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Theme

- Theme 5: Arctic Observations in the context of Global Observing initiatives

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Poster title (brief) Spatial diversity of total organic carbon stock – an example from Adventdalen Valley (Spitsbergen)

Abstract - text box
Biomass is a key part of the natural environment. The average aboveground and belowground biomass resources in the ecosystem are the result of many biotic and abiotic factors, which affect the biogenic element resources and are subject to dynamic changes over time. Due to global warming biomass resources in the Arctic may accelerate and should be recognized. The main aim of our research is to estimate the total organic carbon stock by quantifying aboveground and belowground biomass in Adventdalen Valley (Spitsbergen). Biomass stock was measured at 23 sites and estimated based on precise measurements of the tundra and belowground part (soils and fine roots) down to 40 cm depth. Standard soil procedures were used for soil organic carbon stock estimation. The highest organic carbon stocks (both above- and belowground) were located at sites dominated by wet moss tundra. Fine roots biomass was highest under grass tundra. Moreover, the belowground organic carbon stock (live and dead biomass) varied depending on the type, kind and grade of soil and the depth of the active layer. Our results suggest that the spatial distribution of organic carbon stocks is controlled by vegetation type and ecosystem production. However, in order to fully understand the complexity of the spatial distribution, the organic carbon stock should be analyzed in context of all environmental conditions.