

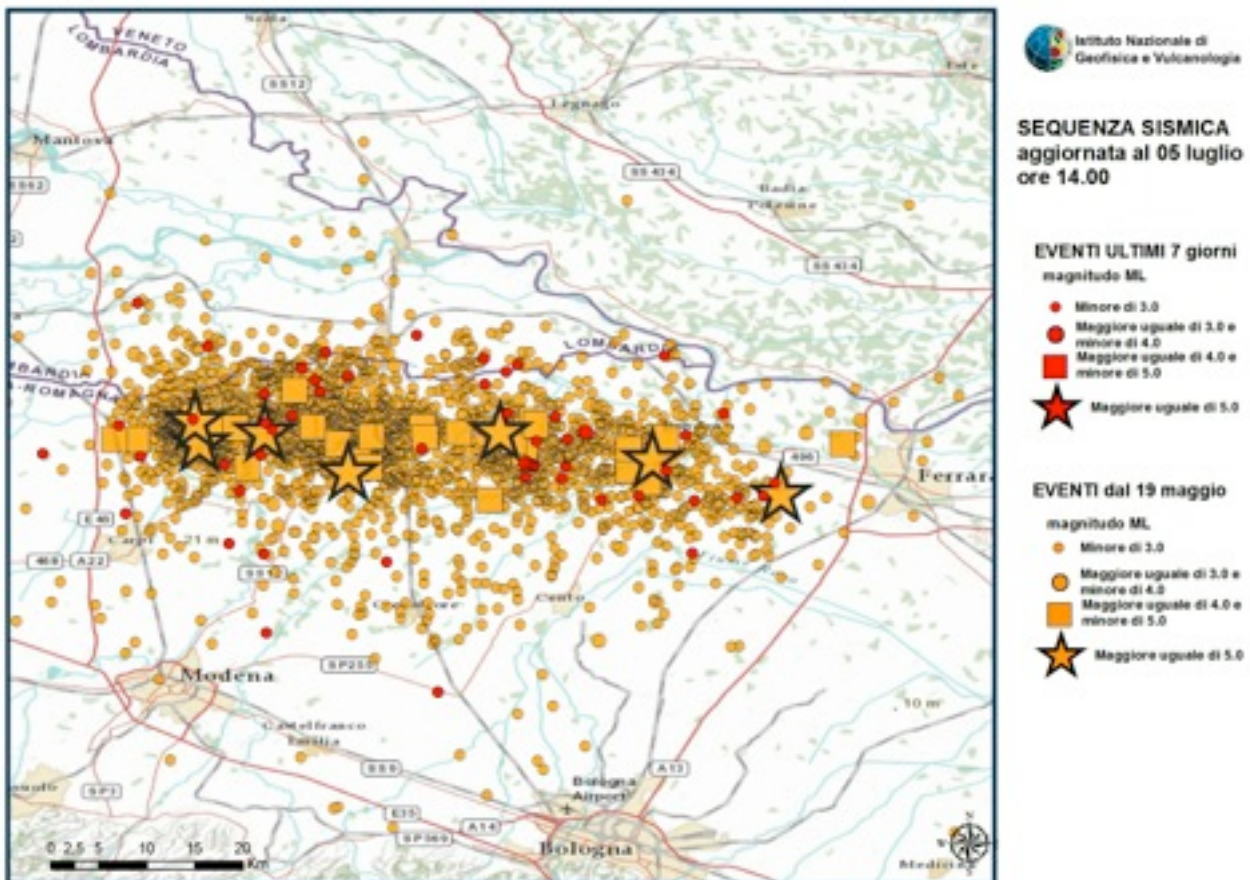
Project

You are strongly encouraged to use your own data for the project. Please discuss this with Anders and Johan. If you do not have any data you will do the project described below.

The project is about making a 3D visualisation of earthquake data from the Italian Seismological Instrumental and Parametric Data-Base (ISIDe). <http://iside.rm.ingv.it/iside/>

You are free to choose and filter out data of your own interest. In fact it will be easier to focus on some specific series of earthquakes than visualising all of them. One example is the earthquakes in the region of Emilia-Romagna in the Po valley in Italy 2012. In this region you find the important and also historical cities of Parma, Modena, Bologna and Ferrara. The earthquake was a bit unusual as it had no less than 3 major quakes separated in time. The Italian 'Istituto Nazionale di Geofisica e Vulcanologia' also publishes visualizations and earthquake data at: <http://cnt.rm.ingv.it>

They also provide 2D visualisations of different earthquakes around the world. The earthquake mentioned is visualised in different ways and the figure below shows one of them. Others are found at: <http://ingvterremoti.wordpress.com>



Your task is to make a 3D visualisation of the data (which is provided to you by the teacher) in VTK, using any visualisation techniques of your choice.

When you play with your visualisation, try to look for patterns in the data. Are the quakes happening randomly in space or do they follow some rift? This could be of interest for the researchers in the fields of geophysics and seismology.

General Requirements to pass

- A 3D visualisation showing some glyph at longitude, latitude and depth.
- The strength (often between 2.0-6.0) should affect the glyph (size, colour or your own choice.)
 - A short report including images from the program showing the result.
 - Motivate your choices of glyphs, colours etc in the report.
- Add a map of the region of interest that you choose and place it on top of the data (earth level). It should be possible for the user to choose opacity of the map so that the underlying data can be seen through the map. Some maps are found on the Italian webpages mentioned in the introduction.
- Add the time dimension and make a simulation on the screen or as an alternative a movie, no longer than 3 minutes, that shows the different quakes appearing at their right time.
 - Avoid cluttering. That is, remove the glyph after some time or diminish it to a small size.
 - Motivate your choices of methods in the report.

Optional

- Use some GUI to manipulate the data, for instance tkinter: <http://wiki.python.org/moin/TkInter>
- The obvious thing is to manipulate the time dimension by some slider or buttons. Then you can scroll through the visualisation and go backwards to see some interesting properties of the quakes. (But you can also rotate the visualisation, zoom in and out as usual.)
- Add the possibility to select the range of strength. There are many small quakes between 2-3 and fewer that are stronger. Hence it can be interesting to look at only the range 4-6 or whatever your choice is.
- The report shall contain examples of how to use it as well as interesting results from using it (images and explanation).