

Reconstruction of historic forest cover changes indicates minor effects on carbon stocks in **swiss forest soils**. Forest cover in Switzerland and other European countries has **gradually increased in the past century**. Our knowledge of the impacts of **forest expansion and development on soil organic carbon (SOC) storage is**, however, **limited due to uncertainties in land-use history and lack of historical soil samples**. We investigated the effect of forest age on current SOC storage in Switzerland. For 857 sites, we analysed SOC stocks and determined the minimal forest age for all presently forested sites using digitized historical maps, **classifying all sites into three categories: young (60 years), medium (60–120 years), and old (120 years) forests**. Grassland was the primary previous use of afforested land. Forest age affected current SOC stocks only moderately, whereas climate, soil chemistry, and tree species exerted a stronger impact. In the organic layer, highest SOC stocks were found in medium sites ($3.0 \pm 0.3 \text{ kgCm}^{-2}$). As compared to other age categories, these sites had a 10% higher cover in coniferous forests with higher organic layer C stocks than broadleaf forests. SOC stocks in mineral soils decreased with increasing forest age ($12.5 \pm 0.9, 11.4 \pm 0.5, 10.5 \pm 0.3 \text{ kgCm}^{-2}$). This decrease was primarily related to a 200-m higher average elevation of young sites and higher SOC stocks in a colder and more humid climate. In summary, **forest age has only a minor effect on SOC storage in Swiss forest soils**. Therefore, ongoing forest expansion in mountainous regions of Europe is unlikely contributing to soil C sequestration