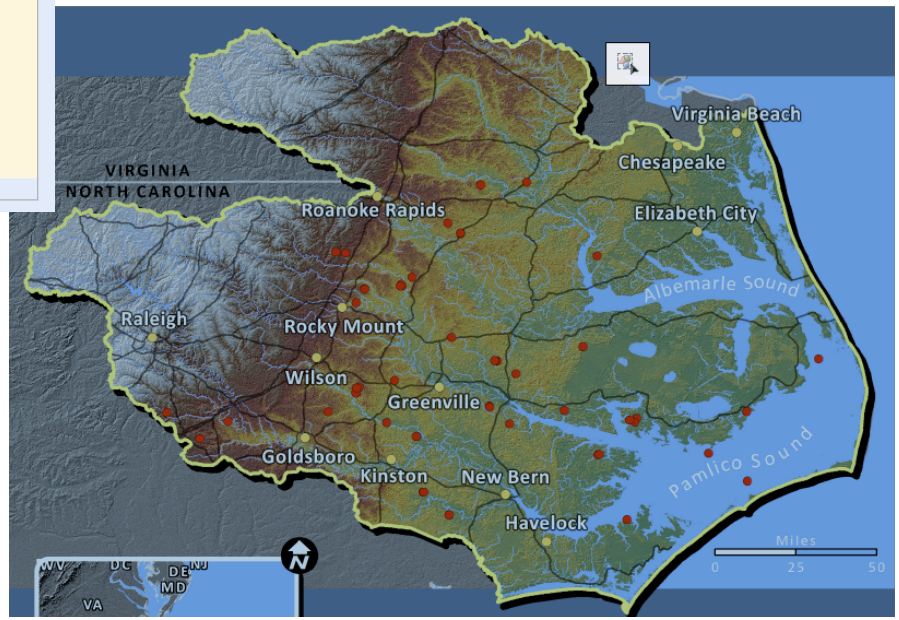
3. **Bar-built Estuaries** form when a shallow lagoon or bay is protected from the ocean by a sand bar or barrier island. Examples of these are found along the Eastern Seaboard and the Gulf Coast of North America.



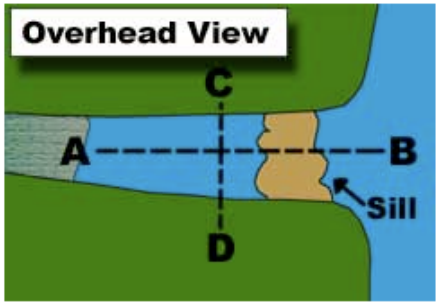


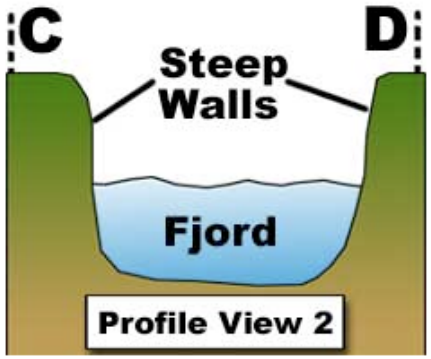

Padstow Chart 1839


Padstow Chart 2010



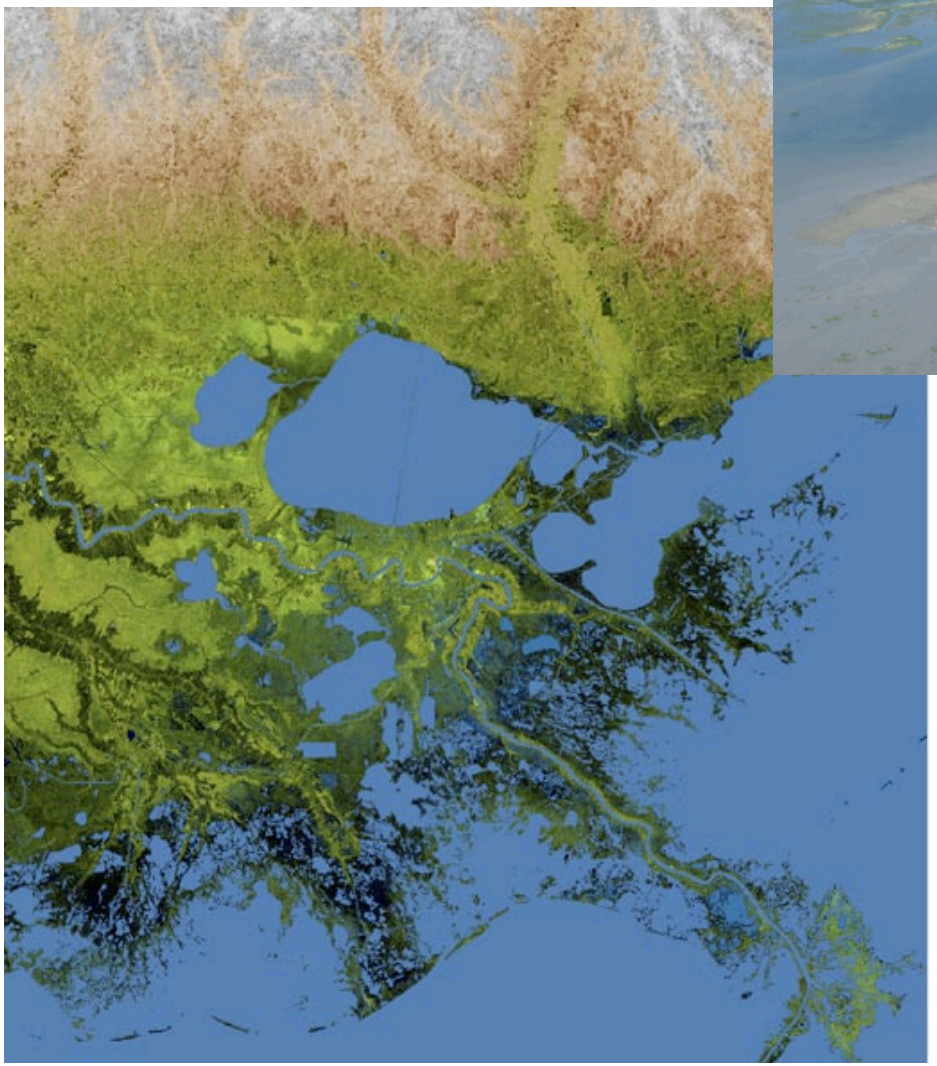
4. **Fjords** are U-shaped valleys formed by glacial action activity, like northern Europe, Alaska and Canada.



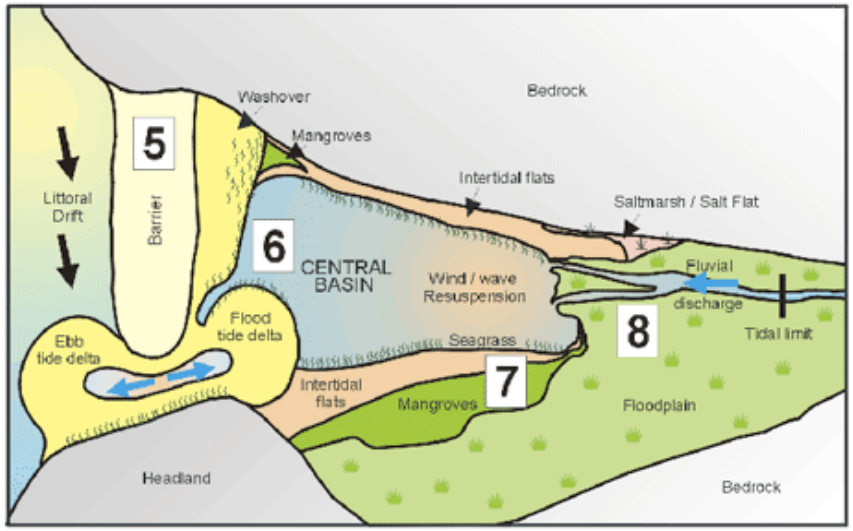



College Fjord Tidal Glaciers

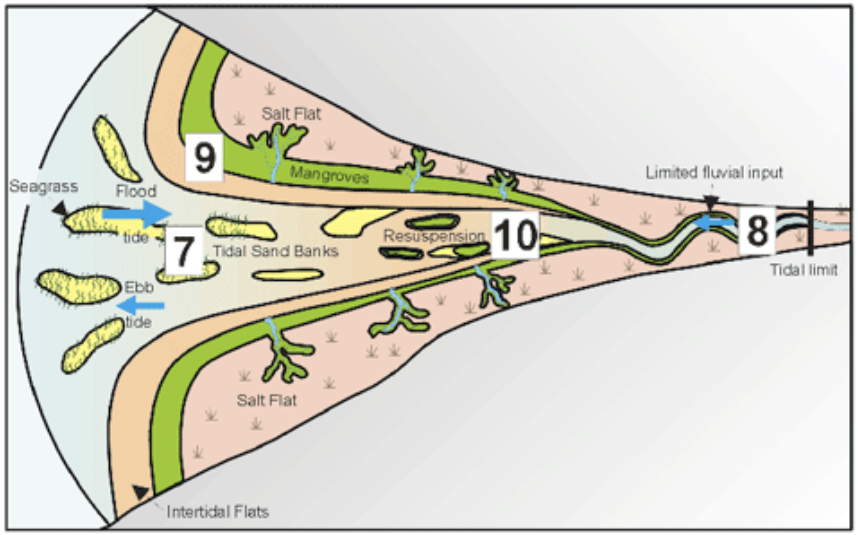
Mississippi River estuary



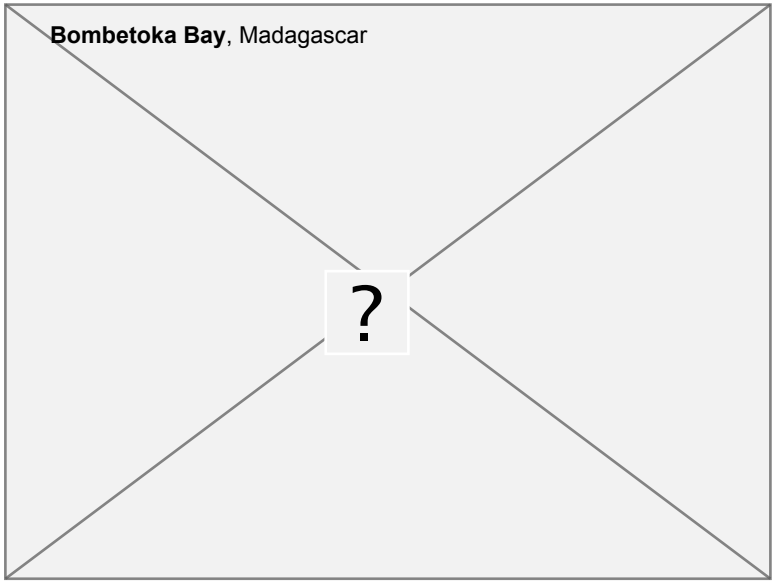
Variations on the theme
Modifying the mixing basin



Wave-dominated Estuaries



Tide-dominated Estuaries



Roughness

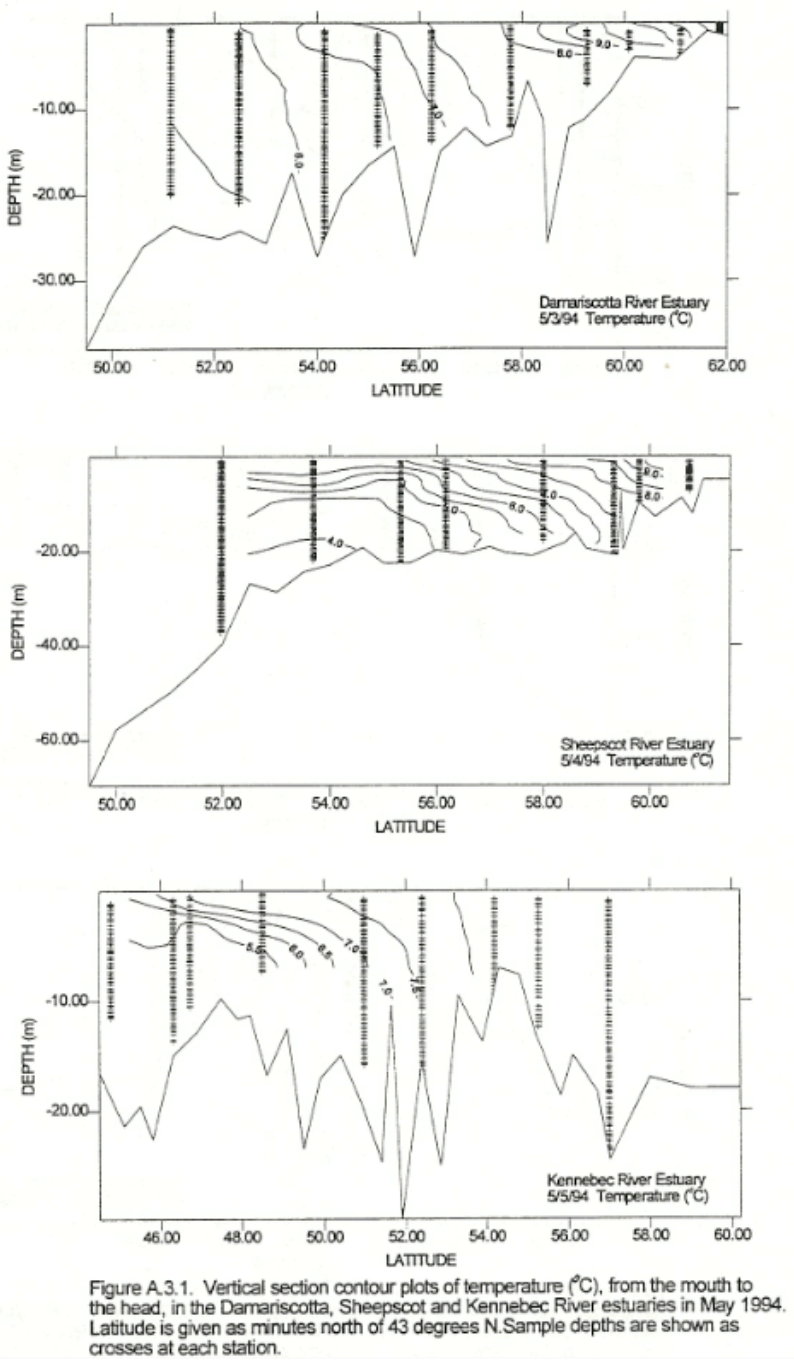


Figure A.3.1. Vertical section contour plots of temperature (°C), from the mouth to the head, in the Damariscotta, Sheepscot and Kennebec River estuaries in May 1994. Latitude is given as minutes north of 43 degrees N.Sample depths are shown as crosses at each station.

Summary of morphological features

1. Shape
2. Size
3. Depth
4. Roughness

Describe genesis of estuary

Image ID: DW0277
Dartmouth, on the banks of the estuary of River Dart, Devon, England
Photo by: Dae Sasitorn

Image ID: DW2451
The Montrose Basin, part of the estuary of the South Esk forming a tidal basin near to the town of Montrose, Angus, Lowlands, Scotland
Photo by: Adrian Warren