ΠΑΝΕΠΙΣΤΗΜΙΟ
ΠΑΤΡΩΝ
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Forest fire selectivity patterns in respect to topography during the period 1984-2015; in selected places in Greece. D2102 EGU 2020-19642

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Forest fire selectivity patterns in respect to topography during the period 1984-2015; in selected places in Greece.

Key words:

Wild fires, selectivity, topography,
Land Use-Land cover,
Burned Areas.

The aim of this study is to assess wildland fires electivity patterns in respect to topography.

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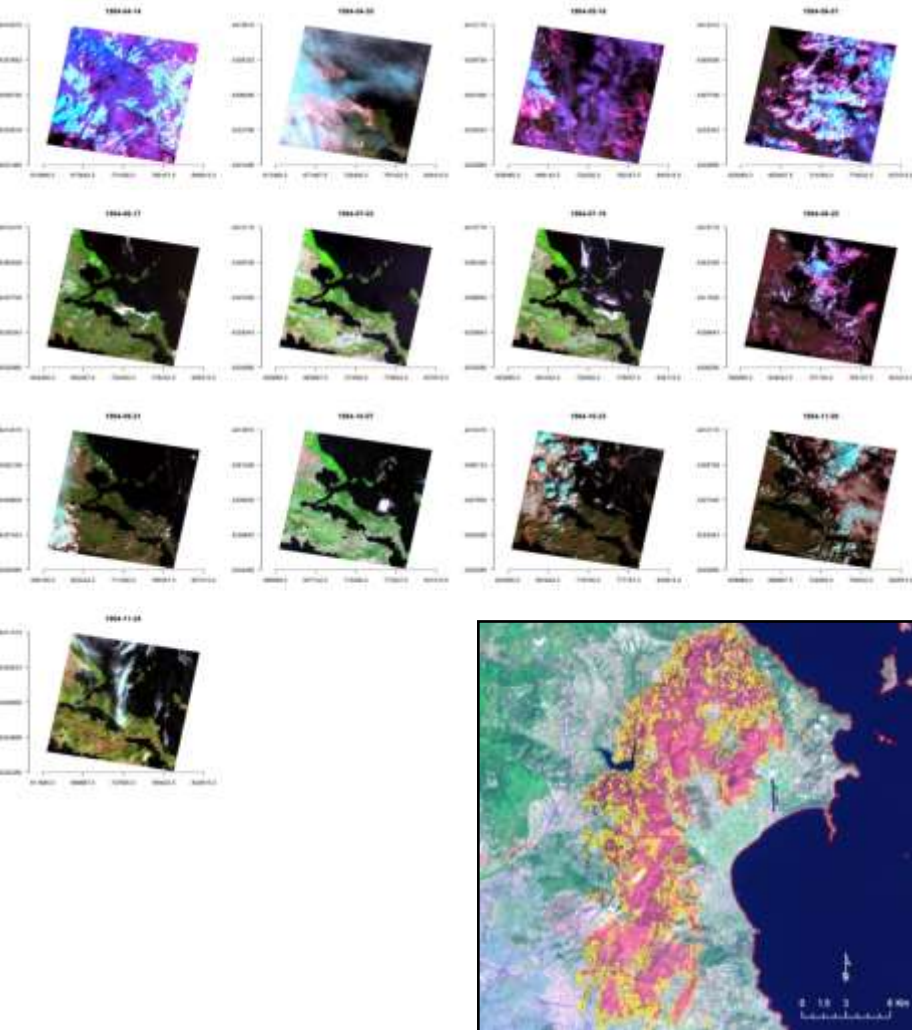G. Seferi 2, GR-30100 Agrinio, Greece, stamou@upatras

Study Area - South Greece
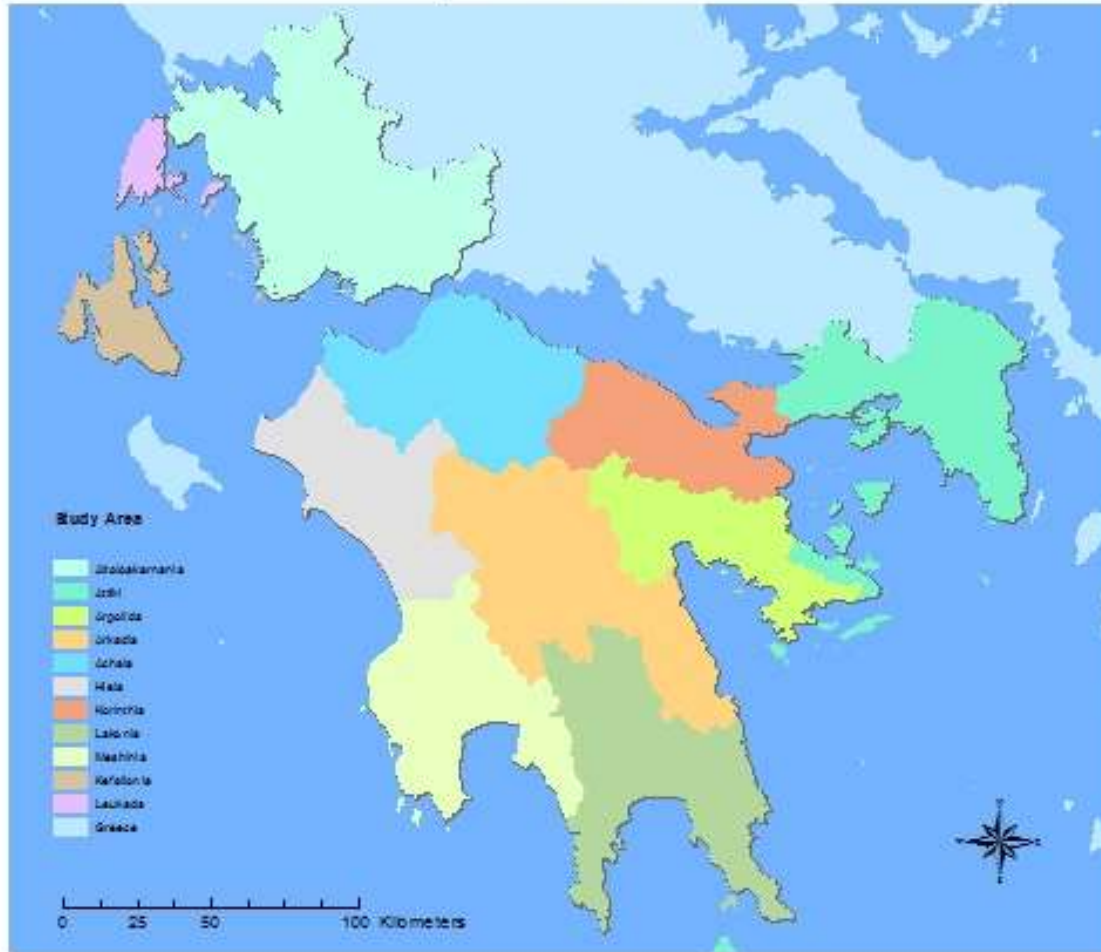
For Study Area have been selected eleven NUTS-3 counties in South Greece of which two are islands.
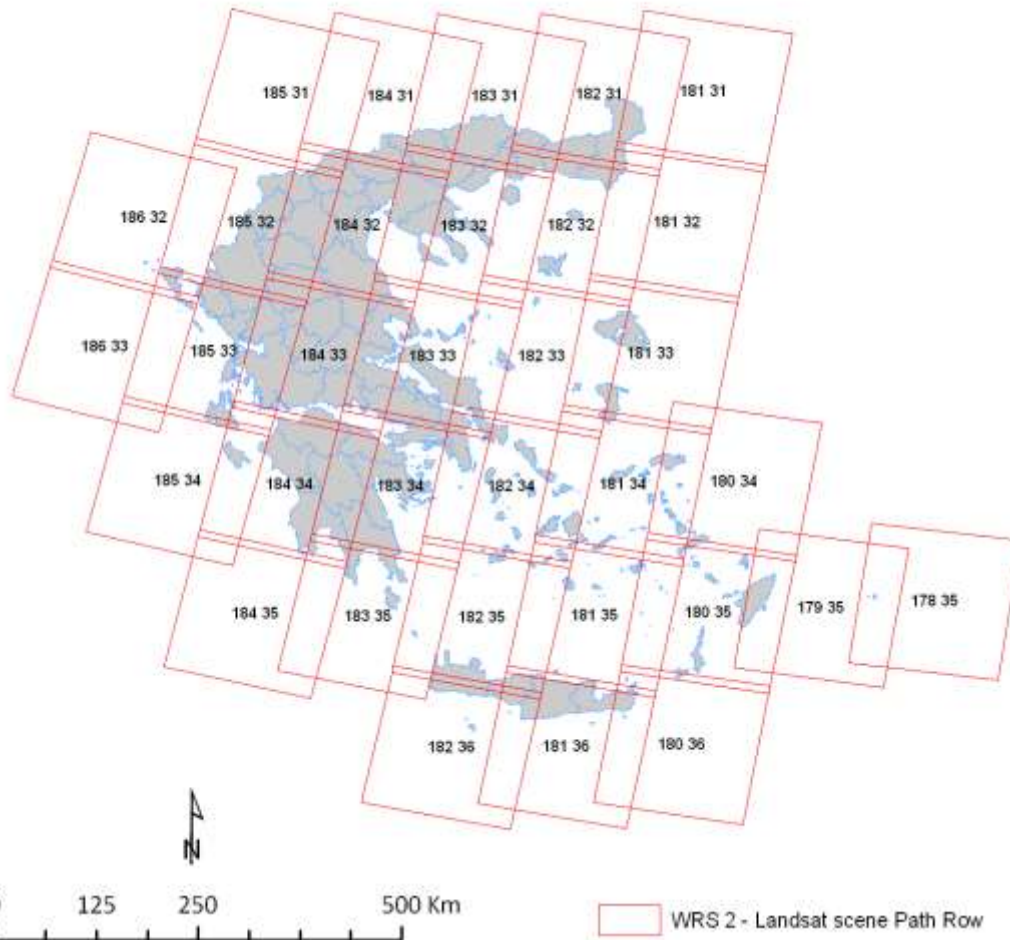
There are strong differences, among all the areas, in terms of topography, Land use-Land cover and also weather conditions.

However it becomes clear, that consideration of the results, can be define the link between spatial factors and fire selectivity patterns.
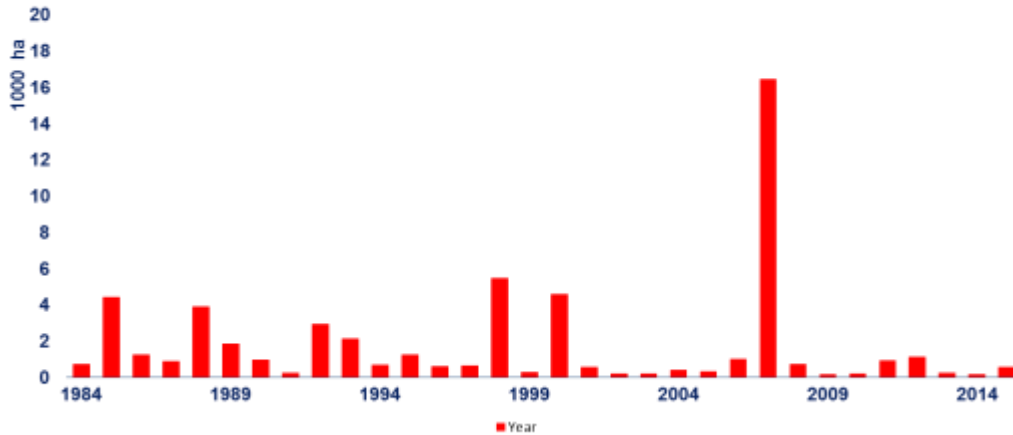
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For the research, almost six thousand Landsat images, from USGS and ESA freely available archives, were processed.

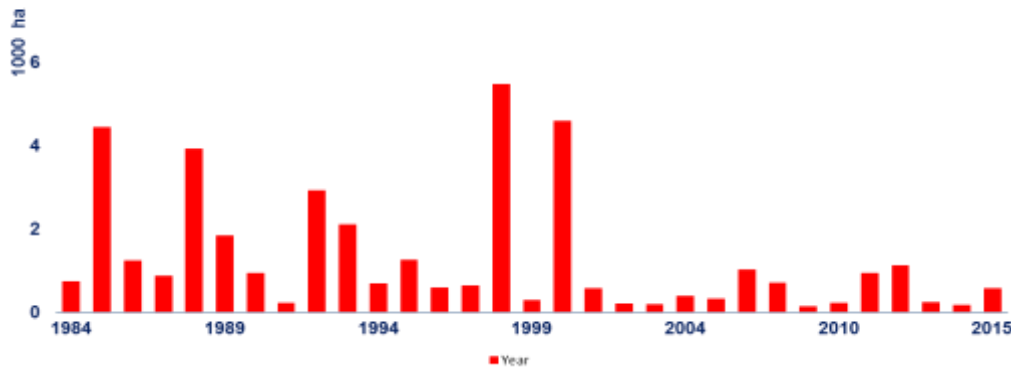Zoi STAMOU, University of Patras, Department of Environmental Engineering,
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GREECE - LANDSAT PATH/ROW

Derived from eight different Landsat scenes (path/row), overlapping the study area.

WRS 2 - Landsat scene Path Row

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Burned Areas - South Greece 1984-2015(2007 included)

The annual recording of burned areas (in ha) in South Greece, in a time series from 1984-2015, demonstrates the role of wildfires into the ecosystem and the necessity to explain and asses selectivity patterns.

Burned Areas South Greece 1984-2015 (year 2007 excepted)

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WILDLAND FIRES 1984-2015 SOUTH GREECE

Burned Areas in Greece 1984-2015
Burned Areas 1984-2015
Study Area
Greece

0   25   50   100 Kilometers

More than five thousand and eight hundred fire perimeters were extracted, in order to reconstruct the fire history of South Greece, in a thirty two years' period.

Fire perimeters within each year of fire occurrence were compared against the available to burn under complete random processes to identify selectivity patterns in respect to topography.

Aspect, slope and elevation are spatial factors, considered to effect fire function.

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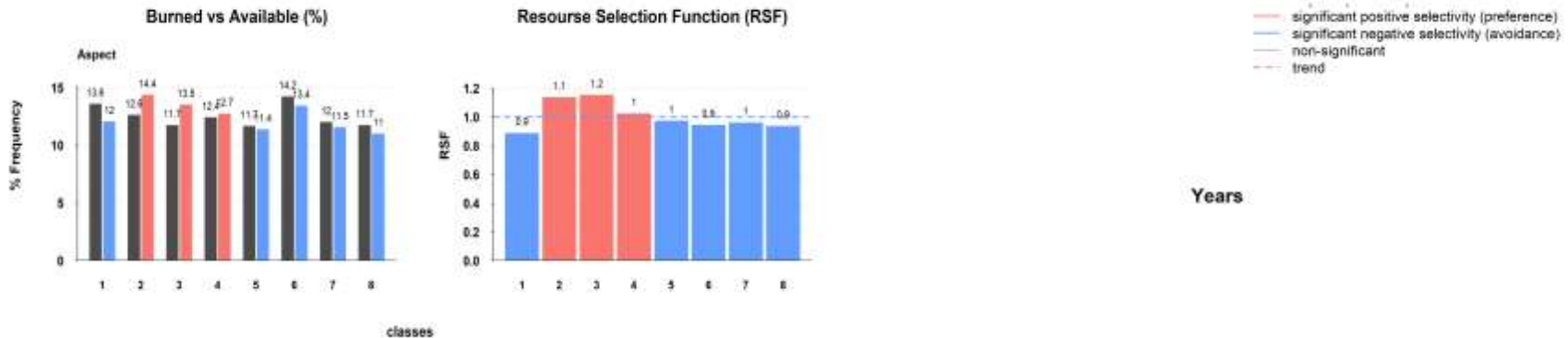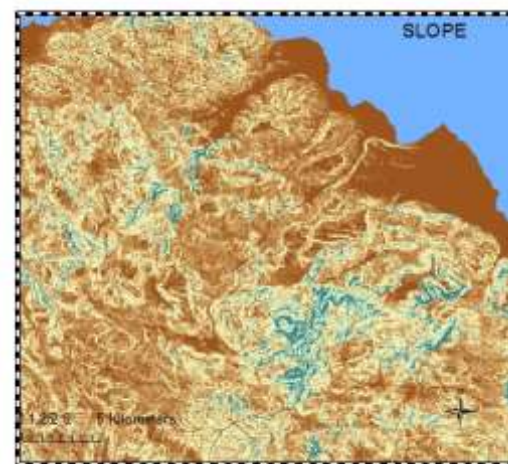G. Seferi 2, GR-30100 Agrinio, Greece, stamou@upatras

It is clear that even though there is a decreasing trend in east, north east and south east facing aspects, fire selectivity in these areas is higher as compared to the available to burn. On the other hand there is a considerable rising in the trend of fire selectivity on west, southwest and northwest facing aspects.

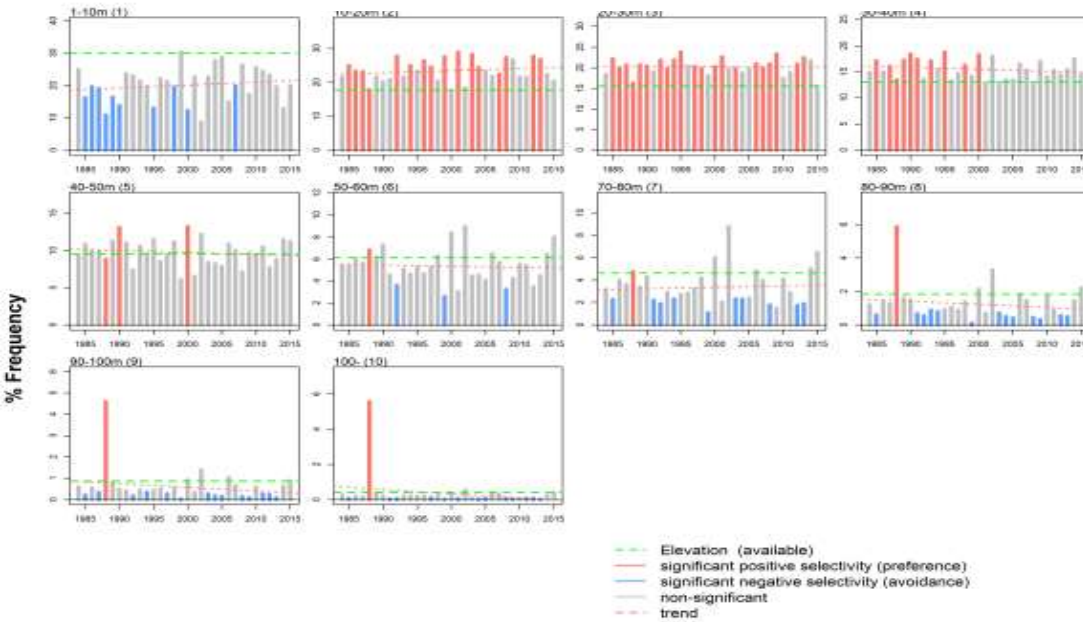Selectivity of Burned Areas on Aspect (South Greece)
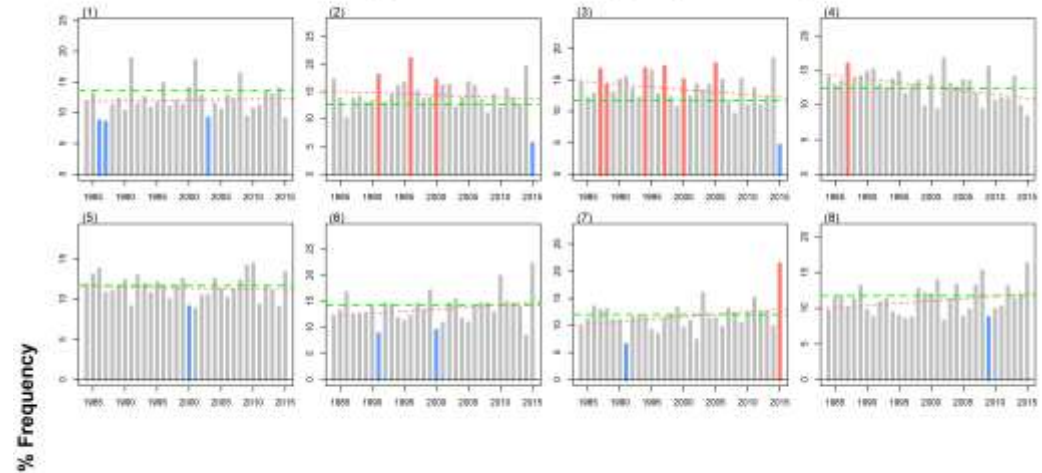
% Frequency

Years

Selectivity of Burned Areas on Aspect (South Greece)

Burned vs Available (%)

Resourse Selection Function (RSF)

Aspect

% Frequency

classes

RSF

significant positive selectivity (preference)
significant negative selectivity (avoidance)
non-significant
trend

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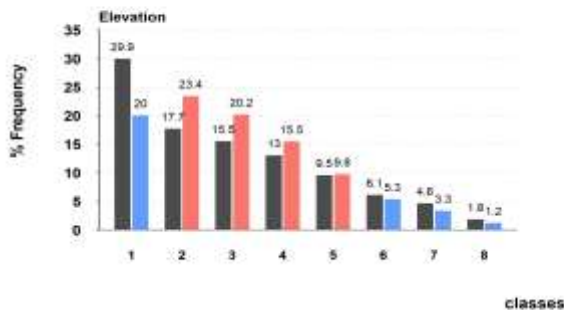G. Seferi 2, GR-30100 Agrinio, Greece, stamou@upatras
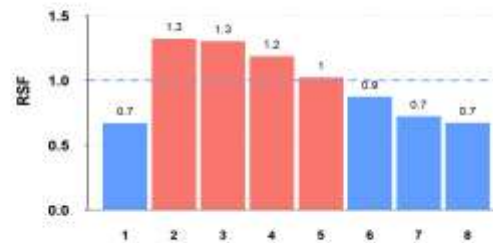
Selectivity of Burned Areas on Slope (South Greece)

In terms of slope, lower- and mid-slopes tend to burn more than the available, opposite to upper- and higher –slopes.
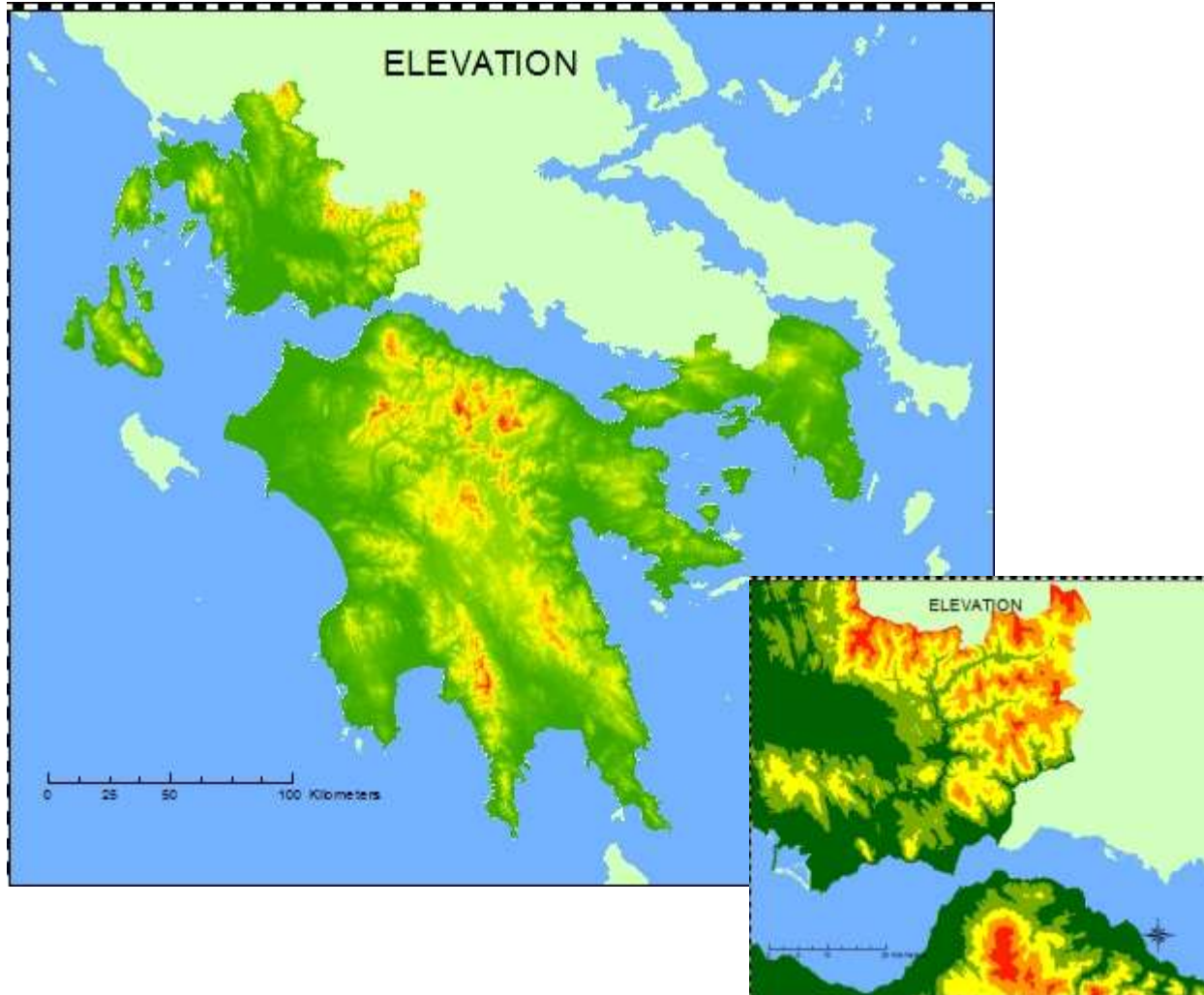
Selectivity of Burned Areas on Slope (South Greece)

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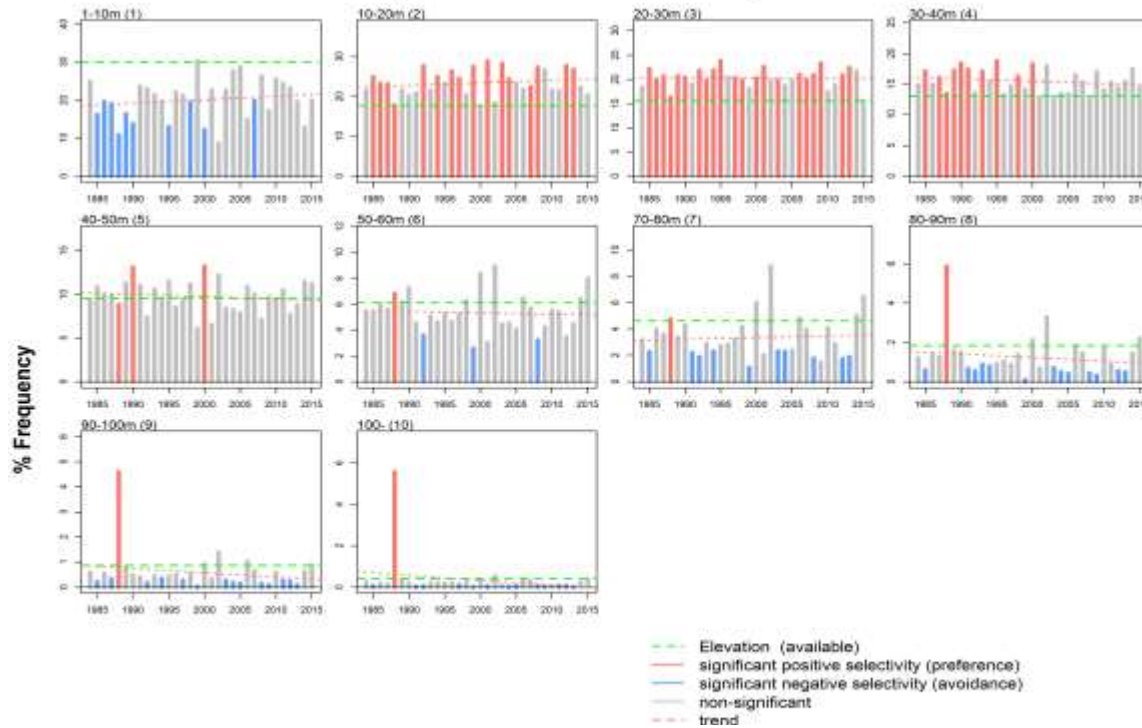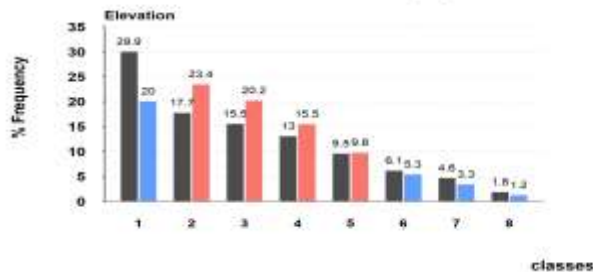G. Seferi 2, GR-30100 Agrinio, Greece, stamou@upatras

Selectivity of Burned Areas on Elevation (South Greece)

In addition, upper-elevation areas (over 800 meters), are negative related to wildfires while most of wildfires occur in altitude from 100 to 600 meters.

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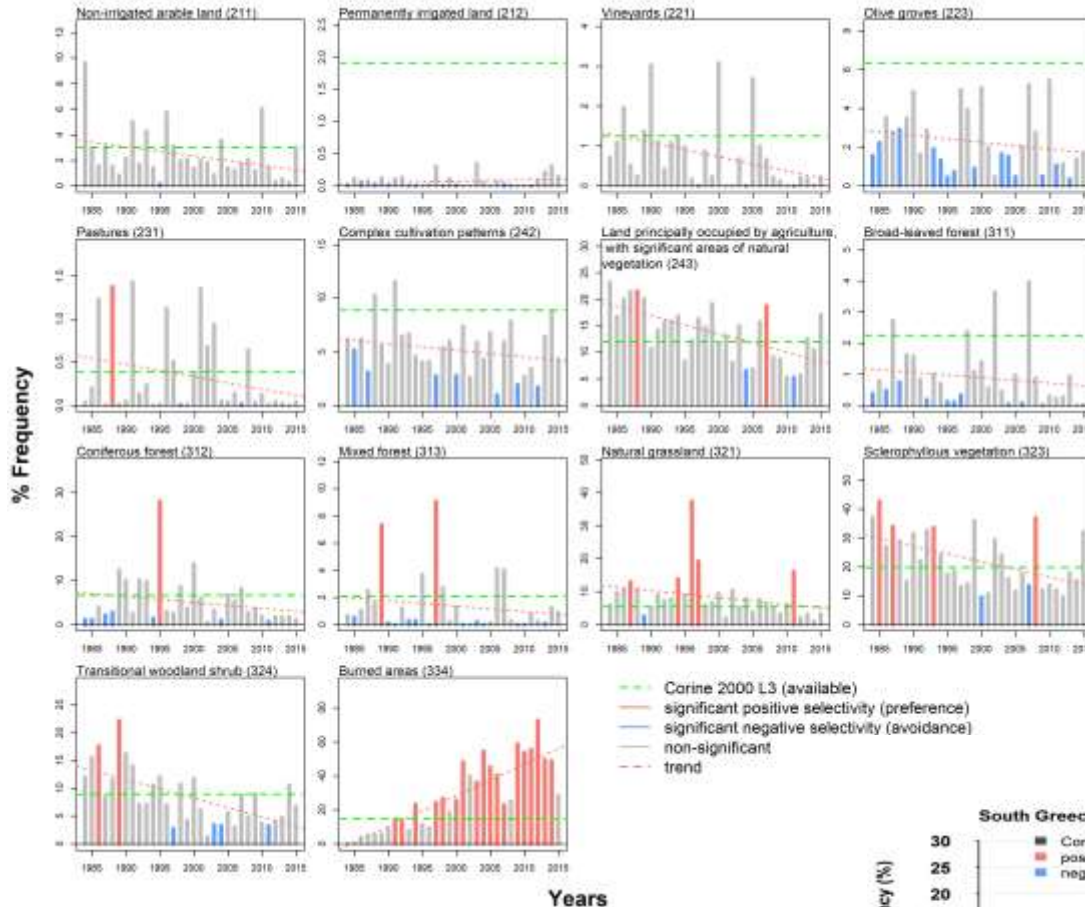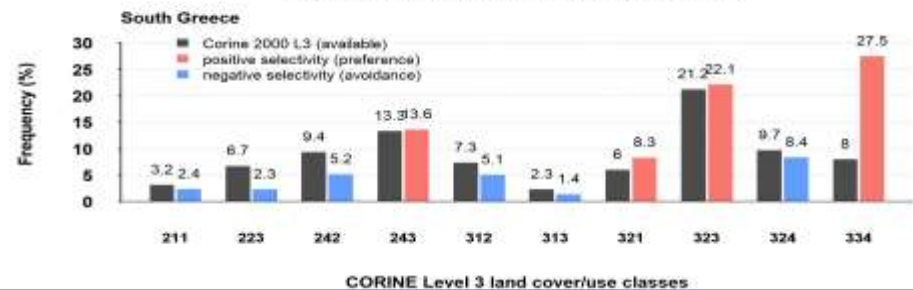
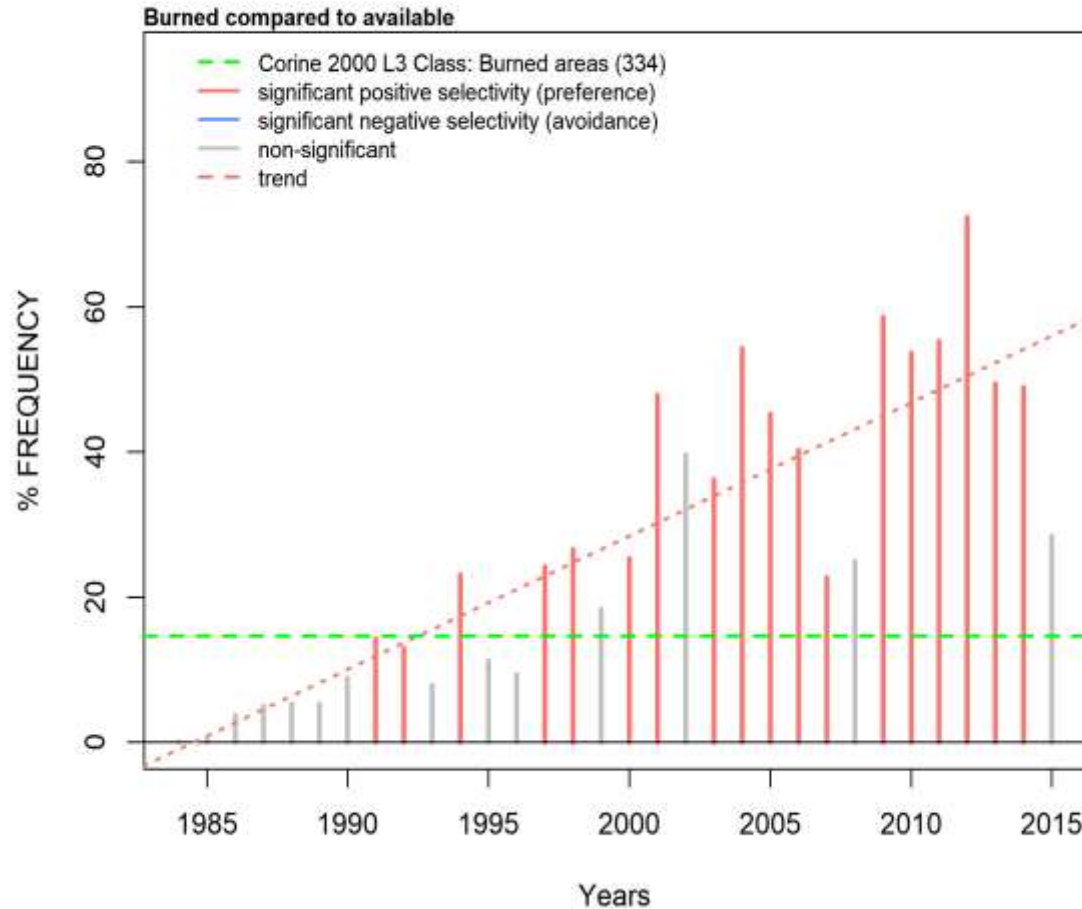Selectivity of Burned Areas on Corine 2000 L3 (South Greece)

Non- irrigated arable lands, complex cultivation patterns and discontinuous urban fabrics were negative related with fires, while coniferous forests, sclerophyllous vegetation and transitional woodlands were preferred by the fires.

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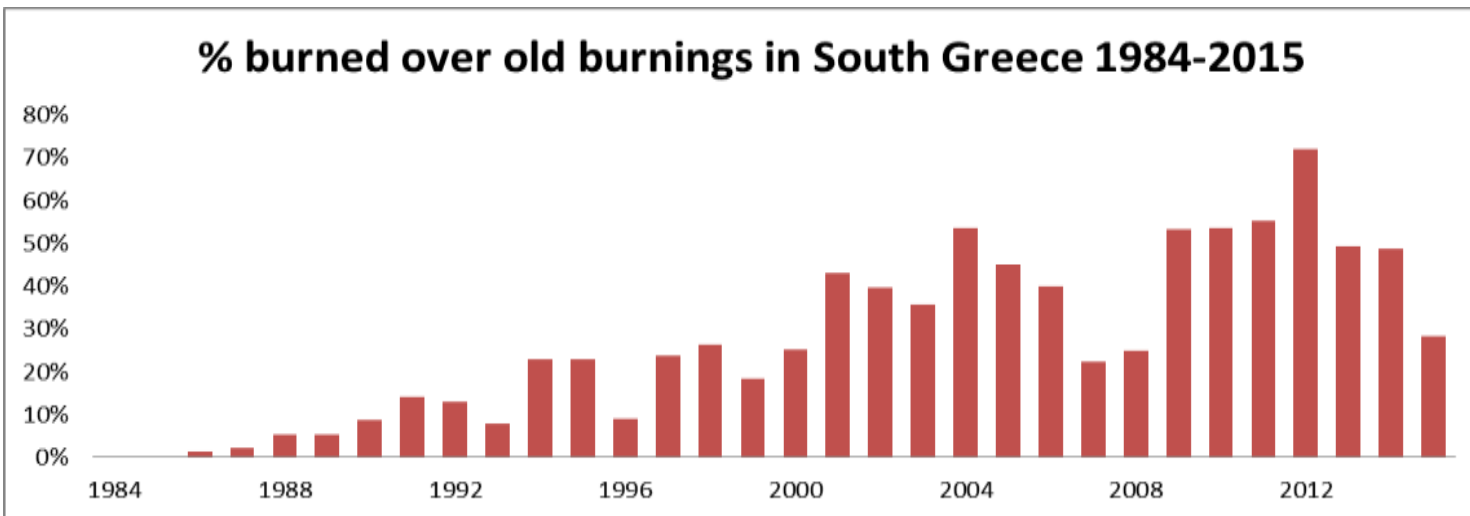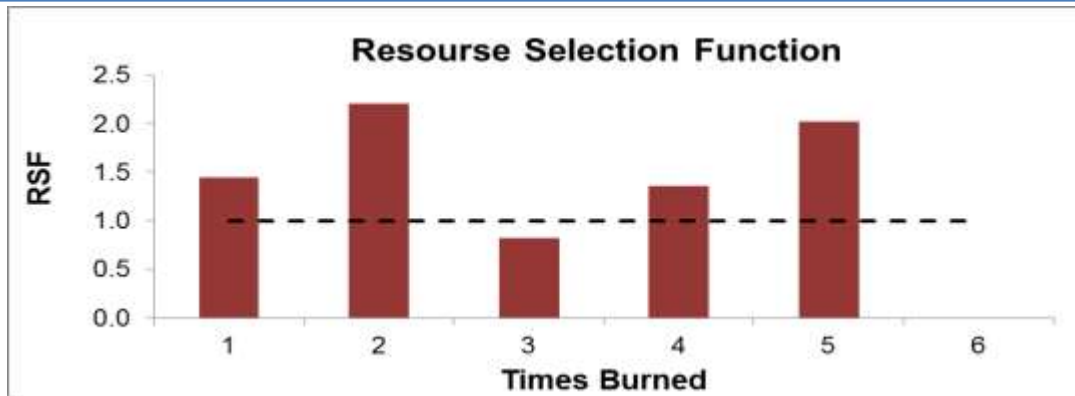
Selectivity of Burned Areas on Corine 2000 L3 classes 334

As it seems, fires prefer their old burnings (two and three times burned) and also places with different patterns of time since last fire depending on the time needed by the type of vegetation to recover and thus to re-burn.

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Resourse Selection Function

% burned over old burnings in South Greece 1984-2015

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Thank you, for participating.

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