

Analysis & Presentation of Data

related to the

Natural Environment

Notes (October 2009):

1) Re Project idea C: A particular open source GIS tool is GRASS GIS. A book on this is available for loan to someone with a genuine interest.

Introduction

Monitoring and management of the natural environment is obviously of great interest and importance. For example, implementation of the European Union Water Framework Directive (see <http://www.wfdireland.ie/>) mainly takes place in the context of River Basin Management projects led by local authorities, and the overall objective of such projects is to establish an *integrated monitoring and management system* for all waters within a river basin district. Similarly, European Air Quality Directives include objectives to harmonise monitoring strategies, measuring methods, calibration and quality assessment methods to arrive at comparable measurements throughout the EU and to provide for good public information.

Relevant Irish and Northern Irish state-sponsored organisations and agencies include the Geological Survey of Ireland (GSI) (<http://www.gsi.ie/>), ANSWER (<http://www.answer-online.org/>, especially <http://www.answer-online.org/eds/index.htm>), CEDAR (<http://www.habitas.org.uk/cedar/>), the National Council for Forest Research and Development (COFORD) (<http://www.coford.ie/>) and, particularly, the Irish Environmental Protection Agency (EPA) (<http://www.epa.ie/>). Among Irish companies and organisations operating in this general business area are Compass Informatics (<http://www.compass.ie/>) and Maptec (<http://www.era.ie/>).

Internationally, there is a vast array of organisations engaged in various aspects of environmental work. As an indication, there is a useful listing of internet resources related to the oceans at http://ioc.unesco.org/goos/Remote_sensg/. The Space Agencies are also useful information sources (naturally for satellite remotely sensed data) - see <http://www.esa.int/export/esaEO/index.html> and <http://rsd.gsfc.nasa.gov/rsd/RemoteSensing.html>. A few other international sources are US Global Change Research Information Office (<http://www.gcrio.org/index.php>) and Best Environmental Directories (<http://www.ulb.ac.be/ceese/meta/cds.html>).

Some of the links given above lead to sources of environmental data (some of which may be free although others must be purchased) and to software tools that have been developed to help in processing such data. Again, many

Project Suggestion

such tools must be purchased although some are free (e.g. see Generic Mapping Tools (GMT) at <http://gmt.soest.hawaii.edu/>).

Possible project ideas

A) Develop a (prototype) “Environmental Impact Assessment System” (EIAS) in order to assist in evaluating the current status of the physical environment in a region (such as an Irish county) and in assessing the impact of proposed future developments. Potential users could be planners, councillors, general public, farmers, etc.

The chosen region should be such that at least some environmental data are openly available to be incorporated into the EIAS (e.g. water characteristics at designated places on water bodies (streams, rivers, lakes), air quality at specific locations, noise levels along certain roads, geological characteristics, satellite remote sensing data, population distribution, agricultural practices and patterns, industrial development, and so on).

It may also be possible to incorporate (or to enable investigation of) some relevant models of various aspects of the environment (e.g. associations between water quality and population density, milk production and phosphate/nitrate levels, traffic and air quality, local weather patterns, social capital and car usage).

The EIAS should be designed so as to be able to incorporate new data sources and models in the future.

B) Similar to (A) except with a comparative, international flavour.

C) Identify some (freely available) software for environmental data analysis or modeling, familiarise with it, maybe adapt it, and apply it to some particular region or context.

NB: Any project chosen should have an appreciable technical content and should certainly not be just an index to open data sources.