

TEMPORAL VARIABILITY IN THE BRAZILIAN AMAZON FOREST FIRES AND ITS
EFFECT ON LOCAL RESPIRATORY PROBLEMS, SEPTEMBER OF 2005

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Abstract

Forest fires are one of the main contributors to carbon dioxide emissions in Brazil. Forest fires also cause respiratory problems in the local and neighboring population. In this project I attempt to understand the distribution of forest fires in the Brazilian Amazon for September of 2005 and correlate them with the health problems suffered by the Rio Branco population (about 300,000) during the same time period. I used MODIS satellite data provided by NASA, through the MODVOLC website, which shows the location and the number of surface temperature anomalies (forest fires) in near-real-time. I also used the study “Anthropogenic air pollution and respiratory disease-related emergency room visits in Rio Branco, Brazil-September, 2005” emergency room data. No relationship was found between the number Rio Branco’s forest fires and the local number of respiratory related emergency room visits for a specific day, but cumulative smoke from multiple days peaked at this time. I conclude that the excess smoke that caused a high number of emergency room visits in Rio Branco came from neighboring states, such as Rondonia and Mato-Grosso, which show high number of hotspot anomalies for September of 2005. It appears that particulate matter from forest fires can be easily transported in the atmosphere and cause respiratory problems not only locally, but also to more distant populations. This result has implications not only for forest burning in Brazil, but also for other parts of the world such as Singapore, where smoke from Indonesian fires is often a problem.