

Publication

A definition of mountains and their bioclimatic belts for global comparisons of biodiversity data

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 986270**Author(s)** Koerner, Christian; Paulsen, Jens; Spehn, Eva M.**Author(s) at UniBasel** [Körner, Christian](#) ; [Paulsen, Jens](#) ; [Spehn, Eva Maria](#) ;**Year** 2011**Title** A definition of mountains and their bioclimatic belts for global comparisons of biodiversity data**Journal** Alpine botany**Volume** 121**Number** 2**Pages / Article-Number** 73-78**Keywords** Mountain definition, Ruggedness, Mountain life zones, Alpine, Montane, Thermal belts

This is the first quantitative attempt at a global areal definition of 'alpine' and 'montane' terrain by combining geographical information systems for topography with bioclimatic criteria (temperature) subdividing the life zones along elevational gradients. The mountain definition adopted here refrains from any truncation by low elevation thresholds, and defines the world's mountains by a common ruggedness threshold ([200 m difference in elevation within a 2.50 cell, 0.50 resolution), arriving at 16.5 Mio km(2) or 12.3% of all terrestrial land area outside Antarctica being mountains. The model employed accounts for criteria of "mountainous terrain" for biological analysis, and thus arrives at a smaller land area fraction than hydrologically oriented approaches, and by its 2.50 resolution, it includes less unstructured terrain (such as large plateaus, very wide valleys or basins) than earlier approaches. The thermal delineation of the alpine and nival biogeographic region by the climatic tree limit (the lower boundary of the alpine belt) arrives at 2.6% or 3.55 Mio km(2) of the global land area outside Antarctica (21.5% of all mountain terrain). Seven climate- defined life zones in mountains facilitate large- scale (global) comparisons of biodiversity information as used in the new electronic 'Mountain Biodiversity Portal' of the Global Mountain Biodiversity Assessment (GMBA).

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