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Variability and properties of subaqueous soils in river deltas.

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The upper part of bottom sediments are referred to as subaqueous (or underwater) soils. They occur in river backwaters, shallow lakes, ponds, coves, marine shelves and deltaic zones if the current is weak, and the water layer above not exceeding 2 m. Subaqueous soils seem to be intermediate members in the coastal soilgeochemical continuum: terrestrial alluvial soils – semiterrestrial acid sulphate soils – post-subaqueous soils. This paper is based on the data obtained from the field studies of the Volga, Don and Kuban River deltas. The objects of the investigation were deltaic lagoons, fresh-water small bays, big and small channels, and also the part of deltaic nearshore zone. The thickness of subaqueous soils ranges from the first centimeters to a meter or even more. They have their own profile consider with several horizons differ with color, structure, clay content and physicochemical properties. Following the terminology of the 'Classification and Diagnostic of Soils of Russia' we use term aquazm for subaqueous soils and prefix aqua for name their horizons. The upper layer is usually represented by humus horizons. Their organic carbon content vary from 1.5 to 6 % of humus and depend on water plants abundance and current speed. Due to currents in the topsoil oxidized horyzon could be formed. Middle part of aquazems presents by gley horizon that gradually merges into the parent material – stratified bottom sediments. The pH values are close to neutral in the upper horizons, and become weakly alkaline downward. Redox potential values are always low, and vary in accordance with the hydrological regime and plant communities. The average value is about –80 to –100 mV, in all soils they decrease downwards to –120 to –150 mV; in oxidized horizons they may reach +80 mV. The particle-size composition primarily depends on the flowage degree and current rate. Combination of horizons gives several types of subaqueous soils (currently we have identified 4 types and 8 subtypes). Subaqueous soil diversity depend on variety of soil forming agents. In the Volga delta, biggest of three investigated, exist all identified soil types. The underwater soils of Don River delta have the lowest diversity.