JRC
EUROPEAN COMMISSION

Background note

Climate Change and Slovenia – Some facts and figures

Climate change, caused by the emission of greenhouse gases, is one of the gravest environmental challenges facing humanity. It not only threatens our environment but also has the potential to disrupt our economies and destabilise our societies. Slovenia is no exception: recent studies by the European Commission's Joint Research Centre (JRC) have confirmed rising temperatures and higher levels of precipitation here. These problems form part of a global picture that includes rapidly rising sea levels, more frequent storms, floods, droughts and heat waves, all of which put millions of coastal dwellers at risk and mean water and food shortages in many parts of the world.

Climate change trends in Slovenia[1]

Observed trends

- The annual mean temperature has increased by around 1.5° C over the past 35 years;
- The impact on ecosystems is manifest, for example agricultural crops are flowering 1-2 weeks earlier than 30 years ago.

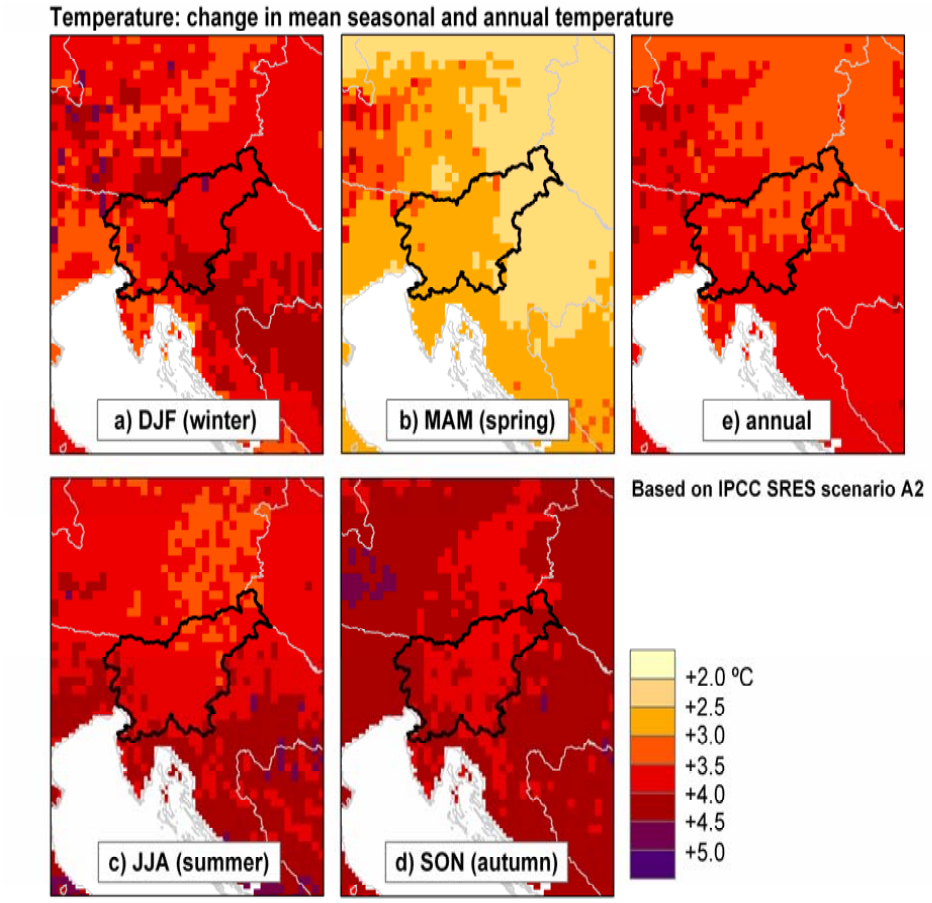
Projected trends

- Temperatures will increase up to 3-4 degrees Celsius by the end of the century under certain scenarios[2];
- Under the same scenario sustainable fresh water resources in Slovenia are projected to increase in winter and spring, whereas reductions of 40% and more are projected in summer and autumn;
- The frequency and severity of droughts will increase;
- An increase in the occurrence of extreme precipitation events and flash floods is likely;
- The projected climate-induced changes in Slovenia will aggravate the impact of other stresses, such as those of land use and demographic or socio-economic changes, on water availability, freshwater ecosystems, agriculture, energy production, navigation, irrigation, tourism and several other sectors.

See below for information on SRES scenarios and the Intergovernmental Panel on Climate Change.

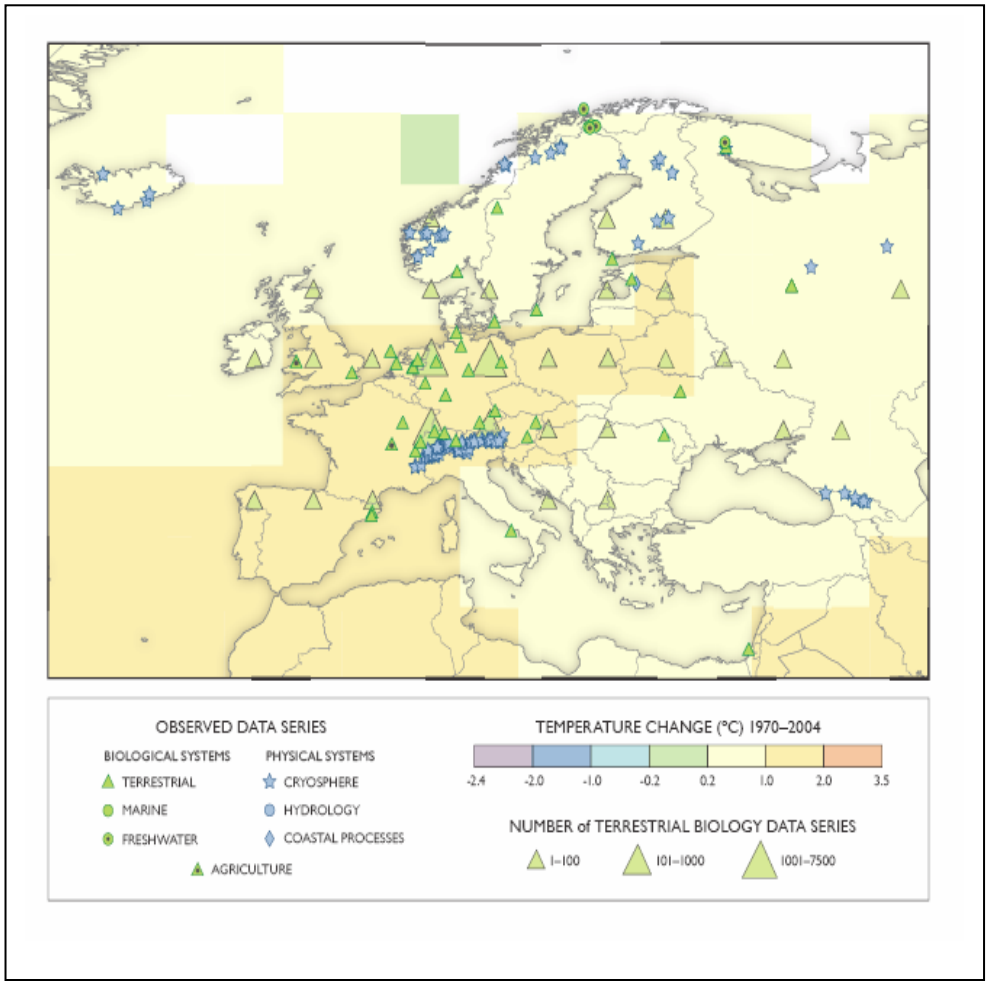
[1] Source: JRC
[2] BAU scenario (A2)

Change in **mean temperature** in Slovenia
(between 1961-1990 and 2071-2100, based on IPCC SRES A2 scenario)



DJF = December, January, February, etc.

Change in **mean temperature** in Europe (1970-2004)

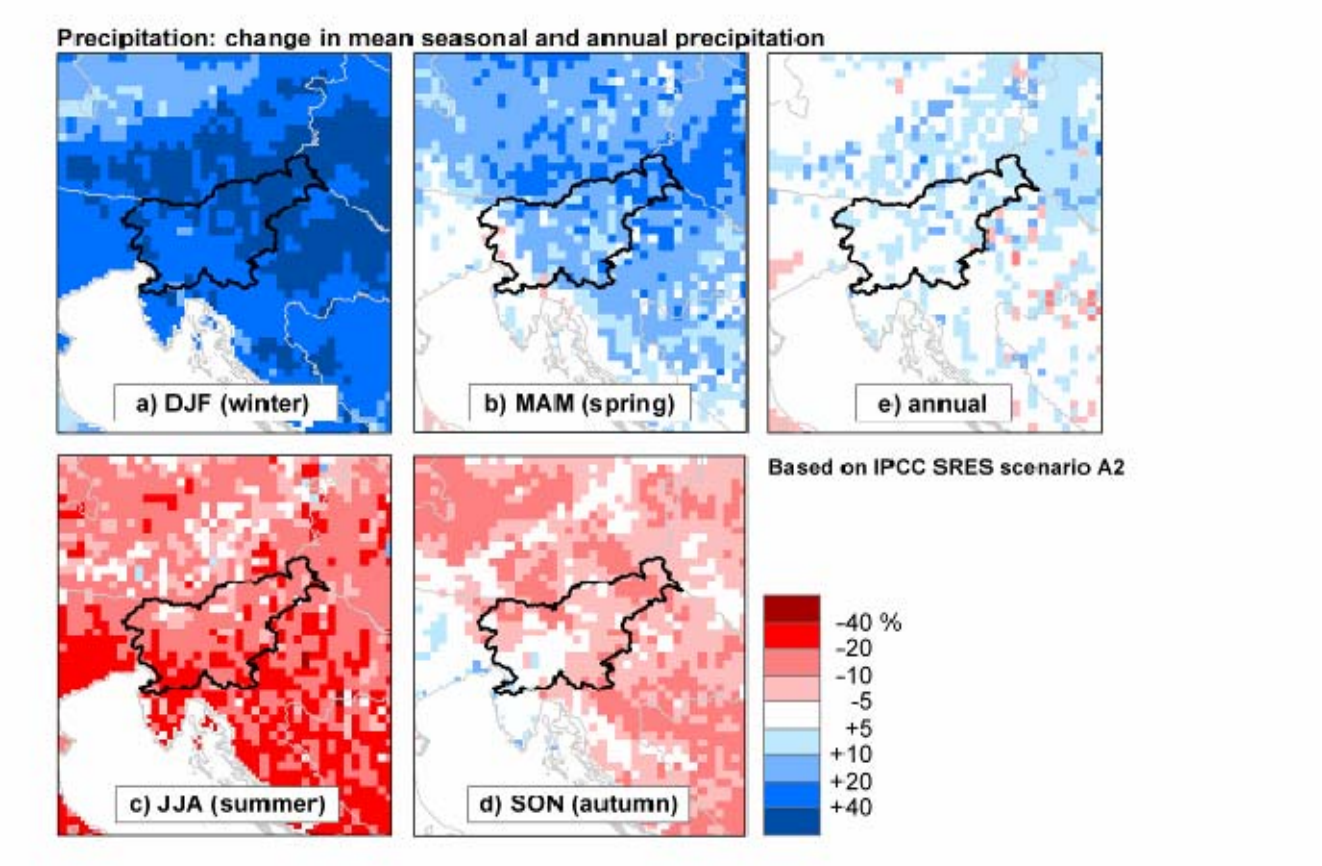


Climate change and floods in Europe

Global warming is generally expected to have an effect on the earth's the earth's hydrological cycle, increasing the magnitude and frequency of extreme precipitation events, which may also lead to more intense and frequent river flooding. A recent study by the Joint Research Centre's Institute for Environment and Sustainability based in Ispra, Italy, entitled *"Climate change impact on flood hazard in Europe: An assessment based on high resolution climate simulations"* has assessed the implications of climate change of climate change for future flood hazards. Rutger Dankers and Luc Feyen, the authors of the report, have carried out regional climate simulations[3] that led them to conclude that by the end of this century under certain scenarios[4], the level of extreme discharges in many European rivers may increase in magnitude and frequency.

In several rivers, most notably in the west and parts of eastern Europe, the probability of what is currently a 100-year flood may double or increase even more, meaning that the return period decreases to 50 years or less[5].

Change in **mean precipitation** in Slovenia
(between 1961-1990 and 2071-2100, based on IPCC SRES A2 scenario)



[3] (from the HIRHAM model with 12-km horizontal resolution, used to drive the hydrological model LISFLOOD at 5-km resolution)
[4] (the SRES A2 emissions scenario)
[5] A notable exception to this was found in the northeast, where warmer winters and a shorter snow season reduce the magnitude of the spring snowmelt peak.

Role of the JRC

The EU is leading international efforts to combat climate change and has developed a battery of cost-effective measures to help reduce our emissions, including the innovative Emissions Trading Scheme. The **European Commission's Joint Research Centre (JRC)** provides scientific support for the development and monitoring of European policies in the area of regional and global climate change in the framework of the Kyoto protocol and beyond. An overview of concrete activities and results obtained during the past two years is given in the publication: "Research at JRC in support of EU Climate Policy making".

Note on the IPCC and SRES scenarios[6]

The **Intergovernmental Panel on Climate Change** (**IPCC**) is a scientific body tasked to evaluate the risk of climate change caused by human activity. The panel was established in 1988 by the United Nations' World Meteorological Organization (WMO) and its Environment Programme (UNEP). The IPCC's SRES scenarios are emissions scenarios developed by Nakicenovic *et al*. (2000) and used as a basis for the *climate projections* in IPCC contributions to reports.

Further information:

On the JRC's role in fighting climate change:

http://ec.europa.eu/dgs/jrc/index.cfm?id=2290&lang=en

On the activities of the Instituted for Environment and Sustainability:

http://ec.europa.eu/dgs/jrc/index.cfm?id=1550&lang=en

[6] http://www.ipcc.ch/pdf/glossary/tar-ipcc-terms-en.pdf