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# Evaluation of Wildfire Mapping with NOAA/AVHRR Data by Land Cover Types and Eco-Regions in California

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## Abstract

In order to determine the efficacy of archived remotely sensed data to create historic fire maps, this study compares a remote sensing based wildland fire map with an historical fire database for California, USA. Fires occurring in two years (1996 and 1999) were mapped using data obtained from the NOAA Advanced Very High Resolution Radiometer (AVHRR) sensor. A vector database of fire perimeters, compiled and maintained by the State of California was obtained as a source of comparison for the AVHRR based fire map. The two datasets were overlaid and spatially compared in seven land cover types and ten ecoregions. The sources of disagreement and overlap between the datasets were quantified in order to elucidate trends in fire detection algorithm performance over the land cover types and ecoregions. Various methods of vector based comparison were examined in order to more effectively describe the spatial relationships between the two fire maps. The results show that algorithm performance varies over both ecosystem type and geographic region of California. The remote sensing method was able to map between 62% and 74% (1999 and 1996, respectively) of fire area mapped in the State maintained database. There was between 40% and 45% (1999 and 1996, respectively) of geographic overlap in the datasets. The results illustrate the need to calibrate remotely sensed algorithms by ecosystem type and geographic location in order to more effectively produce historic fire map products for research and other purposes.

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