



Spatial focusing of lake sedimentation by wind driven circulation

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Sedimentation patterns in aquatic systems affects the biosphere as well as utilitarian water resources management. We investigate grain size specific sedimentation patterns in the perialpine Lake Biel, greatly influenced by the upstream diversion of the Aare River into the lake. The majority of the river supplied sediment arrived to the lake in short term suspended sediment concentration (SSC) events. These were linked to weather systems originating out over the Atlantic Ocean, resulting in seasonal varying sediment supply. The Atlantic weather systems, besides controlling the temporal frequency of the SSC events in the river, furthermore focused the sedimentation inside the lake. This led to large amounts of sediment being deposited on steep topography, resulting in series of subaqueous slides. Furthermore, the high flow speed in both river inlets and outlets caused selective sedimentation of particle sizes, with increased mass occurrence rate of sand (63 to 2000 μm) in high energetic environments, while smaller sized silt and clay (< 63 μm) clearly dominated in the low energetic deeper parts of the lake.