

# HIGH RESOLUTION DAILY TEMPERATURE FOR SERBIA (1960-2015)

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# INTRODUCTION

- Maximum and minimum temperature
- Spatial resolution: 1 km
- Temporal resolution: 1 day
- 1960 - 2015

# METHODOLOGY

- “Spatio-temporal interpolation of daily temperatures for global land areas at 1 km resolution” (Kilibarda et al.)
- Spatio-temporal regression kriging
- R Meteo package



# PREDICTORS

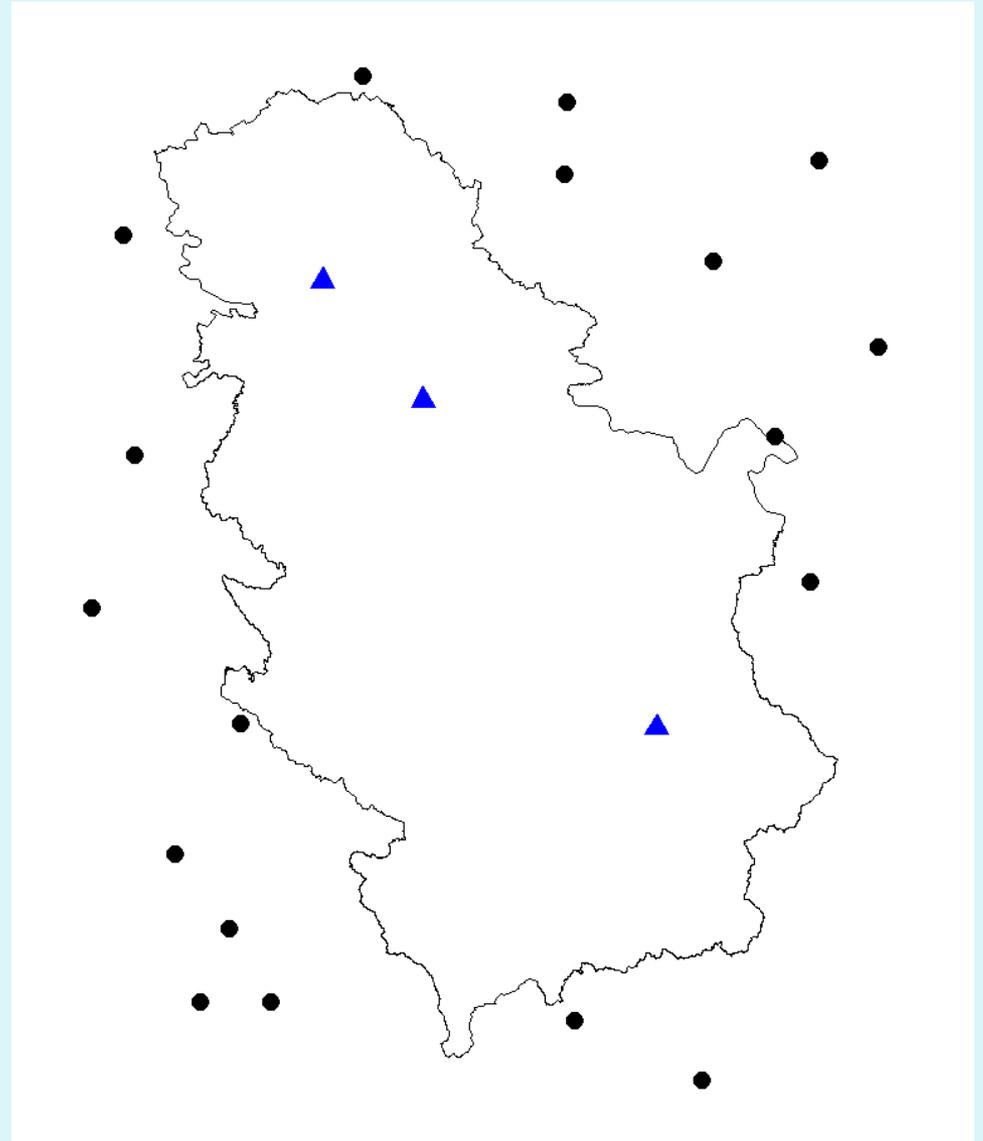
- DEM
- TWI
- Geometrical temperature trend:

$$t_{geom} = 37\cos\varphi - 15.4(1 - \cos\theta)\sin|\varphi|$$

- MODIS LST
- Station data

# GHCN daily

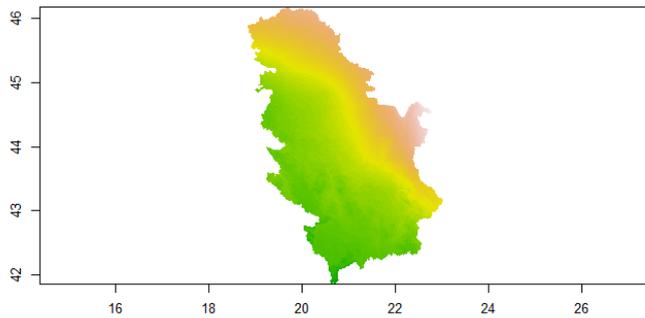
- 3 stations in Serbia
- 20 nearest stations for prediction



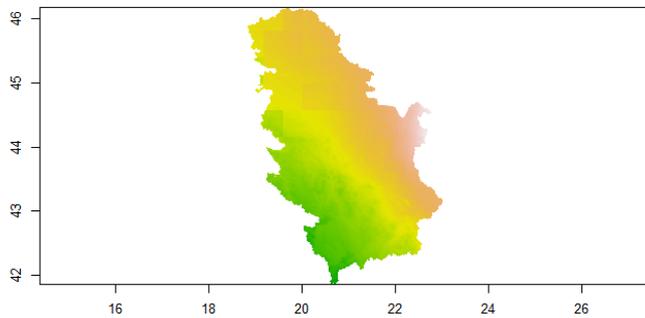
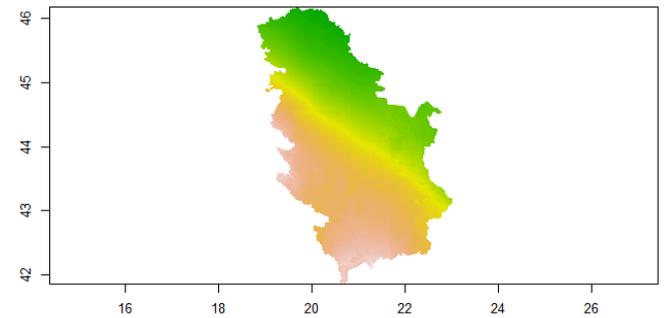
# RESULTS

15-01-2014

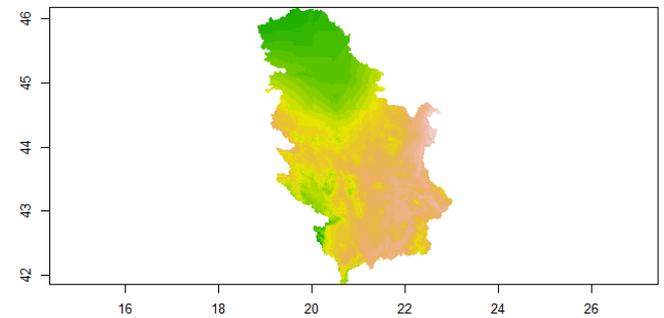
15-07-2014



MAX



MIN



## Rasdaman

Geoserver  
Geonetwork  
Copernicus data Serbia  
Cesium  
Rasdaman

GetCapabilities

DescribeCoverage

GetCoverage

ProcessCoverages

DeleteCoverage

InsertCoverage

WCS service endpoint:

Get Capabilities

Available coverages ▾

Coverage ID

Coverage subtype

[MinTemperature\\_SERBIA](#)

RectifiedGridCoverage

[AverageTemperature](#)

RectifiedGridCoverage

[mean\\_summer\\_airtemp](#)

RectifiedGridCoverage

[MaxTemperature\\_SERBIA](#)

RectifiedGridCoverage

[MaxTemperature](#)

RectifiedGridCoverage

Rasdaman

- [osgl.grf.bg.ac.rs/rasdaman](http://osgl.grf.bg.ac.rs/rasdaman)

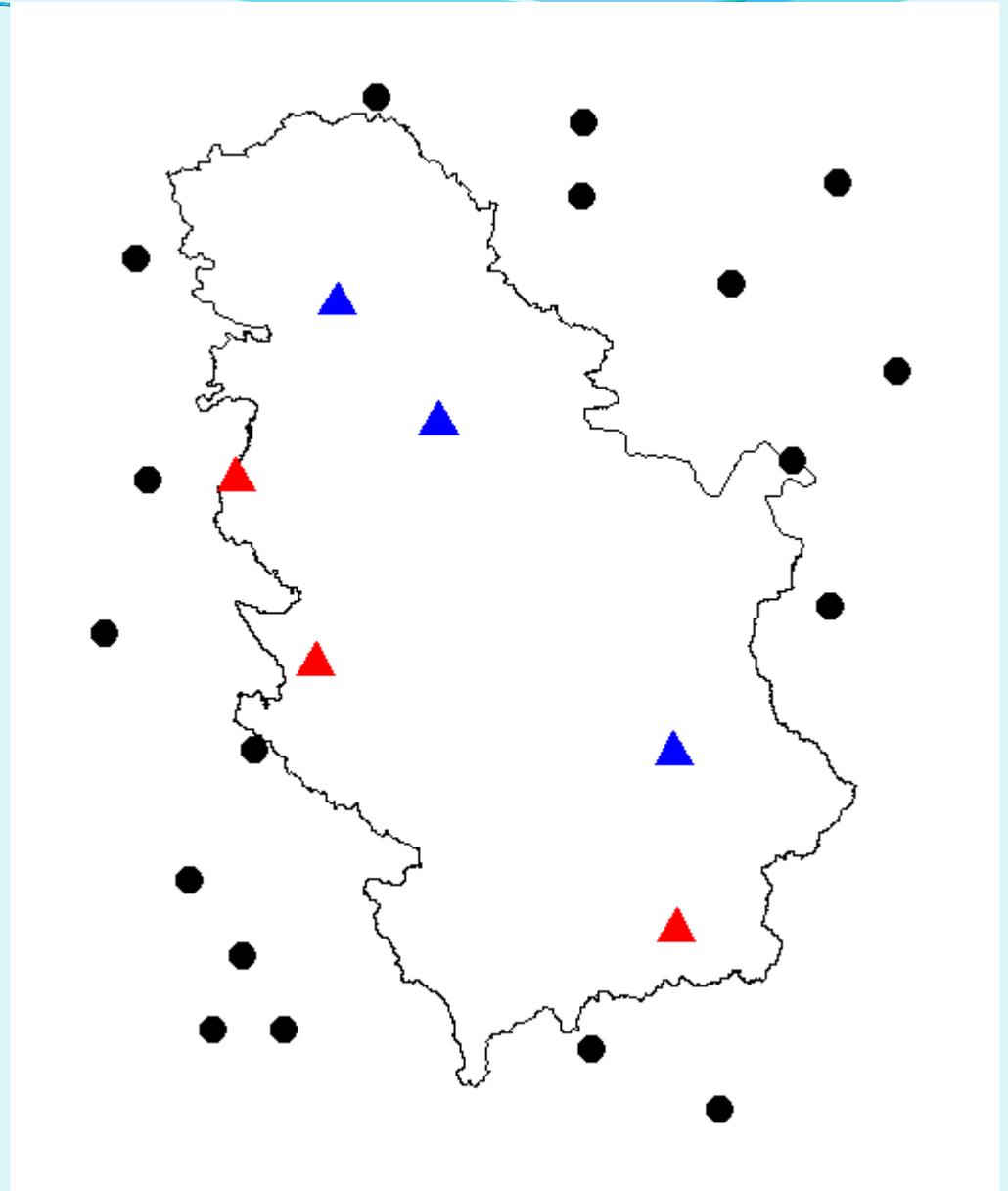
# CROSS VALIDATION

- RMSE

Stations	Belgrade	Novi Sad	Niš
MAX	1.908462	1.547734	2.406954
MIN	2.924081	1.388202	1.879265

# TEST

- 3 RHMZ stations
- Year 2014



# TEST

## MAX

Stations	Zlatibor	Vranje	Loznica
Altitude	1028m	432m	121m
RMSE	4.57	1.67	2.33
Min	-9.7	-4.7	-4.4
1 <sup>st</sup> Qu.	-5.3	-0.9	0.5
Mean	-3.69	0.02	1.43
Median	-4.0	0.1	1.5
3 <sup>rd</sup> Qu.	-2.3	1.0	2.6
Max	17.5	6.5	7.0

## MIN

Stations	Zlatibor	Vranje	Loznica
Altitude	1028m	432m	121m
RMSE	2.87	1.78	2.14
Min	-12.1	-5.2	-2.5
1 <sup>st</sup> Qu.	-3.5	-1.6	0.6
Mean	-2.09	-0.44	1.46
Median	-2.2	-0.5	1.5
3 <sup>rd</sup> Qu.	-0.8	0.6	2.4
Max	4.8	5.3	15.7

# COCLUSION

- Simple method – small number of points
- Model improving for higher altitudes
- Agriculture
- 20 more test stations (2014)

**Thank you for  
your attention!**