Vergleich CH2011 / CH 2018

Informationen zu den neuen CH2018-Szenarien: www.klimaszenarien.ch (auch französisch)

Referenzperiode: CH2011: 1980-2009; CH2018: 1981-2010

Zeitfenster: 2035, 2060 und 2085 für beide gleich

Emissionsszenarien:
- CH2011: RCP3PD, A1B und A2
- CH2018: RCP2.6, RCP4.5 und RCP8.5
- Das RCP3PD-Szenario entspricht dem RCP2.6, das A2-Szenario in etwa dem RCP8.5, für das A1B-Szenario gibt es kein entsprechendes Szenario. Da A1B und A2 in den Zeitfenstern 2035 und 2060 sehr ähnlich sind, können die im Bericht verwendeten Werte aus dem A1B-Szenario mit dem neuen RCP8.5 verglichen werden (für 2035 und 2060).

Regionen
- CH2011: Nordostschweiz, *Westschweiz* und Südschweiz
- CH2018: Nordostschweiz, *Westschweiz*, Südschweiz, Ostalpen und Westalpen. Für einzelne Parameter wie Temperatur und Niederschlag stehen zusätzliche Regionalisierungen (wie z.B. *Voralpen*) zur Verfügung. Würde mit den neuen Szenarien gerechnet, wären „Voralpen“ die bevorzugte Wahl, da das gesamte Untersuchungsgebiet in diese Kategorie fällt.

Veränderung der mittleren Wintertemperaturen (°C)
Identische (2060) bzw. leicht höhere Werte (2035) in den neuen CH2018-Szenarien (vgl. untenstehende Tabellen)

CH2011: Veränderung der **mittleren Wintertemperaturen** (°C) in der Region **Westschweiz** (Tab. 3 im Bericht)

	2035			2060			2085		
	low	medium	high	low	medium	high	low	medium	high
A2	0.3	1.12	1.92	1.33	2.26	3.18	2.46	3.61	4.75
A1B	0.41	1.26	2.08	1.37	2.3	3.24	2.03	3.1	4.13
RCP3PD	0.35	1.19	2	0.59	1.38	2.16	0.54	1.32	2.08

CH2018: Veränderung der **mittleren Wintertemperaturen** (°C) in der Region **Westschweiz**

	2035			2060			2085		
	low	medium	high	low	medium	high	low	medium	high
RCP8.5	0.5	1.4	1.9	1.8	2.3	2.6	2.9	3.7	4.8
RCP4.5	0.6	1.2	1.8	1	1.8	2.7	1.4	2	2.8
RCP2.6	0.5	1	1.6	0.6	1.2	1.8	0.6	1.2	1.8

CH2018: Veränderung der **mittleren Wintertemperaturen** (°C) in den **Voralpen**

	2035			2060			2085		
	low	medium	high	low	medium	high	low	medium	high
RCP8.5	0.7	1.5	1.9	1.9	2.3	3.1	3.2	4.3	5.1
RCP4.5	0.8	1.4	1.8	1.2	1.8	2.7	1.5	2.2	3.2
RCP2.6	0.6	1	1.9	0.6	1.4	2.1	0.7	1.4	2.1

Veränderung der mittleren Winterniederschläge (%)
In den CH2018-Szenarien werden die Winter feuchter (rund 10%) (vgl. untenstehende Tabellen)

CH2011: Veränderung der **mittleren Winterniederschläge** (%) in der Region **Westschweiz** (Tab. 4 im Bericht)

	2035			2060			2085		
	low	medium	high	low	medium	high	low	medium	high
A2	-16	0	+16	-14	+1	+17	-11	+5	+22
A1B	-17	0	+17	-14	+1	+17	-11	+4	+21
RCP3PD	-17	0	+17	-13	0	+16	-12	+2	+16

CH2018: Veränderung der **mittleren Winterniederschläge** (%) in der Region **Westschweiz**

	2035			2060			2085		
	low	medium	high	low	medium	high	low	medium	high
RCP8.5	-0.8	+10.3	+16	+0.4	+7	+20.6	+4.9	+15.4	+23.9
RCP4.5	-2.3	+6.6	+16	-4.8	+6	+19	-6.5	+8.2	+16.5
RCP2.6	-6.8	+6.3	+17.6	-0.6	+5.5	+14	-1.8	+5.5	+16.1

CH2018: Veränderung der **mittleren Winterniederschläge** (%) in den **Voralpen**

	2035			2060			2085		
	low	medium	high	low	medium	high	low	medium	high
RCP8.5	-0.2	+11.6	+21.3	+2.4	+10.3	+26.8	+3.3	+21	+39.7
RCP4.5	-5.1	+8.3	+19	-7	+6	+18.7	-14.8	+11.1	+21.1
RCP2.6	-7.8	+6.2	+26	-6.8	+7.3	+16.8	-6	+6.7	+19.9

Auszüge aus dem Technical Report

Quelle: CH2018 (2018): CH2018 – Climate Scenarios for Switzerland. Technical Report, National Centre for Climate Services, Zurich, 271 pp. (nur Englisch)

Table 2.1. RCPs used within this report, their main characteristics in terms of radiative forcing (RF), CO 2-equivalent concentration (CO_2eq), global mean surface temperature change (GMT), and relationship to the emission scenarios used in CH2011.

Scenario	Pathway	Global changes until 2100 relative to 1850 to 1900	Corresponding CH2011 scenario
RCP8.5	Unabated emissions	Continuously increasing RF (8.5 W m^{-2}, 1370 ppm CO_2eq) and GMT (4 - 5 °C)	A2
RCP4.5	2°C-non-compliant mitigation	Emissions decline after 2050, stabilization of RF (4.5 W m^{-2}, 650 ppm CO_2eq), increasing GMT (~2.5 °C)	-
RCP2.6	2°C-compliant mitigation	Implies strong reduction of greenhouse gas emissions early in the 21st century, peak and decline of RF (2.6 W m^{-2}, 490 ppm CO_2eq), stabilization of GMT (< 2 °C)	RCP3PD

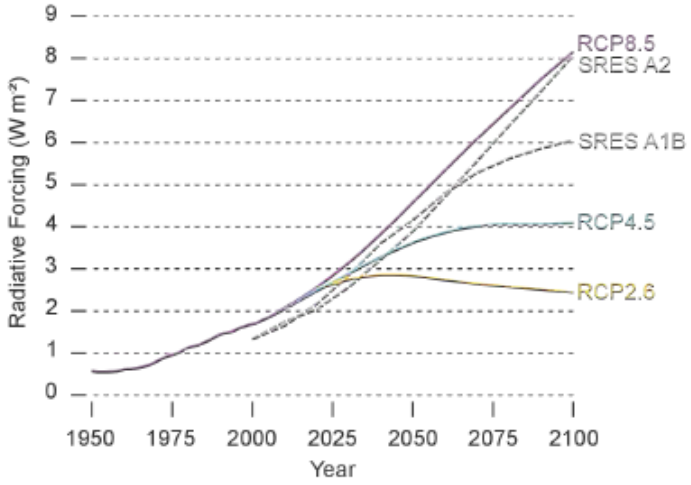

Figure 2.4. Radiative forcing with respect to pre-industrial levels for the three RCPs used in this report (colored lines). The dashed grey lines show the two SRES scenarios that were used in CH2011. RCP2.6 was also included in CH2011, but is labeled "RCP3PD" for historical reasons. The atmospheric CO_2 concentration and RF corresponding to the SRES emission scenarios can only be calculated within some uncertainty related to the uptake of CO_2 by the ocean and the land biosphere [224]; the RF shown for the SRES emission scenarios do not account for this carbon cycle uncertainty. The RF shown at the end of the century does not exactly correspond to the nominal forcing levels of the RCPs, as forcing was implemented in terms of greenhouse gas concentrations or emissions, which results in slightly different RF in the various models. Figure adapted from [168].

Summary

CH2018 supersedes the previous scenario assessments CH2011 and CH2007 (OcCC (2007)). Major changes in the methods employed have been made, mostly related to the implementation of advanced scientific developments. Although there are also some quantitative differences in the climate change projections, the CH2018 scenarios generally confirm the findings of CH2011.

- In particular, many of the quantitative differences between CH2018 and CH2011 are related to precipitation. The new scenarios indicate wetter winters and a less pronounced summer drying. In addition, model spread and thus uncertainty ranges have increased with the new set of scenarios. Nevertheless, the CH2018 scenarios are fully compatible with the "expert judgement" interpretation of CH2011 that the projected ranges encompass the actual changes with a likelihood of 66 % (for temperature) and 50 % (for precipitation).
- CH2018 incorporates higher-resolution climate simulations (12 km as opposed to 25 km in CH2011), allowing for a better representation of relevant processes (especially in Alpine terrain). In addition, the set contains simulations at a resolution of 50 km. The ensemble size has increased by half, with 21 RCM simulations (14 in CH2011) using 9 GCMs combined with 7 different RCMs, facilitating more comprehensive coverage of model uncertainty.
- CH2018 considers three emission scenarios from the IPCC AR5: one mitigation scenario (RCP2.6) and two non-mitigation scenarios (RCP4.5 and RCP8.5). This is similar to CH2011, which explored three comparable scenarios (see also Figure 2.4).
- In contrast to CH2011, CH2018 provides transient projections that include simulated daily to interannual variability and cover a set of additional variables (minimum and maximum temperature, relative humidity, radiation, and wind).
- Other innovations of CH2018 include an assessment of projected changes in climate extremes and impact-relevant indices (Chapter 6), as well as a detailed chapter on observed climate variability and trends (Chapter 3) and natural variability (Chapter 7).
- Based on the in many ways novel and methodologically improved data basis, as well as the differences identified between CH2011 and CH2018, it is highly recommended that researchers and stakeholders re-assess the quantitative impacts of potential climate change using this new reference data.