

# Rates and styles of Lake Powell delta migration on the Colorado and San Juan Rivers

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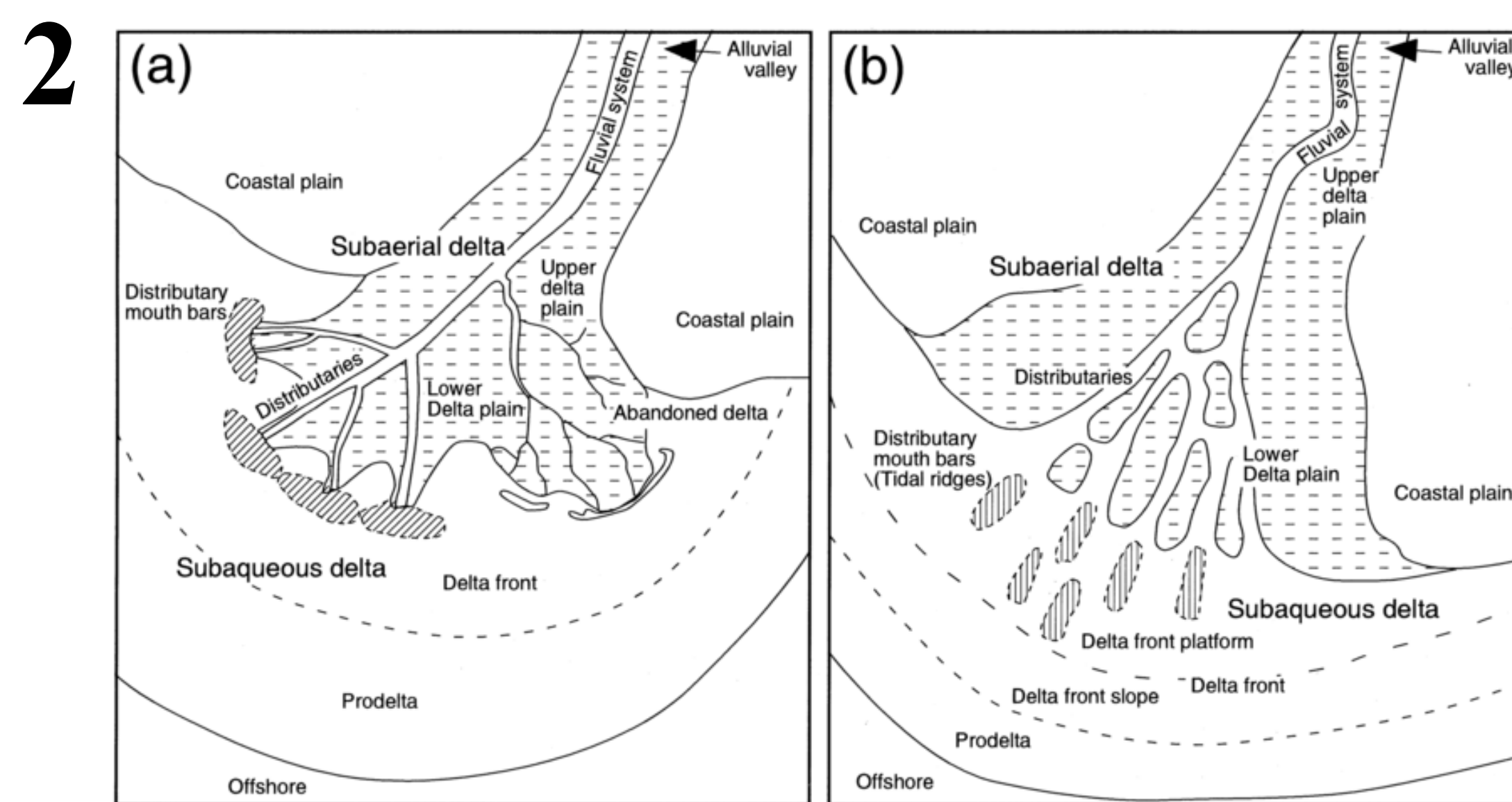
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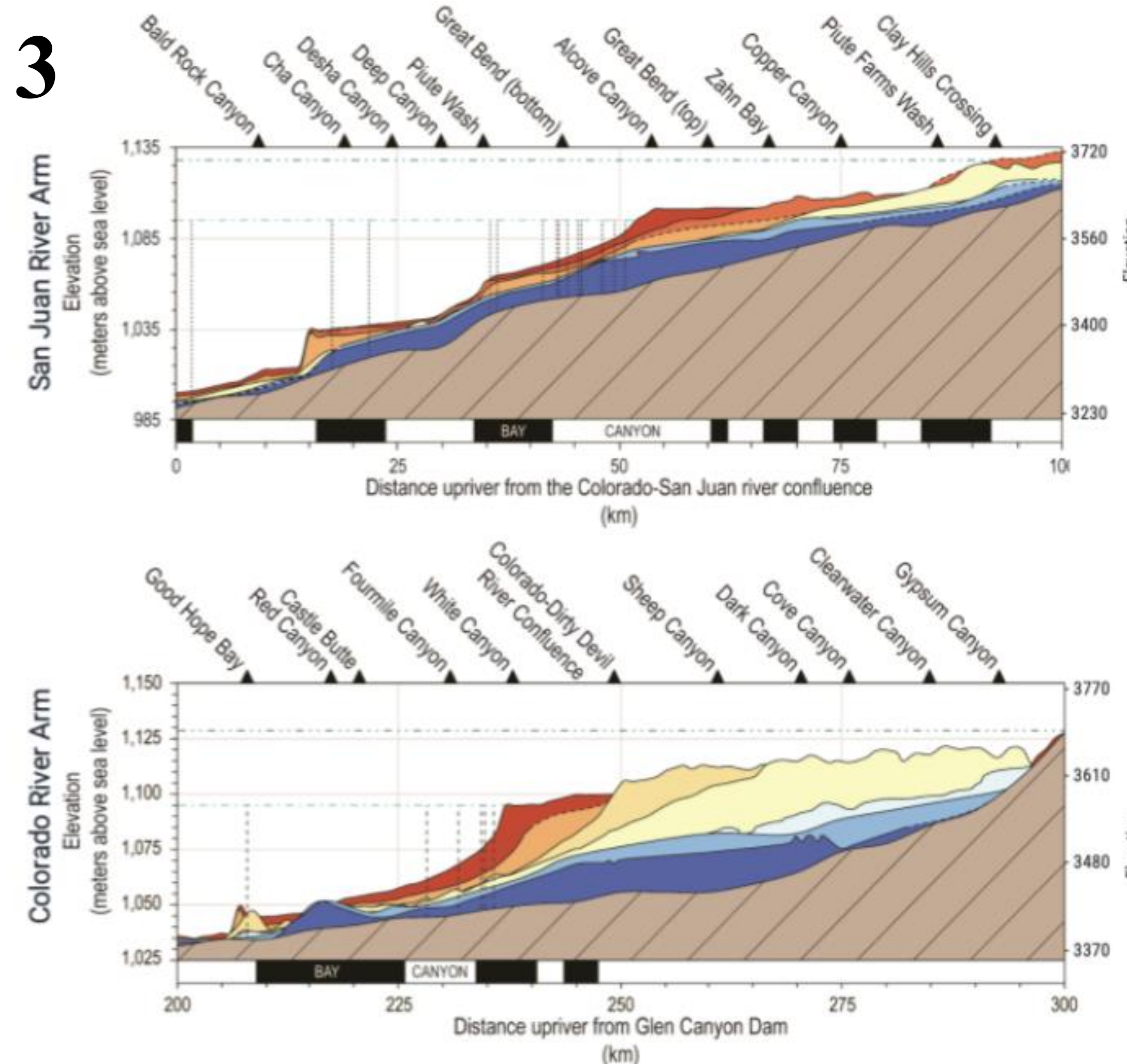
## Lake Powell River-Reservoir Deltas



**Figure 1.** Satellite images showing location of analysis of the Lake Powell deltas on the (B) Colorado and (C) San Juan Rivers.

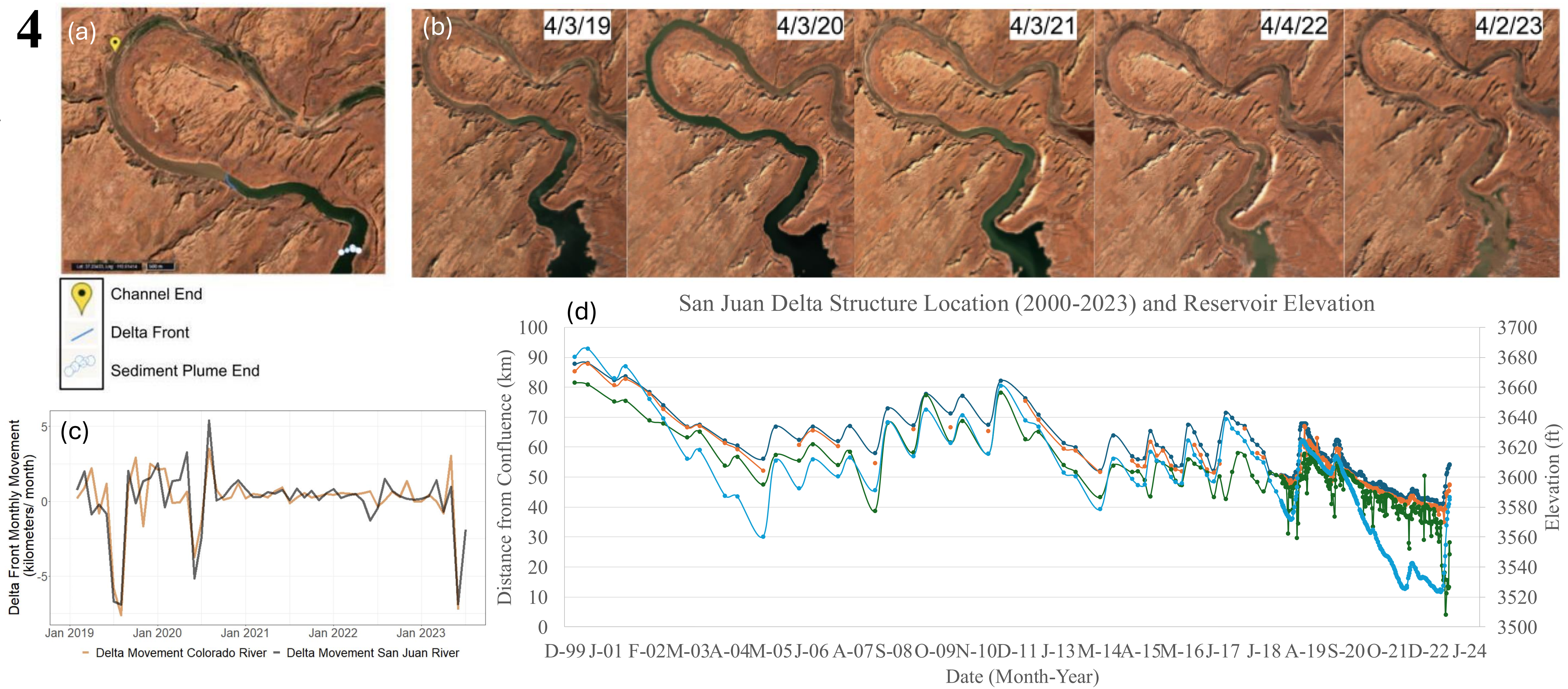


**Figure 2.** Deltas are dynamic landscapes with complex sedimentary features diagnostic of (A) fluvial and (B) tide-dominated processes. The sediments move quickly when confined in steep walled river canyons rather than open water bodies (figure after Suter, 1994).



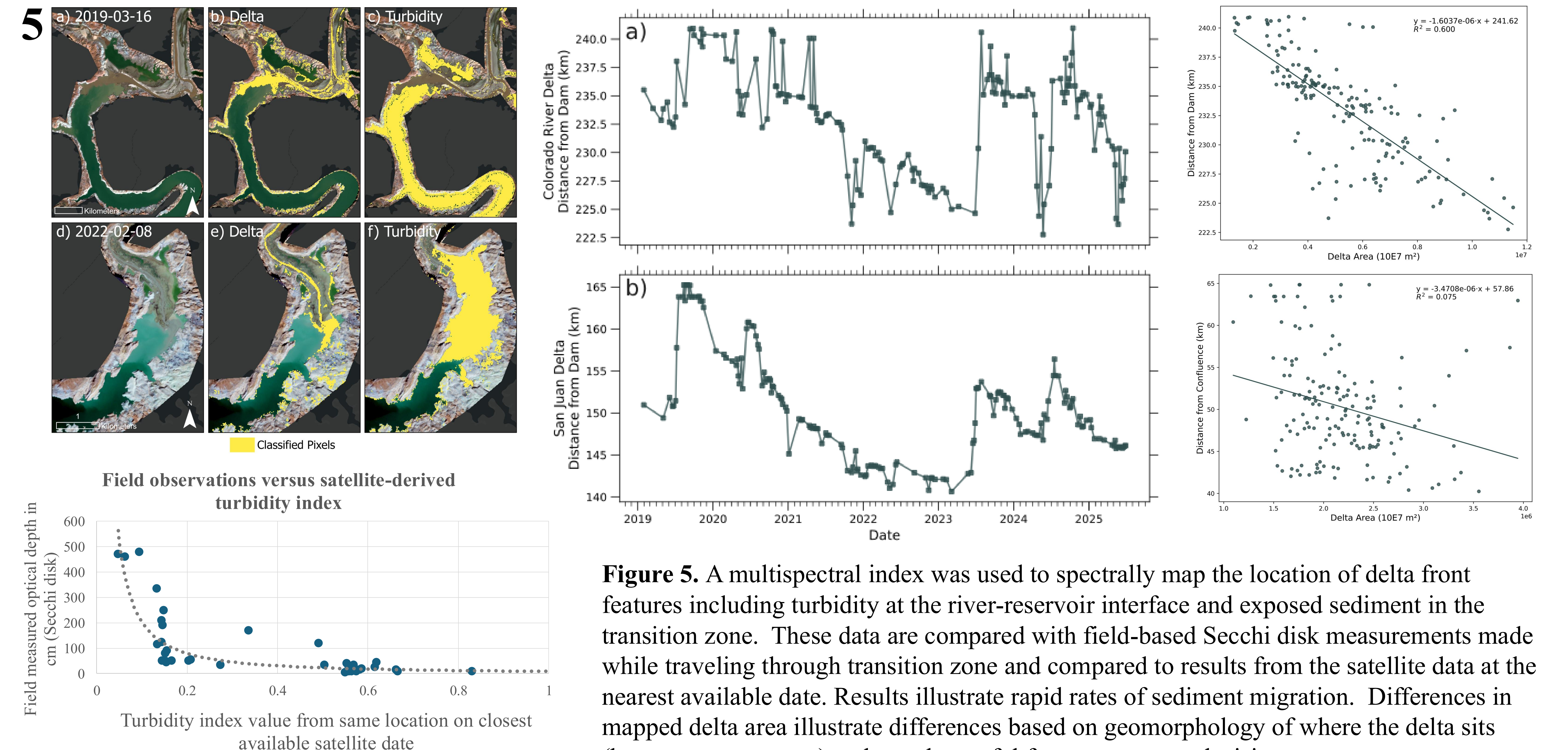
**Figure 3.** The USGS has periodically mapped the extent of the delta sediments into Lake Powell.

## Mapping Delta Features Through Time Via Visual Inspection



**Figure 4.** Earth observing satellites capture imagery of the deltas since the 1980s and visual inspection allows for mapping of the channel end, the delta front, and the end of the sediment plume. Compiled over time these data show the rates of delta migration.

## Mapping Deltas Through Time Via Remote Sensing



**Figure 5.** A multispectral index was used to spectrally map the location of delta front features including turbidity at the river-reservoir interface and exposed sediment in the transition zone. These data are compared with field-based Secchi disk measurements made while traveling through transition zone and compared to results from the satellite data at the nearest available date. Results illustrate rapid rates of sediment migration. Differences in mapped delta area illustrate differences based on geomorphology of where the delta sits (bays versus canyons) and may be useful for management decisions.