


Slovenia From Space

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Biotechnical educational centre Ljubljana
The Hill Der and Its Past




The research paper presents the hill Der, which had a supporting role during World War I. Its relief was examined and found that is, despite its simplicity, something special. A great help to us was the lidar based digital terrain model. Lidar has the potential to show many archaeological features previously hidden from aerial reconnaissance by canopy cover.

Gimnazija Kranj
Analysis of Distribution of Invasive Plant Species Japanese Knotweed (*Fallopia japonica*)




Japanese knotweed is, listed by the World Conservation Union as one of the world's 100 worst invasive species. In the town Naklo, Japanese knotweed has spread severely in the last 5 years, especially near rivers, roads and building sites. In this project we analysed remote sensing techniques on which determination and mapping of its distribution is based on. Reasons that Japanese knotweed had spread so quickly are biological, geological and anthropological.

Diocese Gymnasium Vipava
Bora in Vipava Valley
Satellite and Ground-based Observations




Bora is a strong and severe wind of great impact. While waiting for the first satellite observations of wind profiles to describe the vertical bora structure, we have observed cloudiness accompanying the bora events and compared it with our own pictures in winter 2012. We installed new measurement sites along the slopes of orography and collected unique observations of bora variations in the direction of the flow.

Diocese Gymnasium Vipava
Bora in Vipava Valley
Analysis of Observational and Forecast Data



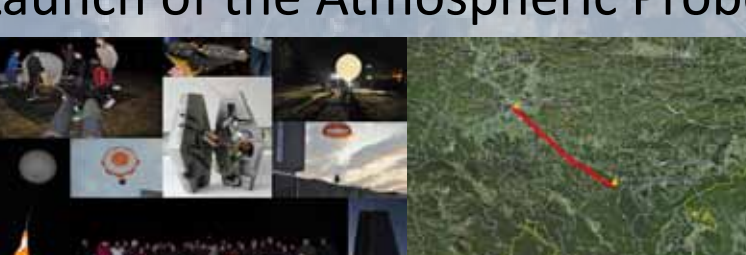
The most important bora property is its gustiness. We studied bora gusts by using new observations collected during the four-month period in 2012. On less than 2 km distance, bora velocity more than doubles. We compared bora forecasts of the SPACE-SI prognostic model with the observations to show that current forecast models lack the ability to describe the bora gustiness.

Gimnazija Vič
Vič Goes to Space
Making an Atmospheric Probe



The goal of the project was to make an atmospheric probe and equip it with different sensors, living micro organisms, a parachute and a helium balloon, and two high resolution cameras.

Gimnazija Vič
Vič Goes to Space
Launch of the Atmospheric Probe



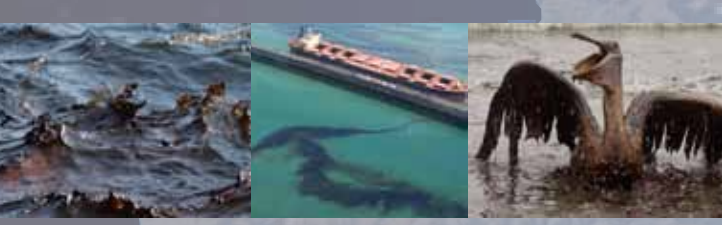
The probe was launched on 3rd March at 5.15 am. It landed approximately 50 km from the launch site, after reaching an altitude of 32 km. Most of the data was successfully retrieved and analysed.

School centre Krško-Sevnica, Gimnazija Krško
The Analysis of the Changes Regarding the Sava River and City of Krško




Our research paper focuses on the changes regarding Krško in the period from 1984 to 2011. Particular interest was placed upon urban sprawl, the changes in the bed of the Sava River and major construction developments conducted on the river.

Center for Maritime and Technical Education Portorož
Identification of Polluters in the Adriatic Sea




Spills at sea are a common occurrence in today's shipping lanes. Oceans and seas are choked with fully laden ships, causing a tremendous impact on the fragile marine life and ecosystem. The biggest concern for life on and under the seas is oil pollution, which is becoming a big problem. This is an occurrence that usually happens on accident; however, there are deliberate polluters out there as well.

Gimnazija Kranj
Defining the South Alpine Thrust Fault in the Central Slovenia



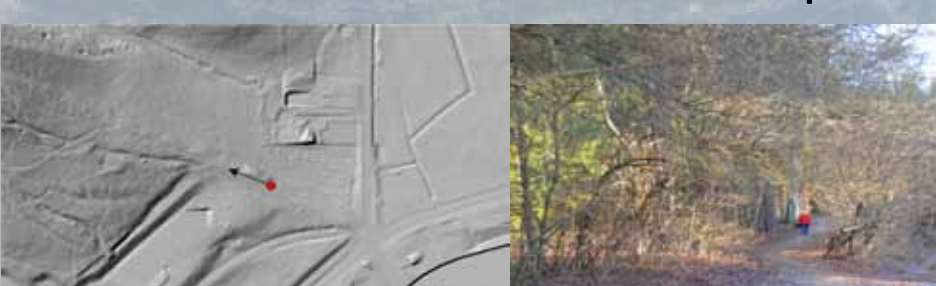
In the research paper we present a new tectonic and structural interpretation of the South Alpine Thrust Fault in the Central Slovenia, between the Kropa village and Kamnik. The new interpretation is based: (1) on geologic field work and mapping, (2) on the analysis of the digital terrain model of Slovenia and (3) on the numerous microtectonic studies and interpolation of the paleostress fields in the geological past of the region.

School centre of Rudolf Maister Kamnik
Understanding, Predicting and Managing a Windthrow



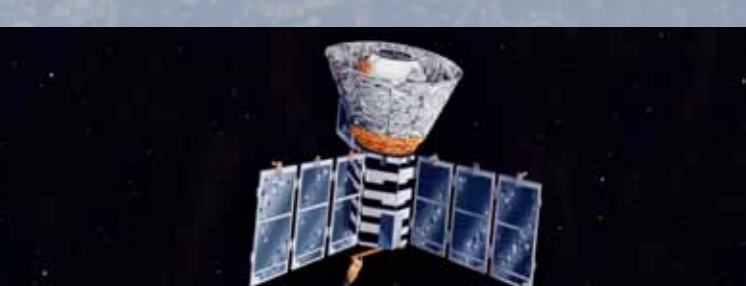
The aim of our research was to present the major windthrow that occurred on the 13th of July, 2008 and damaged mountain pass Črnivec. Specifically, we examined the damaged forest areas with the use of remote sensing data, effects of planned and preventive reforestation as well as the reconstruction of buildings and roads, especially considering long-term approach of integrating resources and knowledge in the prevention.

The Secondary School of Civil Engineering, Land Surveying and Economics Ljubljana
Lidar Based Path Analysis in Tivoli, Rožnik and Šišenski Hrib Landscape Park



In the research analysed the suitability of LIDAR DTM for the analysis of paths in the Landscape park Rožnik, Tivoli in Šišenski hrib in the Centre of Ljubljana, the capital city of Slovenia. The area was decreed as a landscape park in 1984. The decree includes no information regarding the management of the park, nor does it set any standards of behaviour one should uphold when visiting the park.

Gimnazija Ravne na Koroškem
Spacecraft Attitude Control and Stabilization



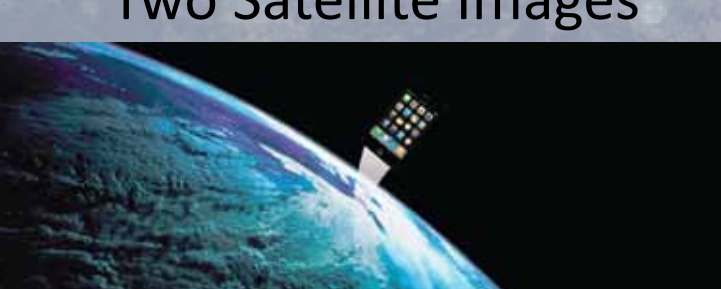
Our research project presents two ways to control and stabilize satellites. We developed two models of satellites that are suspended in a magnetic field. In the first model we used a reaction wheel and in the second a pair of gyros (SGCMG). Rotational speed and orientation is measured by a MEMS gyroscope and controlled by a microprocessor.

High School Slovenska Bistrica
Analysis of Alloys for the Manufacture of the Satellite Body




The company Impol d.o.o., located in Slovenska Bistrica, which produces satellite castings, has the ambition of creating the best possible alloy (with all required properties) for the satellite operation. Their work has been studied by a group of students.

High School Slovenska Bistrica
An Application for Comparing Two Satellite Images




A group of students decided to write an application using the Java Programming Language, which would compare two satellite images and show differences in a new perspective. It actually does so by indicating patches in shades of red in the new image. We have clearly succeeded in doing so.

School centre Krško-Sevnica, Gimnazija Krško
Invasive Water Lettuce in the Topla Stream




The aim of this research was to find the main reasons for the spread of Water Lettuce (*Pistia stratiotes*) in the Topla stream area (Čatež ob Savi).

Gimnazija Murska Sobota
Visibility of Aurora Borealis from Slovenia




Aurora borealis is a common phenomenon in high latitude (Arctic and Antarctic) regions. When particular conditions are fulfilled it can be also observed at lower latitudes, as in Slovenia. In our research we identified main parameters linked both to the Solar activity and to the interaction between the Solar wind and the Earth's magnetic field. We processed available data from satellites and ground-based stations for seven nights when auroras were observed in Slovenia between years 2000 and 2005. We obtained threshold values for aurora to be seen at our latitudes and finally tried to determine what is the frequency of auroras in Slovenia.

Gimnazija Murska Sobota
Comparison of Lot Sizes and Shapes on the Opposite Banks of the Mura River



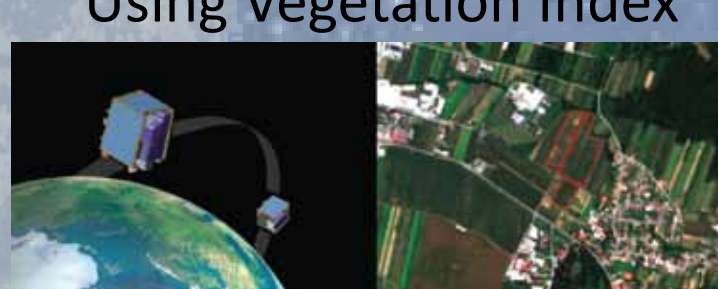
There is a considerable difference of lot sizes and shapes on the Mura river banks. The reasons for this are natural factors, influence of people and the differences in farming. The aim of this research is to numerically define the differences of lot characteristics, such as area and elongation. Two specific areas have been analysed.

Gimnazija Murska Sobota
Searching For Beavers On the Banks Of the Mura River



Beaver dams are difficult to approach so we have tried to determine their number with remote sensing. Beaver colonies were found on account of specific characteristics of their living environment.

Biotechnical School Rakičan
Land Suitability Analysis by Using Vegetation Index



The Normalized Difference Vegetation Index (NDVI) is used to analyse remote sensing measurements. It shows the activity of a chlorophyll, which is directly connected with growth and development of a plant, and soil fertility. For this reason, our hypothesis predicted a connection between soil fertility/suitability and the NDVI index.

PARTICIPATING SECONDARY SCHOOLS:

- Gimnazija Vič
- Center for Maritime and Technical Education Portorož
- Biotechnical centre Rakičan
- Gimnazija Murska Sobota
- Diocese Gymnasium Vipava
- Gimnazija Krško
- High School Slovenska Bistrica
- Biotechnical Educational centre Ljubljana
- The Secondary School of Civil Engineering, Land Surveying and Economics Ljubljana
- School Centre of Rudolf Maister Kamnik
- Gimnazija Kranj
- Gimnazija Ravne na Koroškem

DATA:

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- National Aeronautics and Space Administration (NASA).
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