A new technique for fire risk estimation in the wildland urban interface

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A novel technique based on the physical variable of pre-ignition energy is proposed for assessing fire risk in the Grassland-Urban-Interface. The physical basis lends meaning, a site and season independent applicability, possibilities for computing spread rates and ignition probabilities, features contemporary fire risk indices usually lack. The method requires estimates of grass moisture content and temperature. A constrained radiative-transfer inversion scheme on MODIS NIR-SWIR reflectances which reduces solution ambiguity is used for grass moisture retrieval, while MODIS land surface temperature/emissivity products are used for retrieving grass temperature. Subpixel urban contamination of the MODIS reflective and thermal signals over a Grassland-Urban-Interface pixel is corrected using periodic estimates of urban influence from high spatial resolution ASTER.