



Seasonal and interannual distribution of global cropland fires detected by MODIS

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The Moderate Resolution Imaging Spectroradiometer (MODIS) sensor offers an improved combination of spectral, temporal, and spatial resolution for global fire detection compared to previous sensors. The MODIS Terra active fire product was analyzed to investigate the spatial and temporal occurrence of fires in croplands from 2001 to 2003. Monthly fire counts were analyzed globally, within several regions and for important crop-producing countries. The annual global total number of fire counts ranged from 1,472,367 to 1,577,952 during the three years. Agricultural fires were found to account for 8-11% of the annual global fire activity during the three years, but the contribution of agricultural burning was significantly higher on a regional basis. The Russian Federation was the largest contributor to agricultural burning globally during the three years, producing 31-36% of all agricultural fires. The global spatial distribution of agricultural fires was fairly similar among the three years, but a notable interannual change was observed in the total number of global agricultural fire events. The majority of regions showed similar magnitude and seasonality in their year-to-year agricultural fire activity but in some regions significant differences were found. At the global scale, agricultural fire activity showed two peaks, the first occurring during April to May, and was associated primarily with burning in the croplands of Eastern Europe and European Russia, and the second in August from burning mainly in the croplands across central Asia and Asiatic Russia. This timing pattern was observed both in 2001 and 2002. The August 2003 fire peak was significantly affected by reduced agricultural fire activity in European Russia. The seasonal and interannual trends in agricultural fire activity are consistent with known national and regional agricultural practices and reported crop production estimates.