

Submitted Abstract

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Abstract

After A. von Humboldt's genuine idea of an isotherm connecting the mountains of the world, the bioclimatic stratification of vegetation belts became an accepted biogeographic framework. The climatic treeline represents the overarching reference line for this stratification. Next year we can celebrate hundred years after Däniker's first attempt at a unifying explanation of the low temperature range limit of the life form tree, although inevitably, he had a temperate zone perspective and very limited data. Over these 100 years, the topic saw its ups and downs, largely tied to definition issues, available methods and concepts rooted in different disciplines. For instance, one may question whether rating a tree by its stem's usefulness as timber bears ecological meaning. In this presentation I will illustrate how stringent scientific logics can both advance and constrain this field of research. Scale is a central issue. Some seemingly divergent ideas converge, depending on the scale applied. I will focus on the global dimension, the underlying physical principles and the potential biases of static concepts in comparison to dynamic ones. I will conclude that a dynamic forest line concept will make static categories superfluous, and it opens the floor to generalization. However, such a concept also bears conflict with attempts at applying stringent explanatory criteria, physiological ones in particular. Impressions of site visits and short-term demographic assessments are likely to give weight to a random state on a multi-century chronology of forest dynamics at the edge. I will illustrate cases of rapid current advances of tree limits and provide data for the likely global land area that will become encroached by advancing uppermost montane forests in response to ongoing climatic warming. Further reading: Körner C (2021) The cold range limit of trees. Trends Ecol Evol 36: 979, <https://doi.org/10.1016/j.tree.2021.06.011>