SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Lift Off - Secondary Space Education (2)

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ATTRACTIVE SCIENCE EDUCATION WITH SPACE: LESSONS OF PHYSICS WITH EARTH OBSERVATION SATELLITES

Abstract

Using space technologies and activities for education and training purposes has been developed in France since the creation of CNES in 1962, with a close partnership with the ministry of education and specialised organisations such as Planète Sciences and Cité de l'espace.

Their experience of the use of pedagogic and outreach tools, addressing either the space technologies (experimental rockets, satellites, stratospheric balloons), or their applications in our daily life (GMES and environment, Galileo, Climate Change, etc.) confirm the benefits as attractive supports for education.

Based on the specific case of Pleiades satellite and its applications, the paper explains in a first part how the satellite, from technical architecture to operational missions, can be a very effective and motivating tool for secondary education.

The second part will review concrete examples of successful use during physics courses, with three complementary case studies:

- The activities directly developed by teachers in their classrooms or as content for schoolbooks.
- The educational workshops proposed by the Cité de l'espace and its pedagogical team.
- The hands-on projects and activities based on satellite imagery developed by CNES and Planète Sciences. This includes a new dissemination mean for its education and outreach activities: the value of blogs and social networks as a "market place" to target a wider audience, beyond the young people and their teachers.

For each case study, one or two examples of practical lessons are described, highlighting the benefits with respect to the school curriculum, both for technologies (sun synchronous orbit or attitude control and physical laws, spectral bands and light composition, image acquisition and digital information, etc.) and for applications (image classification, rapid mapping, time series, etc.)

Each example includes a short description of the targeted notion or learning, a matrix of compliance with the school curriculum between 12 and 18 and the description of the proposed tools.

Based on the return of experience gained in the three contexts, the paper provides a first evaluation of the results and the benefits from the educational point of view. Also derived from practical examples, the lessons learnt and the feedback from teachers are analysed.

In particular the level of complexity of each tool and its applicability for each age bracket is critically reviewed. It explains also what are the factors enabling a successful deployment on a wider scale and proposes some recommendations for further work.

More information and examples are available on www.regard-sur-la-terre.over-blog.com