

ESA EARTH OBSERVATION EDUCATIONAL TOOLS CONTRIBUTION TO THE CREATION OF AWARENESS FOR WORLD HERITAGE SITE CONSERVATION

F.Sarti⁽¹⁾, *M.Hernandez*⁽²⁾, *J.C.Bigot*⁽¹⁾, *S. Dransfeld*⁽¹⁾, *A. B. Ruescas*⁽¹⁾

⁽¹⁾ ESA/ESRIN, V.G.Galilei, 00044, Frascati, Italy

⁽²⁾ UNESCO, 1, rue Miollis, 75732 Paris, France

1. INTRODUCTION

Earth Observation (EO) from space is a key tool to assess the effects of anthropogenic activities to our planet (e.g. deforestation, urban growth). It can provide measurements supporting the process of sustainable development, or observations allowing the detection of changes in the surface of our planet related to climate change. United Nations Educational and Scientific and Cultural Organisation (UNESCO) and European Space Agency (ESA) have launched a call to all national and international space agencies, space research institutions and universities to make use of space technologies in order to assist developing countries in the monitoring of the World Heritage sites [1].

ESA and UNESCO are also covering associated educational aspects by using all the results of the projects under implementation as educational material to support UNESCO's 'UN decade for education and sustainable development', within a common and joint strategy of education, targeting schools, universities and young professionals. This includes creating new tools for the creation of awareness and *savoir-faire* in the use of space technology for the conservation and preservation of the environment and for a sustainable development. Conservation of our natural and cultural heritage must imply the young generations: it is in the mind of the youngsters that the idea of conservation must be developed and Earth Observation from space is particularly interesting to create such awareness [2]. For this reasons, bringing space closer to children and youngsters for a sustainable use and development is one of the highest priorities in the coordinated activities of ESA and UNESCO.

2. METHODOLOGY

Material derived from satellite images provided to decision makers is also being used to support teachers and school children from the surroundings of the World Heritage sites where the space partners of the 'Open

Initiative' are working [3]. In the frame of its educational activities for Earth Observation, ESA is creating particular modules oriented to UNESCO sites. All this material comes out of the different activities being implemented by partners of the ESA – UNESCO 'Open Initiative', in complete integration with the EDUSPACE programme of ESA [4].

EDUSPACE [5] is the ESA platform and web-based tool for Earth Observation Education, in eight different languages, available for free to worldwide secondary schools teachers and students, aiming to provide schools with tools for teaching and learning. It offers an entry point to Earth Observation satellite data and software applications for training. The website is host to a multitude of didactical material inclusive high-resolution local and lower resolution global remote sensing satellite data in order to show students how to study the planet as a whole from space as well as the possibility of zooming into specific areas and natural features to investigate their behaviour over space and time. An image processing tool called LEOWorks (Learning Earth Observation), including a GIS, soon in open source, is made available for data analysis and image interpretation . New dedicated content, like case studies and projects dedicated to the monitoring of UNESCO archaeological sites and to sustainable development are presently under development.

3. OBJECTIVES

The extraordinary cultural and natural diversity is an important source of life and inspiration for humanity and its preservation is a responsibility that should be shared by the whole international community starting with the youngest. Space tools have been recognised by the world community as contributing to solutions for the problems the world and its citizen face. This deserves a real effort of international coordination that ESA together with UNESCO and all other space partners will continue to achieve in order to promote further the knowledge of the Earth in all its complexity and diversity within the UNESCO's community [6].

The new educational tools based on Earth Observation jointly developed by ESA and UNESCO allow to observe cultural and natural sites as a component of an integrated context taking into account the cultural landscape and the complex eco-system and to better understand the changes in the surroundings. This integrated understanding is essential for the estimation of anthropogenic factors and natural hazards (like climate change) and for the design of strategies for preservation and sustainable development. Joint educational activities are undertaken by ESA and UNESCO in order to create awareness among the young generations on the enormous potential of Earth Observation in order to assist the future generation in protecting our common heritage.

4. REFERENCES

- [1] UNESCO World Heritage Initiative: <http://whc.unesco.org/>
- [2] ESA Education Department: <http://www.esa.int/SPECIALS/Education/>
- [3] Observing the Earth: http://www.esa.int/esaEO/SEMKZ9WO4HD_index_0.html
- [4] On line articles: http://www.unesco.org/science/remotesensing/?id_page=118&lang=en,
http://www.unesco.org/science/remotesensing/?id_page=105&lang=en
- [5] Eduspace Project: <http://www.eduspace.esa.int/>
- [6] F.Sarti, M.Hernandez, J.C.Bigot, S. Dransfeld and A. B. Ruescas, 2009: “Space technologies as an educational tool to create awareness for conservation and sustainable development” ISRSE 33 Stresa, May 2009