

Interannual climate variability mediates changes in carbon and nitrogen pools caused by annual grass invasion in a semiarid shrubland

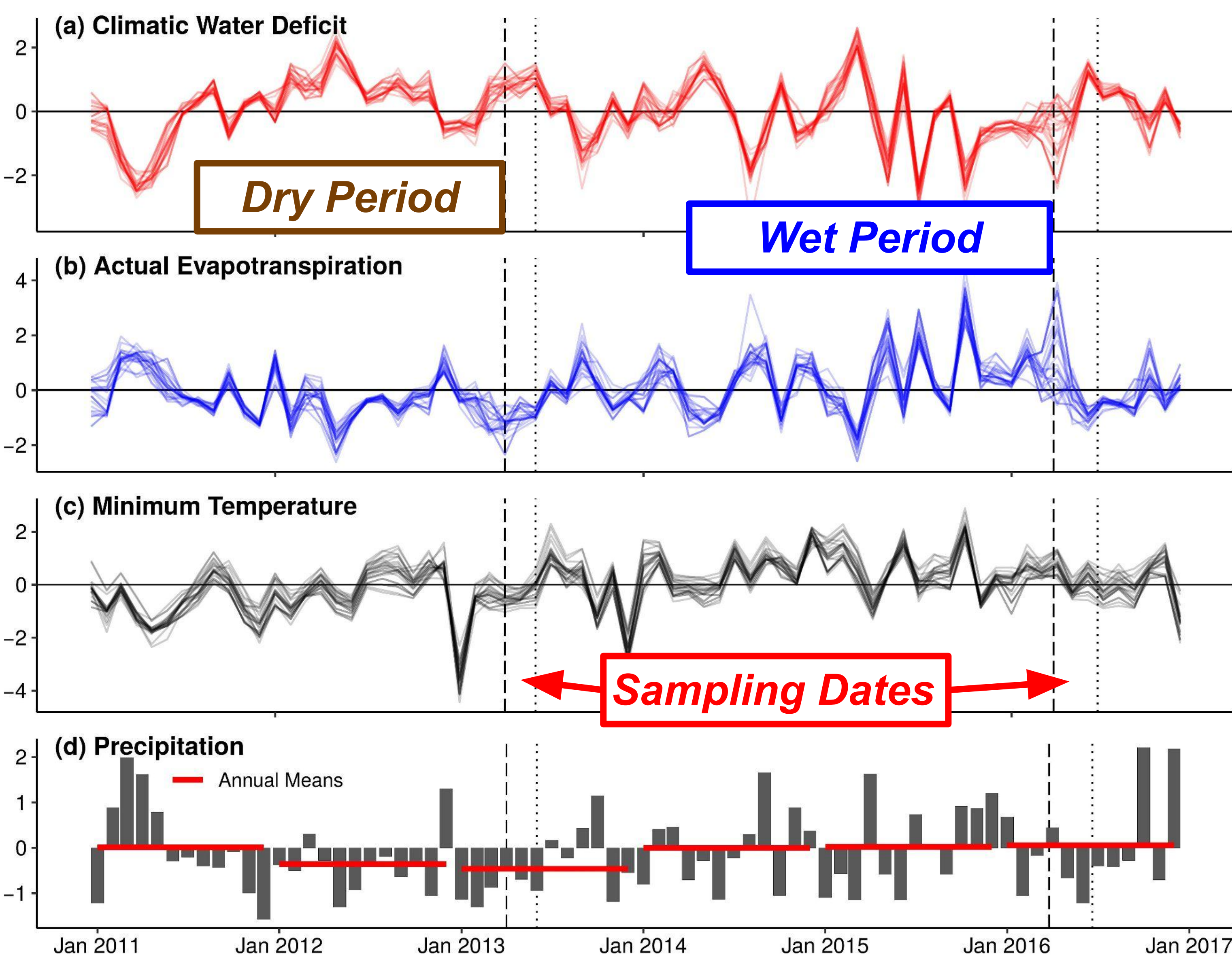
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Introduction

- Invasions impact nutrient cycling
- But so does climate variability
- So, results from single-year studies may be confounded by this interaction

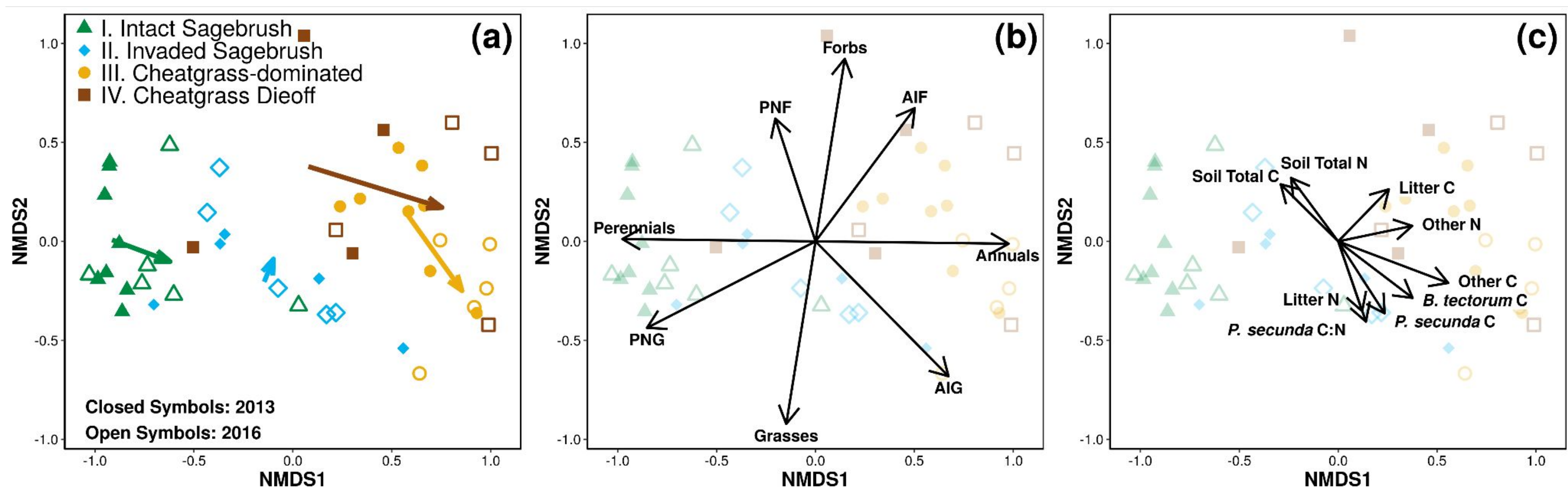
Study Design

- 20 sites, 4 progressive levels of invasion
 - I. Uninvaded shrubland
 - II. Invaded shrubland
 - III. Cheatgrass-dominated
 - IV. Cheatgrass-dieoff (more forbs)
- Sampled two years - one wet, one dry
 - Measured vegetation cover, Soil nitrogen & carbon

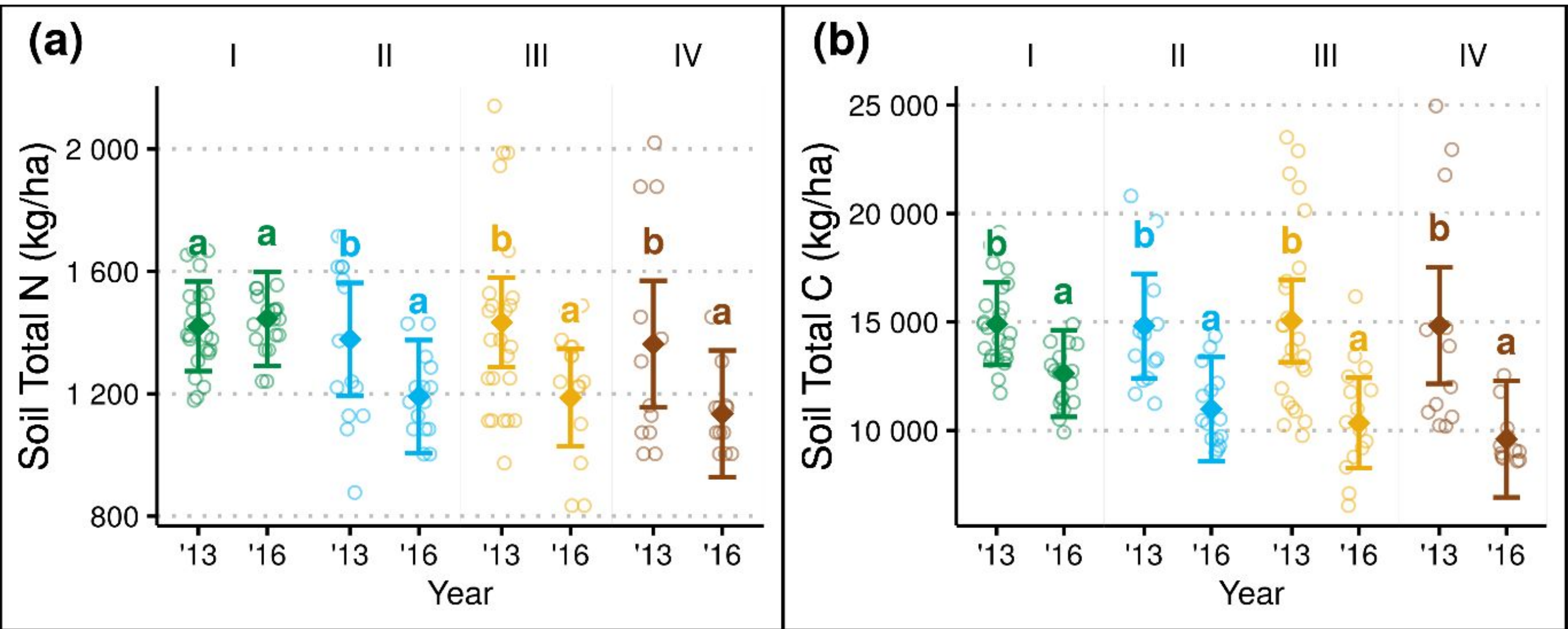


Results

1. Vegetation changed more at sites composed of invasive, annual vegetation

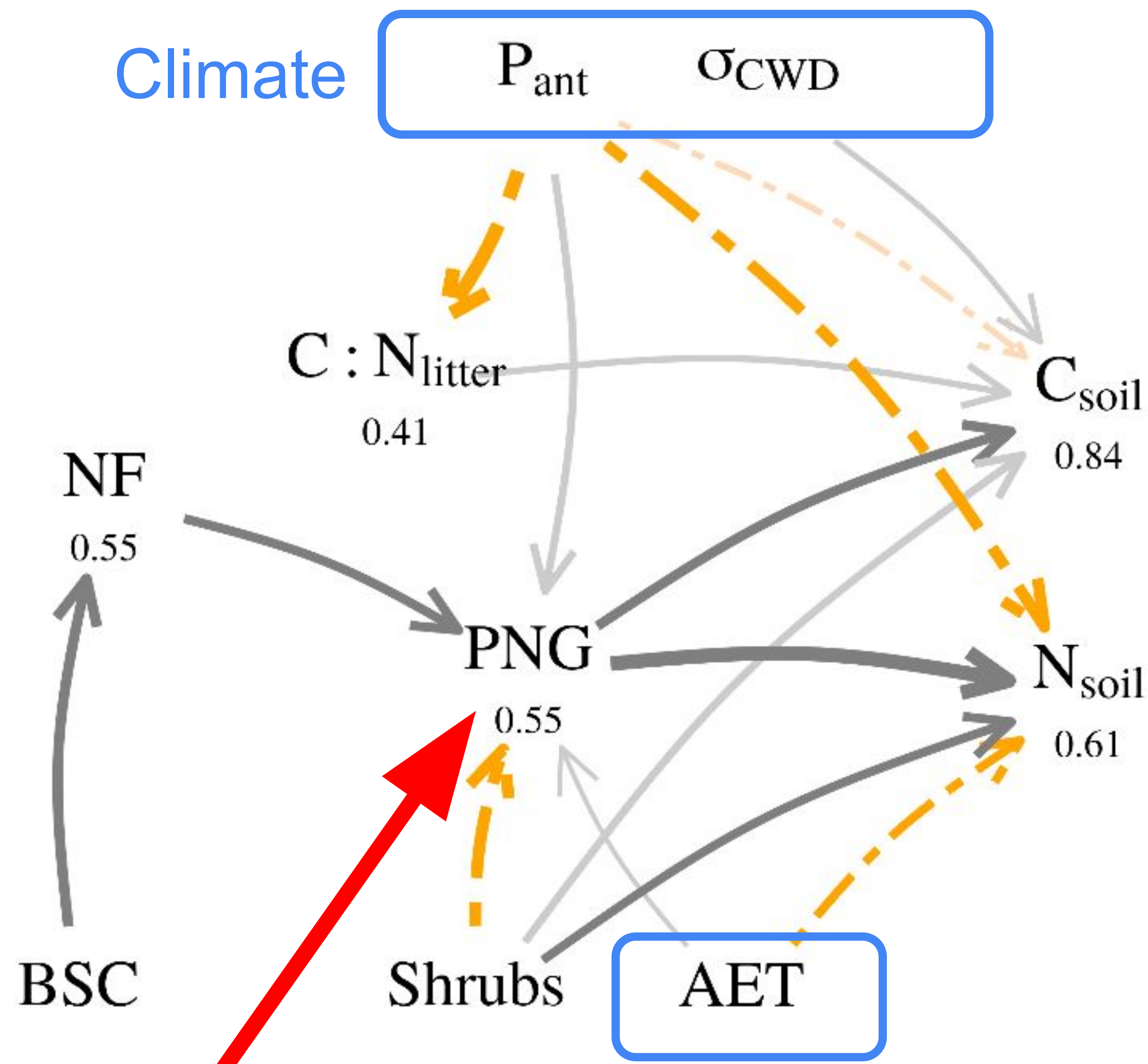


2. Nitrogen and carbon changed more in the invaded sites



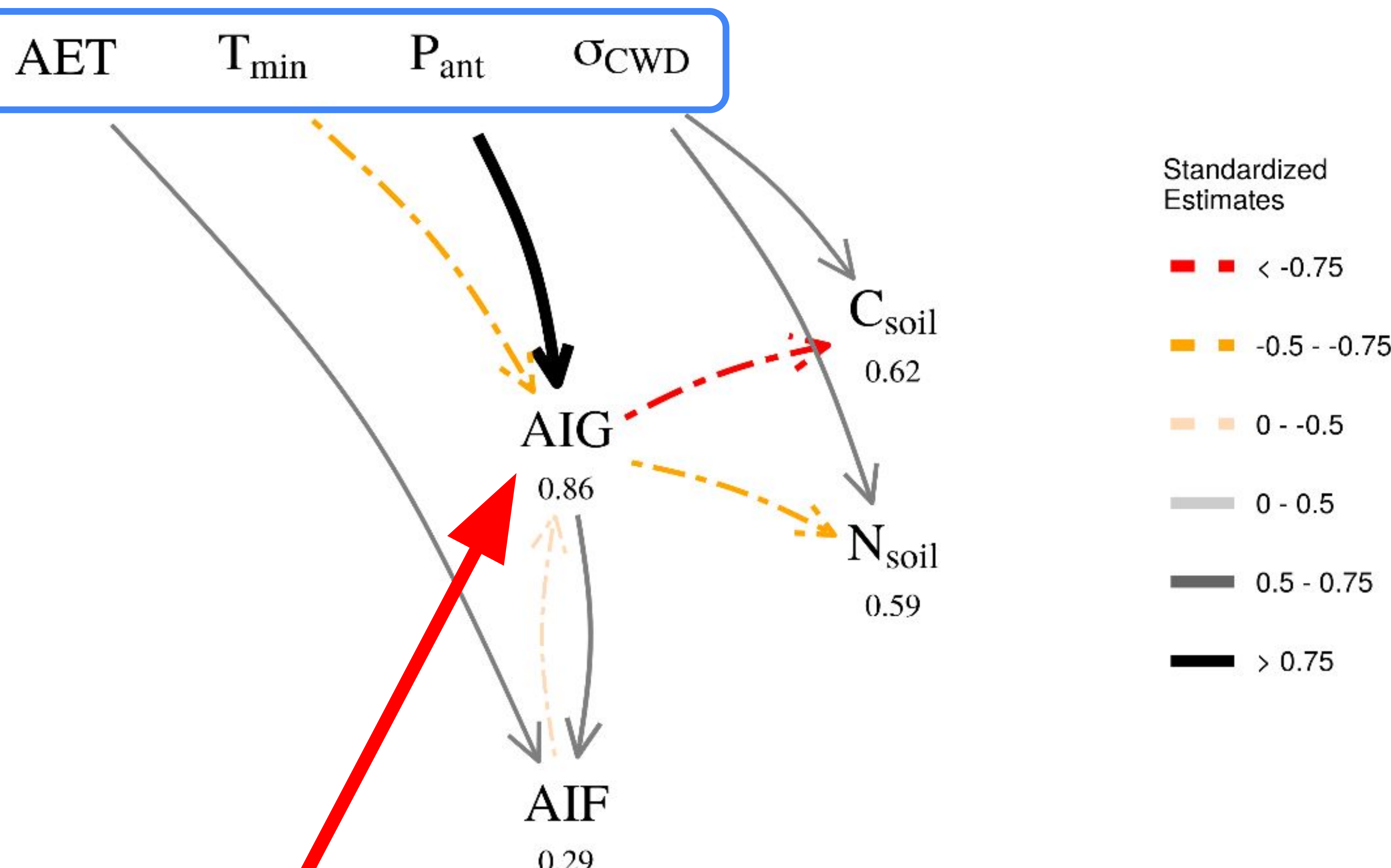
3. Climate acted indirectly on soil through (a) its effect on plant cover, and (b) the differential effects of plant functional groups on soil.

(a) Soil Total N & C: Stages I & II



Deep-rooted perennials had positive effects on soil N & C, cancelling out the direct negative effects of moisture.

(b) Soil Total N & C: Stages III & IV



Annual grasses were positively impacted by moisture, and had a negative effect on Soil N & C, so climate amplified nutrient loss by stimulating growth of annuals

Give it a read! <https://doi-org.colorado.idm.oclc.org/10.1111/gcb.15921>