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Extreme Weather and Climate
COLUMBIA UNIVERSITY

Fire risk assessment across spatial scales in the WUI. Some examples of practical application in Europe

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When it comes to assessing fire risk in the wildland-urban interface (WUI) a first, essential question must be answered: the geographical extent to which the assessment refers to. Once answered, whether it is a large portion of the landscape, the grounds of a settlement or the extension of a particular housing lot, a systematic survey of factors of danger is performed. To achieve this, a particular granularity of information, which includes the level of detail and spatial resolution, must be wisely adopted for each scale. Consequently, the selected models for the prediction of danger intensity and trajectories (whether it is flame front, convection column, emission of flying embers or smoke production and dispersion) must convey with the dimension and extent of the phenomenon explained at each scale. Within the framework of the project WUIWATCH, funded by the European Commission, a number of lessons learnt in recent wildfires affecting WUI areas have been acquired, hence deriving into valuable methods for risk assessment in the macro, meso and microscales, as mentioned. This paper briefly presents the ideas governing this approach, the constraints and limitations, the information density and models required at each scale, particularly of fire spread and flame intensity, and the procedures to discover the “paths of danger” to which eventually vulnerable elements may be exposed. The concept of “areas of influence”, as en extension of the term “wildland-urban interface” is briefly outlined. Some examples of practical application, as implemented in Europe, are also presented.