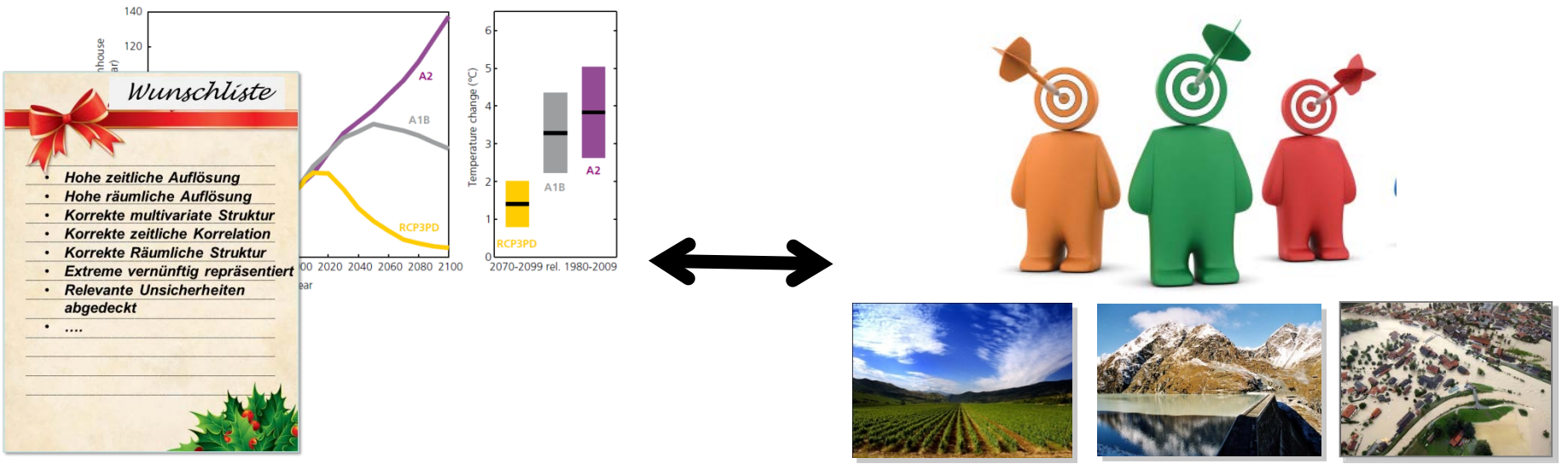
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Eidgenössisches Departement des Innern EDI
Bundesamt für Meteorologie und Klimatologie MeteoSchweiz

Assessement of user needs for climate change scenarios in Switzerland

Andreas Fischer, Mark Liniger, Jacqueline Flückiger Knutti, Michael Sigel

Federal Office of Meteorology and Climatology MeteoSwiss, Climate Division, Switzerland

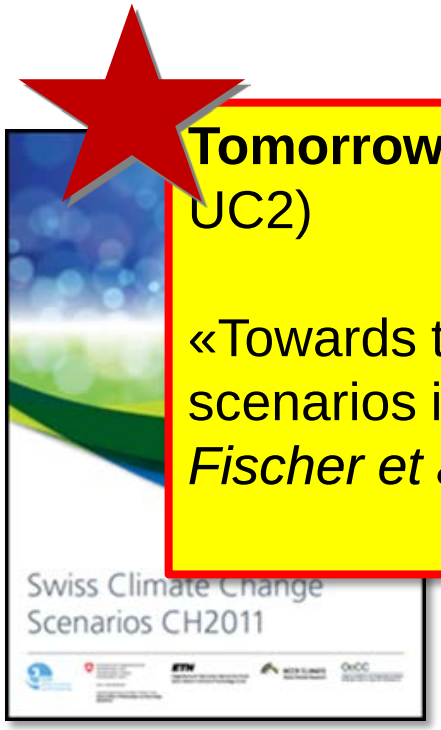


Swiss Climate Scenario Assessments

CH2018

Tomorrow at 10am (room Saturnia, UC2)

«Towards the new CH2018 climate scenarios in Switzerland»
Fischer et al.



CH2011

CH2007

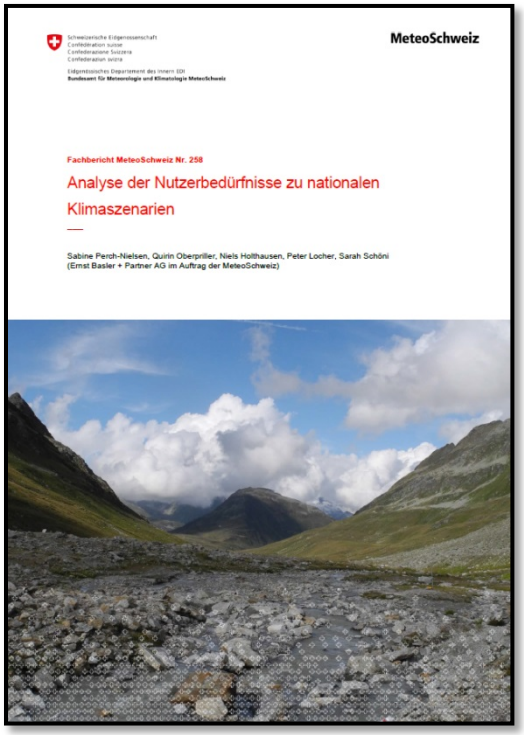
Approach

Conducted by Ernst Basler + Partner AG on behalf of MeteoSwiss
(June 2015 – January 2016)

Ernst Basler + Partner

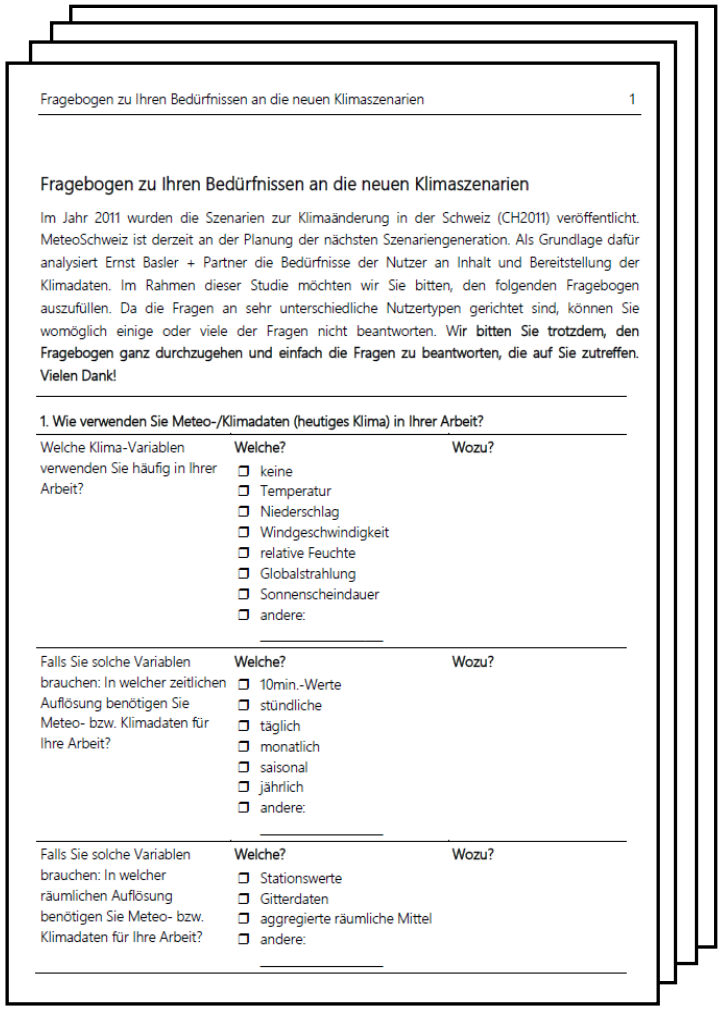
Analysis

- 10 Individual interviews
- 9 group interviews (2 hours each)
  - organized per sector
  - 3-5 participants of different user types
- 2 User-Centred Design Workshops on Dissemination
- Written questionnaire
- Consolidation of the survey results at a national symposium with ~150 participants



(MeteoSwiss Technical Report, 2016)

Written Questionnaire



Fragebogen zu Ihren Bedürfnissen an die neuen Klimaszenarien 1

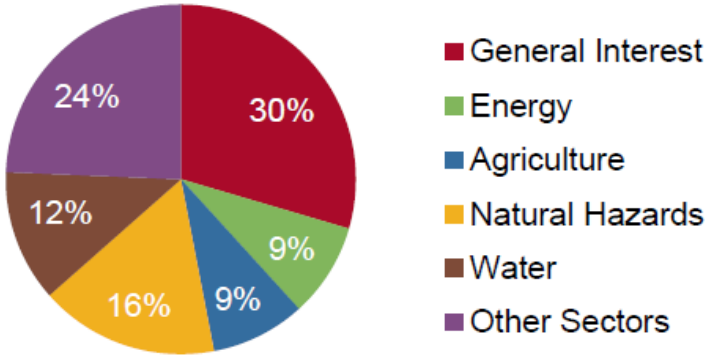
Fragebogen zu Ihren Bedürfnissen an die neuen Klimaszenarien

Im Jahr 2011 wurden die Szenarien zur Klimaänderung in der Schweiz (CH2011) veröffentlicht. MeteoSchweiz ist derzeit an der Planung der nächsten Szenariengeneration. Als Grundlage dafür analysiert Ernst Basler + Partner die Bedürfnisse der Nutzer an Inhalt und Bereitstellung der Klimadaten. Im Rahmen dieser Studie möchten wir Sie bitten, den folgenden Fragebogen auszufüllen. Da die Fragen an sehr unterschiedliche Nutzertypen gerichtet sind, können Sie womöglich einige oder viele der Fragen nicht beantworten. Wir **bitten Sie trotzdem, den Fragebogen ganz durchzugehen und einfach die Fragen zu beantworten, die auf Sie zutreffen.** Vielen Dank!

1. Wie verwenden Sie Meteo-/Klimadaten (heutiges Klima) in Ihrer Arbeit?

Welche Klima-Variablen verwenden Sie häufig in Ihrer Arbeit?	**Welche?** ❒ keine ❒ Temperatur ❒ Niederschlag ❒ Windgeschwindigkeit ❒ relative Feuchte ❒ Globalstrahlung ❒ Sonnenscheindauer ❒ andere:	**Wozu?**
Falls Sie solche Variablen brauchen: In welcher zeitlichen Auflösung benötigen Sie Meteo- bzw. Klimadaten für Ihre Arbeit?	**Welche?** ❒ 10min.-Werte ❒ stündliche ❒ täglich ❒ monatlich ❒ saisonal ❒ jährlich ❒ andere:	**Wozu?**
Falls Sie solche Variablen brauchen: In welcher räumlichen Auflösung benötigen Sie Meteo- bzw. Klimadaten für Ihre Arbeit?	**Welche?** ❒ Stationswerte ❒ Gitterdaten ❒ aggregierte räumliche Mittel ❒ andere:	**Wozu?**

- **High return rate** (45%)
  → 115 returns from 256 sent
- Covered **Sectors**

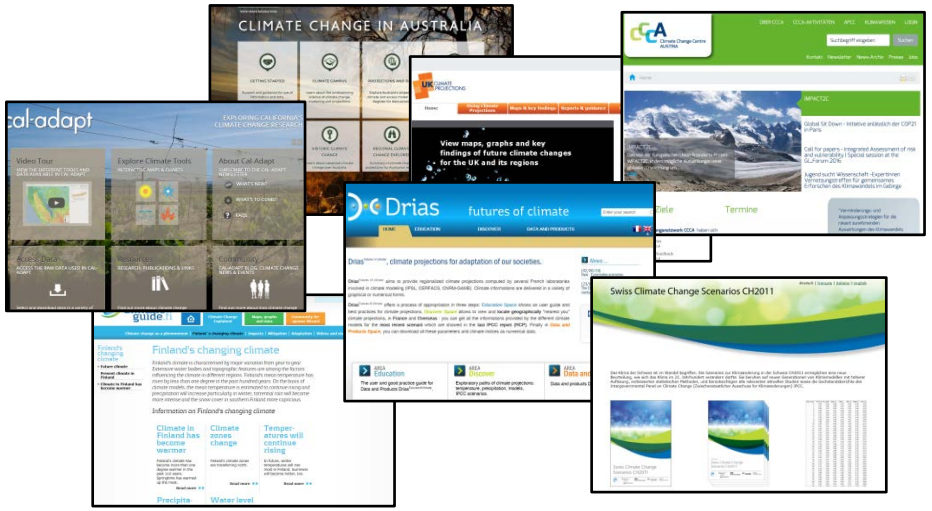


- **Limitations**
  → not representative
  → Potential misunderstandings due to complexity

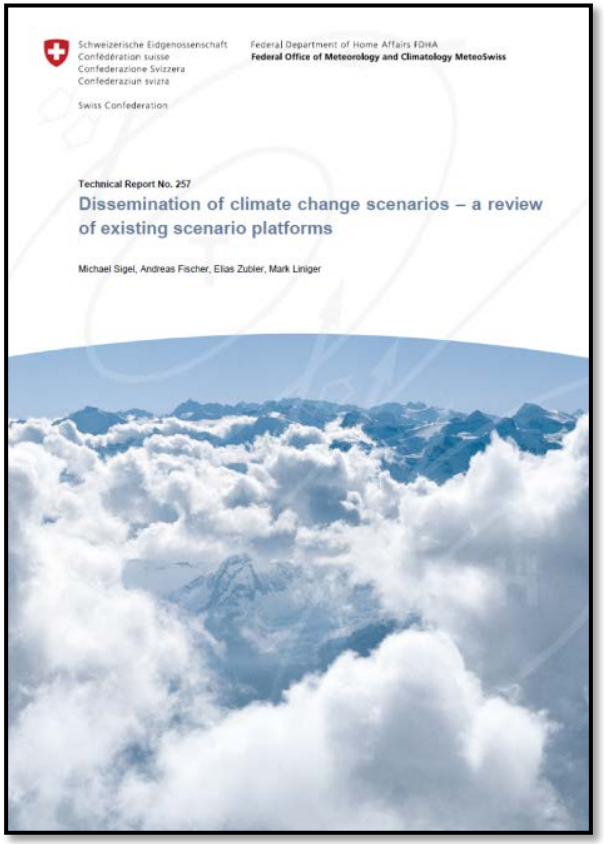
=> **First Inventory of User Needs**

What do other scenario providers do?

A systematic review of existing scenario platforms,



[...]

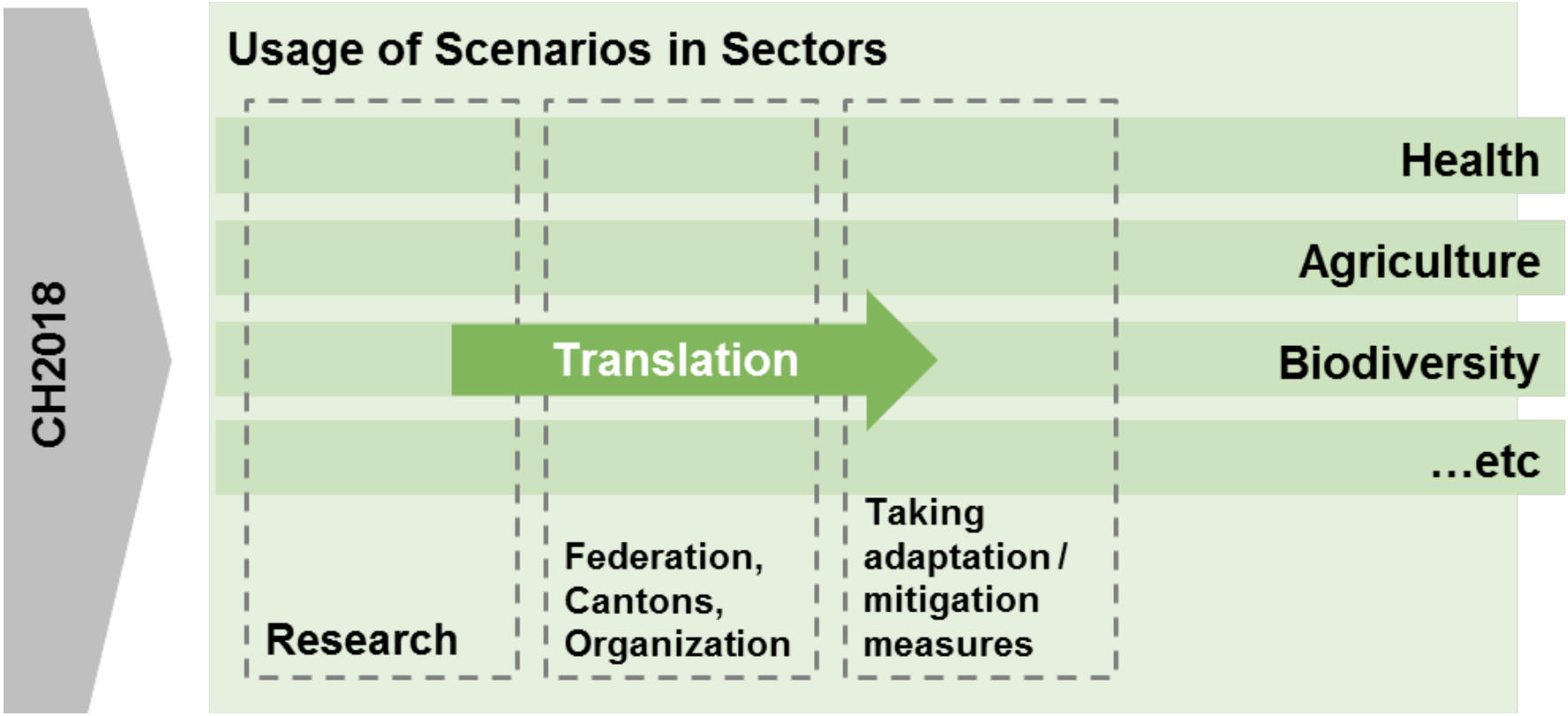


Investigation of 17 websites from 14 countries

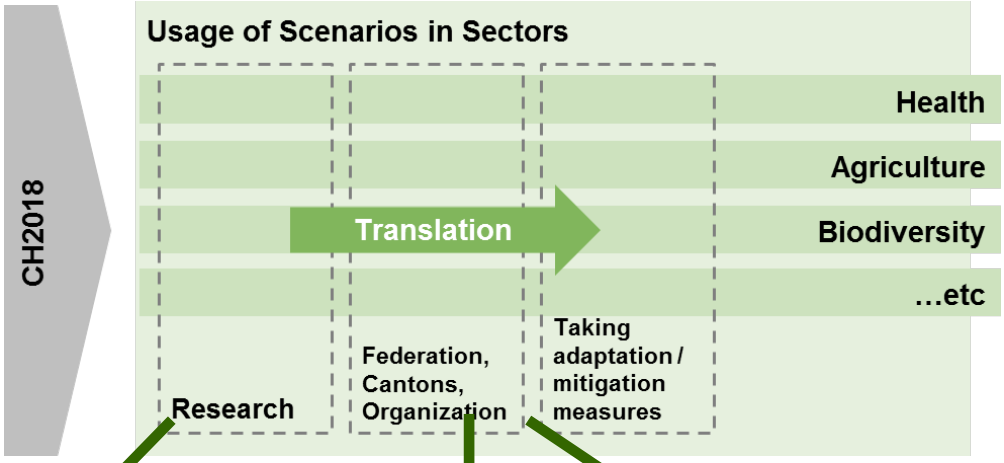
→ Content
→ Guidance
→ Tools
→ Data Provision
→ Communication
→ ...

(Sigel et al. 2016)

User Landscape in Switzerland



User Landscape in Switzerland

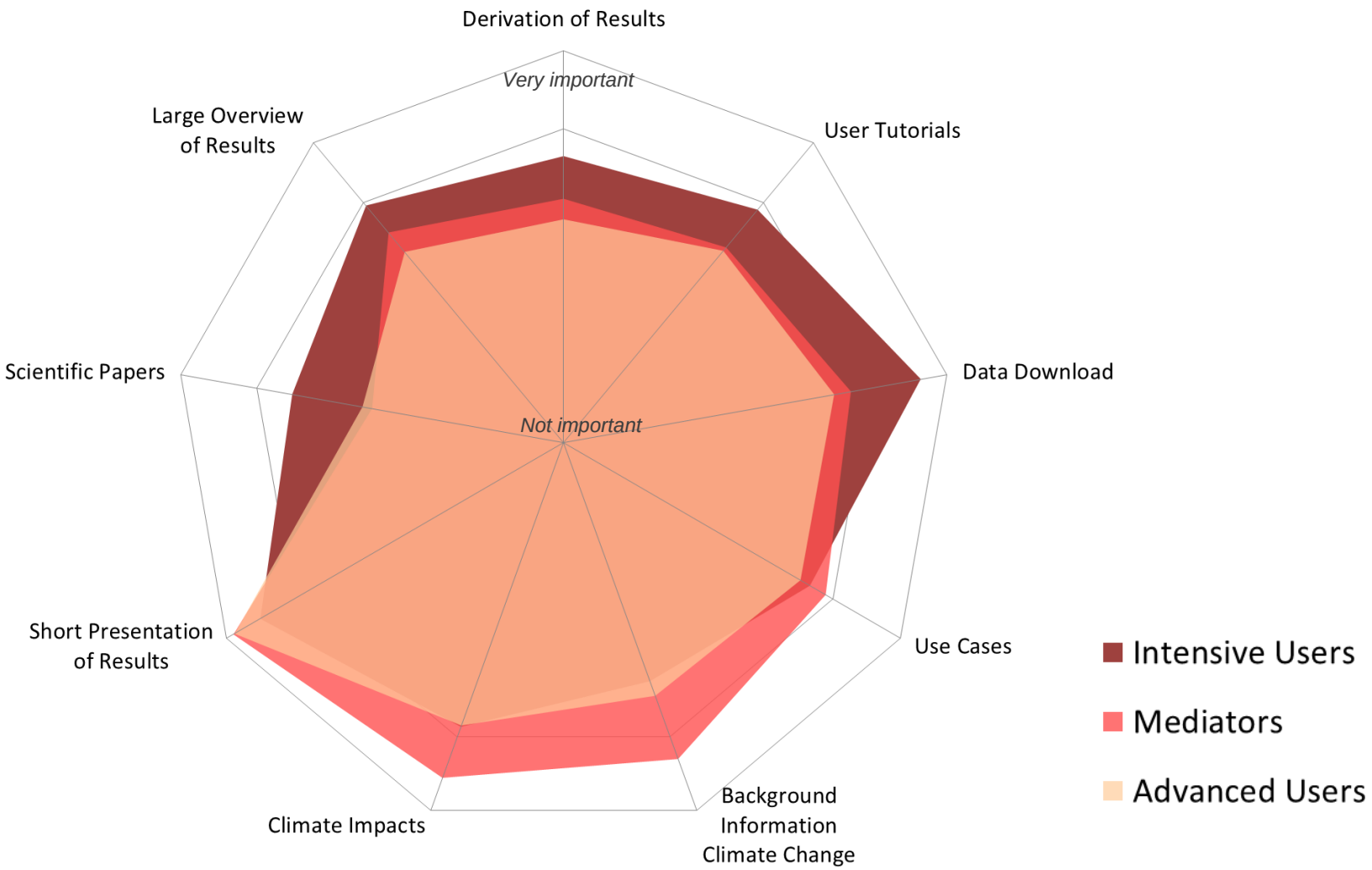


Intensive users (25%)
Scientists

Advanced users (50%)
Engineering & government agencies
Private consultancy firms

Mediators (25%)
Schools & teachers
Journalists
General public

Dissemination: Needs on a web-platform



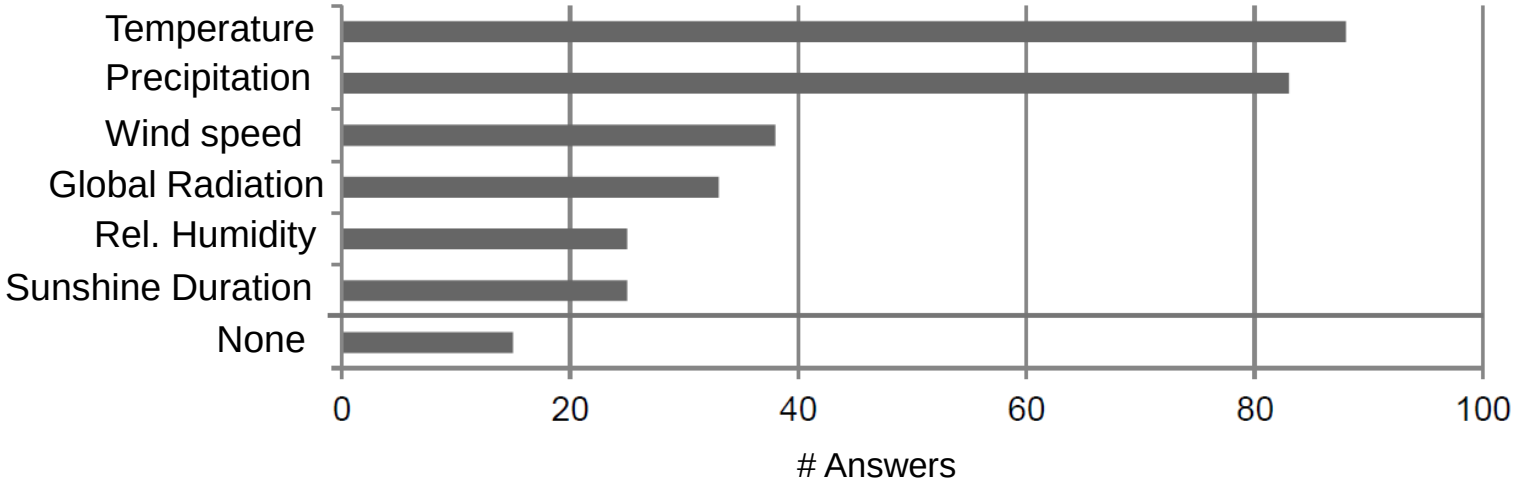
(Fischer et al. 2016)

Needs in Content (1)

Questions on the use of meteorological / climatological data in today's climate

→ Assumption: requests for today's climate are the same as for a future climate

*Q: Which **atmospheric variables** do you often use in your work?*



Needs in Content (1)

Variables beyond temperature / precipitation

USA	•Hurricanes				•Sea level	•Melting ice •Ocean Acidification
Australia	•FG		•RH	•SR	•Sea level	•Ocean Acidification •Sea surface temperature
UKCP		•1-20yFX	•RH		•CC	
SMHI			•FXx			•T2m dayVegStart5 •T2m dayVegEnd5 •T2m dayVegPeriod2
Norway				•SDx •SD1		
Finland				•SDx	•PET	•Runoff •Soil moisture
Canada						
Germany					•T2m dayVegPeriod2	•Soil temperature •Soil moisture •Forest fire index
France						
Netherlands	•FG	•1-20yFX	•RH	•SR	•Evaporation	•Fog •Sea level •Hail
Switzerland						
Spain	•FG		•RH		•CC	•Evaporation
Impact2C				•SD1	•PET	
ClimatHD						
Belgium	•FG	•FX99p			•PET	
California	•FG	•FX90p		•SD x	•Sea level	•forest free index

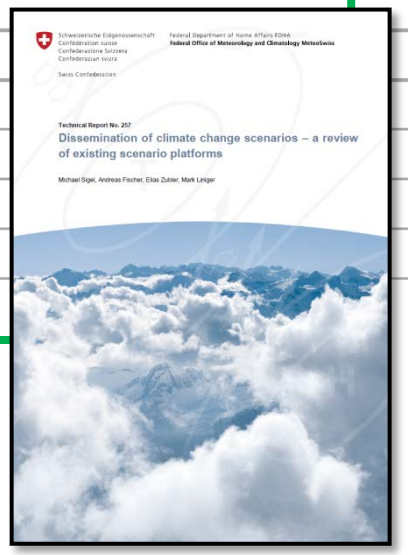
wind

snow

more…

radiation

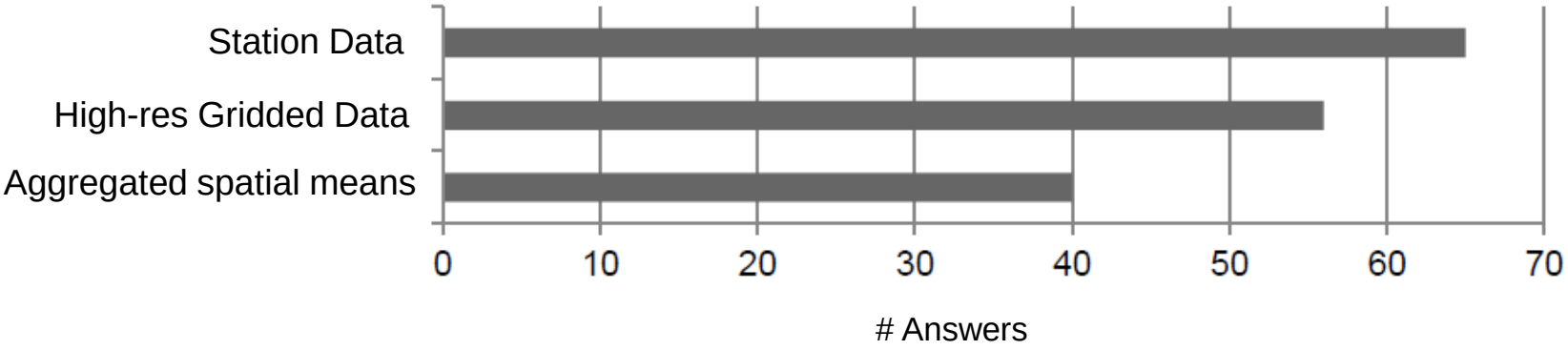
humidity



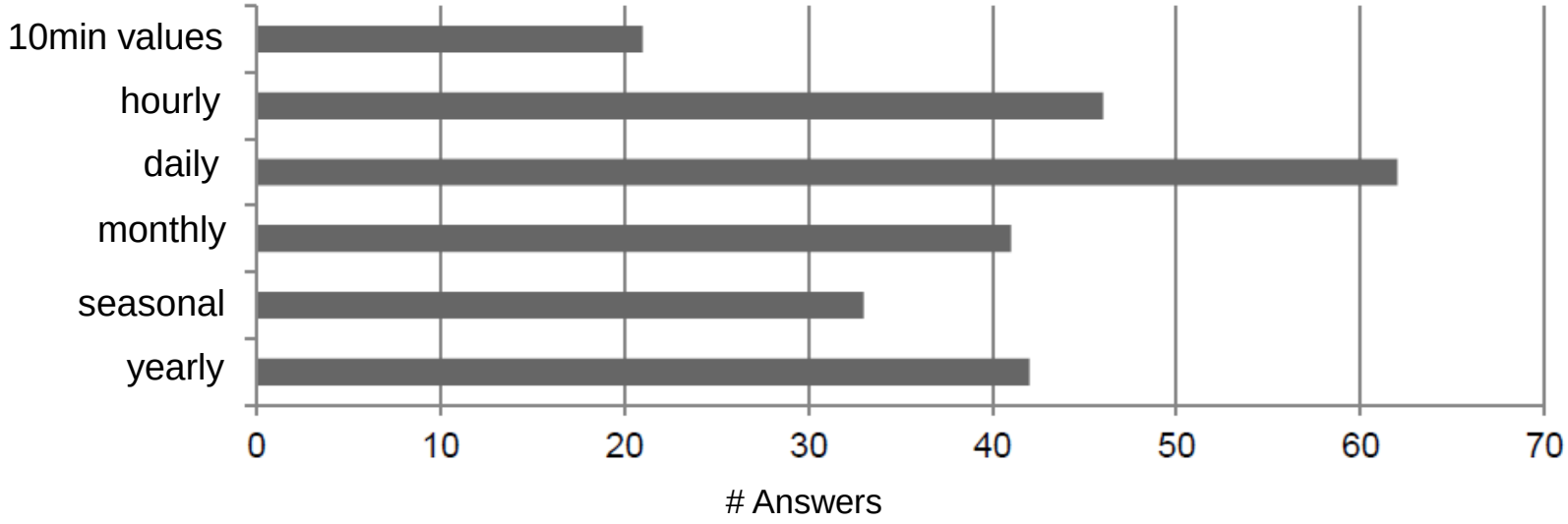
(Sigel et al. 2016)

Needs in Content (2)

*Q: Which **spatial resolution** do you need for your work?*



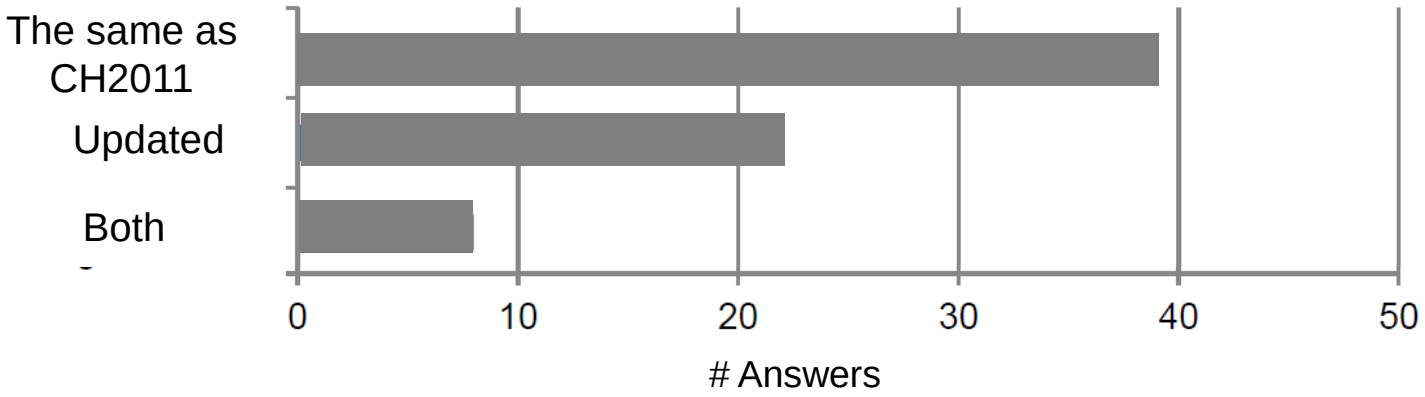
*Q: Which **temporal resolution** do you need for your work?*



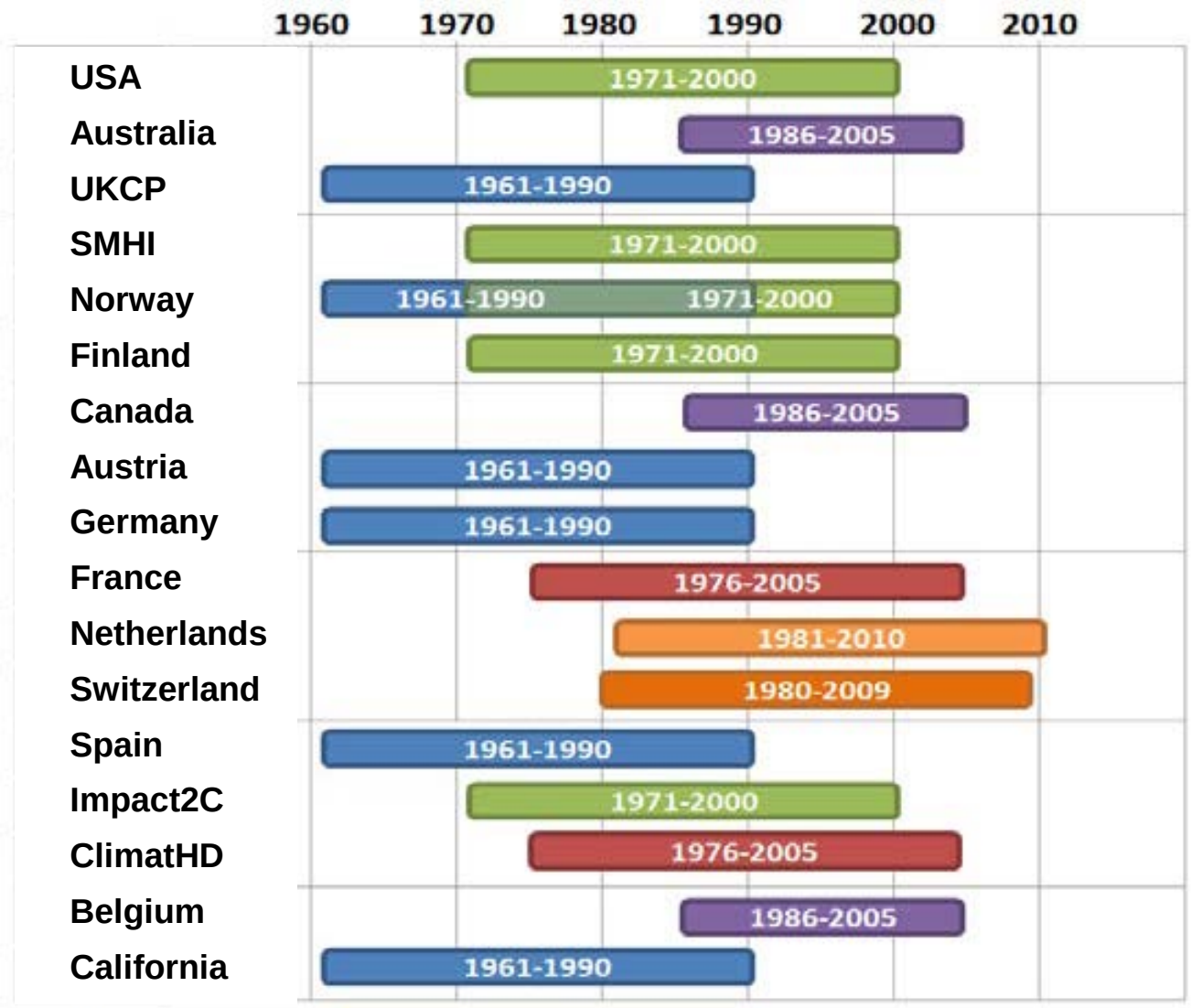
Needs in Content (3)

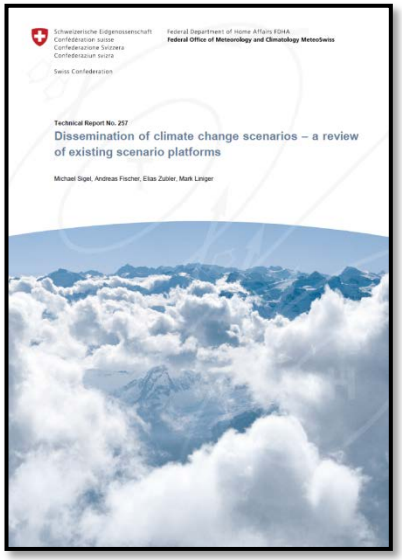
Questions on the setup of the new climate change scenarios

*Q: Which **reference period** should be chosen?*



Needs in Content (3)





(Sigel et al. 2016)

Needs in Content (3)

→ **Comparability!**

Conclusions

- All **three user types** need to be addressed.
- More ressources to **dissemination** of climate change information should be allocated.
- Important needs in content:
  - information on **extreme** changes,
  - **high spatial/temporal** scales,
  - **physical consistency** in downscaled products

➔ **These recommendations guide the development of the new CH2018 climate scenarios.**

➔ **To oversee this process, a sounding board with members from different sectors has been established.**

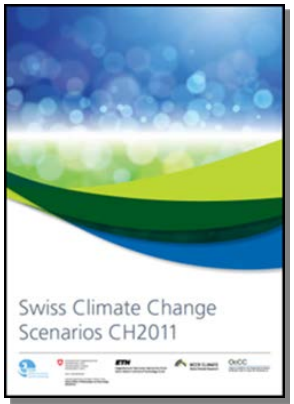
Thank you!

Paper in preparation:

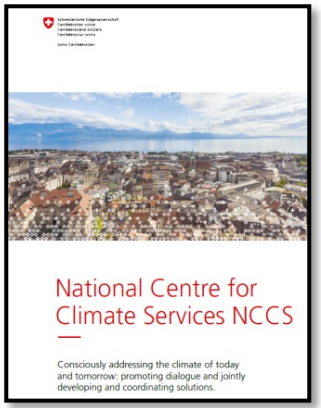
Fischer et al., Approaching End-User Needs in developing National Climate Change Scnearios: Experiences from Switzerland

MeteoSwiss Reports

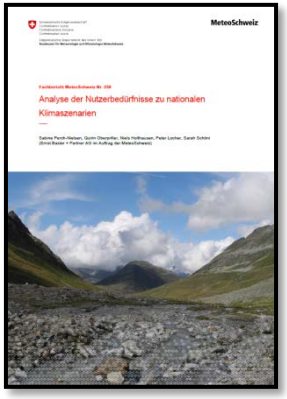
www.ch2011.ch



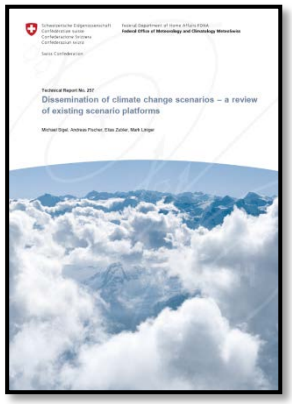
www.nccs.ch



End-User Needs



Review of Web-platforms



Sigel et al. (2016)

New Climate Scenarios for Switzerland CH2018

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

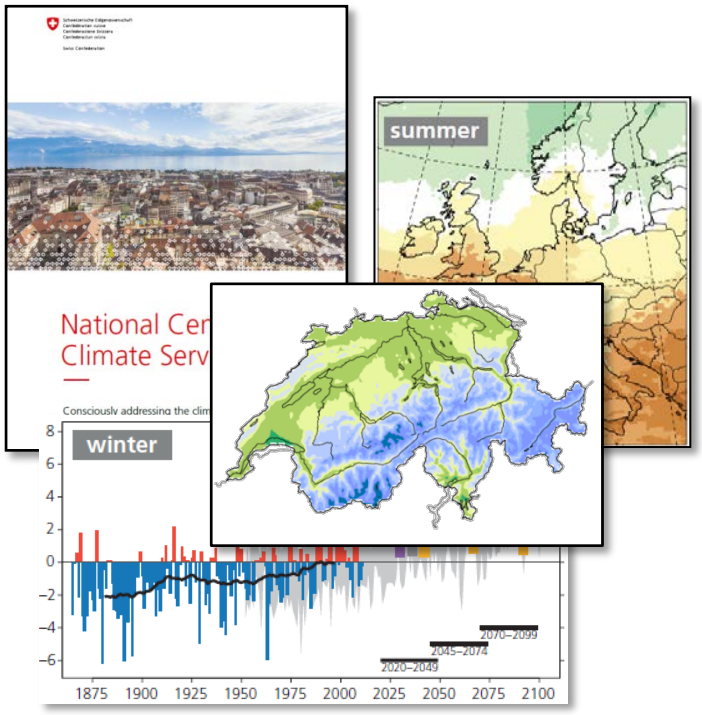
Federal Department of Home Affairs FDHA
Federal Office of Meteorology and Climatology
MeteoSwiss

ETH zürich

C2SM Center for Climate Systems Modeling

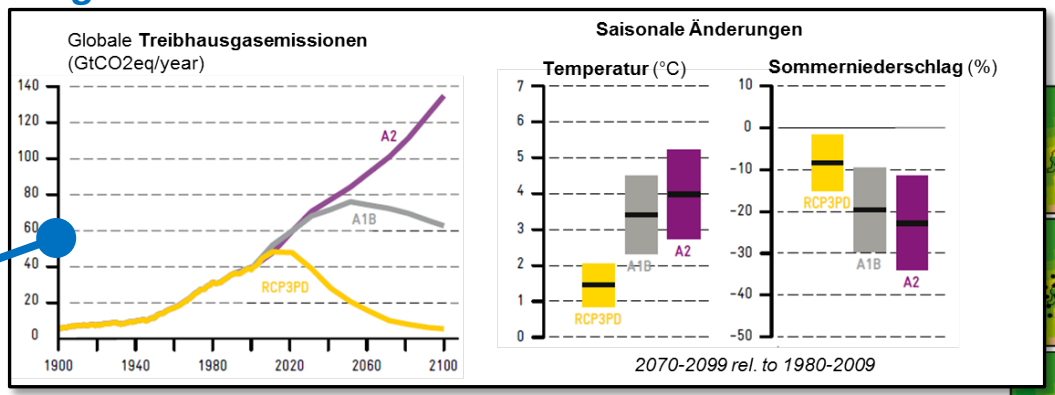
UNIVERSITÄT BERN

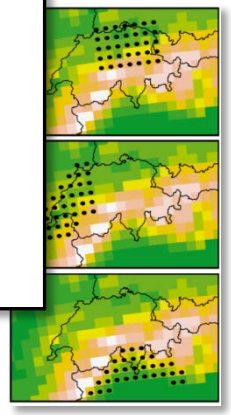
- Focus Area of NCCS
- Project Duration: 2015 – 2018
- Around 20 persons from research and administration
- Based on the latest model simulations over Europe
- Important Improvements
  + Inclusion of user needs
  + more information on extremes
  + higher resolution

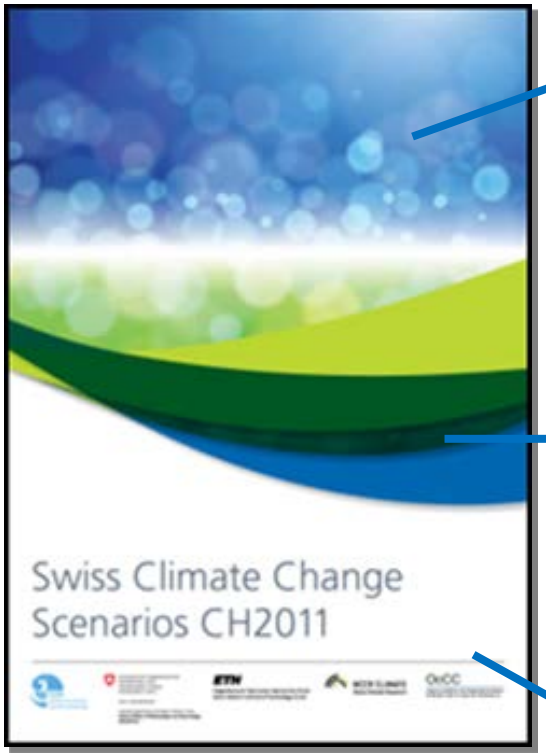


CH2011 Climate Scenarios

Regional / Seasonal

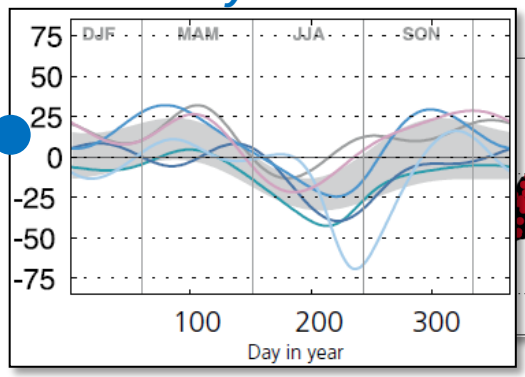


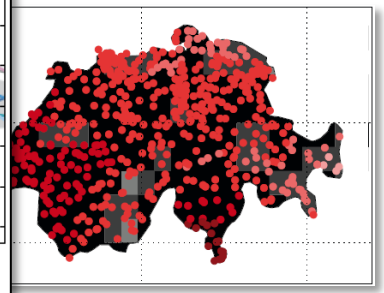




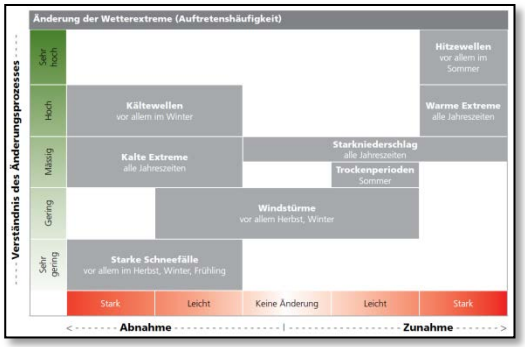
www.ch2011.ch

Local / Daily





Extremes



Framework of the survey

produce raw data with models

provide data, analyse and display climate data

deduce impacts for Switzerland for different scenarios

need for action: mitigation

need for action: adaptation

deduce adaptation measures

promote adaptation measures

implement adaptation measures

CH2018

focus of «user needs»

climate impact research

Confederation & Cantons

associations, unions

others

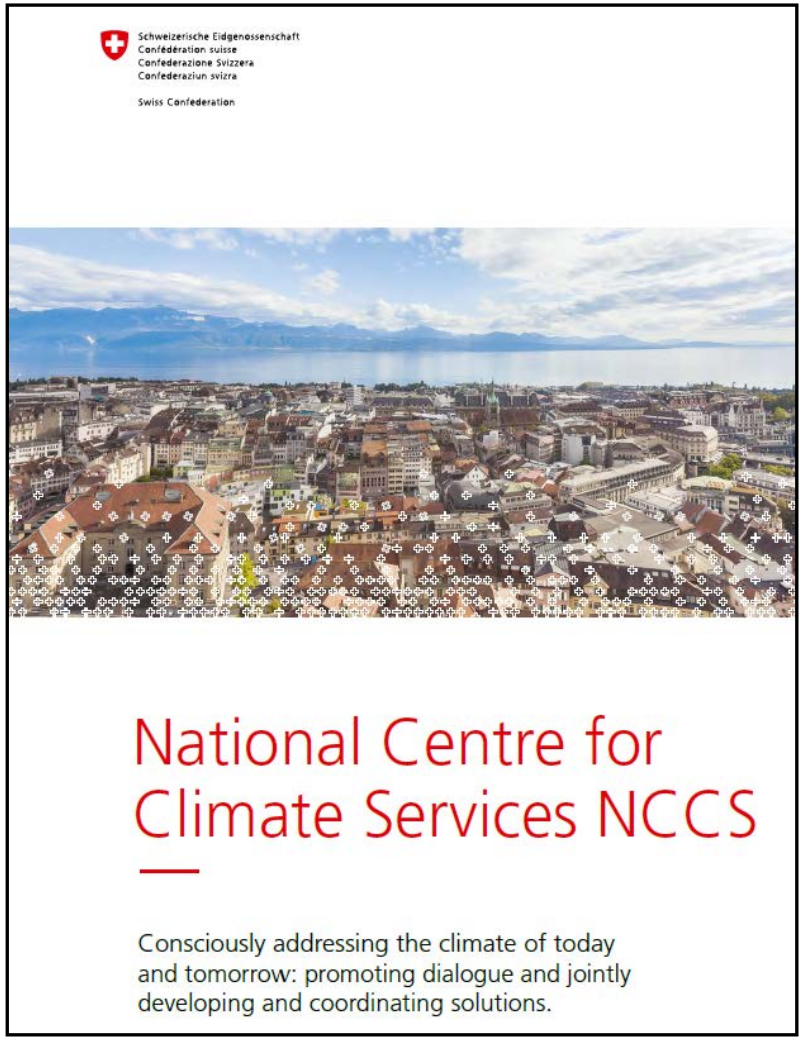
media

demonstrate need for mitigation action

demonstrate need for adaptation **and** basis for better adaptation

Purpose of the Scenarios

National Center for Climate Services (NCCS)



Founded in late 2015
Hosted at MeteoSwiss

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Meteorologie und Klimatologie MeteoSchweiz
Bundesamt für Umwelt BAFU
Bundesamt für Landwirtschaft BLW
Bundesamt für Bevölkerungsschutz BABS

ETH zürich WSL

Focus areas

- **CH2018 Climate Scenarios**
- **Hydrological Cycle (Hydro-CH2018)**
- **Agriculture: Harmful Organisms**
- **Forest functions and climate change**
- **Natural Hazard Processes**

Motivation

Demand on up-to-date and reliable climate change scenarios on the regional-to-local scale is **continously growing**

Growing number of stakeholders in **various sectors** (e.g. agriculture, health or energy). The palette of specific needs is rising in **heterogeneity**.

To produce user-tailored climate scenarios a **comprehensive market research** was undertaken in Switzerland

The results frame the basis for the development of **new national climate change scenarios** that are currently being developped by 2018 («**CH2018**»). This is done in the framework of the recently funded National Centre for Climate Services («**NCCS**»).

Dissemination (2)