



Sediment deposition modelling and virtual coring in a high alpine lake

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Sediment deposition by turbidity current processes has been modeled in a high alpine lake setting. Virtual sediment core extraction reveals grain-size and layer thickness at pre-defined locations in the sediment fan. The newly developed Lake Sediment Deposition Model utilizes an event-based iterative structure to drive distinct short lived intense inflows, or long durations of base flow, treated as single instantaneous events. Bulk quantities of sediment placed in grain size categories and discharge rates from the river mouth are used as inputs. Results show how lake sediment laminae accumulate, with distinct variations in layer thickness and grain-size sequences. The model is also sensitive to the effects that the existing and evolving bed topography have on subaqueous turbidity current routing and the location where sediment plume formation occurs. The model and virtual coring could provide an improved understanding of real world lake sediment transportation dynamics, and the inferences based upon lake sediment cores.