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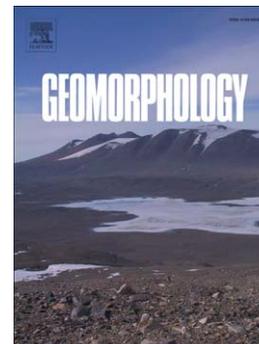
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# Breakage or uprooting: how tree death type affects hillslope processes in old-growth temperate forests

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## Highlights

- Analyzed >55,000 trees over 3-4 decades in four old-growth forests
- Assessed biomechanical geomorphic effects of both living & dead trees (BETs)
- Standing death, uprooting produce fundamentally different geomorphic impacts
- About 30% of all trees in unmanaged old-growth forests are uprooted
- BETs vary among sites at different elevations, with greater effects at higher sites

## Abstract

Tree breakage and uprooting are two possible scenarios of tree death that have differing effects on hillslope processes. In this study we aimed to (i) reveal the long-term structure of the biomechanical effects of trees (BETs) in relation to their radial growth and tree death types in four old-growth temperate forests along in four different elevation settings with an altitudinal gradient of 152-1105 m a.s.l., (ii) quantify affected areas and soil volumes associated with the studied BETs in reserves, and (iii) derive a general model of the role of BETs in hillslope processes in central European temperate forests.

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