



Modeling and Monitoring for Landslide Processes

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Landslides process is one of the most widespread and dangerous processes in the urbanized territories. In Moscow the landslips occupy about 3 % of the most valuable territory of city. There are near 15 places of deep landslides and some hundreds of shallow landslides in Moscow. In Russia many towns are located near rivers on high coastal sides. There are many churches and historical buildings on high costs of Volga River and Moscow River. The organization of monitoring is necessary for maintenance of normal functioning of city infrastructure in a coastal zone and duly realization of effective protective actions. Last years the landslide process activization took place in Moscow.

One of landslide sites is on Vorob'evy mountains, on a high slope of the right coast of the river Moscow with height of 65 m. In June 2007 a rather big landslide took place there near ski-jump.

Another landslide site is in a southeast part of Moscow, occupying the right coast of river Moscow near museum - reserve "Kolomenskoye". Last serious activization of a landslide has taken place in 2002 with a motion on 53 cm. Catastrophic activization of the deep blockglide landslide in the area of Khoroshevo in Moscow took place in 2006-2007.

Deep landslide activization took place in Moscvorech'e, Moscow, in September 2009.

Mechanical-mathematical model of high viscous fluid was used for modeling of matter behavior on landslide slopes. Equation of continuity and an approximated equation of the Navier-Stokes for slow motions in a thin layer were used. The results of modelling give possibility to define the place of highest velocity on landslide surface, which could be the best place for monitoring post position. Model can be used for calibration of monitoring equipment and gives possibility to investigate some fundamental aspects of matter movement on landslide slope.