



GLOBE



ZŠ A. Sládkoviča Sliac
BENEFITS OF THE ENVIRONMENT

SOMETHING ABOUT US



Our school is located in a small town of Sliač in the Zvolen district, in the Central Slovak Region. Sliač – „The Pearl of Pohronie“ has a long history. The first written mention of it is in the documents from the mid-13th century. Sliač belongs to the category of spa cities. There are healing thermal springs.

Sliač lies in the Zvolen Basin in the Valley of the Hron River.

There are about 450 pupils in our school.

Our school focuses on the development of regional culture, environmental education and development of 21st century competences.



Research project

Comparison of the growth rate of small-leaved linden leaves depending on altitude

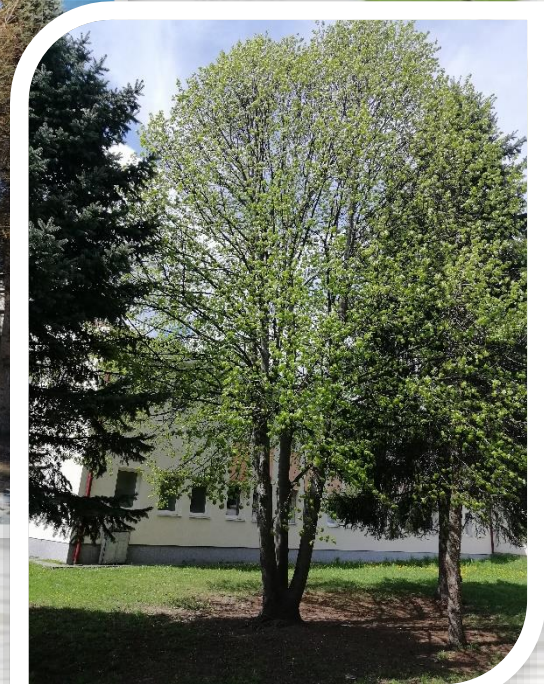


At the beginning of our observation, we chose two trees - small-leaved linden in two different habitats with different altitude. Our first linden tree grows in the Kalinovo locality in the village of Očová, with an altitude of 397 m above sea level. Our second linden tree grows near our school, in the locality of Sliač, with an altitude of 297 m above sea level. We also took into consideration the suitability of both sites.

KALINOVO



SLIAČ



Research questions:

- At which site will the leaves of the tree sprout and grow faster?
- What will be the difference in the length of the leaves of the small-leaved linden on two trees in the same period?
- Is the altitude of the locality related to the air temperature?
- Does air temperature affect the growth rate of small-leaved linden leaves?

Labelling of buds and their appearance in winter



Hypothesis:

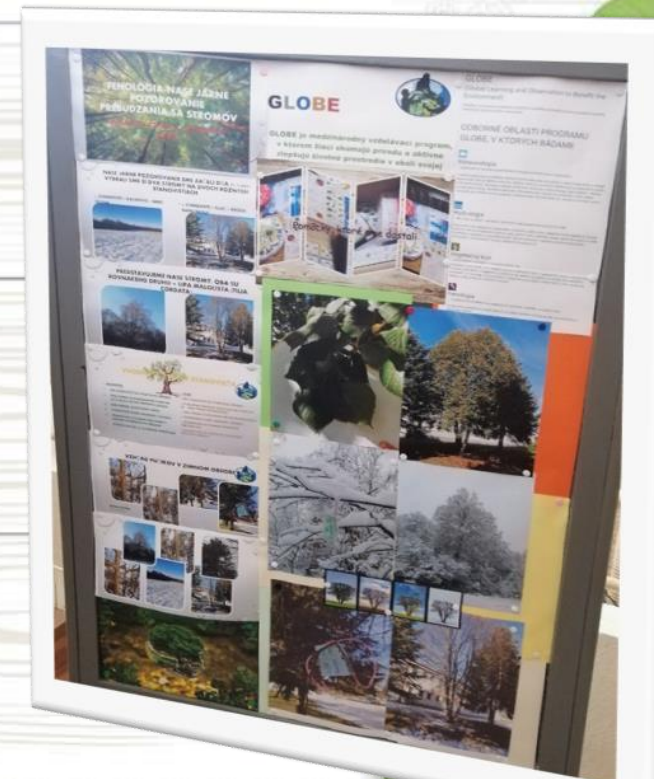


- **Trees in a locality with a higher altitude are likely to sprout later than trees growing in the lower altitude site.**
- **Differences in leaf length measured at the same time are likely to be well observable.**
- **Air temperature is an important factor in leaf growth and is closely related to the altitude of the observed site.**

Our Research process

- We started our observations on January 31st 2021. We visited the sites at regular intervals, twice a week, and recorded the data in the Globe database. In the period from April to May 2021, we recorded the most intensive growth of leaves and the total increase of biomass. We also took photos of our trees in the Growapp application.

We have prepared a Poster about our work on the Globe project and we have placed it in our school corridor.



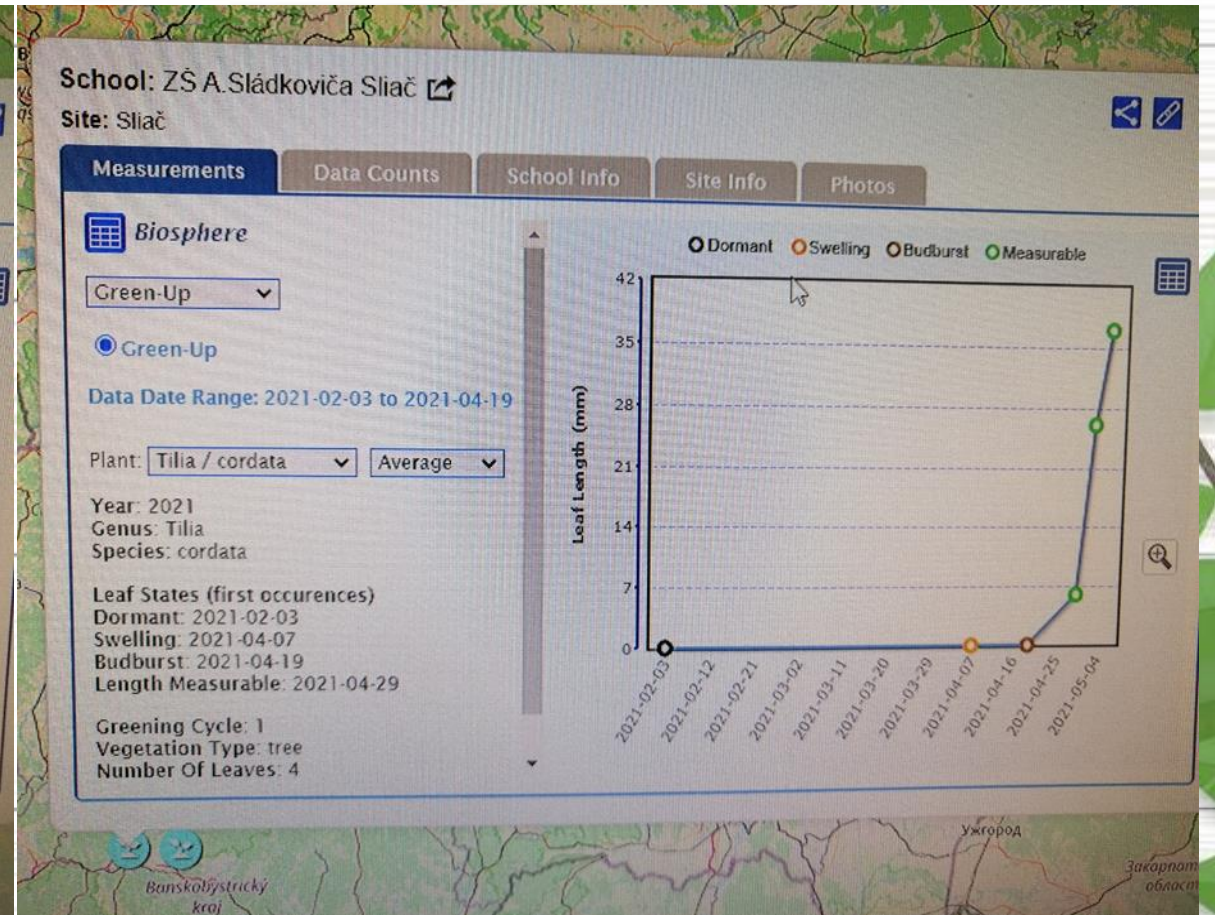
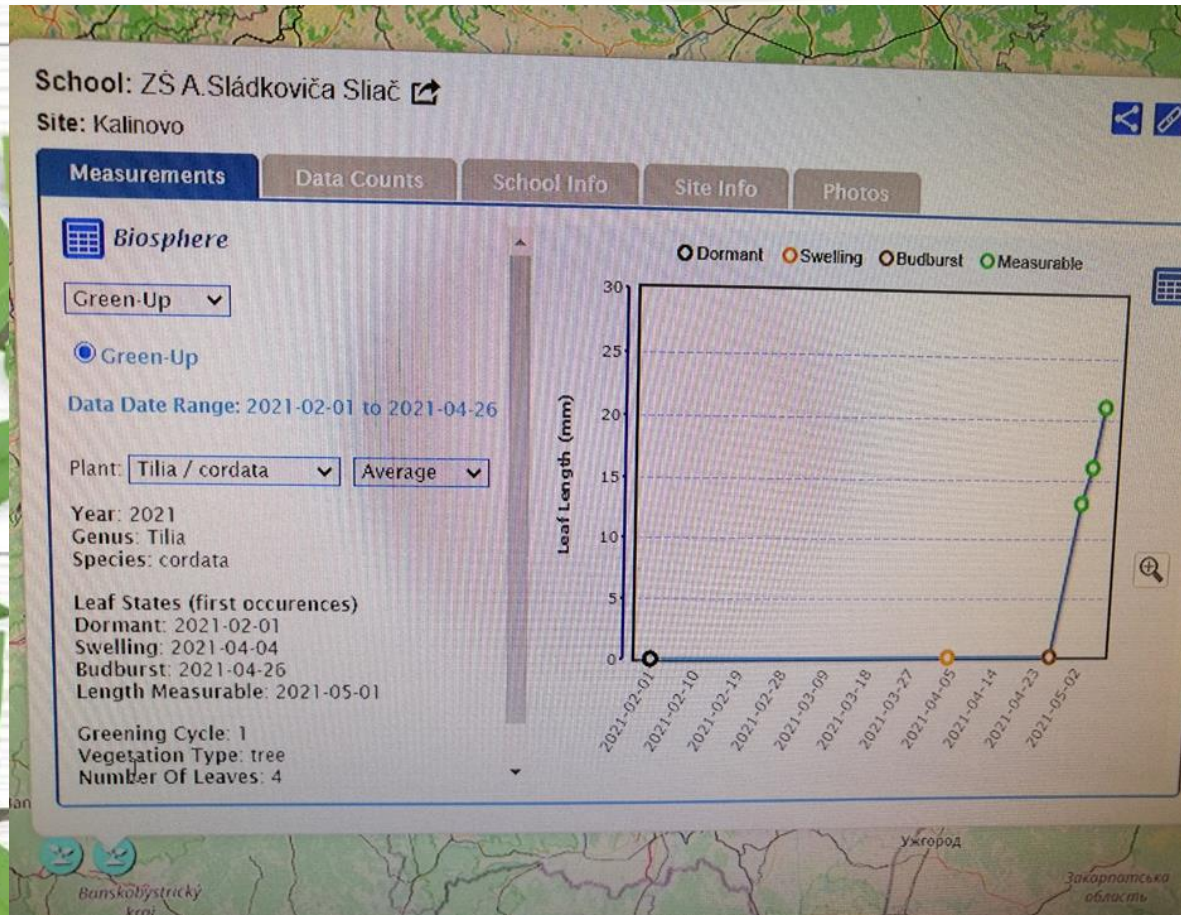
The change of buds and trees with increasing air temperature in the period from January 31 to May 15 2021

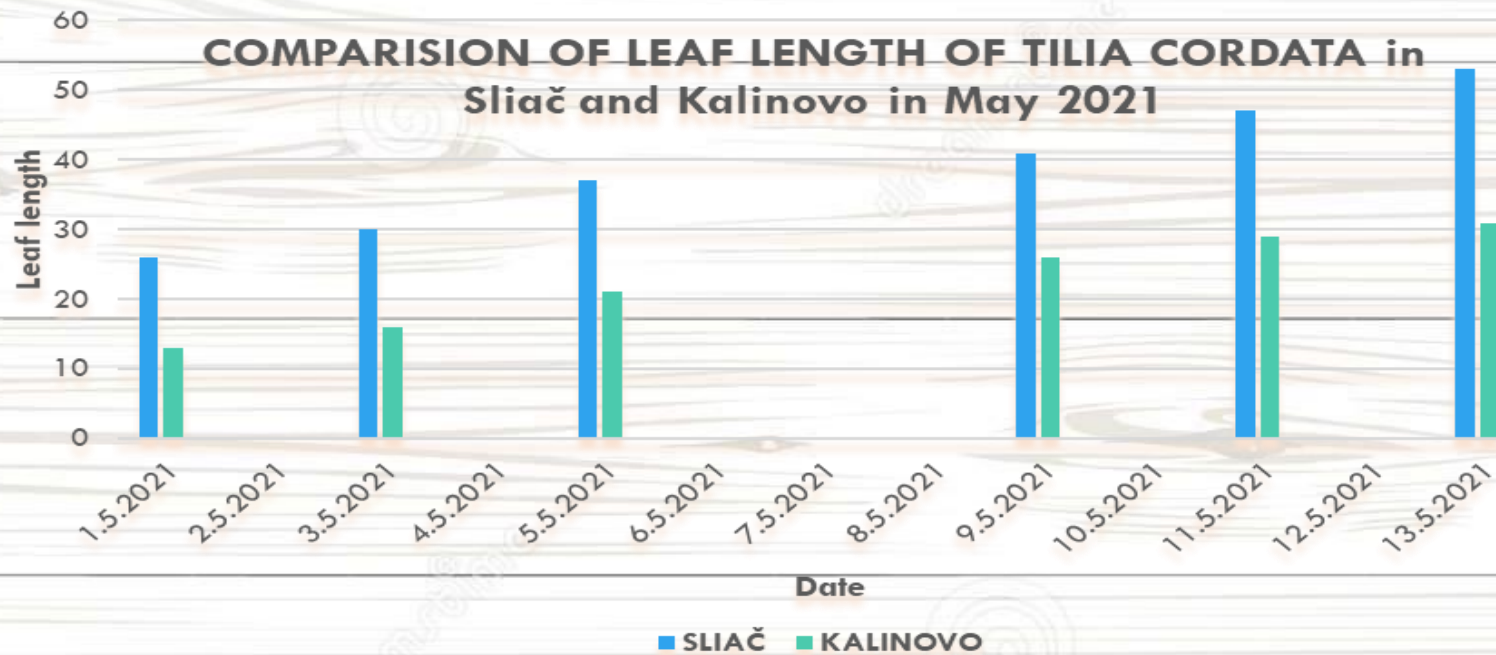


From bud to the leaf



Our measurements displayed in the visualization system





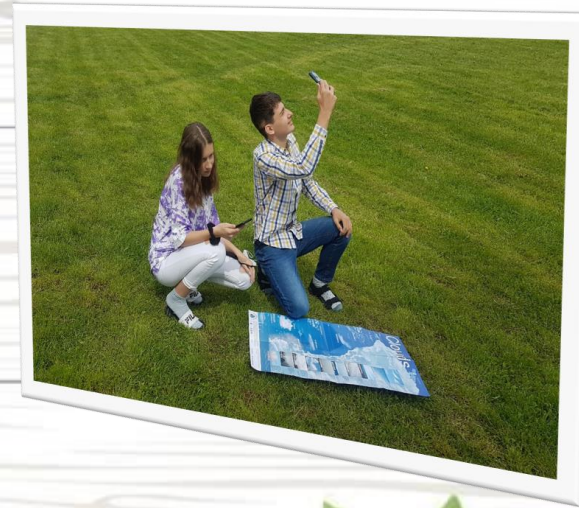
We evaluated our data for the period of May 1st to May 13th 2021 in the form a graph. We can see significant differences in the length of the leaves of our two trees. The length of the observed leaves in the Kalinovo area was on average 40 percent smaller in comparison to the length of the linden leaves in the Sliač area.

THE RESULTS:

We found out that the higher the altitude of the site, the lower the air temperature in this area and the slower and later the leaf buds develop. Also, the growth of leaves is slower and stays behind the growth of leaves on a tree in a locality with a higher altitude.

Our hypothesis that the altitude of the locality is related to the air temperature and and this directly affects the growth rate of tree leaves was confirmed. The lower the temperature, the later and slower the trees wake up in the spring.

In addition to **phenology** we have intensively worked also in the area of **meteorology**.



- Our research:
- Cloud observation through visual and graphical tools, basic observation and cloud classification
- Processing and uploading data via mobile devices into the **Globe observer** application



04/09/2021 Clouds



North

Date/Time (UTC): 04/09/2021 09:54:00

Data Source: GLOBE Observer App

Latitude/Longitude: 48.6081, 19.1197 (48° 36' 29.16", 19° 7' 10.92")

Organization: ZŠ A.Sládkoviča Sliac

Site: 34UCU614856

Total Sky

Cloud Cover: **Isolated (10-25%)**

Sky Color: **Blue**

Sky Clarity: **Clear**

High Level Clouds

Cloud Types: **Cirrocumulus**

Latitude/Longitude: 48.6081, 19.1197 (48° 36' 29.16", 19° 7' 10.92")

Organization: ZŠ A.Sládkoviča Sliac

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Total Sky

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Sky Color: **Blue**

Sky Clarity: **Clear**

High Level Clouds

Cloud Types: **Cirrocumulus**

Cloud Cover: **Isolated (10-25%)**

Opacity: **Translucent**

Short Lived Contrails: **0**

Persistent Non-Spreading Contrails: **1**

Persistent Spreading Contrails: **0**

Mid Level Clouds

Cloud Types: **Alto cumulus**

Cloud Cover: **Isolated (10-25%)**

Opacity: **Translucent**

Low Level Clouds

Cloud Types: **Cumulus, Cumulonimbus**

Cloud Cover: **Isolated (10-25%)**

Opacity: **Translucent**

Surface Conditions: **Dry Ground, Leaves on Trees**



Thank you
for your attention

zš a. sládkoviča sliac