Frequency distribution of LST >35°C Google Earth Engine open-source code

(developed by authors for calculating the mean day and night LST during summer for the study area)

Northeast Italian viticulture affected by heat and vegetation stress. A Satellite-Based Study from 2000 to 2024

Vincenzo Baldan, Eugenio Straffelini, Vincenzo D’Agostino, and Paolo Tarolli (2025)

// import study area boundaries

//import MODIS LST data and select “'LST\_Day\_1km” for analysing the daytime LST

var mod\_1223 = ee.ImageCollection('MODIS/061/MOD11A2');

var coll\_1223 = mod\_1223.select('LST\_Day\_1km')

//filter the dataset for the periods and months considered

.filter(ee.Filter.calendarRange(2020, 2024, 'year'))

.filter(ee.Filter.calendarRange(6, 8, 'month'))

//clip the dataset with the study area “table”

.map(function(image){return image.clip(table)});

//convert MODIS data from Kelvin to Celsius

var mod\_series\_1223 = coll\_1223.map(function(img) {

return img

.multiply(0.02)

.subtract(273.15)

.copyProperties(img, ['system:time\_start']);

});

//calculate the exceedances of LST>35°C and clip it with the study area

var exceedance\_count\_1223 = mod\_series\_1223.map(function(img) {

return img.gt(35).rename('exceedance');

}).sum();

var exceedance\_count\_mask\_1223\_clip = exceedance\_count\_1223.clip(table)

//map the exceedances

Map.addLayer(exceedance\_count\_mask\_1223\_clip, {min: 0, max: 50, palette: ['white', 'pink','red','purple','black']}, 'Exceedance Count2');

var exceedance\_count\_mask\_1223\_clip\_float = exceedance\_count\_mask\_1223\_clip.float()

//export the map

Export.image.toDrive({

image: exceedance\_count\_mask\_1223\_clip\_float,

description: 'SUPERAMENTO\_35\_2020\_2024\_vf',

region: table.geometry().bounds(),

scale: 1000,

crs: 'EPSG:32632',

maxPixels: 1e10});