

**Poster #1-55****FATES Sensitivity to Forests Disturbance and Regrowth in the Amazon**

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The Landsat Ecosystem Disturbance Adaptive Processing System (LEDAPS) was developed to represent vegetation disturbance and regrowth. Whether LEDAPS is suitable to identify different disturbances and regrowth in the Amazon needs to be further examined. In this study we used LEDAPS in Landsat 5 imagery (LL5) to determine its sensitivity to spectral changes following windthrow, clearcutting, and burning in old-growth forests in Central Amazon and to assess whether the newly developed Functionally Assembled Terrestrial Ecosystem Simulator (FATES) model simulate these changes. The selected disturbances are very frequent in the Amazon and have strong influences on vegetation structure and dynamics. The results shown that all LL5 bands were sensitive to the disturbance and last from 4-6 years. Following this period, only the Near Infrared (NIR) band had significant changes associated with the disturbances and the pathways of regrowth. In general, the NIR increased with the increase in the vegetation cover, which reached its maximum after pioneers dominated the canopy and then decreased slowly and linearly to pre-disturbance conditions with the dynamics of forest succession and changes in canopy height. The faster NIR decrease rate to pre-disturbance conditions was for clearcutting, windthrow, and then burnings, respectively. After the windthrow, the NIR returned linearly to old-growth values in about 41 years in agreement with observations of biomass recovery for this type of disturbance. This in turn corroborate the sensitive of NIR to biomass changes. The NIR for clearcut and burning returned to pre-disturbance conditions after 37 and 56 years respectively. FATES predictions of biomass regrowth from windthrow and clearcut agreed with our NIR results suggesting that the dynamics of forest regrowth for these disturbances are properly represented in FATES.