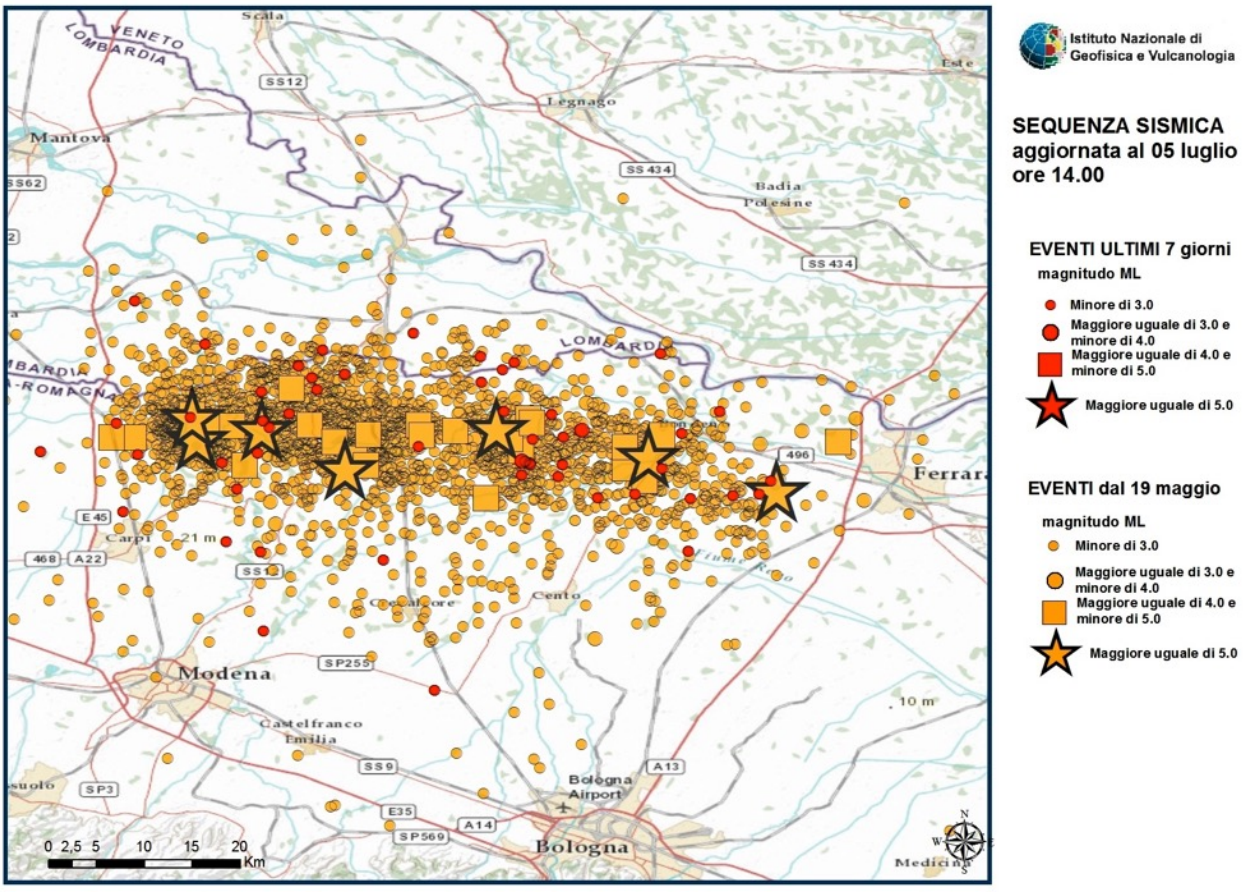
Project

The project is about making a 3D visualisation of earthquake data gathered from the start of the devastating 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' publishes 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.

The data provided covers the whole Italy between the summer of 2012 to the autumn of 2014, so you might need to filter out the interesting parts of your choice. There is a lot going on in southern Italy too.

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. In any case you are encouraged to put it onto youtube!

General Requirements to pass (1 person)

- A 3D visualisation showing some glyph at longitude, latitude and depth.
  - The strength (usually between 1.8-5.3) should affect the glyph (size, colour or your own choice.)
- A map shall also be included so that one can understand where the quakes occurs.
- A short report including images from the program showing the result.
- Motivate your choices of glyphs, colours etc in the report.

Requirements to pass for groups of 2 persons

- Add the time dimension and make 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.

Requirements to pass for groups of 3 persons

- Use some GUI to manipulate the data, for instance QT.
- 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).