



Research Brief for Resource Managers

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Contact:
Jon E. Keeley
Marti Witter
Liz van Mantgem

Phone:
(559) 565-3170
(805) 370-2333

Email:
jon_keeley@usgs.gov
marti_witter@nps.gov
evanmantgem@usgs.gov

Central and Southern California Team, USGS Sequoia and Kings Canyon Field Station, Three Rivers, CA 93271

Two Historical Data Sets Tell Different Fire Stories

Syphard, A.D., and J.E. Keeley. 2016. Historical reconstructions of California wildfires vary by data source. *International Journal of Wildland Fire* 25:1221-1227. <http://dx.doi.org/10.1071/WF16050>

Reconstructing California's fire history from 1919-2013 is complicated by the temporal and spatial scale differences between the two historical databases. **FRAP** (State of California Fire and Resource Assessment Program) is a GIS formatted database delineating fire perimeters, but it is restricted to large fires, over 4 ha on federal lands and over 121 ha on Cal Fire lands. FRAP usage is also restricted by the quality of the data, making the exclusion of records before 1950 necessary for some analyses. The **written records** database includes state and federal annual summaries of all wildland fires, regardless of size. However, because they are only spatially explicit to the level of county or forest, there is a risk of double reporting the largest fires (e.g. 2003, 2007, 2008). A third, contemporary database was used to cross-examine the comparison results for these disparate histories: the 20-year old **FPA FOD** database (National Interagency Fire Program Analysis, Fire-Occurrence Database).

To facilitate the 1919-2013 comparisons to

Management Implications

- “The spatial nature of each dataset is so fundamentally different that a spatial comparison finer than the unit of NOAA climate division was not possible.” (Fig.1)
- Fire history studies based exclusively on the FRAP data set should be reevaluated using the written records data set.

each other, both historical data sets were sorted and “snapped” into four GIS, NOAA climate region layers (Fig.1: North Coast, North Interior, Sierra Nevada, South Central Coast). Organized in this manner, the differences in fire frequencies and area burned between the data sets were quite significant. Specifically, the *written record data* (Figs.2,3a; red) showed far more ignitions and area burned for each climate region than the *FRAP data* (blue). This was particularly true of ignitions (number of fires) in the latter half of the 20th century, and for area burned in the northern half of the state.

When the two historical data sets were further compared to the contemporary *FPA FOD data set* (Figs.2,3b; green), all three fire histories finally began to converge within the last 10 years. However, the written records data were still the most informative, proving

to be the best database for evaluating how ignition sources have changed over time. The FRAP and FPA FOD databases were most useful for evaluating large fire ignition sources since 1950.

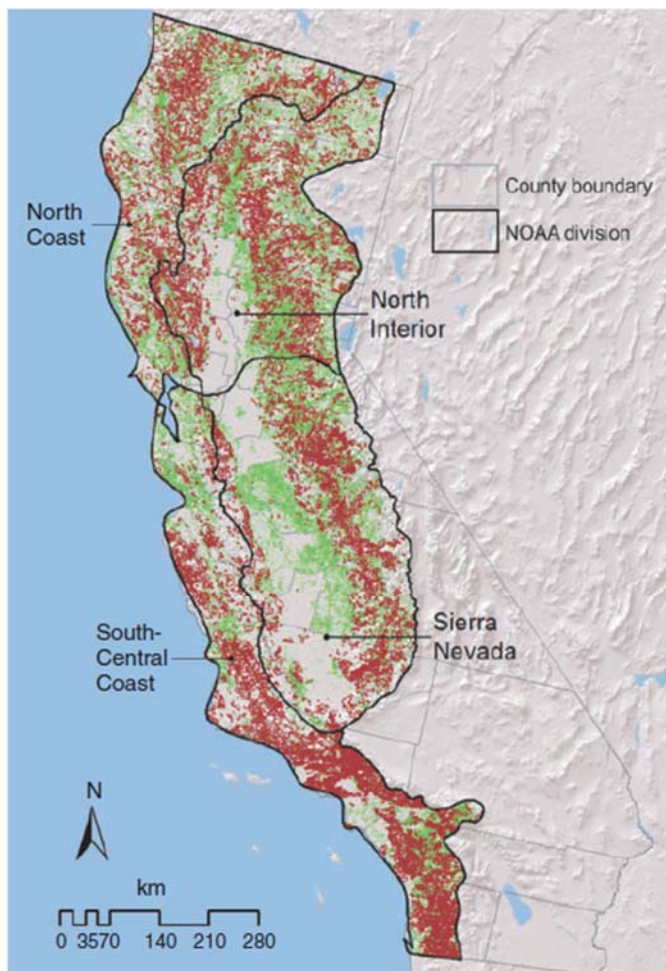


Fig. 1. The study area showing National Oceanographic and Atmospheric Administration (NOAA) climate divisions in California, USA, and location of fires for the two spatial datasets, the State of California Fire and Resource Assessment Program (FRAP) fire history database (FRAP, red perimeters) and the National interagency Fire Program Analysis, Fire-Occurrence Database (FPA FOD, green points).

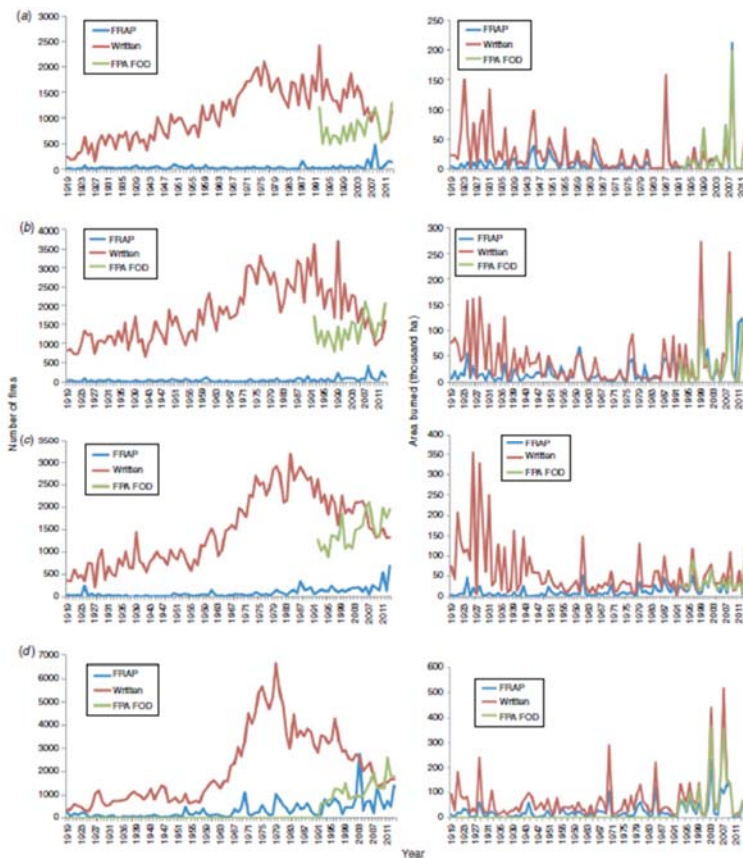


Fig. 2. Number of fires and area burned over time for three datasets in the four regions (a-d)

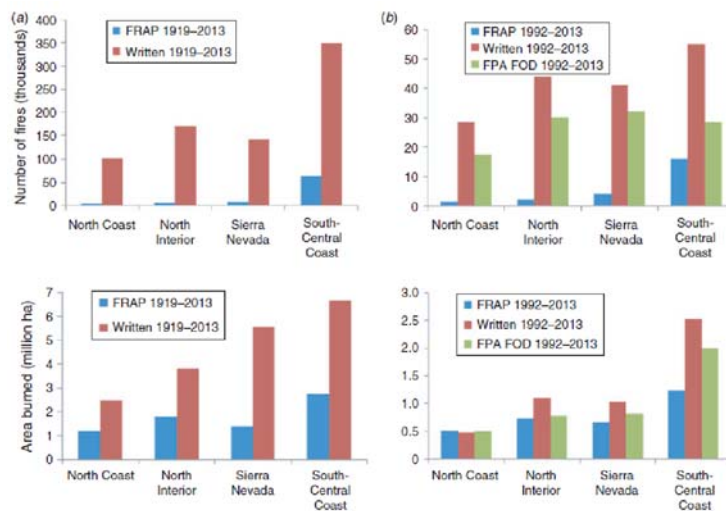


Fig. 3. Cumulative number of fires and area burned for the different datasets