



STORMS AND EXTREME BEHAVIOR IN WILDFIRES. RECENT CASES IN THE VALENCIAN COMMUNITY, SPAIN.

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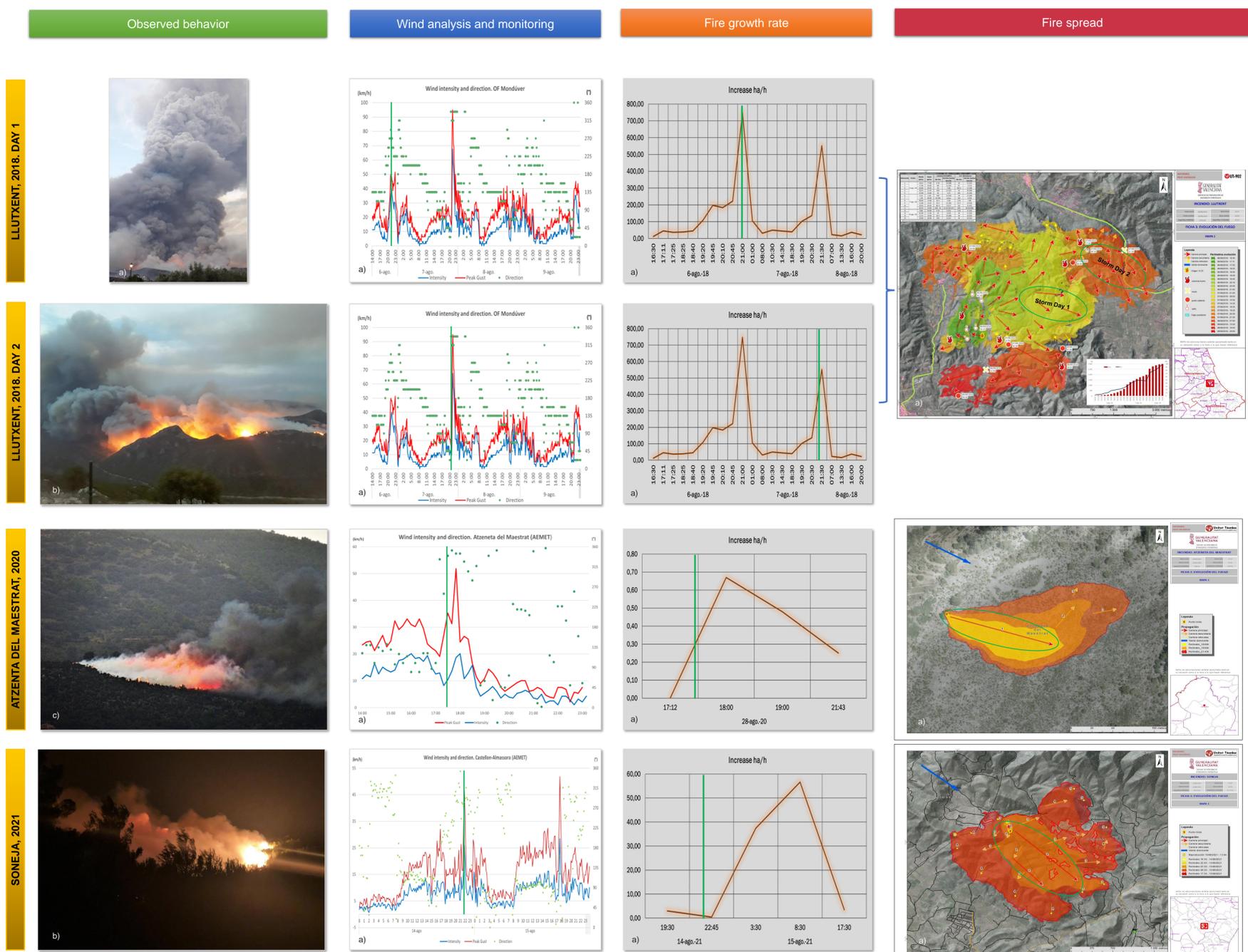
OBJECTIVES

Reducing the uncertainty generated by the presence of storms in the area of influence of the fire, caused by the possibility of sudden spreads that may result in risky situations for the operation, through the identification of these scenarios

METHODS

Several recent cases of wildfires with associated storm phenomena that have taken place in the Valencian Community, Spain (Llutxent 2018, Atzeneta del Maestrat 2020 and Soneja 2021) have been selected. These wildfires have undergone drastic changes in the spread of the fire, generating risky situations for the firefighters.

A detailed study of the evolution of each fire and the variables that have influenced its spread has been carried out. We have analyzed the behavior observed in the fire during the passage of the storm, the meteorology collected at the stations in the area, paying special attention to the analysis of the wind variable and the influence of the storm on the fire growth rate and fire spread.



Pictures show fire behavior and the graphical evolution of wind variation, fire growth and fire spread during the influence of the storm (represented with green line). Source: a) Wildfire Analysis Team, b) Generalitat Valenciana, c) Esteller, F.

RESULTS

The analysis of the particularities of these fires has made it possible to relate fire behavior to the influence of storms, resulting in the elaboration of storm monitoring protocols through the Preventive Monitoring Service's network of fire lookout points and units strategically distributed throughout the territory, the use of remote sensing products with information on the state of the atmosphere and the monitoring of storms by radar and lightning discharge. The identification of warning flags by means of two tools; 1) monitoring and early warning of changes in wind intensity and direction at the meteorological stations of the fire lookout points network, located at high points in the fire's area of influence, where changes in wind intensity and direction occur earlier than at the surface and 2) the analysis of atmospheric soundings, which allow the identification of favorable conditions for the development of convective phenomena. This analysis, with critical information on possible changes in fire behavior, is transmitted to Incident Commander instantaneously by verbally and through Fire Behavior and Analysis Reports, which are distributed to the entire field operation.

CONCLUSIONS

Being able to identify fire scenarios with associated storm phenomena, through the analysis of recent cases where a notable change in fire behavior has been observed, is essential to reduce the uncertainty generated in these situations, avoiding that sudden spreads result in risky situations for the operation.