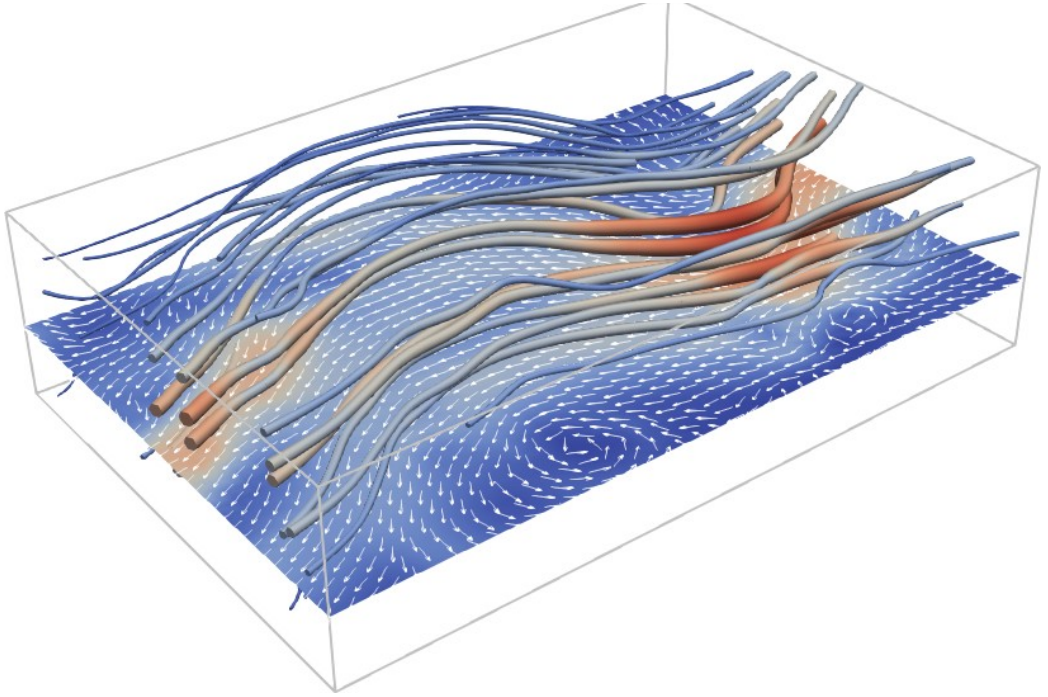
Scientific Visualisation

Autumn 2022



Teachers

- Anders Hast (teacher)
- Stefan Seipel (teacher)
- Paul Häusner (teacher, labs)

Formalities

- Register for the course in ~~Studentportalen~~ Ladok!
- 3 mandatory assignments (in ParaView and Python)
- 1 project (mandatory only for 7.5 credit course)
- 1 exam (5 hours)
- 2 + 3 + 2.5 credits (exam + assignments + project)
- More information can be found on the course web page on Studium

Format of the course

- The course will be a mix of campus and online teaching.

  Zoom-links for online lectures, and other changes to the schedule, will be posted under Kursöversikt/Syllabus. So check this page often!

Some lab sessions will be online.

Start doing the labs with your lab partner as soon as they are published.
Report them during the lab.
The labs will also give you a chance to get help.

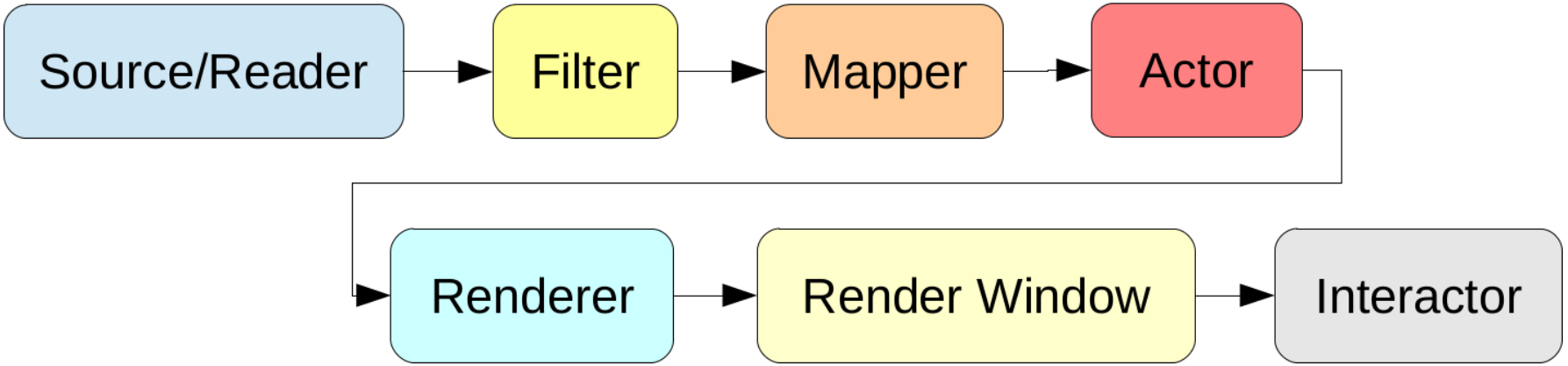
Course evaluation + changes

☺ Most liked the labs and the lectures! Some lectures were given pre-recorded, and replaced with a live question session, which some liked.

- We will try to keep the format with mixing question sessions with live lectures

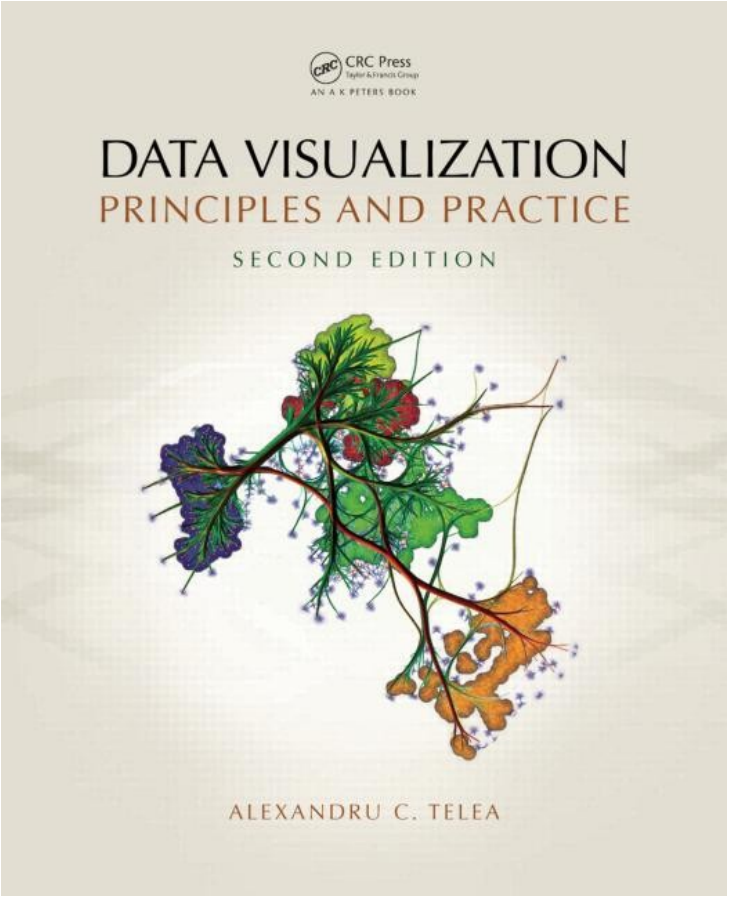
Content (what you will learn)

The visualisation pipeline. Data representations and scalar visualisation. Vector and tensor visualisation. Multidimensional visualisation. Stereo Rendering. Perceptual issues in visualisation. Information Visualisation. Rendering techniques for visualisation such as volume rendering, splatting and isosurface generation. **Creating advanced visualisations in ParaView/VTK**.



Course book

Alexandru C. Telea: Data Visualization: Principles and Practice (2nd edition, 610 pages).



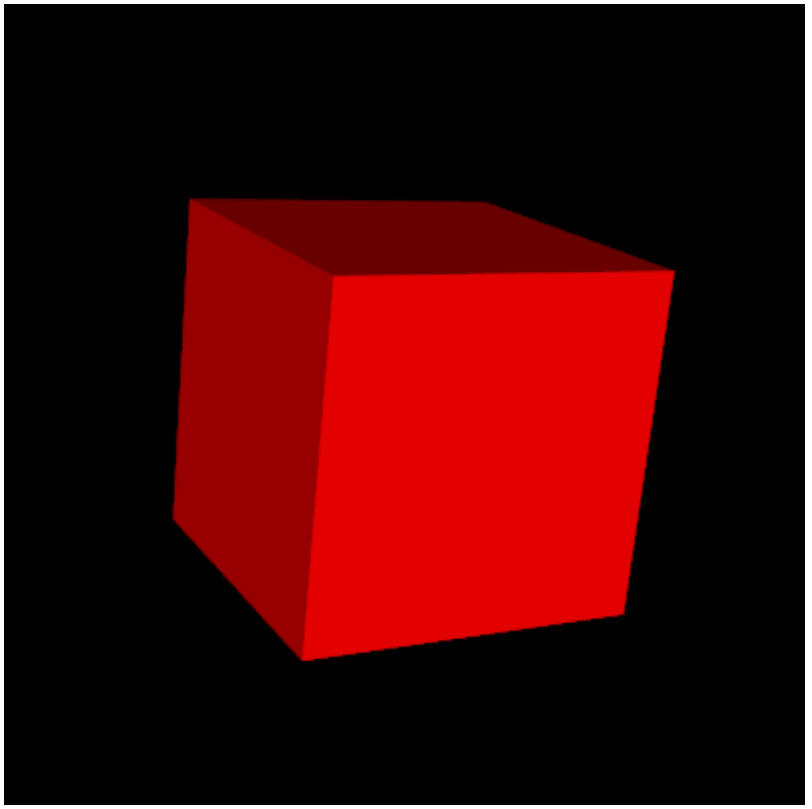
Lab sessions (given online)

- You will use the software ParaView (and some basic Python scripting) to visualise various datasets!
- An older version of ParaView is installed in the PC labs (in 1312 and 1313), but we recommend that you install the latest version on your own computer
- You do not have to present anything during the labs! They are only for asking questions or getting help with the assignments that you will hand in.
- More instructions for the labs and assignments will follow in Studium...

Assignments and project

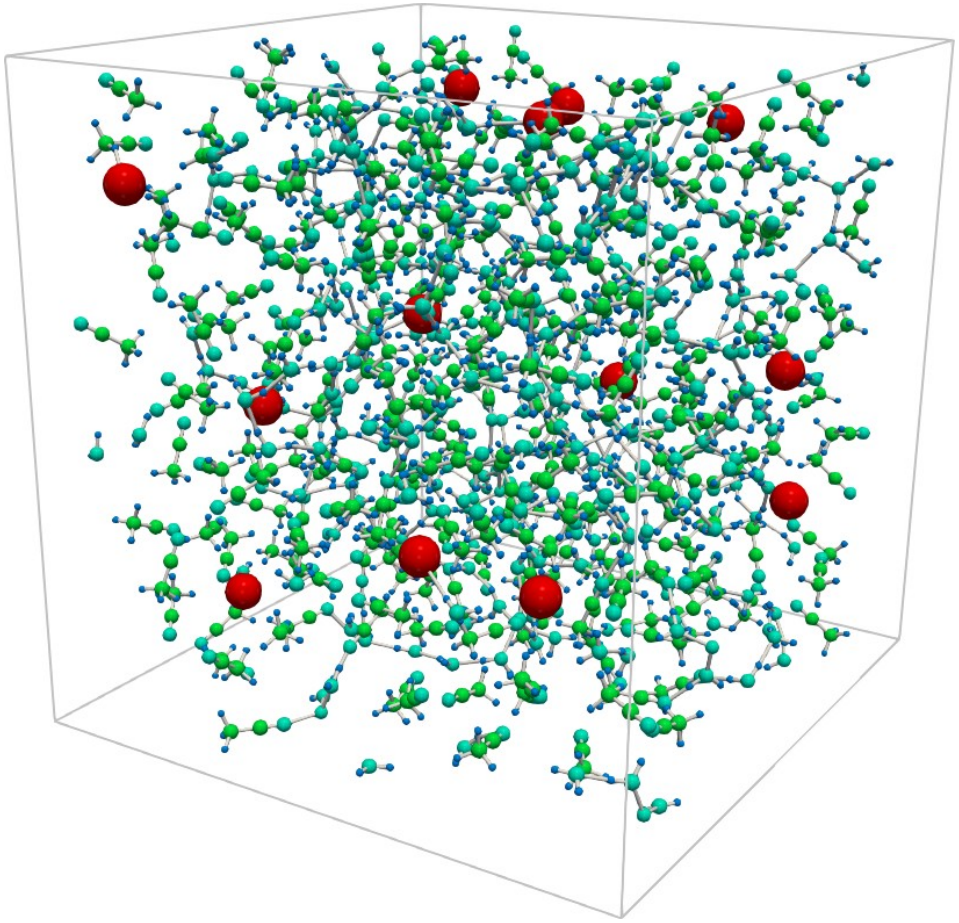
- Should be handed in (before deadline!) via Studium
- For assignments 1-2, you may work alone or in pairs
- For the project, we recommend that you work in groups of 2-3 people (but you may also work alone if you prefer that)
- If you want help finding someone to partner with, please send us an email!

Assignment 0 (non-mandatory)

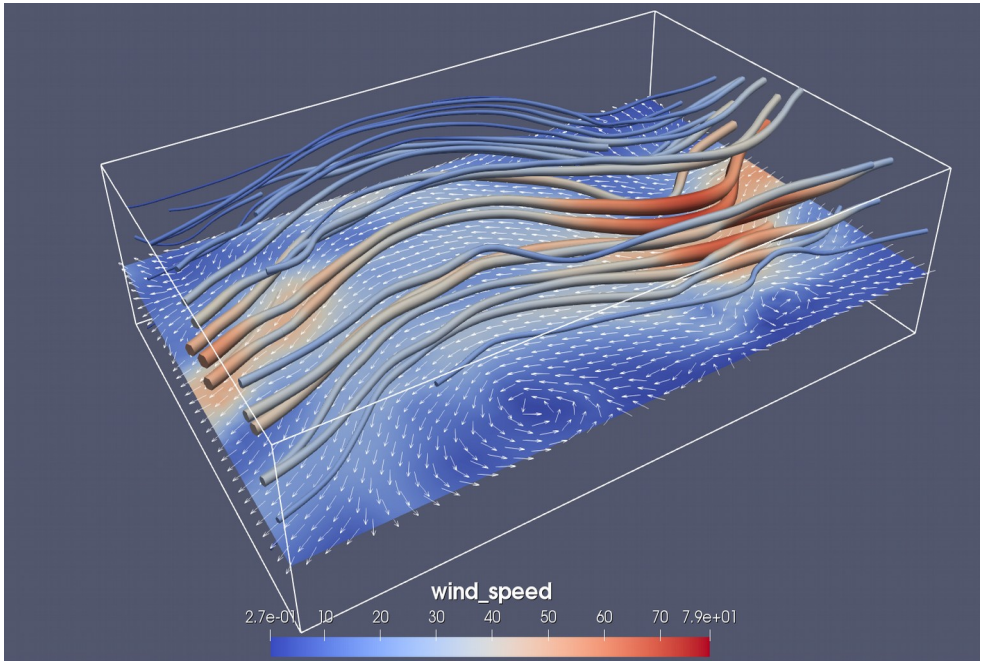


Installing ParaView on your own laptop
(You can get help with this on the first lab session)

Assignment 1 (ParaView)

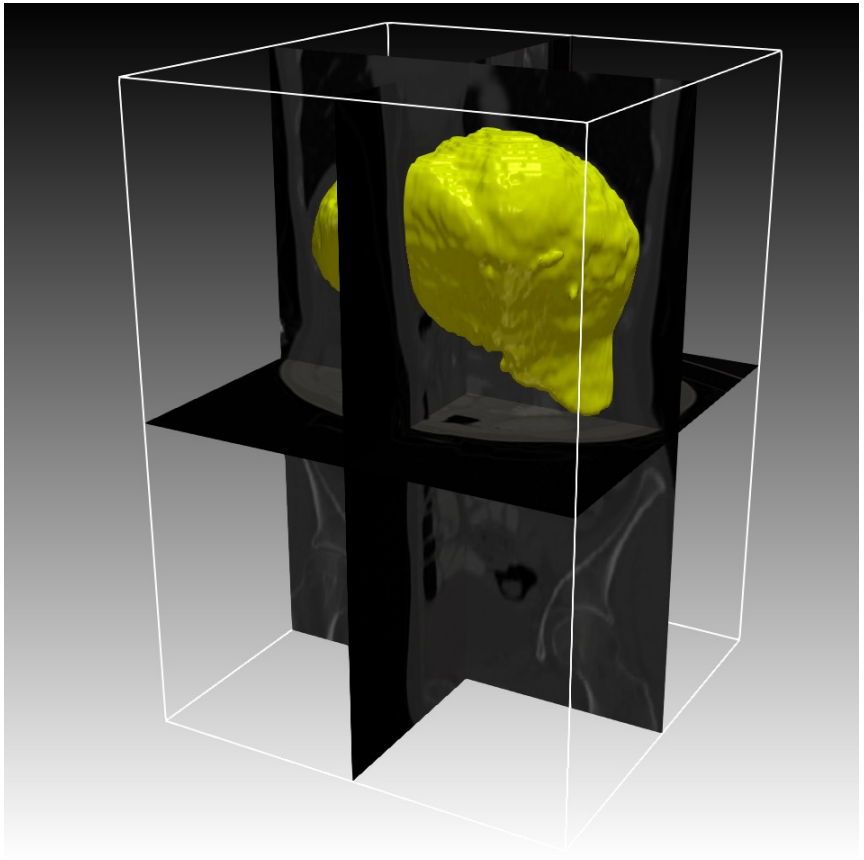


Molecular data

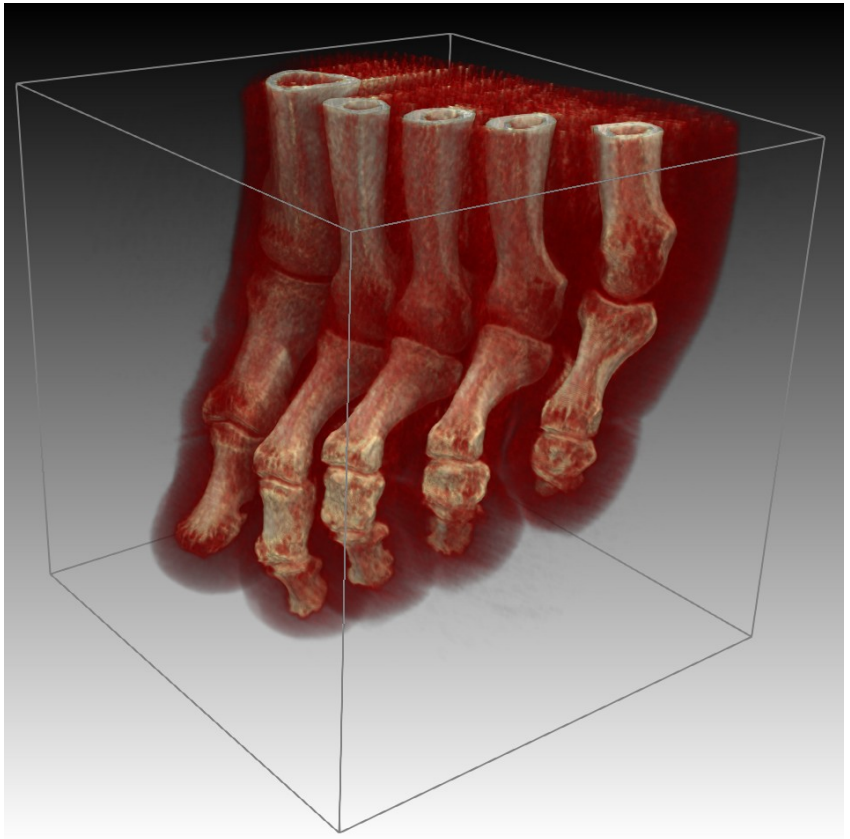


Wind streams

Assignment 2 (ParaView)

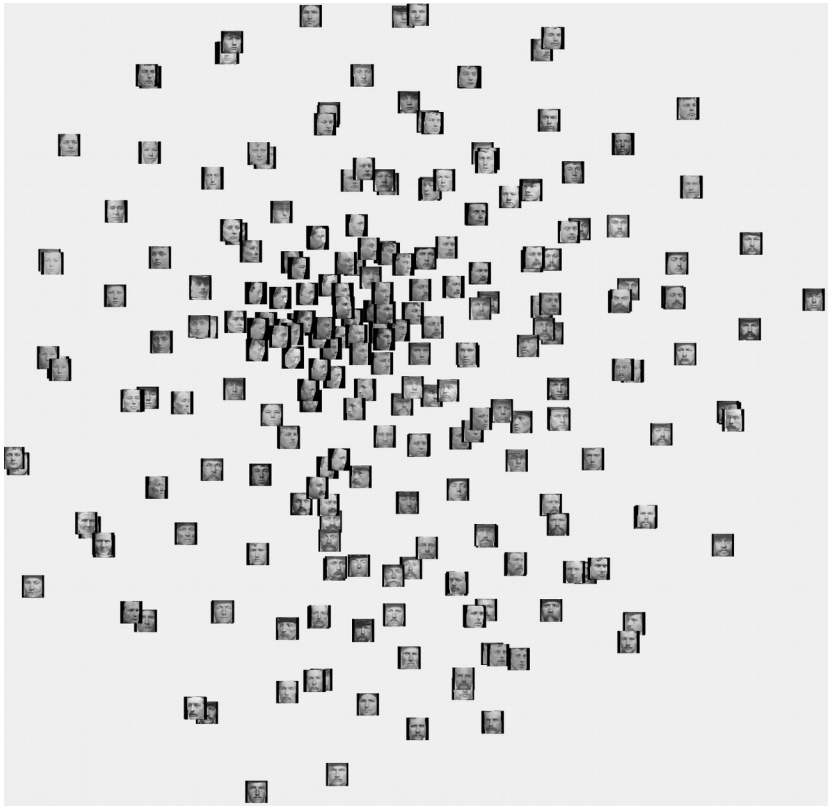


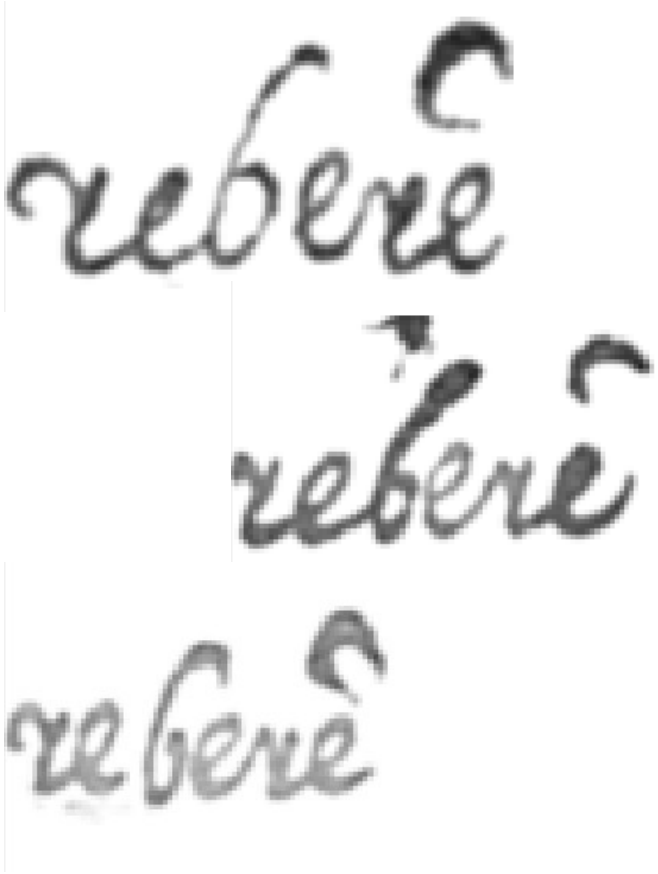
Visualising segmented CT data



Volume rendering

Assignment 3 (Python)





Dimensionality reduction techniques
for image data (faces and words)

Project (ParaView)

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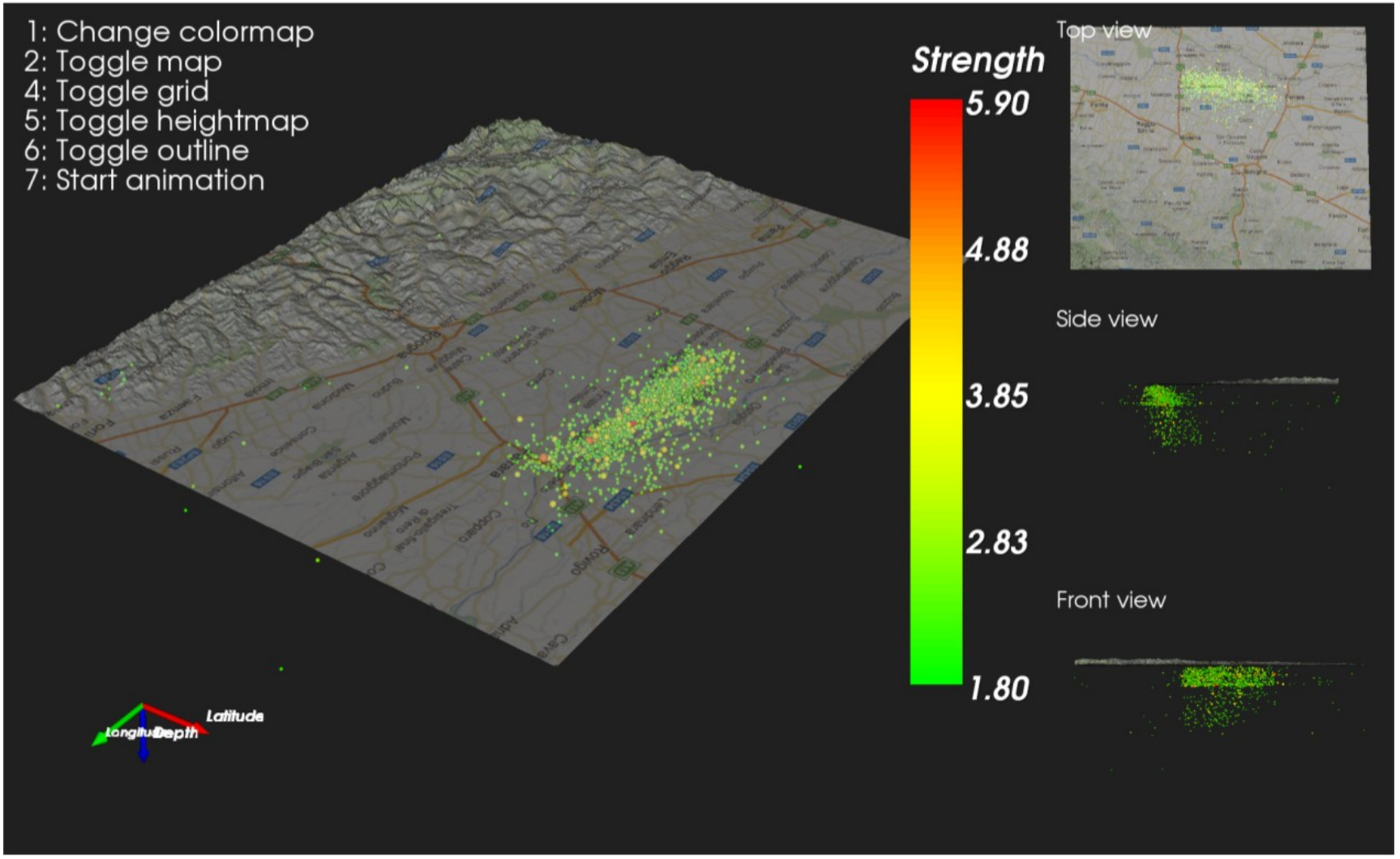

Earthquake data

Remember to sign up for the exam!