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Particle-size distribution of postpyrogenic soils after forest fires in Russia in 2010

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Extreme summer temperatures of 2010 in Russia were critically important for appearing of the catastrophic wildfires. Hot weather has been started in the middle of June and occupied the whole Russian European part and Eastern Europe. The area of soils affected by wildfires assessed as more than 744 000 ha. Forest fires in 2010 have occupied Moscow, Yekaterinburg, Kaluga, Pskov, Samara and many other regions.
The study plots were so-called «steppe island of pine forests» near Togljatty city, Samara region, which were exposed to catastrophic forest fires in 2010. Three soil pits were studied in order to compare the influence of different types of fires on soils: a place of local forest fire (in the end of July, 2010), riding forest fire (in the end of July, 2010) and unaffected site by fire – control (mature).
The studied postpyrogenic soils are characterized by fine earth dominance over a soil the coarse fraction; soils investigated were classified as sandy loams. Data obtained by traditional sedimentometry method shows that clay content in postfire soils was higher than in mature ones. With aim to testify these trend we have measure the clay content by the laser diffractometry method. Clay content by diffractometry were lower in these case for all studied soil that this index determined by sedimentometry. This was co-called effect of pseudofractions in sedimentometry, while organic matter particles, including the black carbon components, partially forms the clay fraction while there are not truth component of this fraction. There seeming increasing of clay in postfire soils can be interpreted by increasing black carbon components but not real increasing of very fine particles in fine earth.
Investigation conducted in 2012 shows that particle size distribution as a whole hasn't changed for two years. However, a decrease of the fine earth fractions content in the solum is observed as a result of linear sufrace erosion. The results of particle-size composition analysis of soils in various landscape and geochemical positions show that the silt fraction moves to accumulative positions, and its minimum contents is characteristic for slope positions.
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