

Preliminary Results on Soil Study in Case of Mongolia

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1. Introduction

Mongolian soils of Mongolia has divided into two parts, like Mountain and Plain and intermountain valley soils, which are distinguished for 36 types (D.Dorjgotov, 2003)

In this paper we have evaluated some research results of microelements such as Mn, Sr, Ti, Cu and Pb in a different soils, which were collected from soums of several aimags of Mongolia.

In Hydro meteorological service of Mongolia the soil moisture measurement started since 1970-s. Currently, for operational use and research purpose soil moisture samples are taken every ten days from 34 pasture fields, 14 spring wheat fields, 12 potatoes fields. Locations of soil sample taking points are shown in the next map.

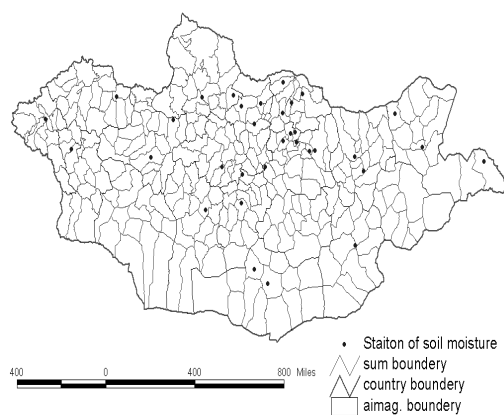


Fig. 1. Location of soil sample taking points.



Fig. 2. Soil sampling for agro-hydrological parameters.

2. Methodology

The agro-hydrological parameters were determined by sampling methods using formulae.

3. Results

A. Bulk density

In this study we have tried to analyze the change of soil bulk density in forest steppe zone of Mongolia

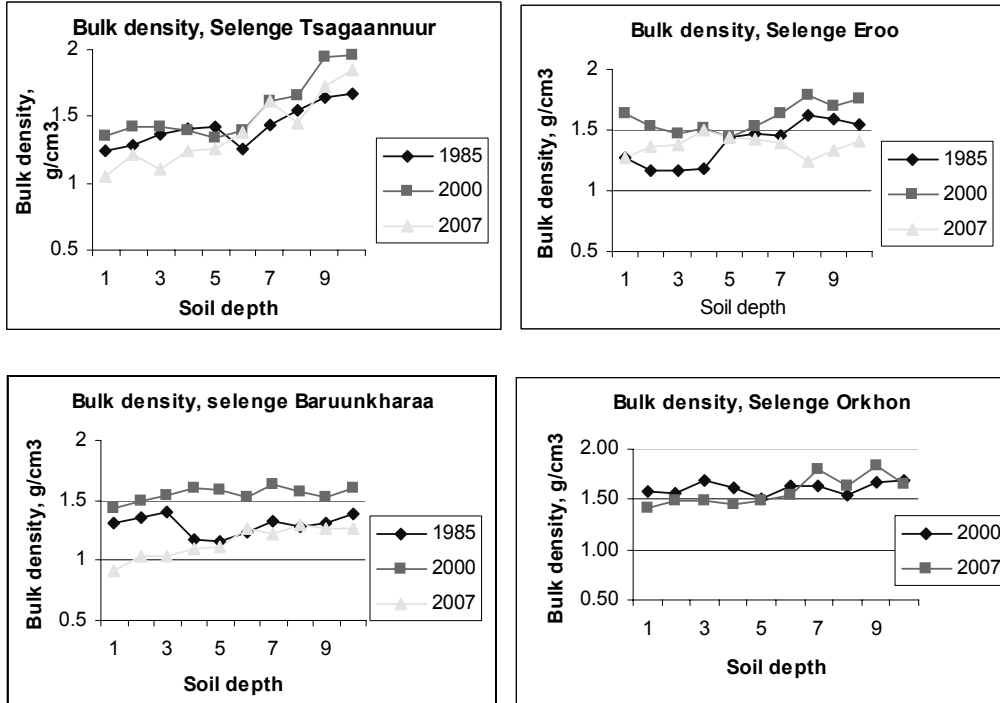


Fig. 3. The soil bulk density, g/cm³.

for last 22 years. We have selected 4 soums such as Tsagaannuur, Eroo, Orkhon and Baruunkharaa in Selenge aimag, which are located in the forest steppe zone of Mongolia.

The change of soil bulk density in Tsagaannuur of Selenge aimag during the last 22 years is from 0.01 g/cm³ to 0.31 g/cm³ (Fig 3) in the soil depth 0-100 cm. In case of 1985-2000 it is increased by 0.11-0.30 g/cm³. For years 2000-2007 that has decreased by 0.01-0.31 g/cm³. If compare the value of bulk density for 1985 and 2007, then it is decreased by 0.07-0.26 g/cm³.

The soil bulk density in Eroo soum of Selenge aimag in the last 22 years has changed by 0.06-0.55 g/cm³. For the period from 1985 to 2000 the soil bulk density in the studied area is increased by 0.06-0.37 g/cm³. Since 2000 till 2007 the value of soil bulk density is increased by 0.01-0.32 g/cm³ in the depth 0-50 cm. The value of the soil bulk density in the depth 60-100

cm is decreased by 0.04-0.38 g/cm³ for this area.

In Baruunkharaa soum of Selenge aimag the soil bulk density for the period from 1985 to 2007 has changed by 0.02-0.52 g/cm³. The bulk density is increased by 0.13-0.43 g/cm³ for period from 1985 to 2000. After 2000 the value of soil bulk density has decreased by 0.25-0.52 g/cm³. In the last 7 years it is decreased by 0.04-0.39 g/cm³.

In Orkhon soum of Selenge aimag the bulk density has changed 0.02-0.21 g/cm³ for the period from 2000 to 2007.

Thus, the change of soil bulk density in this area can be explained by soil cultivation and climate change.

B. Soil elements

In this research we have tried to analyze soil elements (Fig. 4).

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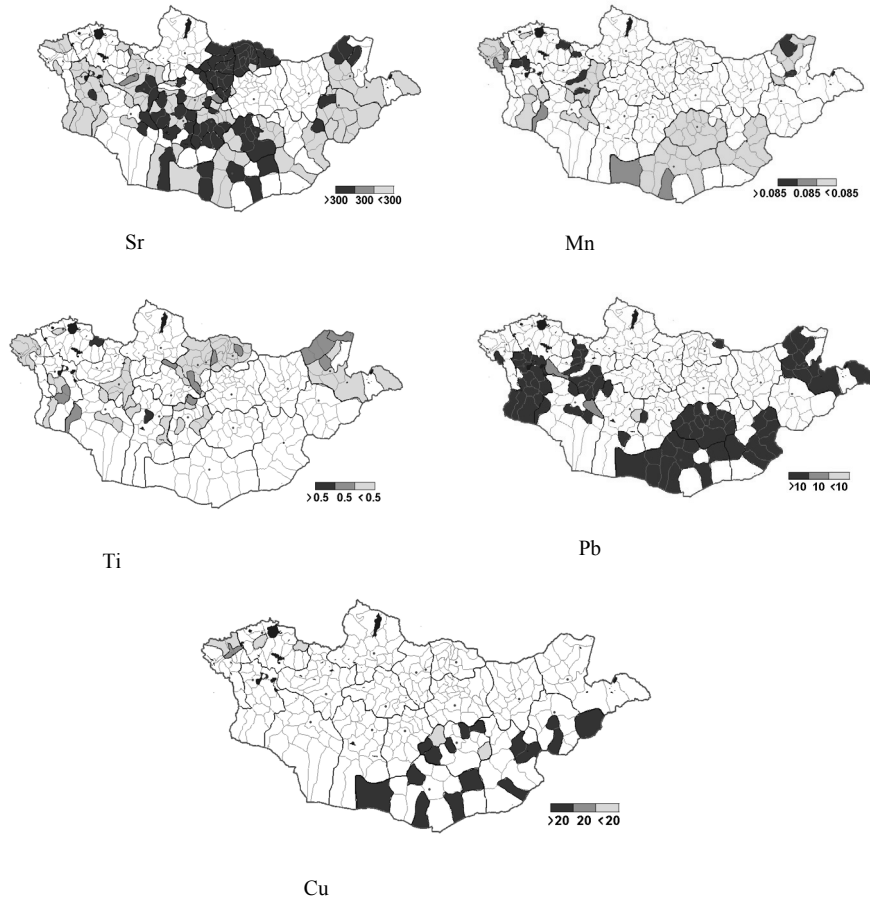


Fig. 4. Variable soil elements in Mongolia.

4. Conclusion

Based on the above study we concluded that the soil bulk density in the forest steppe of Mongolia has changed due to soil cultivation and climate change in the last 22 years.

Reference

- D.Azzaya. The instruction (manual) for measurement of agrohydrological parameters. 1997. 35 pages.
- D.Azzaya, Dr. Dadhwal. Vegetation and soil moisture tendency estimation using NDVI from NOAA-AVHRR data over Mongolia. 1998.
- D.Azzaya, Dr. Dadhwal. Soil moisture estimation using NOAA-AVHRR data over Mongolia. 1999.
- D.Azzaya, E.Erdenebat. Soil agrohydrological studies, 2001
- D.Azzaya, E.Erdenebat. Soil moisture dynamics, 2002
- D.Azzaya, E.Erdenebat. Some results of soil moisture studies, 2003
- D.Azzaya, E.Erdenebat. Soil moisture study in Mongolia, 2004
- D.Azzaya, B.Gantsetseg. Soil agrohydrological studies, 2006