Geophysical Research Abstracts,
Vol. 11, EGU2009-1854-1, 2009
EGU General Assembly 2009

Mineralogy of two Cryosoils fromWestern Antarctica

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Investigations of Antarctic Cryosoils are very urgent now in context of finishing of International Polar Year, assessment
of soil resources on the Sixth Continent and prognosis of soil evolution and stability in changing climate. Two soils were investigated on two climatic regions of Western Antarcica. The first was in continental climate (station "Russkaya" 74.45 S., 136.48 W.) and the second in the sea-shore ecoclimatic region (station "Leningradskaya", 69.30 S., 159.23 E.). In first case soils were described as thin (max 3 cm) coarse gravel low humus content layer, presented by sporadical spots of Cryosoils on the debrises of gneises iwth permafrost on the depth about 30 cm. The second soil was located in three polypedons situated in micro depressions on the gneises and basalts rocks with permafros depth about 35 cm. Soils was identified as Cryosoils on gneises, the solum thickness is more than 10 cm. On the base of soil mineralogical study the following peculiarities of Antarctic soils were revealed: - initial parent materials consists of quarts, spates, byotyte, granate and augite, - the ratio of coarse to thin fraction (on the diameter 1 mm) was 90:1 and 80:2 in Russkaya nad Leningradskaya stations correspondingly, which shows that the weathering process is more expressed in sea-shore ecoclimatic region. - "iron films" formation on the surface of stones, this process mostly expressed on the northern exposed slopes, which have a good insolation. Iron films presented by hetite and pyrolisite and mostly expessed in Russkaya station with extra-arid climate, - clay minerals was presented by: smectite (K-Na and Ca-Mg types), illite, chlorite and kaolinite, with some portion of mixedlayer fraction These data shows that the weathering process in very intensive and simultaneously going with new clay and amorphous minerals formation, in both cases of continental and sea-shore climatic environments. That is why it is possible to conclude that main soil formation process in investigated soils was the transformation of soil mineral part, while the humus formation in was limited by low portions of thin fraction and short period of biological activity (1-3 weeks).