Finite Elements Model for fluvial and tidal fluxes in the Fly River delta
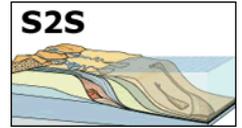
S. Fagherazzi[1,2], I. Overeem[3], S. Peckham[3]

[1]Florida State University; [2]Boston University; [3]University of Colorado

We used a shallow-water Finite Elements Model to study the hydrodynamics of the Fly River delta The model successfully captures the wetting and drying of large portions of the delta during a tidal cycle. The model runs on a triangular mesh of more than 30000 elements derived from available bathymetric surveys and digital elevation models. The distribution of maximum velocity and maximum bottom shear stress provides important information on the spatial organization of tidal deltas and the role of emerged islands within the delta. Our hypothesis is that the different channels separated by islands redistribute the tidal prism within the delta so that there is enough flow velocity to transport the sediment load offshore.
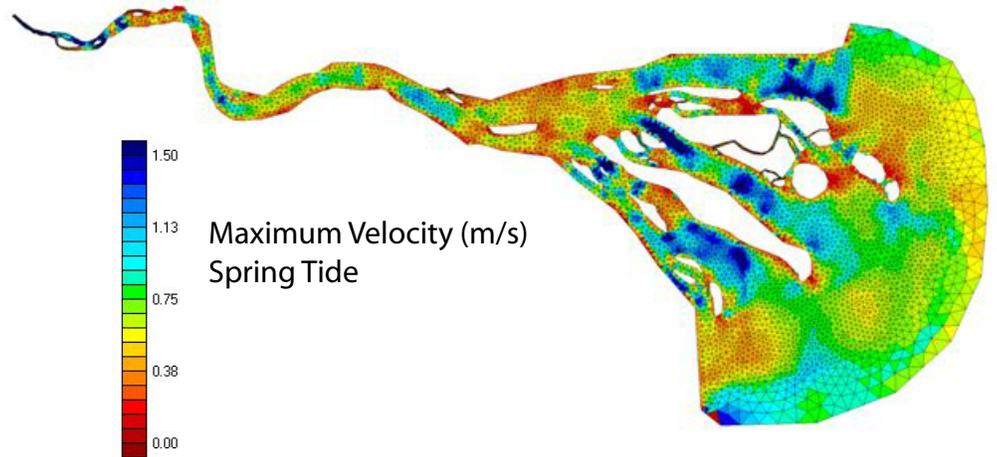

Figure: Numerical simulations of tidal fluxes and related bottom shear stresses within the Fly River delta

Fagherazzi S., Overeem I., Models of Deltaic and Inner Continental Shelf Landform Evolution, Annual Review of Earth and Planetary Sciences Vol. 35: 685-715, 2007