Satellite remote sensing of plant functional diversity

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STELLINGEN
(Propositions)
Behorend bij het proefschrift:

Satellite Remote Sensing of Plant Functional Diversity

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1. Currently operational satellite observations offer overlooked opportunities to estimate plant functional and taxonomic diversity patterns at a landscape scale (this thesis)
2. Plant spectral profiles are integrative representations of plant phenotypes capturing the underlying functional variation (Schweiger, 2018)
3. Satellite-based broadband spectral signals to study plant diversity are obscured by the spectral dominance of vegetation cover heterogeneity (this thesis)
4. Physics-based radiative transfer model (RTM) inversion isolates canopy plant traits from other spectral features to estimate plant diversity patterns (this thesis)
5. Distance-based diversity metrics possess robustness against biased estimates of individual plant functional traits (this thesis)
6. Satellite-based estimates of plant functional diversity vary significantly across a land use gradient of intact forest, logged forest and oil-palm plantations (this thesis)
7. Plant functional richness patterns are strongly scale-dependent and requires either justifiable (arbitrary) spatial scaling decisions or a multi-scale analysis (this thesis)
8. A breakdown of drivers of spectral variation helps understand under which conditions spectral diversity serves as a proxy for biodiversity monitoring (Fassnacht, 2022)
9. Hybrid inversion replaces field data needed for training with simulations while relying on the flexibility and efficiency of machine learning to estimate plant traits (Verrelst, 2019)
10. There is a trade-off in RTM selection and configuration between model realism and inversion possibility (Verrelst, 2015)
11. The spatially continuous nature of satellite observations of plant diversity challenges the traditional ecological concepts of discrete and clear-cut alpha and/or beta diversity (this thesis)
12. *"The most striking feature of earth is the existence of life. The most striking feature of life is its diversity"* – Tilman (2000)
13. *"Fragmentation of knowledge* [in disciplines] *and resulting chaos (…) are not reflections of the real world but artifacts of scholarship"* – E.O. Wilson (1998)