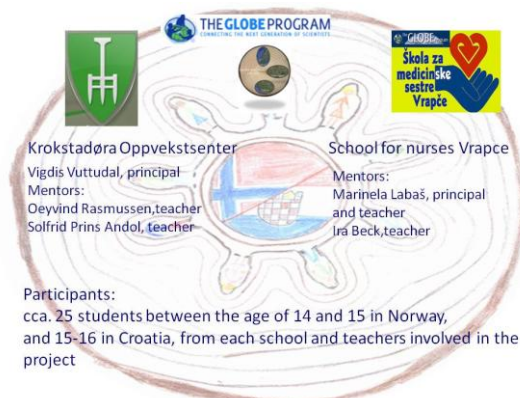


TREE RING REPORT FROM SCHOOL FOR NURSES VRAPCE (TWIN SCHOOL OPPVEKSTSENTRUM KROKSTADORA)



Phase I

During 2011. we choose the pixel, made all the steps according to GLOBE protocols considering biometry, biomass measuring, carbon storage measuring, soil analysis etc; took the samples, processed them, prepared them for skeleton plotting.

Our GLOBE team members on the field are:

4.a Filip Matijašec, Mislav Buva, Sara Čačić, 3.b Renato Vraneković

Phase II

In February 2012. we "became friends" with His Excellency Henrik Ofstad, norv. ambassador in Zagreb. We were His guests, He was a very kind host and told us a lot of interesting things about Norway.

After the field work we held some **skeleton plotting workshops** in our school:

13. 10. 2012.

- 4. a Filip Matijašec, Mislav Buva
- 3. a Franjo Uremović, Salopek Katarina, Vonić Anamaria
- 3. b Renato Vraneković, Mislav Orel, Katarina Dujmović
- 2. b Magdalena Jurić, Ella Cvejanović, Nikola Ostrež
- 2. c Petra Škvorc, Margareta Poljski, Granit Shabanaj

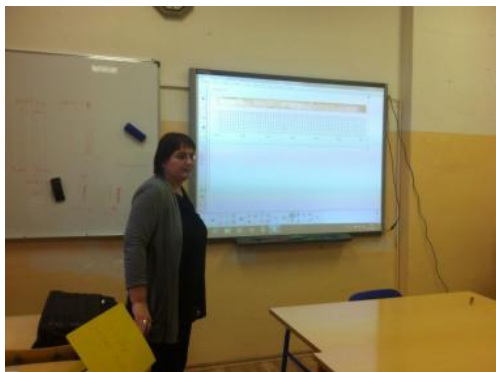


II 09. 01. 2013.

4. a Filip Matijašec, Mislav Buva
2. c Petra Škvorc, Margareta Poljski, Granit Shabanaj

III 10. 01.2013.

4. a Filip Matijašec
2. c Petra Škvorc, Margareta Poljski, Granit Shabanaj



IV 16.02.2013.

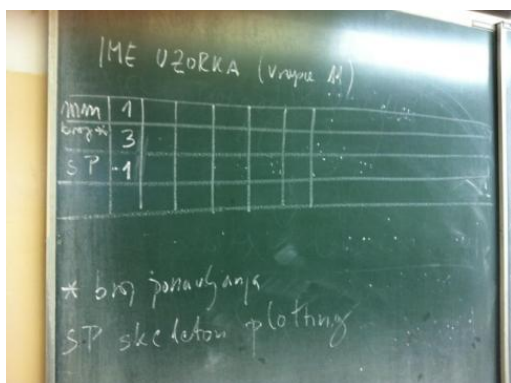
4.a Filip Matijašec

3.a Stjepan Miter, Franjo Uremović, Salopek Katarina, Vonić Anamarija

3.b Renato Vraneković, Mislav Orel, Katarina Dujmović

2.c Petra Škvorc, Margareta Poljski, Granit Shabanaj

2.b Magdalena Jurić, Ella Cvejanović



We used this investigation as a basis for our GLOBE project, here are some parts of it, it will be finished in May, and presented on our annual GLOBE meeting in Zadar.

Title of the project: Tree rings talk about people, too?

1. Hypothesis

Considering the fact that pinus nigra, pine species which was assigned for this project, is very resistant on climatic elements– temperature, precipitation, wind especially and it doesn't need rich soil, on the contrary it succeeds in sandy soil, can endure shading from near by trees; drought, frost; it's moderately sensitive to winter cold; but not to smoke, industrial dust and harmful gases so it's suitable for green making areas near industrial centers; also very important for afforestation, because has little demands on water, soil quality, important is only that it is deep enough– all that make us wonder what could cause the changes visible by tree rings analysis. We also wondered if that might cause any effect on a human health, too ?

2. Investigation methods

We used GLOBE protocol for biometry and Tree ring protocols – defining pixel, measuring circumference and height of the trees, covering density, soil cover, MUC classification, DBH (breast height diameter), damage degree, skeleton plotting (research method which includes collecting samples, their preparing for analysis: numbering the rings, measuring their width, finding the average value, determining the positive or negative event years based on the difference of ring's width, recording the data using the protocol sheets, entering the data in excel tables) (<http://filarkiv.viten.no/globe/SkeletoPlot1900-2012.xls>), using of allometric equations for biomass per tree and per area calculating, calculating the amount of carbon storage per tree and per area, soil analysis (collaboration with II gymnasium Zagreb).

We also used annual and monthly based data of average temperature and precipitation at the weather station near pixel, BOTINEC, from 1981. and the same data from weather station MAKSIMIR, delivered to us by MHSC/Zagreb. The national public health data will be presented to us for the period from 1980. 'till today.

Further more we also used in protocols recommended measuring, reading, describing and calculating methods needed for a proper data entering and processing.

3. Our investigations aim

To establish was the growth of our trees at a pixel uninterrupted in it's expected, natural rythm, to measure the ammount of a stored carbon, and, comparing with spotted irregularities in a growth of a trees, to define any indicator of something unexpected in a public health data for the same time period.

4. Data review and analysis

Investigations period October 2011.- September 2013.

„Lučko“-our pixel is 30x30m area situated in 45°46' 20.60" N 15°52'30.50"E.(picture 1)

This area is near the highway and a very liquid waste polluted canal.



(picture 1)

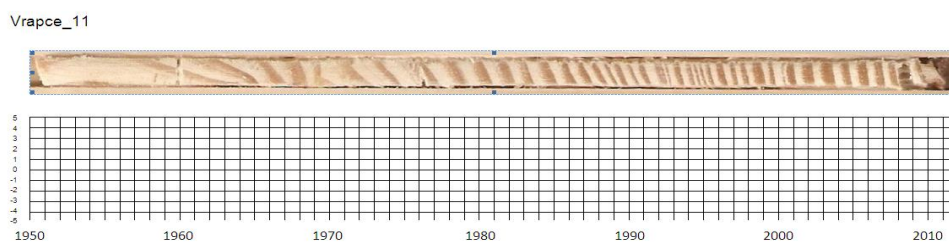


(picture 2)

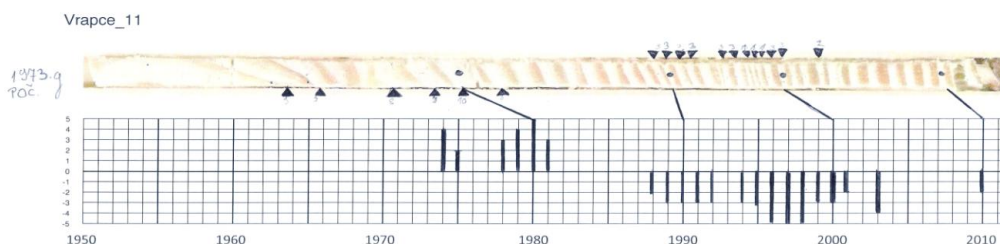
We took samples from 20 trees. Samples were processed in accordance with standard protocol method and prepared for a skeleton plotting (picture 2).

Samples were than scanned and we sent them to project manager in Norway. He chose 10 for further analysis. (picture 3)

Students discovered positive and negative event years for each tree. (picture 4)



(picture 3)



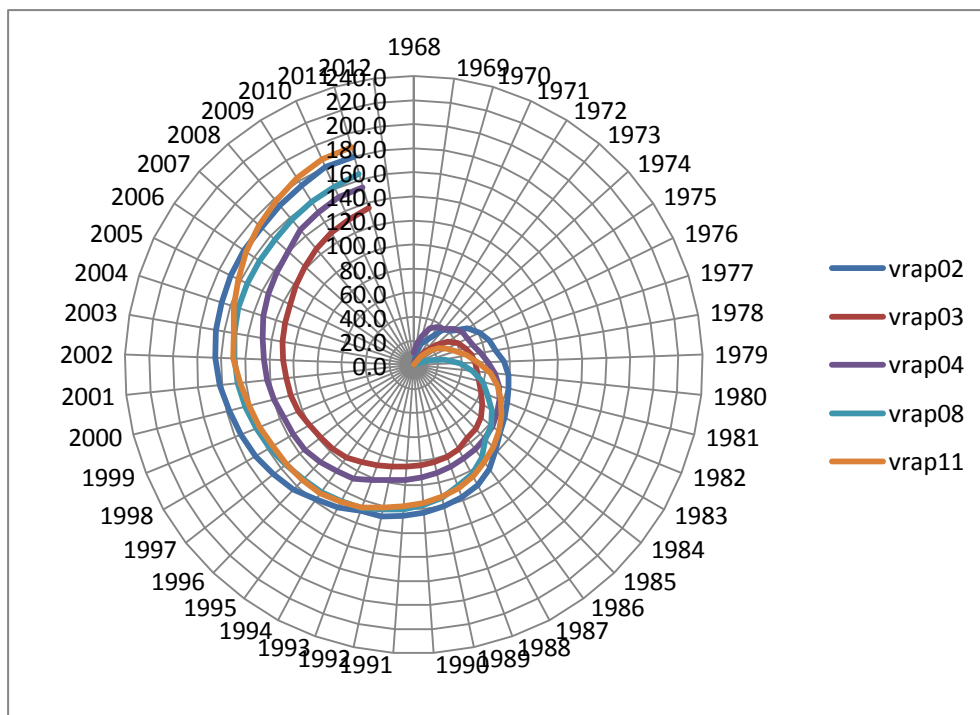
(picture 4)

vrapce 11										
mm	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0
number	3	1	8	3	10	6	1	2	3	1
SP	-1	-1	0	0	0	1	1	2	2	3

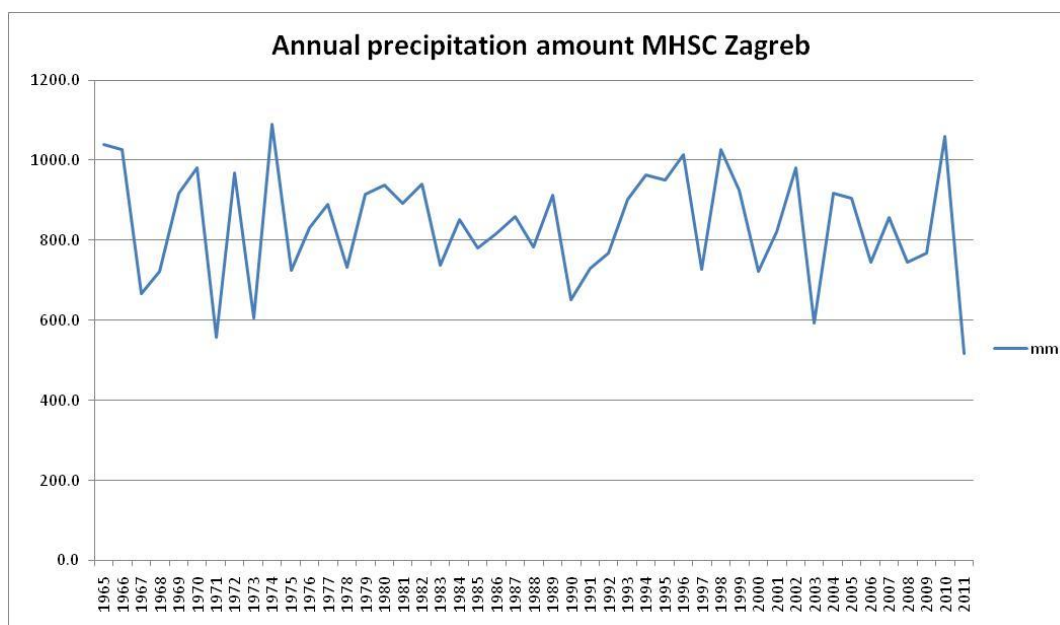
(Table shows some positive and negative event years presented alpha numeric)

Polar Graph 1

This graph shows each tree's annual and entire growth, and it can compare annual growth of all trees in one year, too. It also shows us in wich year some tree had a maximum growth, for example sample „vrapce 11“ in 1980.god. had it's maximal annual growth, 10mm.



Graph 2 - Annual precipitation amount-MHSC-Zagreb



Based on facts spotted by skeleton plotting we should compare the temperature and precipitation data from NHMI for 1971.-1983. period („positive years“) and 2002.-2009. period („negative years“). Same data then should be compared with Public health institute data in the same period. Our colleagues from II. gymnasium, Zagreb helped us with soil analysis. Besides that we managed to make regular contact with our twin school in Norway by **video presentations and videoconferences per skype** in which were included some other students:

- 3. a Stjepan Miter, Franjo Uremović, Salopek Katarina, Vonić Anamarija
- 3. b Renato Vraneković, Katarina Dujmović, Vanja Potrkač, Mislav Orel
- 2. a Luka Knafelj, Dominik Gadže (author of the visual emblem of the twin partners project)
- 2. b Magdalena Jurić, Ella Cvejanović
- 2. c Margareta Poljski, Antonela Rešetar, Rene Mixich, Lea Borošak (folk music and customs presentation *in vivo*)



Phase III

Despite all our financial problems and obstructions that we had during past 6 months, we managed to find sponsors (our Mayor of the City, mr Milan Bandić, is the most important) and we are ready to take in our homes some students and mentors from our twin school in May this year. We are also planning to take them with us in Zadar, at the GLOBE meeting. We also plan to visit Krokstadora in September, before our meeting in Dalen.

Mentors: M.Labaš,prof., Ira Beck,prof.

Principal: L.Križnik,prof.