



The ice - bottom adfreezing band: salt transfer in active layer and permafrost evolution

V. Ostroumov

Institute of Physicochemical and Biological Problems of Soil Science <v.ostroumov@rambler.ru>

The shallow water belt is typical for the thermal abrasion coasts of Arctic seas. The active layer consists of the shore ice and bottom ground at the adfreezing band. An interaction between continental permafrost deposits and sea water is typical here. We described a process of salt transfer in the system “sea water- bottom ground” during freezing of the active layer at the adfreezing band. The shore band was studied at the ACD key site “Malyi Chukocii Cape”, West-Siberian sea shore. Both ground temperature and pore water mineralization were in the ground during field studies. Additionally the ground samples were isolated from the active layer for chemical analysis. The zone of the pore solute concentration was found in the bottom of the active layer. The salt concentration is explained as a result of the mass transfer during the freezing of sea water and bottom ground. The relative small sulfate content was observed in the zone of high mineralization. A decrease of sulfate is a result of the cryogenic separation of the compounds of pore solute during the freezing in open system. An impact of salt accumulation at the permafrost evolution is described in the paper.

This work is carried out under the support of the project ACD and RFBR-08-05-0175.