



# Teacher Guide

## Unit 7

### Using Satellite Data

For first teaching from September 2013

For first assessment from Summer 2014

For first award in Summer 2014

space  
science  
technology

*Level 2 Certificate*

**UNIT 3: Technology Impact on Society**

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## UNIT 7: Using Satellite Data

***Learning outcome 1: Understand the role of Earth Observation satellites in monitoring our fragile world***

1.1 Explain the acronym GMES and the importance of Earth Observation for the future development of European and global society

The objective of this introductory exercise is to familiarise learners with the terms Global Monitoring for Environment and Security (GMES) and Earth Observation (EO) and identify how humanity is using spacecraft to monitor our planet and society

Learners should be able to show evidence of research and understanding of why we use satellites to view our planet from above. Evidence can be in the form of an annotated poster or diagram highlighting at least 4 ways in which satellites scrutinise the planet and help us to manage the planets environment and deploy our global resources effectively and wisely

An overview on GMES is available from the European Commission website: <http://ec.europa.eu/enterprise/policies/space/gmes/> Other relevant documents and publications can be viewed at:

[http://www.esa.int/esaLP/SEM1SFWW32H\\_LPgmes\\_0.html](http://www.esa.int/esaLP/SEM1SFWW32H_LPgmes_0.html)

1.1 Explain how satellite data can help us to develop future city infrastructure

- Learners should produce evidence that shows how Earth Observation satellites can increase our ability to monitor and respond to a choice of two of the following:
  - Climate change
  - Man-made disasters
- The portfolio should highlight the satellites deployed and the sensors/instrumentation required to collect data and how this information is used.

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The European Space Agency has a dedicated portal to Earth Observation titled the Living Planet Programme at: <http://www.esa.int/esaLP/LPqmes.html> Learners can interrogate this website to develop some ideas on how to carry out their investigation.

- Investigate how remote sensing data could be used to develop infrastructure in urban or rural areas in Northern Ireland. Learners should provide a topic heading such as agriculture, transport, tourism etc. and give an example of how they envisage using space based technology to develop the region.

Learners can be encouraged to investigate and follow their own innovate ideas and approach to the subject matter through activities such as creative media, navigation devices and information products or services using space generated data. Some case examples on how regional authorities and small to medium sized enterprises across Europe have used satellite generated data can be viewed on the Eurisy Organisation website: [www.eurisy.org](http://www.eurisy.org)

Learners can use the European Space Agency Eduspace Secondary School web portal for Earth Observation data to download archive satellite data of Northern Ireland. The Eduspace portal is rich in didactical material, especially in local and global remote sensing satellite data. It is a source of ideas about how to introduce space-related matters into the classroom, where full scale examples are also presented.

## 2.1 Research the potential threats to Earth from Space and demonstrate how these threats have impacted upon Earth in the past

- Evidence for this exercise can be in the form of a written or oral presentation, with presenter notes and annotated diagrams. The learner must show evidence of research and investigation and provide an account of the source of the threat and impact upon the planet.

A useful guide as an introduction to this exercise is [http://www.esa.int/esaSC/SEMPZ1T1VED\\_foryou\\_0.html](http://www.esa.int/esaSC/SEMPZ1T1VED_foryou_0.html) Learners should also provide any historic recorded imagery or text as proof to support their findings.

- Learners construct a simple experiment, virtually or in the laboratory, to demonstrate the potential impact on Earth from a space related threat and

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create text or presentation to explain this experiment to their peer group or teacher.

2.2 Provide a detailed account of how new technologies, land or space based, can warn humanity of two potential threats from space and any measures that can be taken to reduce or prevent the threat to Earth

- Following from research as part of the activities in 2.1 the learners must look at how our modern day technology and society can respond to potential threats from space. The final piece of work presented must show evidence of the identification of the threat posed to the Earth and/or society, the impact this could have on society and measures that can be taken to prevent or reduce the impact of that threat either on the environment, society as a whole or both.
- The learner must also show what technology can be deployed to monitor, evaluate and respond to the threat the specific threats highlighted in their activities.