

Fire in the Xingu region: its determinants and effects on vegetation and socio-environmental relevant resources

Divino Silvério^{1,2*}, Leandro Maracahipes¹, Robson Oliveira¹, Eddie Lenza², Hellen Almada², Leonardo Maracahipes-Santos¹, Marcia Macedo^{1,3}, Paulo Monteiro Brando^{1,3}

ABSTRACT- Slash-and-burn agricultural systems represent an important source of food for indigenous communities in Amazonia and have been conducted for centuries or millennia. However, the traditional use of fire has ignited an increasing number of wildfires. In 2010, for instance, 298,000 hectares of forests burned in the Xingu Indigenous Park (XIP). Yet, it is still unclear what are the main factors driving this apparent change in fire regimes inside the PIX, as well as the consequences of such changes to vegetation dynamics, ecosystem services, and food security for the indigenous communities. Here we describe the activities we are conducting in the scope of a project that aims to quantify the causes and consequences of changes in fire regimes inside the XIP, funded by the Brazilian National Research Council (CNPq) and the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA). Objectives include: 1) mapping burned areas inside the PIX over the past few decades using high-resolution imagery, differentiating those fire scars in slash-and-burn areas from wildfires in primary forests; 2) quantification of the combined roles of forest fires, droughts events, and forest management by indigenous peoples on recent changes of forest cover inside the XIP. Preliminary results indicate that large areas of forest in the XIP are now degraded, mainly due to increases in the burned area over the past two decades. Fire frequency and the number of drought years were the main predictors of forest degradation. Results of this project will contribute to a better understanding of the drivers of regional changes in fire regimes. We are also generating valuable information about management techniques that can reduce fire-related degradation of native forests and the ecosystem services they provide for indigenous peoples, which may help to improve food security for local communities of the XIP.

Keywords: Amazon; environmental degradation; fire management; environmental degradation; food security; Amazon

¹Instituto de Pesquisa Ambiental da Amazônia (IPAM Amazônia), Brasília, Brasil

²Programa de Pós-graduação em Ecologia e Conservação - UNEMAT

³Woods Hole Research Center, Falmouth, MA 02540, USA.

*E-mail para contato: dvsilverio@gmail.com