Geophysical Research Abstracts, Vol. 9, 01511, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-01511

Monitoring of changing landscape and soil on dried bottom of Aral Sea

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Since 1960 till 1996 water level of Aral Sea dropped by 17 m and water volume reduced by near 70 %. Aquatic surface reduced from 67 to 30 th. km2. If in 1960 water inflow was 60 km3/yr, presently it equals to 5-10 km3/yr.

The major environmental consequence of the Aral Sea shrinkage is an intensive development of desertification processes in Prearalie (coastal zone), occurrence of new desert ARAL-KUM with an area of about 4 Mha.

Environmental changes in the coastal area are fostered by two processes:

1. Desertification of delta area in Priaralie

2. As the sea level drops, area of new dry lands increases.

The consequences of degradation are:

Decreased lake and delta areas; lower groundwater levels; intensified salt and dust transfer; soil cover degradation; expended areas under solonchaks and sand; reduced reed areas; reduced tugai forest areas;

An open seabed is subject to desertification within a large area. Sources of deflation and salt transfer that previously occupied a narrow strip along the coast now extended deep into the former offshore water. During 1960 – 2006 Aral Sea has receded from relic coast on 100-150 km. Salt and dust transfer from drying Sea bed take place on the distance up to 500 km with intensively from 0.1 to 2 t/ha annually.

Four field surveys provided in 2005 -2006 in a greater degree is difficult-accessible territory. Research content and methods included:

Hydrogeology: groundwater level and salinity

Soil: genetic description, texture, humus, carbonates, gypsum, salinization, salt composition, soil type.

Vegetation: composition, conditions, projective cover

Ecology: landscape stability and landscape of risk

It has been surveyed more than 300 test sites and 100 soil profiles. These surveys have permitted to definite risks' zone-area of moving sands and solonchaks that can be source for salt transfer. The investigation has goal to clarity plan of actions for future aforestation by local and Germany specialists GTZ.