



## Salting the landscapes in Transbaikalia: natural and technogenic factors

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Salting the soils, surface and subsurface waters is widespread in Transbaikalia. Hearths of salting occur within intermountain depressions of the Mesozoic and Cenozoic age both in the steppe arid and forest humid landscapes. Total water mineralization reaches 80 g/dm<sup>3</sup> in lakes and 4-5 g/dm<sup>3</sup> in subsurface waters. The waters belong to hydrocarbonate sodium and sulfate sodium types by chemical composition. The soda type of waters is widely spread through the whole area. Sulfate waters are found in several hearths of salting. Deposition of salts takes place in some lakes. Mirabilite and soda depositions are most commonly observed in muds of salt lakes. Deposition of salts occurs both as a result of evaporative concentrating and during freezing out the solvent. In the winter period, efflorescences of salts, where decawater soda is main mineral, are observed on ice surface.

Solonchaks are spread in areas of shallow ground waters (1-2m). Soil salting is most intense in the lower parts of depressions, where surface of ground waters is at depth 0.5-1.0m. In soil cover of solonchaks, salt horizon is of various thicknesses, and it has various morphological forms of occurrence, i.e. as thick deposits of salts on soil surface and salting the surficial horizons. The soil has low alkaline reaction of medium and is characterized by high content of exchangeable bases with significant content of exchangeable sodium in the absorbing complex. Total amount of salts varies from 0.7 to 1.3%. Their maximal quantity (3.1%) is confined to the surficial layer. Sulfate-sodium type of salting is noted in the solonchak upper horizons and sulfate-magnesium-calcium one in the lower ones (Ubugunov et al, 2009).

Formation of salting hearths is associated with natural and technogenic conditions. The Mesozoic depressions of Transbaikalia are characterized by intense volcanism. Covers of alkaline and moderately alkaline basalts that are enriched in potassium, sodium, carbon dioxide, fluorine, chlorine, sulphur, strontium, lithium, molybdenum, nickel, and vanadium are widely spread there. Geochemical habit of basalts largely determines chemical compositions of waters and mineral formations in hearths of salting. Unloading the fissure-vein waters that evacuate solute from the Jurassic-Cretaceous volcanogenic-sedimentary deposits greatly effects chemical composition in some hearths of salting.

Irrigation systems in many intermountain depressions influence the salting hearth formation. The associated secondary salting occurs as spots in the areas, where ground water surface reaches foot of loams during irrigation. Salting the landscapes takes out big areas of fertile lands from agricultural use, threatens with breakdowns at enterprises of thermal energetic that consume water as heat carrier.