

## **Sensing our Environment: Remote sensing in a physics classroom**

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Remote sensing is defined as data acquisition of an object, deprived physical contact. Fundamentally, most remote sensing applications are referred to as the use of satellite- or aircraft-based sensor technologies to detect and classify objects mainly on Earth or other planets. In the last years there have been efforts to bring the important subject of remote sensing into schools, however, most of these attempts focused on geography disciplines – restricting to the applications of remote sensing and to a less extent the technique itself and the physics behind it. Optical remote sensing is based on physical principles and technical devices, which are very meaningful from a theoretical point of view as well as for "hands-on" teaching. Some main subjects are radiation, atom and molecular physics, spectroscopy, as well as optics and the semiconductor technology used in modern digital cameras. Thus two objectives were outlined for this project: 1) to investigate the possibilities of using remote sensing techniques in physics teaching, and 2) to identify its impact on pupil's interest in the field of natural sciences.

This joint project of the DLR\_School\_Lab, Oberpfaffenhofen of the German Aerospace Center (DLR) and the Earth and Planetary Image Facility (EPIF) at BGU, was conducted in 2016. Thirty teenagers (ages 16-18) participated in the project and were exposed to the cutting edge methods of earth observation. The pupils on both sides participated in the project voluntarily, knowing that at least some of the project's work had to be done in their leisure time. The pupil's project started with a day at EPIF and DLR respectively, where the project task was explained to the participants and an introduction to remote sensing of vegetation was given. This was realized in lectures and in experimental workshops. During the following two months both groups took several measurements with modern optical remote sensing systems in their home region with a special focus on flora. The teams then processed their data and presented it to their foreign partners for evaluation in a video conference call. Alongside exciting insights about their respective environments and living conditions, the young scientists had daily access to live satellite sensors and remote sensing through the DLR\_School\_Lab in Germany and the Earth and Planetary Image Facility in Israel.

This paper provides an overview regarding the project, the techniques used and the evaluation results following a pre-post-questionnaire design, and above all demonstrates the use of remote sensing as an application for physics teaching in a significant learning environment.