

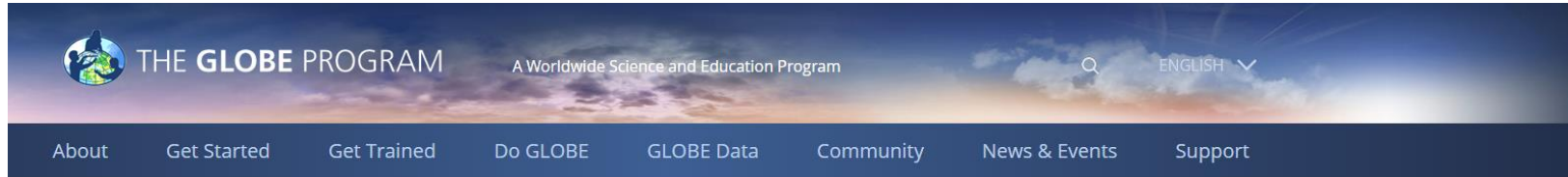
# Time of buddburst and dynamics of leaf growth in *Tilia cordata* Mill. at Varaždin and Belišće

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Lidija Tivanovac Primary school Ivana Kukuljevića Belišće



# All started with...*Find a Project Collaborator* tool



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 Share

## Find a Project Collaborator

Use this tool to find GLOBE community members who are interested in collaborating on GLOBE projects, protocols or other activities.

On the search results page, you can select a person's name or organization to learn more about them. If you'd like to collaborate, select 'Request Friend' next to the person's name. This will send an email to the member asking if they'd like to collaborate. If they approve your request, you will receive an email confirming they have accepted your invitation. As friends, you'll see an email link on their My Page and will have access to their message board (or Wall). If you have additional questions, please contact our help desk.

▼ Close Search Filter

Apply My Profile Settings

For the drop-down menu filters, multiple items can be selected by using CTRL-click.

User Type:

- Any User Types
- STEM Network (scientists)
- Teachers
- Alumni

Who Speaks:

- Any Language
- Arabic (العربية)
- Chinese (漢語)
- Croatian (hrvatski)
- Czech (český)

From:

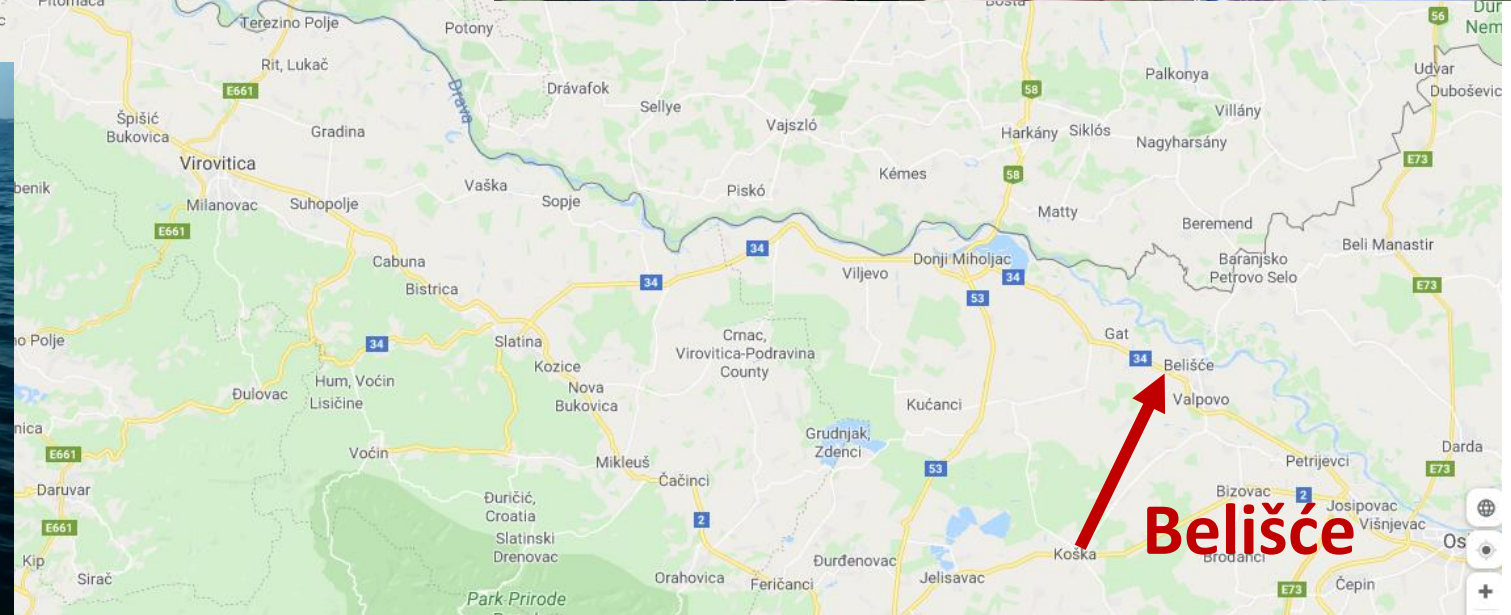
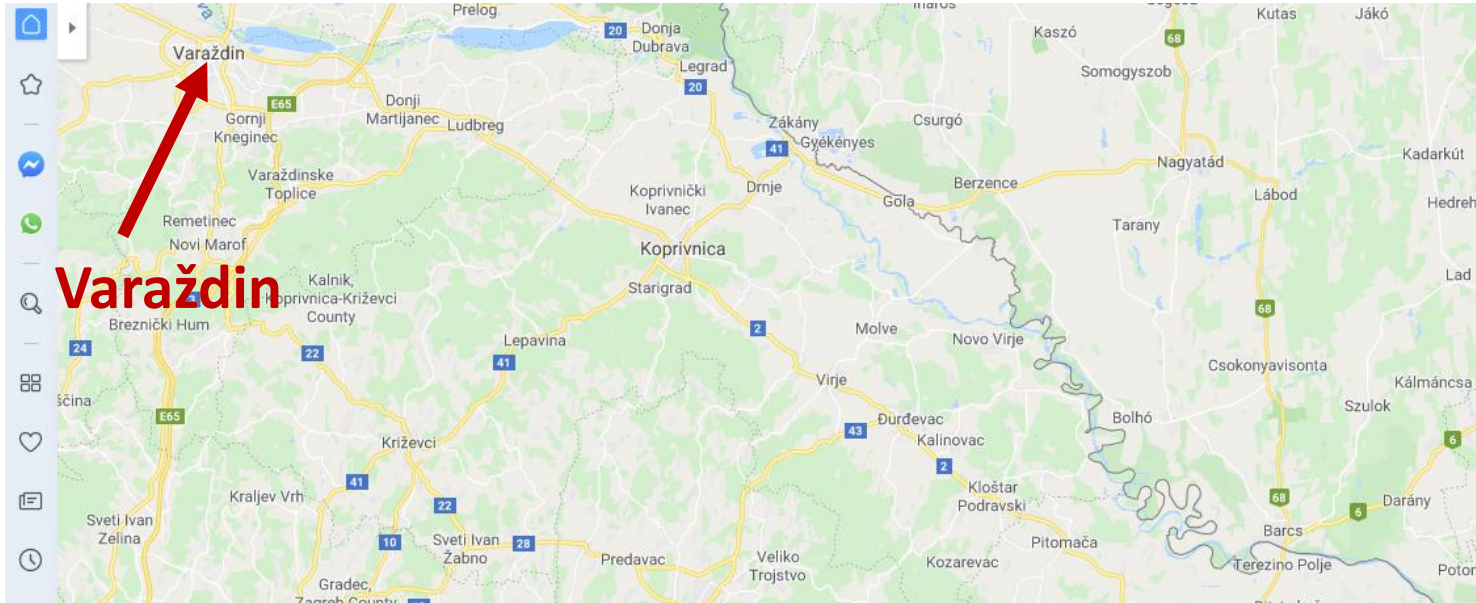
- All Countries
- Argentina
- Australia

Investigation Areas/Protocols

Search for community members that are interested in:

- Atmosphere
  - Aerosols
  - Barometric Pressure
  - Precipitation
  - Surface Ozone
  - Water Vapor
  - Air Temperature
  - Clouds
  - Relative Humidity
  - Surface Temperature
  - Wind
- Biosphere
  - Arctic Bird Migration
  - Carbon Cycle
  - Biometry (including Tree Height)
  - Fire Fuel

And after 5 years of collaboration and friendship between two 300 km distant schools...



**...Two awarded projects...**

# **The Drava River through miles and seasons 2016.**

*Research focuses on comparison of water temperature, water level and transparency in 300 km distant station on river Drava*

# Influence of air temperature and precipitation on decomposition of organic matter and release of carbon dioxide 2018.

*This research focuses on the study of the rate of decomposition of organic matter and the amount of carbon dioxide released during this process on two geographically distant stations with varying precipitation and air temperature (Varaždin and Belišće)*



...we had a new idea...

This time....

...PHENOLOGY!



# Why phenology measurements?



**Vizual Interesting,**

**help detect climate change,**

**Get to do real science!**

# How we did it?

Lots of LOVE for GLOBE...



# ... AND... Visualization system!



community.acer.com | My Drive - Google D... | GLOBE rad - marina... | 2020globeeting... | Call-for-Presentation | Page Not Found | Speed Dial | Length of vegetation | GLOBE Home Page | GLOBE Science Data

vis.globe.gov/GLOBE/

GLOBE Visualization System

Measurements | Data Counts

Select Language | Welcome | Orleans

2020-10-04

Protocol Layers

Green-Up

Greenings data includes one year of measurements

Greenings Species Update

- All
- European Phenology Campaign
  - Beech (Fagus sylvatica)
  - Birch (Betula pendula)
  - Fig (Ficus carica)
  - Hazel (Corylus avellana)
  - Oak (Quercus robur)
  - Small-leaved lime (Tilia cordata)
  - Sour cherry (Prunus cerasus)

Choose sphere to explore protocols

- Atmosphere >
- Biosphere >
- Hydrosphere >
- Pedosphere (Soil) >
  - Soil Temperature and Moisture
- Pedosphere (Soil) >
  - Soil Characterization

Sites on Map: 0

1000 km

OpenStreetMap contributors

Type here to search

21:33 4.10.2020



# After 5 years measuring we asked ourselves...

- *does the geographical location affect the time of budburst and the Green up period?*
- *Which microclimate conditions have the greatest impact on time of budburst and the Green up period?*

# Hypothesis

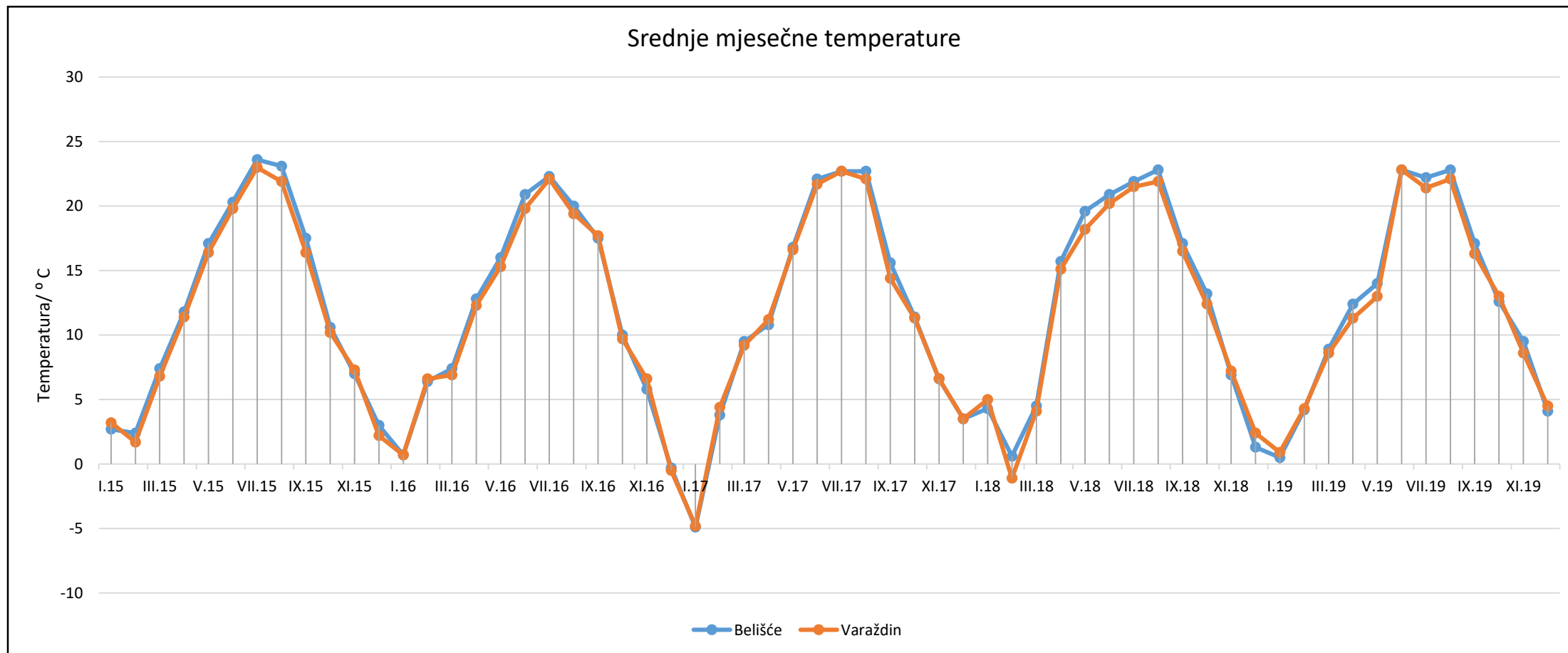
- budburst starts **earlier in Belišće** due to the lower altitude and **warmer microclimate** but **lasts longer in Varaždin** due to **percipitation**
- **soil temperature** has the greatest influence **on time of budburst**
- **precipitation** has the greatest **on green up period**

# Data

year	Time of budburst Varazdin	Time of budburst Belisce	End of vegetation season Varazdin	End of vegetation season Belisce	Duration of vegetation season Varazdin	Duration of vegetation season Belisce
2015.	6.4.	7.4.	25.5.	19.5.	61	42
2016.	30.3.	24.3.	27.5.	4.5.	58	42
2017.	27.3.	28.3.	25.5.	8.5.	59	42
2018.	29.3.	13.4.	9.5.	8.5.	41	26
2019.	21.3.	28.3	21.5.	23.5.	61	57

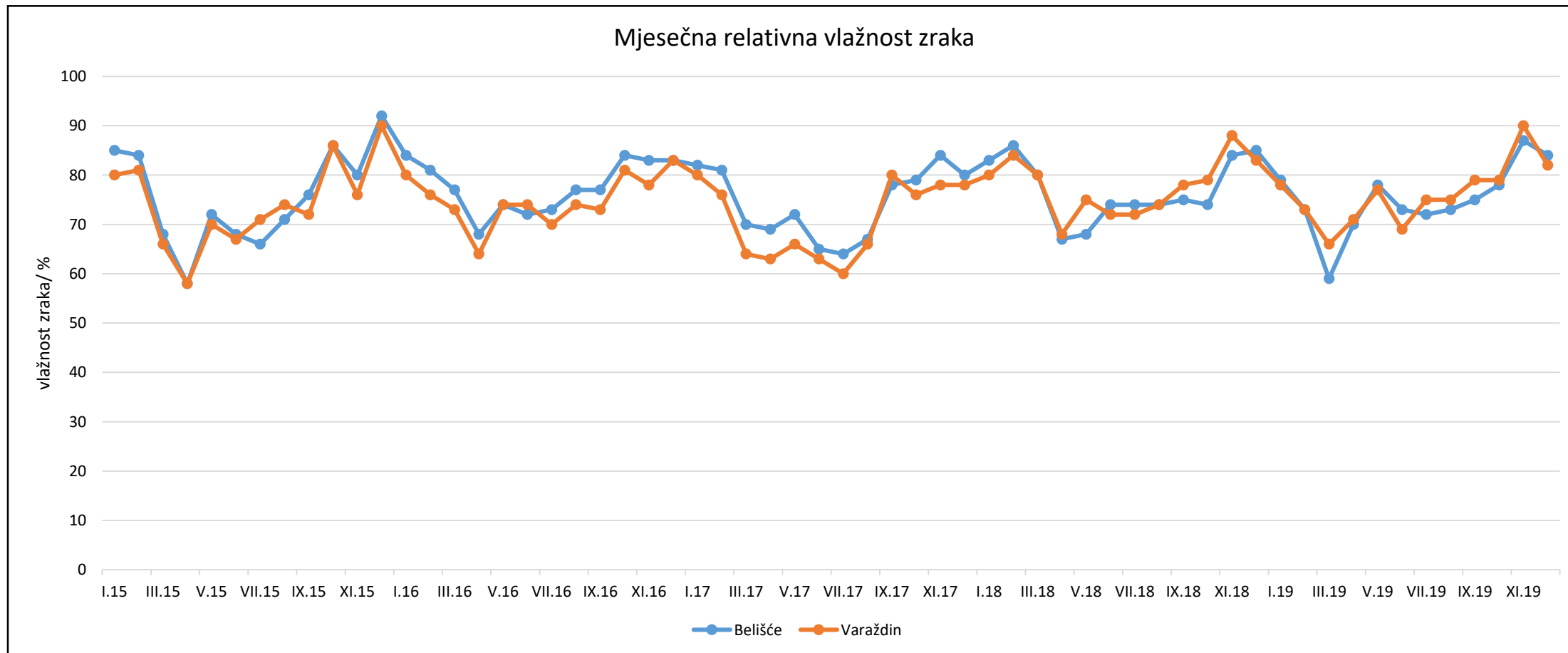
# Air temperature at station B and VZ since 2015.

legend: red – Varazdin, Blue - Belisce



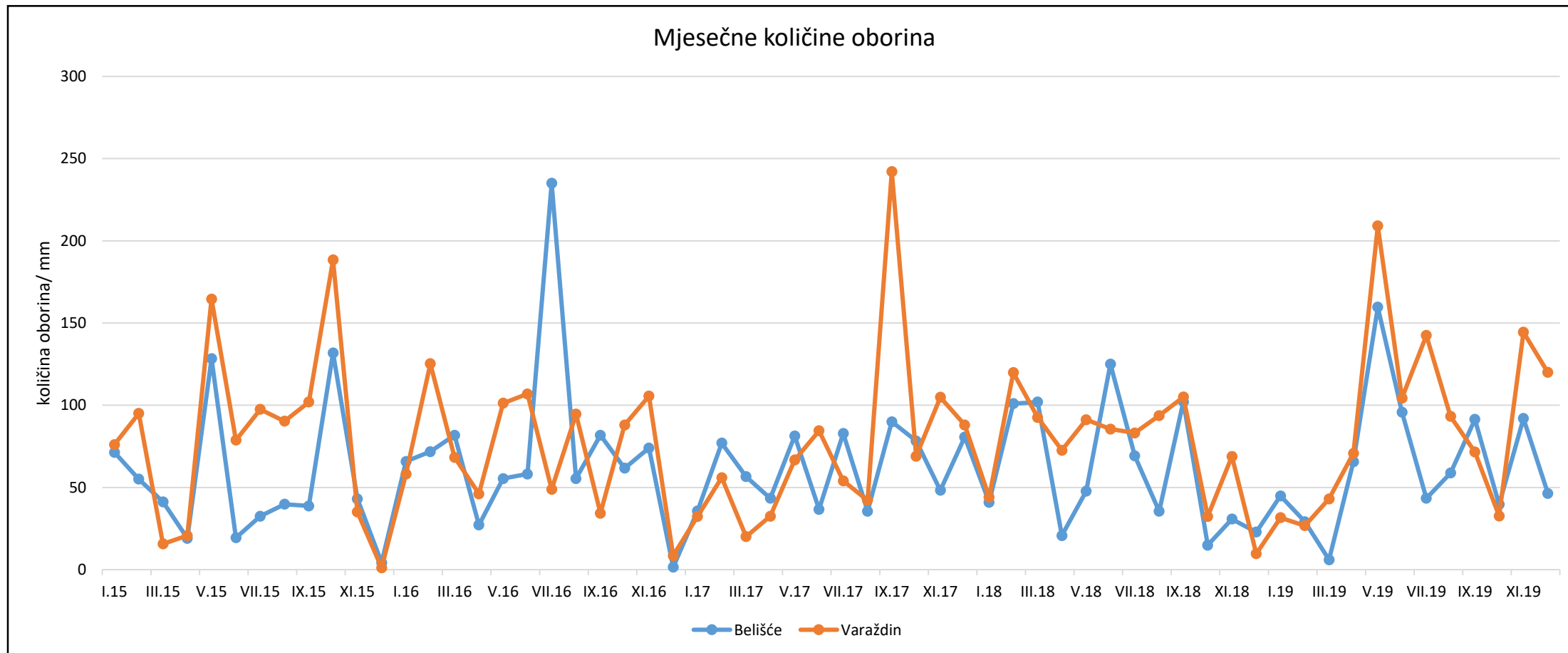
# Air Humidity

legend: red – Varaždin, Blue - Belišće



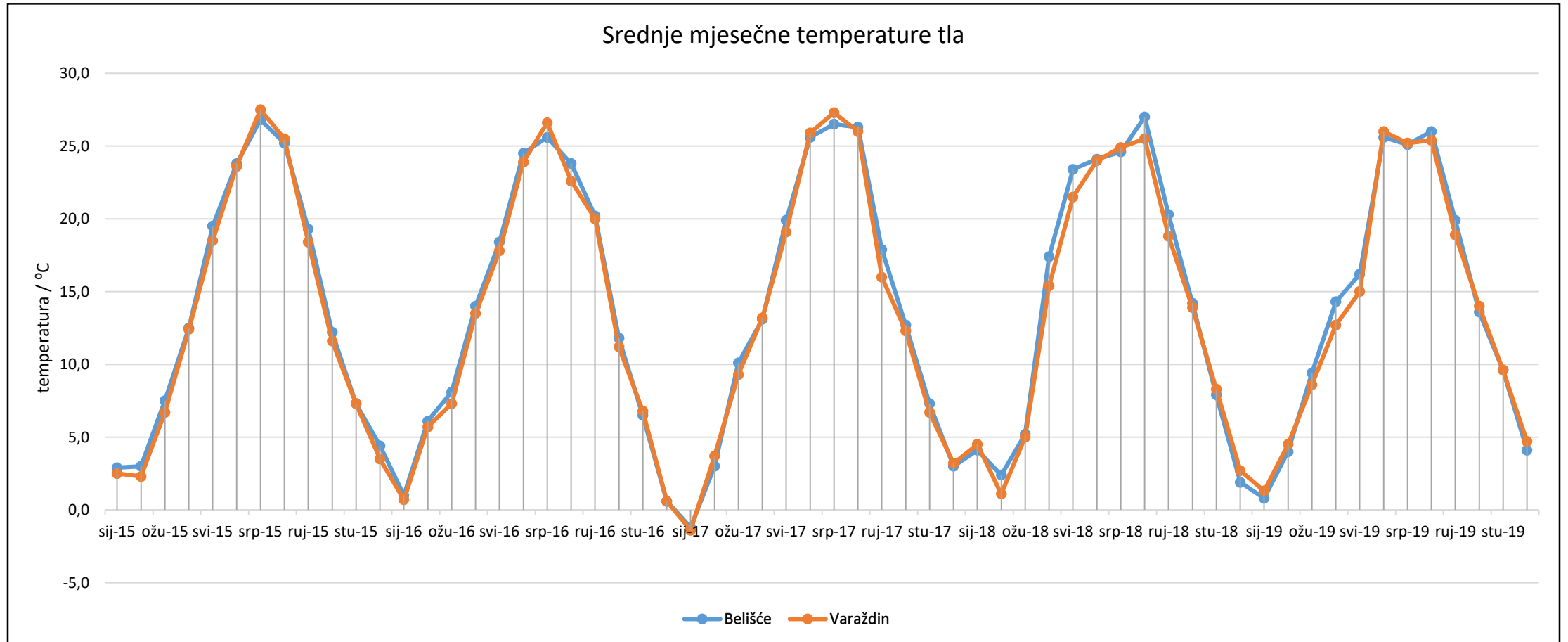
# Percipitation

legend: red – Varaždin, Blue - Belisce



# Soil temperature at 5 cm

legend: red – Varaždin, Blue - Belisce



# Conclusion

- *Time of budburst is similar in both station*
- *Vegetation season is longer in Varazdin because of higher humidity*
- *the main factors influencing the time of budburst is air and soil temperature*

