

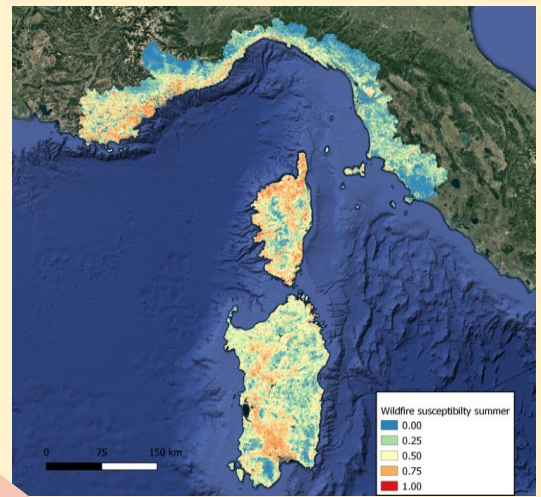
Using cross-border multisource burned area datasets for assessing wildfire susceptibility using machine learning techniques

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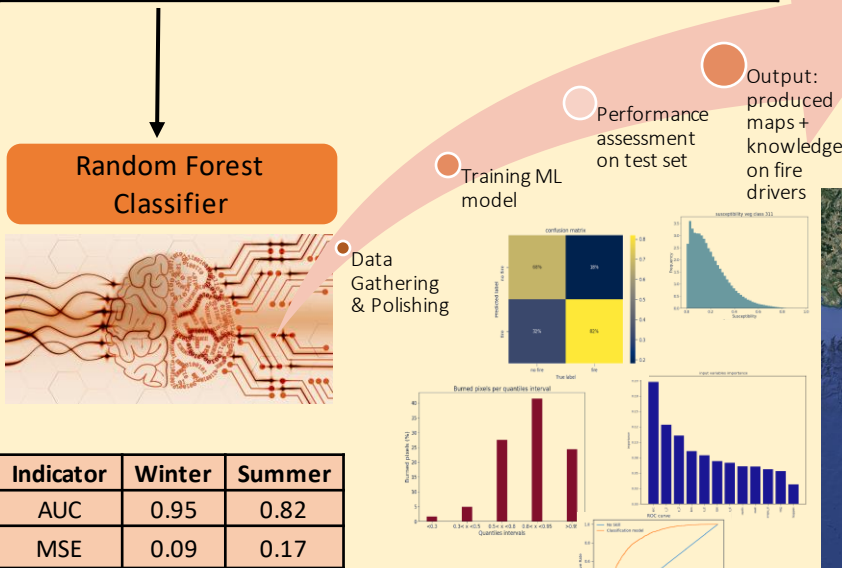
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- Wildfires in the Mediterranean constitute an **extremely serious social and environmental issue**.
- It is important to produce **wildfire susceptibility maps**: static probability of experiencing wildfire in a certain area, depending on the **intrinsic characteristics of the territory**. This analysis allows having a deep understanding on the wildfire regimes furnishing a **tool for wildfire risk management**.
- A **machine learning** model based on the Random Forest Classifier is employed to obtain susceptibility maps at 100 m spatial resolution. The study area is the one of the MED-Star EU strategic project (Sardinia region; Corsica region; Liguria region; provinces of the Tuscany's coast, French departments of Alpes-Maritimes and Var, located in the PACA Region).
- Two maps** are produced, for the **winter** wildfire season and the **summer** one. Susceptibility ranges from 0 to 1.
- Random Forest** associates a data-set of geographic, climatic, and anthropic information to the synoptic past burned area. Validation through a test data-set is carried out with **performance indicators**.

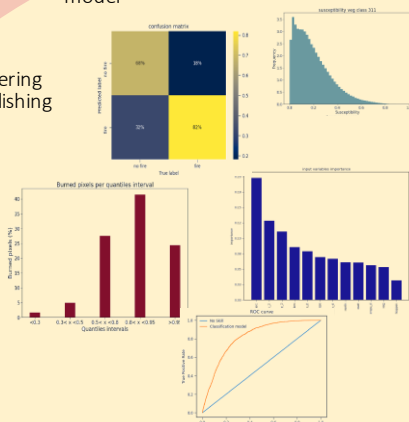
FEATURES (PREDISPOSING FACTORS)		
Land Use, Topographic	Climatic	Anthropic
Land cover (CORINE 2018)	Daily average temperature (1995-2020)	Distance from primary roads
Elevation, slope, aspect	Daily cumulative precipitation (1995-2020)	Distance from crops
	Koppen climatic areas	Distance from settlements
LABEL (OBSERVED VARIABLE)		
Past burned area over the Study Area + randomly sampled pseudo absences		



Summer and Winter Wildfire Susceptibility Maps



Indicator	Winter	Summer
AUC	0.95	0.82
MSE	0.09	0.17



References

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- Tonini, M.; D'Andrea, M.; Biondi, G.; Degli Esposti, S.; Trucchia, A.; Fiorucci, P. A Machine Learning-Based Approach for Wildfire Susceptibility Mapping. The Case Study of the Liguria Region in Italy. *Geosciences* **2020**, *10*, 105.
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