Space Basics – Earth Observation

Examples of Earth Observation in the classroom: the Nile Delta

Nile Delta – MERIS, 1 March 2003
The image

The contrast between the lush vegetation of the Nile delta and river course and the dry sand of the Sahara can be seen spectacularly in this enhanced true colour Medium Resolution Imaging Spectrometer (MERIS) image. The grey area to the bottom of the "triangle" of the delta is Egypt’s Capital, Cairo.

On the border between Israel and Jordan is the Dead Sea, at 412m below the level of the Mediterranean, the lowest point on Earth. The Dead Sea also has salinity 10 times that of the Mediterranean, and due to the high evaporation rate in the area, salt accumulates, and can be extracted, as can be seen in the southern part of this large inland lake. The lighter blue/green areas are increased evaporite deposits, in this case salt. We can also see the structure of the salt pans crossed vertically by a canal.

Image technical information

• Instrument: MEedium Resolution Imaging Spectrometer (MERIS)
• Date of Acquisition: 1 March 2003
• Orbit number: 05228
• Instrument features: Full resolution image
• Coordinates:
  - NW Lat/Long: N 34.50/ E 28.00
  - NE Lat/Long: N 34.50/ E 39.00
  - SW Lat/Long: N 24.00/ E 26.00
  - SE Lat/Long: N 24.00/ E 37.00

General description of the Nile

The Nile River is the longest river in the world. From its major source, Lake Victoria in east central Africa, the White Nile flows mainly northwards through Uganda and into Sudan where it meets the Blue Nile at Khartoum, which rises in the Ethiopian highlands. From the confluence of the White and Blue Nile, the river continues to flow northwards into Egypt and on to the Mediterranean Sea. From Lake Victoria to the Mediterranean Sea the length of the Nile is 5584 km. From its remotest headstream, the Ruvyironza River in Burundi, the river is 6671 km long. The river basin has an area of more than 3.349.000 km2.

North of Cairo, the river fans out into a huge delta as it approaches the Mediterranean. Two main channels are formed – the Damietta and the Rosetta branches. There are fields of crops and several lakes, many towns, and the second city, the ancient port of Alexandria.

Apart from the Nile there is no other surface water in Egypt. Egypt is a dry country. The country receives hardly any rainfall and almost all the water that is needed for agriculture, domestic and industrial supplies, navigation and tourism comes from the Nile.

Keywords

Mediterranean area, Gulf of Suez, Suez Canal, Nile, Red Sea, Cairo, Alexandria, Sinai, desert, delta, drought, irrigation, irrigated agriculture, desertification, arcuate (fan shaped) delta, hydrography.

Exercise

Goal - an introduction to the Nile delta in physical and geographical context in order to understand the importance of the river for Egypt, and the importance of appropriate water policies.

On the image, find out the main streams of the Nile, the main towns, the Suez Canal, the dry area and the area covered with vegetation. Find out the limits of the Nile delta.

Take a transparency film and cover the image with it. Write a key for the image (including the names of towns, rivers, hills, etc.). Use an atlas to help finding the names.

Determine the scale of the image and the extension (sq km) of the Nile delta using the scale of the atlas.

Find changes in land use by comparing the satellite image with maps from one or more atlas.

Question - give an overall description of the importance of the river Nile as can be seen on the satellite image.