

EGU21-283

<https://doi.org/10.5194/egusphere-egu21-283>

EGU General Assembly 2021

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Large deltas versus small deltas: Two different beasts

**Jaia Syvitski**

U. Colorado, INSTAAR, Geological Sciences, Boulder, United States of America (syvitski@colorado.edu)

Many studies rank deltas as a continuum, as conditioned by hinterland drainage area, river discharge, sediment load, ocean energy, or even human interaction. This scaling has helped advance our understanding on how these important coastal deposits develop. From such studies, equilibrium states have been identified, such as the balance between sediment supply and the subsequent dispersal of incoming sediment. Conceptual equations are used to track the influence of changing boundary conditions such as sea level rise (or fall) that can then expose the role of anthropogenic influences such as groundwater mining. However, scaling may not reveal important differences between small-scale deltas, that globally number in the thousands, and large regional deltas that number in the dozens. For example backwater effects appear important in large delta systems but can often be ignored in many smaller delta systems with steeper fluvial gradients. Large deltas are home to large human populations and their infrastructure, but does this influence scale with delta size? This overview presentation explores the use of conceptual equations to determine if there is a limit to scaling.