

Investigating effects of climate change with IPCC Interactive Atlas

IPCC Interactive Atlas: <https://interactive-atlas.ipcc.ch/>

The task is to investigate the effects of climate change in specific regions using the tool provided by IPCC Working Group I: The Physical Science Basis.

- 1) Watch the two introductory videos presenting the tool:

Simple intro:

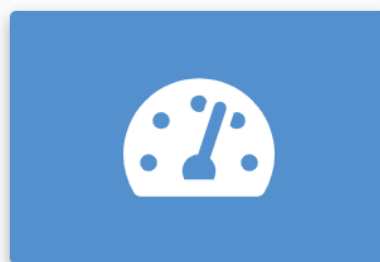
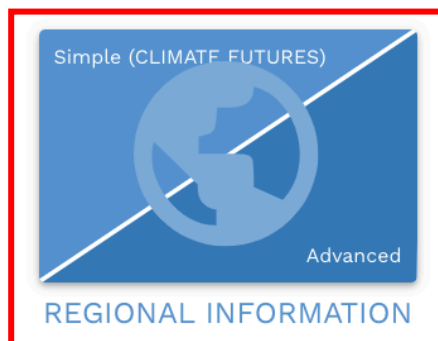
<https://www.youtube.com/watch?v=37LqAwX91sg&list=PL8HWK0G9m3B4FzhLSob7tcfZpFdyCBULD&index=1>

More detailed tutorial:

https://www.youtube.com/watch?v=VzwV9p9_F3c&list=PL8HWK0G9m3B4FzhLSob7tcfZpFdyCBULD&index=2

More info: <https://interactive-atlas.ipcc.ch/regional-information/about>

- 2) Get familiar with the IPCC Interactive Atlas tool. Use the Regional Information to access the data. There are two interfaces: Simple and Advanced. Go and take a look at both of them, but in the assignment we will use the Advanced tool. It allows you to see the effect of different scenarios and investigate more variables.

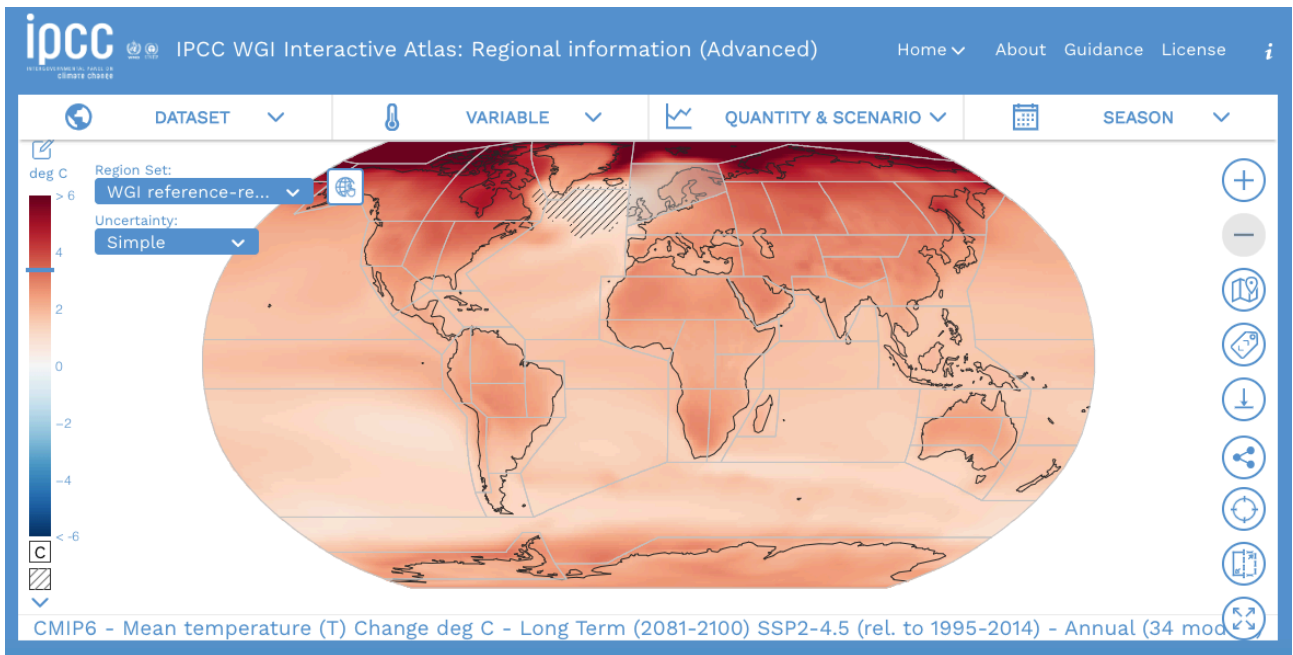


REGIONAL SYNTHESIS



DOCUMENTATION

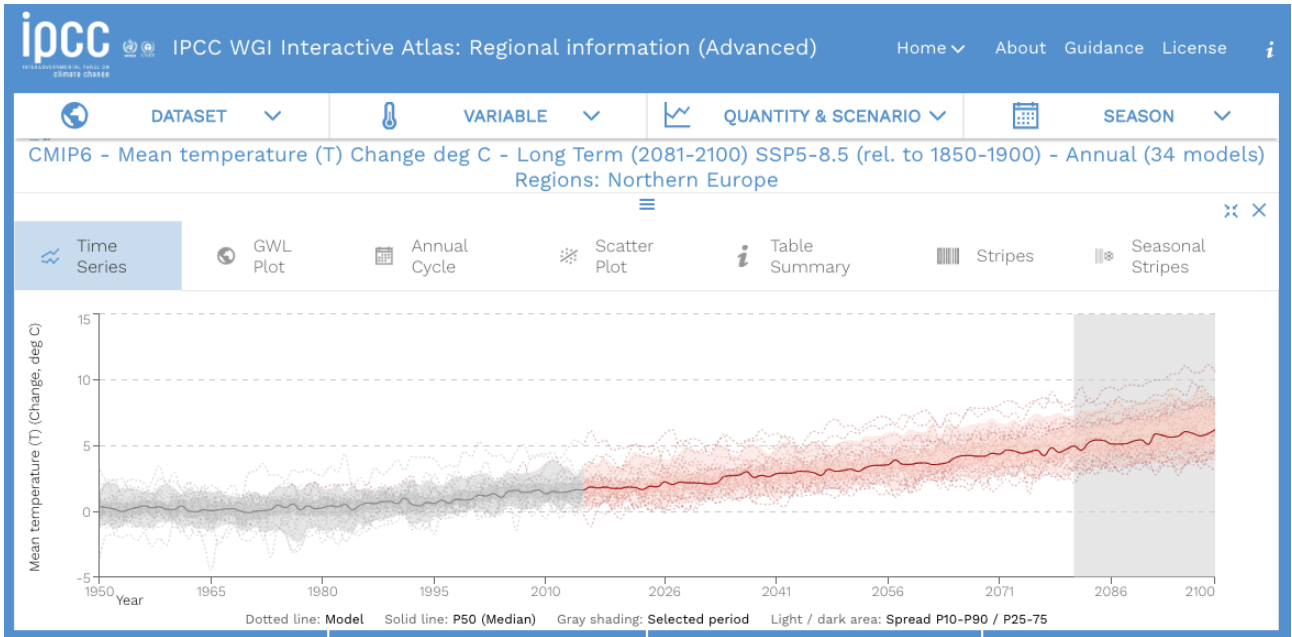
- 3) Select two regions that you want to study in more detail. Select the regions so that the effects of climate change are different. Regions are shown in the map.



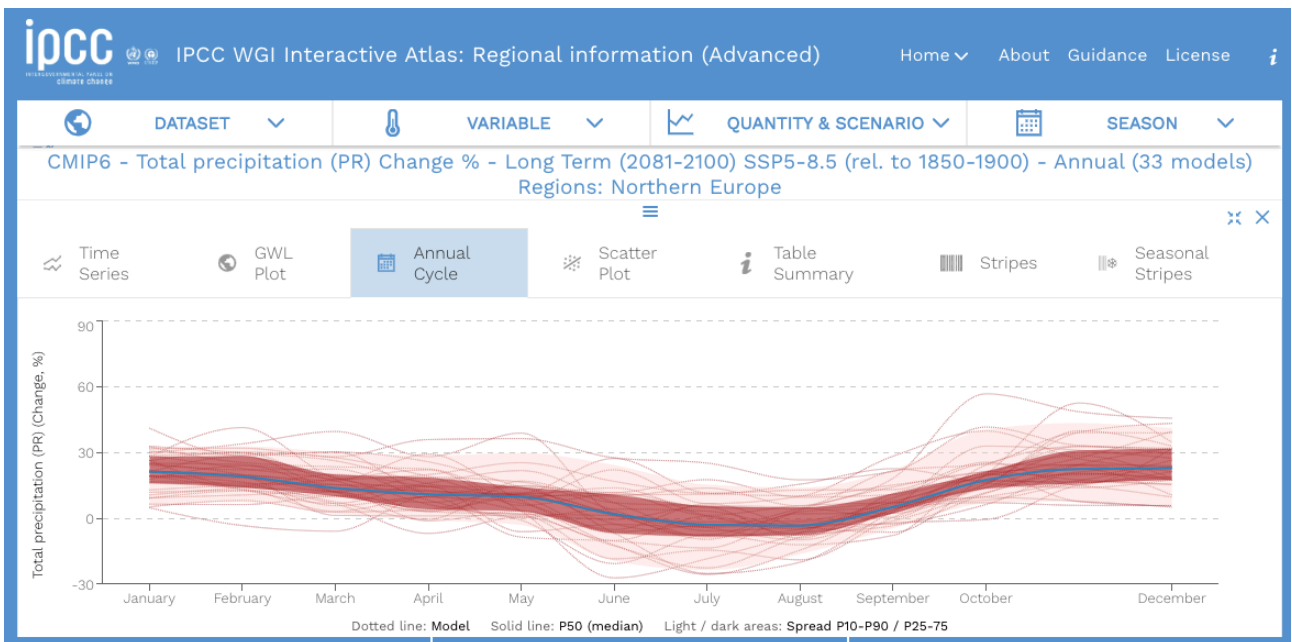
- 4) Click on the region (e.g. Europe as in the figure above), and you will get a time series of the selected variable in another window below the map figure (see figure below). You must click the time series window to be bigger from this symbol in the right bottom corner of the window:

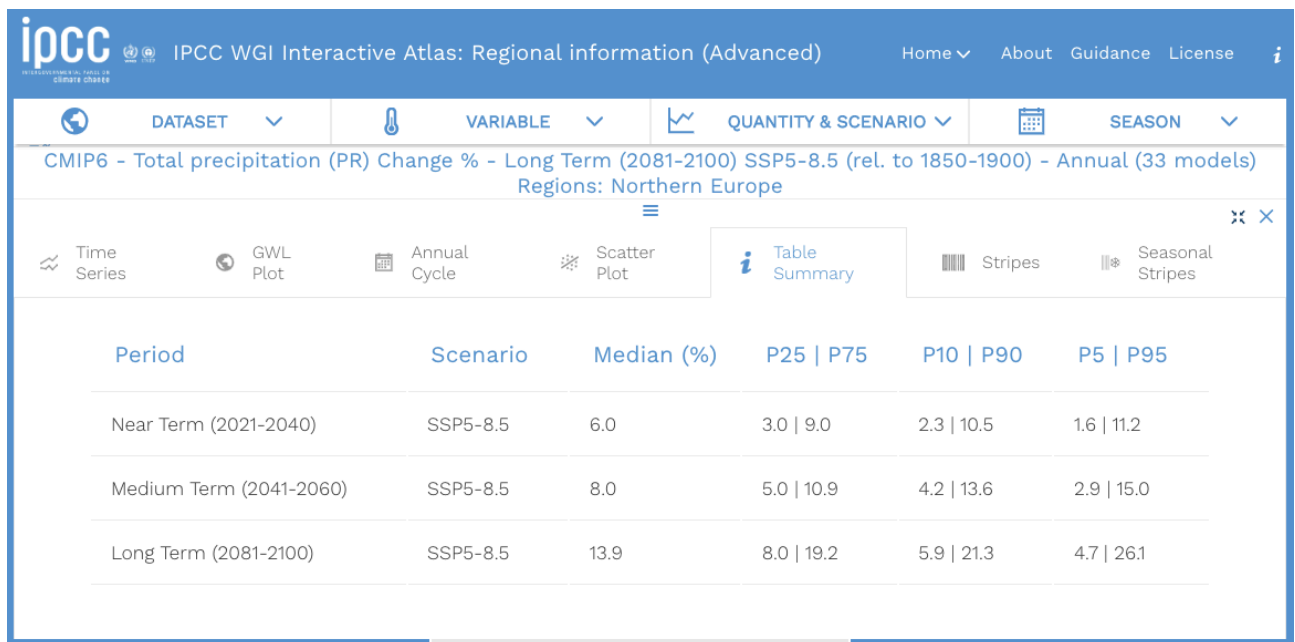
To see the time series of some variable, you must select:

- Dataset: Please use CMIP6 (= Coupled Model Intercomparison Project 6) for model projections and CRU TS for observations
- Variable: e.g. temperature, precipitation, number of hot days, sea level...
- Quantity & Scenario
 - Quantity: either change in the variable (anomaly) or absolute value. If you use the Change, you must specify also the Baseline period (to which the change is calculated)
 - Period: This shows the period that is shown in the map (average over that time period). Select Long-term to see the effect until 2100.
 - Scenario: Climate change scenario (SSP, Shared Socio-economic Pathway)
 - Baseline: reference period to which change is calculated
- Season: Which season you want to look at. Select Annual if you want to look at general trends.



Annual Cycle and Table Summary are also good to look at (here for example for precipitation):





NOW START YOUR ANALYSIS:

- 5) How climate has already changed in the regions? Look the decadal changes in mean temperature and precipitation using the CRU TS data set (Observations).
- 6) Select two climate scenarios for investigation:
 - SSP1-2.6
 - One of these: SSP2-4.5, SSP3-7.0, SSP5-8.5

Find out and explain what the scenarios mean. What kind of assumptions on the future development (emissions, societal development etc.) they include?

Hints: See lecture slides of the first lecture and this link:

<https://www.carbonbrief.org/explainer-how-shared-socioeconomic-pathways-explore-future-climate-change/>

- 7) Select **three variables** you want to investigate for the two selected regions. Present figures for these variables under both 2 scenarios you selected. What can you infer about the effects on climate change in these regions by 2100?

NB! Remember to use the same baseline years (whenever possible) for all the figures, to enable comparison between the figures and numbers. Recommended baseline: 1850-1900 (corresponds to pre-industrial time).

Recommended time period: Long term (2081-2100)

For the presentation and the report:

- Why did you select these regions under investigation?

- What kind of climate is now prevailing in the regions? How much climate has already changed compared to pre-industrial time?
- Present your findings on how the climate will change by 2100 on the regions you selected in the two selected scenarios.
- How climate change will affect the societies in these regions? How people's livelihoods are affected? Which livelihoods suffer, and are there some that could benefit from the change? How vulnerable the regions are to climate change and how much possibilities the societies have on climate change mitigation and adaptation?
- Besides the Interactive Atlas, you may use also other sources you find in the internet.

Make a presentation (7 mins) where you present your analysis. Be prepared to present your analysis as a group at the session 23.11. 14-17.

Report length: About 3-5 pages + figures

Deadline for the presentation slides submission: Wednesday 23.11. at 12.00 (noon). Submitted via MyCourses, one submission per group.

Deadline for the report submission: Sunday 27.11. Submitted via MyCourses, one submission per group.

Assessment and grading: Peer graded with a scale 1-5. Group also makes a self-assessment of their work.