

Improvement of FMA+ wildland fire danger index to the Ilha Grande National Park (PR/MS), Brazil

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Abstract

Ilha Grande National Park is a conservation unit located in the south of Brazil, between the states of Paraná and Mato Grosso do Sul. It covers 75,894 ha and consists mainly of wetlands. The Park has singular importance for biological diversity conservation, due to its influence by the aquatic cycles of the area. Therefore it still offers the scope and habitat diversity to support and maintain a wide range of species. Wildfires occur frequently in the Park – between 1999 and 2006, 88 forest fires were registered. The FMA+ (Modified Monte Alegre Formula) is a new wildland fire danger index developed in the state of Paraná that added wind speed to the original FMA (Monte Alegre Formula) fire danger index. The assessment is based on meteorological data and indicates the possibility of a fire to start and to spread. The main objective of this research was to adjust the performance of FMA+ to the Ilha Grande National Park, in order to improve prevention tools in Brazilian conservation units. Data for the FMA+ adjustment, such as meteorological variables and forest fire occurrences, were collected from SIMEPAR Technological Institute and IBAMA – Brazilian Institute of Environment and Renewable Natural Resources. Collected data refer to the four year period from January 2003 to December 2006. Meteorological data such as daily rain, wind speed, wind direction, temperature and relative humidity were collected from the meteorological stations located in the cities of Guaíra and Umuarama, both located in the State of Paraná. Data were always collected at 13h00 to provide consistency of methodology. Regression equations were developed and submitted to covariance analysis, and based on the forest fire occurrence data, the efficiency of the index was tested. There is an obvious need for prevention tools improvement and utilization in Brazilian natural protected areas. This methodology can be applied to other conservation units in the future.

Keywords: fire risk, fire danger index, fire prevention, fire meteorology, fire weather.

Poster presentation

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