**About this repository**

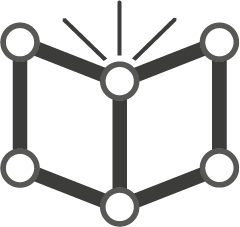
Welcome to **the Principles and Applications of Geographic Information Systems and Earth Observation** open courseware. These exercises are developed and maintained by the [Faculty of Geo-Information Science and Earth Observation (ITC)](https://www.itc.nl/), University of Twente, The Netherlands.

All the exercises were originally developed for the [Master of Science in Geo-Information Science and Earth Observation](https://www.itc.nl/education/studyfinder/geo-information-science-earth-observation/), and are still used in our courses. They are made available to the geo community as statement of ITC commitment towards education and capacity development and can be used by anyone provided the license terms are respected (see the License section).

The exercises assume the use of the free and open source software [QGIS](https://www.qgis.org) , but are not meant to be a software training. **Instead, the exercises are designed to teach key concepts of Geographic Information Science and Earth Observation**. You are free to use them in your own classes if you are a teacher (provided you provide the attribution credits) or on your own as an independent learner.

**How to use these exercises**

On the left pane there is a list of topics, each of those topics contains (mostly) software based exercises designed to demonstrate related concepts. Although the topics arrangement reflect the order we recommend the exercises be taken, they do not not build on each other and therefore can be taken by any order.

Along the exercises description, you may be suggested to take readings that explain the concept the exercise is demonstrating. This is signaled by the icon. All the readings direct to the [Living Textbook](https://www.itc.nl/about-itc/organization/resources-facilities/living-textbook/) – a conceptual map built on top of a wiki that allows the user to not only to read about a certain concept but also to explore how that that concept relates with other concepts.

The exercises might also contain questions. In a supervised environment, we use those questions to stimulate the class and assess how the learning process is going. Presently we do not have answer sheets - you will have to verify your answers independently if you choose to use this repository without support.

Since we assume the use of QGIS, consider to keep at hand the following resources:

* The [QGIS manual](https://docs.qgis.org/3.10/en/docs/user_manual/index.html) can help you to find answers on how to use the tools and interfaces, and it is the first source you should consult when you have a question on how to use QGIS.
* If you have more advanced questions, for example on how to implement a rather specific procedure or data analysis related with GIS and QGIS, then [GIS Stack exchange](https://gis.stackexchange.com/) might help you with that.
* You could also subscribe to the [QGIS-Users mailing list](https://lists.osgeo.org/mailman/listinfo/qgis-user) The mailing list contains a big archive of Q&As from the QGIS user community. You can also post your questions, and someone from the community might answer.

**Structure**

This repository is divided into five parts:

**Part one**, the Introduction contains general information about the exercises. This is the part you are reading right now.

**Part two** contains exercises related to Geographic Information Science where you can learn about Geographic Information Systems and Spatial Analysis.

**Part three** contains exercises related to Earth Observation, where you can learn about Remote Sensing and Image Interpretation.

**Part four** contains exercises related to Data Integration, where you can learn about system dynamics and approaches to integrate data from multiple sources and perform advanced analysis.

**Part five**, the Appendices contain additional information that will be useful for some of the exercises.

**Conventions**

Along the exercises, we use some formatting conventions to highlight content that requires special attention. These are as follows:

**Note**

**QGIS.** This will provide additional explanations specific to how QGIS works.

**Note**

**Reflection.** This will describe situations that require a deep level of reasoning. You should see this content as mental puzzles that will help to broaden your understanding of certain topics.

**Important**

**Resources.** This will describe the software and datasets required for completing a certain exercise. Not all exercises include the use of data; therefore, this will appear only in the sections that need it.

**Attention**

**Question.** This will post questions we encourage you to answer during the exercises.

If you would like to report any issues in this website. You can do that by opening an issue in this [GitHub repository](https://github.com/andremano/online-core/issues). Altenatively, you can also report it to [a.dasilvamano@utwente.nl](mailto:a.dasilvamano@utwente.nl).

Include the following:

* A short, but precise description of the issue,
* A link to the title of the specific section that contains the issues. You can find the URL of a title’s section by click on the chain icon on the right side of title’s section.
* Optionally, include a screenshot of the part of the section containing the issue.

Relevant issues to report:

* Broken links.
* Wrong referencing, e.g., links do not refer to the correct resources.
* Missing or incomplete content. Text or figures.
* Grammatical errors. We use British spelling.

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**Citation**

You can cite this repository using this reference:

*Mano, Andre (ed), Bakx, Wan, Garcia, Manuel, & Knippers, Richard. (2021, August 17). andremano/online-core: Principles and Applications of GIS and RS. Zenodo.* [*https://doi.org/10.5281/zenodo.5213896*](https://doi.org/10.5281/zenodo.5213896)

**Inquires**

If you want to have this or other courses taught at your organization under supervision of a teacher from our faculty, you can contact the editor and maintainer of this repository, Mr. André Mano ([a.dasilvamano@utwente.nl](mailto:a.dasilvamano@utwente.nl))