Effect of hydrological connectivity on nutrient availability and primary production patterns in Danube floodplains.

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Aquatic primary production is a key property for the ecological functioning of riverine wetlands. Autochtonous organic matter derived from local primary production is commonly more labile and easier to assimilate than allochthonous carbon from the catchment and is expected to be a crucial carbon source for riverine food webs. As a consequence aquatic primary production is of high importance in nutrient uptake and self-purification processes of the whole riverine landscape. In the Lobau, an urban riverine wetland within the city limits of Vienna, Austria, nutrient availability is determined by external and internal processes in relation to the hydrological connectivity pattern. The wetland is a back-flooded lake system where the hydrological connection with the main channel of the River Danube is limited due to flood levees and is established up to 137 days per year in the lower parts of the Lobau. It comes along with high nutrient input which, combined with still sufficient light availability, provides optimum conditions for algal primary production. As a consequence, phytoplankton is dominating aquatic production and the nutrient retention potential is high. In isolated or low connected parts of the wetland, macrophytes become more important, as connection with the river is established only during floods and nutrient inputs via the river are rare. Internal processes like anoxic phosphorus release by the sediments are of some importance for algal primary production.