

# Linkage between land cover change and soil organic carbon sequestration in mountain ecosystems

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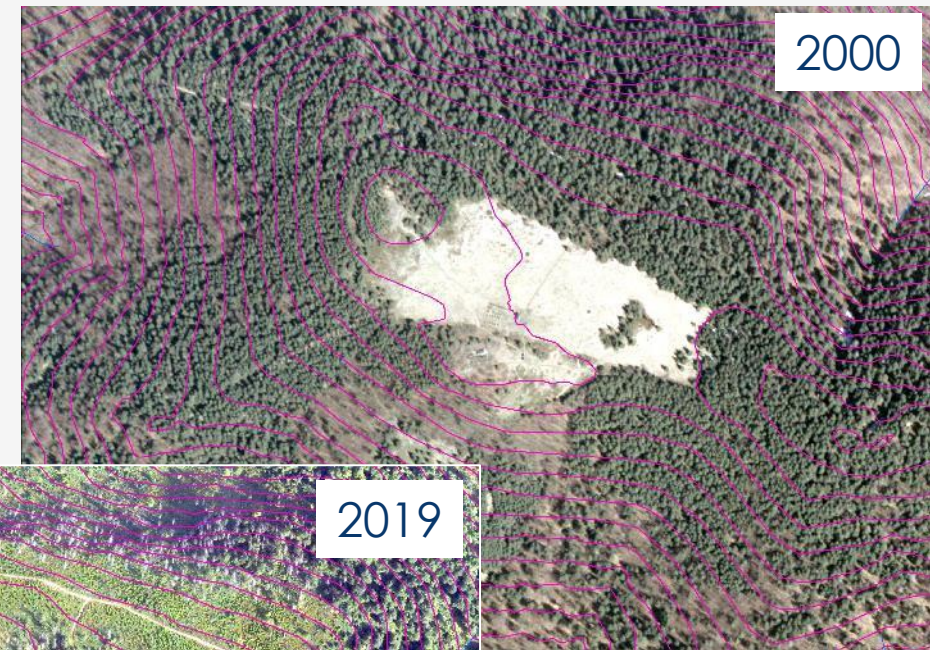
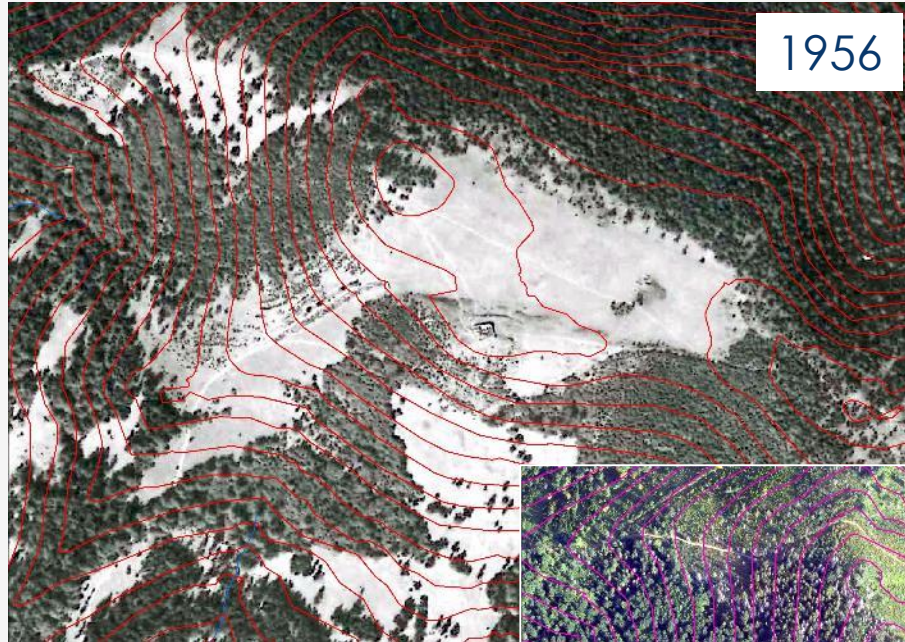
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# Mountain soils

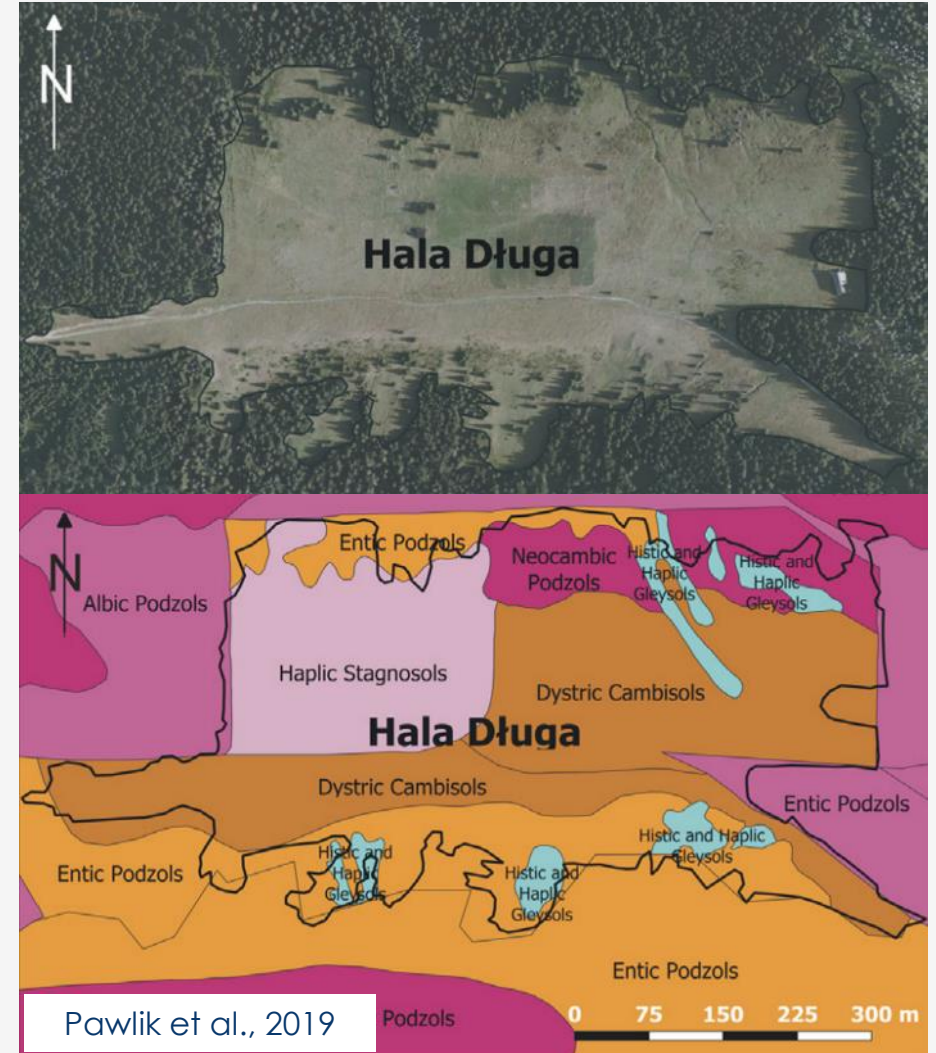
- Mountain areas are 27% of the Earth's land surface (FAO, 2020)
- Mountain ecosystems are active hotspots of SOC stock (Stanchi et al., 2021; Cotrufo et al., 2019).
- Mountains - areas particularly vulnerable to global (land cover, climate, ect.) change with very diverse soil cover (Freppaz and Williams, 2015)
- Major knowledge and data gaps in the context of SOC sequestration (Vesterdal and Leifeld, 2007):
  - (1) the influence of the land-use history on current C-dynamics;
  - (2) the effect of climate change on carbon stocks in mountain regions.

# Land cover change in European mountains

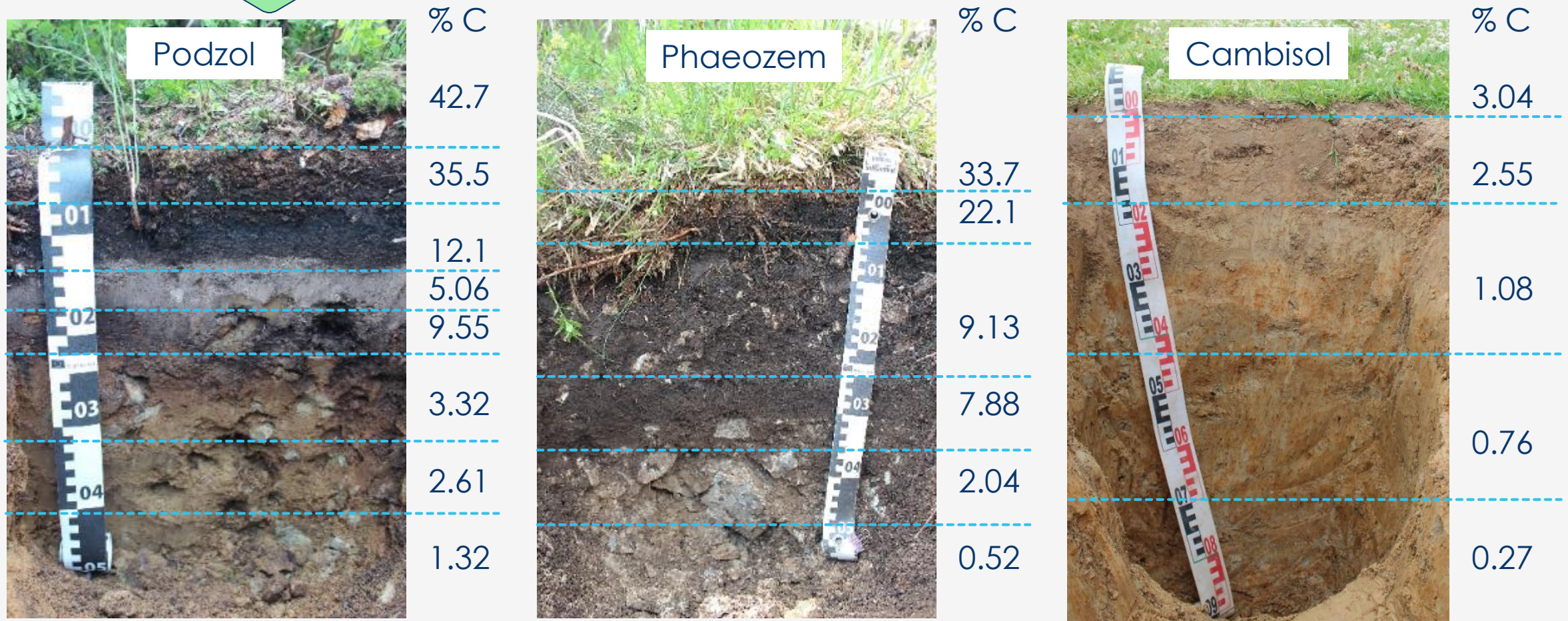
- Forestation
- Tree species conversion
- Windthrows
- Soil erosion
- Deforestation



# Relations between land cover change and soil-forming processes



# Relations between soil-forming processes and SOC storage



# Concluding remarks

- To better understand current C-dynamics and mechanism of SOC sequestration in mountain ecosystems determination of the relations between land cover change, soil-forming processes shifts and SOC stability is needed.
- The EU soil databases should be enriched with data from mountain areas and integrate information on land cover change enabling estimation of particularly vulnerable areas and prediction of areas prone to undergo soil-forming process shift and SOC stock change.