

The Eduspace website

By the European Space Agency

Reviewed by Marco Nicolini, Italy

If you teach geography, earth science, physics, or even information and communications technology (ICT) or biology, you should definitely visit the Eduspace website from the European Space Agency (ESA). Completely revised in 2010, the latest version offers a wide range of tools and exercises to help users learn about and apply Earth observation concepts and techniques. The site's entire contents are available in English, Danish, Dutch, French, German, Greek, Italian, Portuguese and Spanish.

Earth observation (EO) is the name given to a set of activities for gathering data about Earth's physical, chemical and biological systems. The majority of EO activities are now performed almost entirely by satellites, which is why space agencies such as ESA play a central role in providing EO data. Amongst other applications, EO is used to monitor elevation (useful e.g. to detect changes caused by earthquakes), changes in vegetation (in cultivations or during deforestation), weather and climate, disasters and the behaviour of the oceans and atmosphere. These are all topics that science teachers can use to develop multidisciplinary activities.

The Eduspace website offers activities and projects involving EO techniques and applications that are suitable for secondary-school science teachers to include in their lessons, as well as for interested secondary-school students.

A section on remote sensing helps to familiarise beginners with remote-sensing concepts, satellite-based EO

and data acquisition, and shows them how the information can be used and organised in geographical information systems (GIS). Sub-sections include remote sensing in-depth; the history of EO; satellite orbits; and EO satellites.

The most valuable aspect of Eduspace for teachers is the wealth of software-based activities that can be downloaded from the resources section. Using these, teachers can develop multidisciplinary activities for their students. For example, the image catalogue viewer allows you to search and download satellite images from the huge image database of the main ESA-supported missions. The viewer's companion, LEOworks, is a simple but powerful programme for processing the images. For example, it allows you to crop, zoom and resize images; measure distances; check geographical coordinates; produce statistical histograms; combine and animate a series of images; and use GIS tools. ICT teachers can show students how numbers represent coloured pixels, whereas geography, earth science and physics teachers can focus on the interpretation of those pixels and other data.

Another useful programme to download from the Eduspace website is Arcexplorer, with which you can view and query geographic data stored on your computer or the web, display a wide variety of image formats, and create maps. Note that this programme has now been superseded by Arcgisexplorer, which includes GPS integration, geo-referencing and geo-tagging tools and can be down-

loaded from the website of software company Esri (www.esri.com). All of the programmes available on Eduspace are accompanied by succinct but complete tutorials, plus online help.

Also helpful are the case studies of EO applications in the 'Earth from space', 'environmental issues' and 'Envisat for schools' sections. These case studies focus on regions across the world, and are good examples of how you can use Eduspace to download and process ESA satellite images of your region, your town, or even your backyard.

In short, the Eduspace website provides teachers with a vast supply of material that can be integrated into their lessons.

Details

URL: www.esa.int/eduspace

Resources

To learn more about GIS and Arcgisexplorer, see:

Kerski J (2010) GIS: analysing the world in 3D. *Science in School* 15: 34-38. www.scienceinschool.org/2010/issue15/gis

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