



Drought and fire impacts respiratory diseases in the Amazon

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Drought incidence in the Amazon has been observed in the first two decades of the 21st century at a higher frequency than previously reported. Although droughts have been associated with air quality, changes in patterns of respiratory disease incidence are still poorly quantified over the region. Here we analyze the incidence of respiratory diseases in Porto Velho, which is the third most populous city in the Brazilian Amazon, from 2000 to 2016. We show an increase of $42 (\pm 18) \%$ in respiratory diseases, except for asthma that decreased $63 (\pm 72) \%$ in the dry years. In addition, there is a significant relationship between the decrease in rainfall and the incidence of respiratory diseases, which was negative for asthma. The peak of respiratory diseases occurs in the transition between the rainy season and the dry season, which may be associated with a decrease in the process of removal of suspended particles, which is aggravated in the years in which the dry season is extended. Although the driest period occurs at the end of the peak of respiratory diseases, extreme drought years reveal an increase in the number of cases that may be associated with the higher-than-average number of fires that occur in the region. Climate change scenarios project further increases in the frequency of extreme droughts in the Amazon. Thus in order to prevent the increase of respiratory diseases in the future, it is urgent to define more effective public policies to control deforestation and fires that can intensify local droughts and fires.