1. Lithuanian forest soil monitoring (16x16 km) data: 1992 and 1998

According to the forest soil monitoring data total weight of the organic layers increase with increasing age in the 30-100-year-old Scots pine stands. However such increase for the carbon (C) was not found even in the upper 5 cm mineral layer of Arenosols.

2. Detailed study of Arenosols

The estimation of C sequestration should be focused not only on C storage in organic layers and mineral topsoil (root zone) but also on depth at least as deep as 100 cm.

3. Carbon sequestration in Arenosols: a comparative case study in abandoned arable farmland and Scots pine plantations

The highest carbon concentrations were detected in thin (0-2 cm) Ah-horizon that is under the development below organic O layer.

**Fig. 1. Allocation of soil sampling sites (n=12) for composite samples in permanent observation plot of Lithuanian forest soil monitoring in 1992 and 1998**

**Fig. 2. Total weight of organic layer and C pools in organic layer of Arenosols in Scots pine stands of different age (Lithuanian forest soil monitoring, 16x16 km, 1992)**

**Fig. 3. Soil organic carbon concentrations in mineral topsoil of Arenosols in Scots pine stands of different age (Lithuanian forest soil monitoring, 16x16 km, 1992)**

**Fig. 4. Mean soil organic carbon pools in organic layer and the concentrations in mineral topsoil of Arenosols in Scots pine stands (n=19) in 1992 and 1998 (Lithuanian forest soil monitoring, 16x16 km)**

Mean concentration of C decreased significantly in mineral topsoil (0-20 cm) in 1998 when compare to 1992. Hypothetically, this could be explained by the leaching of C due to the excessive precipitation during vegetative period of 1998 that occasionally exceeded 30-80 mm per day.

**Fig. 5. The concentrations of soil organic carbon (SOC) in mineral horizons of Lithuanian Arenosols (data of Ričardas Beniušis, Lithuanian Forest Inventory and Management Institute)**

**Fig. 6. Diminished ortho-photo map of Perloja experiment (xp<0.05, xxp<0.01)**

The highest carbon concentrations were detected in thin (0-2 cm) Ah-horizon that is under the development below organic O layer.

**Fig. 7. Distribution of soil C pools in Scots pine plantations and abandoned arable land in Perloja experiment (p<0.05, *p<0.01)**