

Interactive comment on “Sharp ecotones spark sharp ideas: comment on “Structural, physiognomic and above-ground biomass variation in savanna-forest transition zones on three continents – how different are co-occurring savanna and forest formations?” by Veenendaal et al. (2015)” by A. Staal and B. M. Flores

Anonymous Referee #2

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Staal and Flores provide a short but effective commentary on Veenendaal et al. (2015) "Structural, physiognomic and above-ground biomass variation in savanna-forest transition zones on three continents – how different are co-occurring savanna and forest formations?" (doi:10.5194/bg-12-2927-2015).

Current thinking suggests tropical forest and savanna occupy alternative stable states

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for a given climatic/soil combination, with fire a major factor controlling the relative distribution of the savanna-forest interface. Change in fire regime, either frequency and/or severity controls tree:grass balance with frequent fire maintaining low woody cover, and high woody cover suppressing grass production (fuel) and fire occurrence. There is a wide range of evidence supporting this notion from observations and experiments in fire ecology, physiology and remote sensing.

This evidence is efficiently described by the authors and they then challenge the conclusions of Veenendaal et al. (2015) who present field data suggesting a continuum of savanna-forest cover dynamics rather than an abrupt transition, with fire having far less influence than the current paradigm suggests. In effect, Veenendaal et al. provides a significant challenge to current thinking on savanna-forest dynamics and tipping points.

Staal and Flores provide an elegant re-assessment of key cover data given in Veenendaal et al. Probability density functions off upper stratum and total cover data given in the original paper suggest a tri- and bi-modal distribution is evident in Veenendaal et al.'s data. This is similar to remote sensing evidence of woody cover in the tropics that points to three states of cover; forest, savanna, and a treeless state.

This analysis appears to support the author's contention that Veenendaal's data actually supports the current paradigm rather than disproving it.

I found this a compelling and simple argument and this comment by Staal and Flores makes an interesting contribution to this debate. I didn't find Fig 2 particularly useful, the feedback with high nutrient sites and fire is well described in the text of the comment and it could be deleted.

Interactive comment on Biogeosciences Discuss., 12, 10707, 2015.

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