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Hot pixels and public policy in southwestern Amazonia: the role of accuracy assessment in dissemination of satellite-derived estimates of fire events

Data on fire occurrence derived from satellites have the potential of providing daily information on land use changes, smoke generation, and fire risks in southwestern Amazonia.

For this information to affect societal decisions, accuracy assessment is critical for credibility, particularly as media professionals and governmental officials become more knowledgeable. Helicopter overflights and road observations in 2004 had shown that omission errors for hot pixel detection of fire events were high (70 to 100%) in eastern Acre State.

Inter-comparison of satellites for fire detection in 2005 indicated that fire detection suffers frequently from poor or missing satellite coverage (NOAA and MODIS) that can cause 100% errors of omission on individual days.

Consequently, we used hot pixels from multiple satellites (www.cptec.inpe.br/ queimadas), combined with Rapidfire products (http:// rapidfire.sci. gsfc. nasa.gov/ subsets/ ? AERONET_Rio_Branco) to determine patterns of fire events. The public's interest in such information grew in 2005 as an extended dry season created a 34-year low in river levels and made regional forests inflammable. During August and September 2005, in presentations to the Acre State Fire Committee, to Civil Defense representatives of Brazil, Bolivia and Peru, and in radio and TV interviews, we frequently received direct questions as to the reliability of hot pixels as detectors of fire events.

These data were then used to help justify a month-long fire moratorium declared by Acre's governor on 18 August. Accuracy assessment of hot pixel data has become a obligatory part of the dissemination process, especially when these data are used for public policy and societal decisions.