



Directional–linear nonparametric regression for wildfire analysis

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Abstract. Wildfires represent a threat to natural resources, causing a huge economic and environmental damage, so an effective management of wildfires is required in order to avoid devastating effects. Preventive policies recommend fuel management practices at landscape level, but these measurements will only be successful if strategically placed in order to interfere fire spread in the heading direction. Therefore, characterization of wildfires, with special attention to its main orientation, is important for designing appropriate precautionary plans.

This work will be focused on the analysis of wildfire orientation (two–dimensional and three–dimensional) and the implications of this variable over other features of interest, such as wildfire size. The methodological approach that will be followed comprises nonparametric inference for regression models with directional covariate and linear response, including regression estimators based on kernel smoothers and testing procedures, such as goodness–of–fit and no–effect tests.

Keywords. Directional–linear regression; local–linear estimator; L^2 –test; wildfires data.

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