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Fire-related forest properties observed using Landsat and radar data

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Fire is an important cause of disturbance in terrestrial ecosystems and can have a major impact on biodiversity. Long-term forest plot monitoring in Mato Grosso state (Brazil) indicates lowest species diversity in plots that have been burned multiple times and increasing species richness with time since the last fire. Furthermore, there is a strong positive relationship between species richness and basal area in unburnt and once-burnt plots, especially in the large tree stratum. We used high-resolution Landsat and PALSAR data at varying spatio-temporal (single and bi-temporal) scales to (a) assess Vegetation Indices sensitive to varying fire severity for different tropical forest species; (b) quantify fire severity and basal area/ biomass changes (1999, 2006, 2010, 2013); and (c) quantify the sensitivity of L-band backscatter to fuel load, moisture content and basal area/ biomass dynamics.