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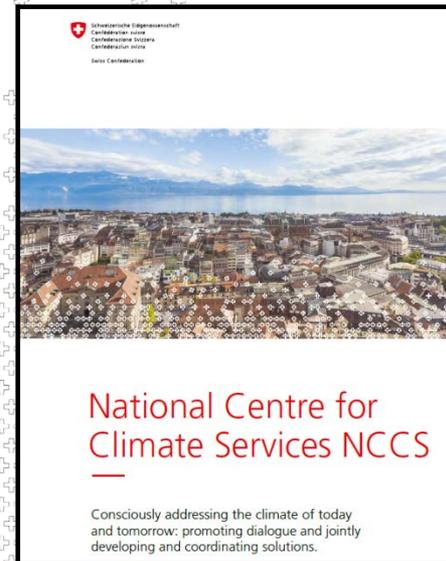
Federal Department of Home Affairs FDHA  
Federal Office of Meteorology and Climatology MeteoSwiss

# Toward the new **CH2018** climate scenarios for Switzerland

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MeteoSchweiz

**Elias Zuber**, Center for Climate Systems  
Modeling, ETH Zurich

**CH2018 Team**



# National Scenario Assessments

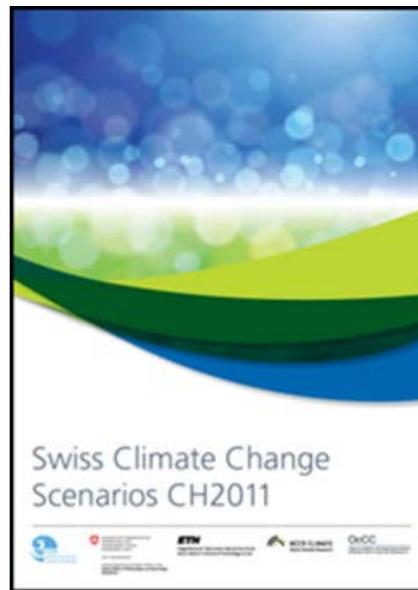
CH2018



CH2007

MeteoSwiss

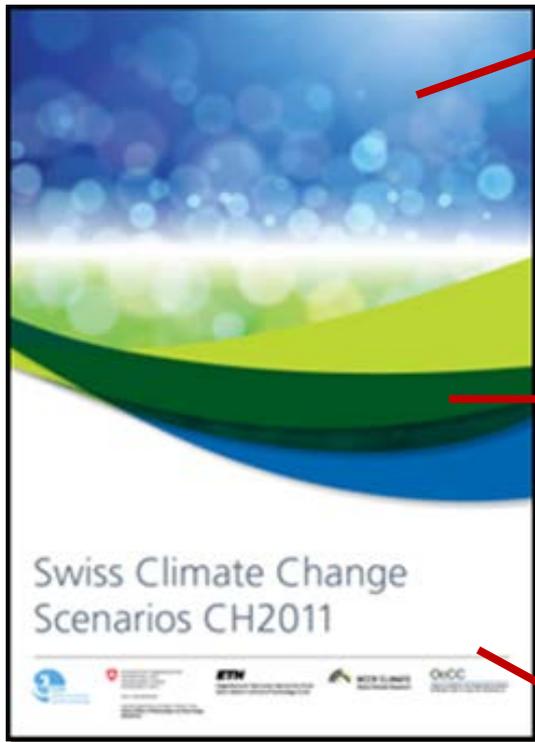
CH2011



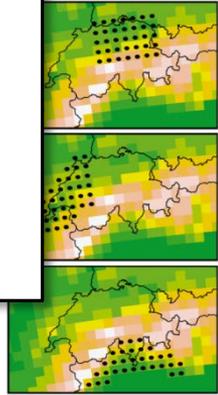
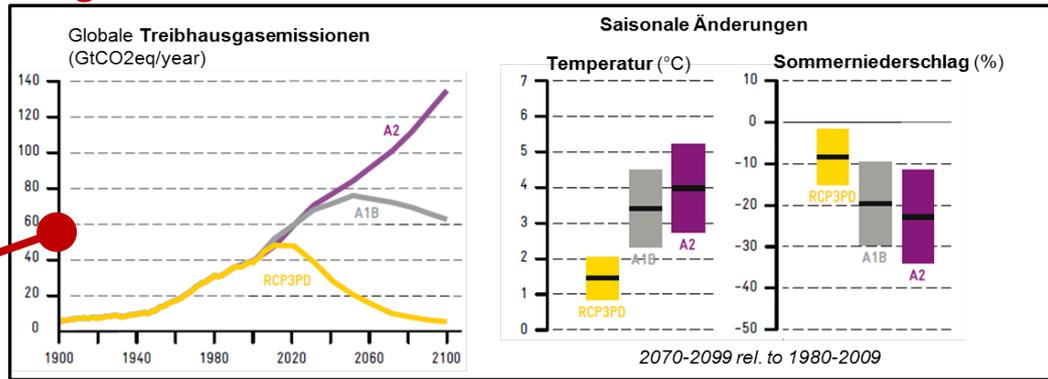
[www.ch2011.ch](http://www.ch2011.ch)



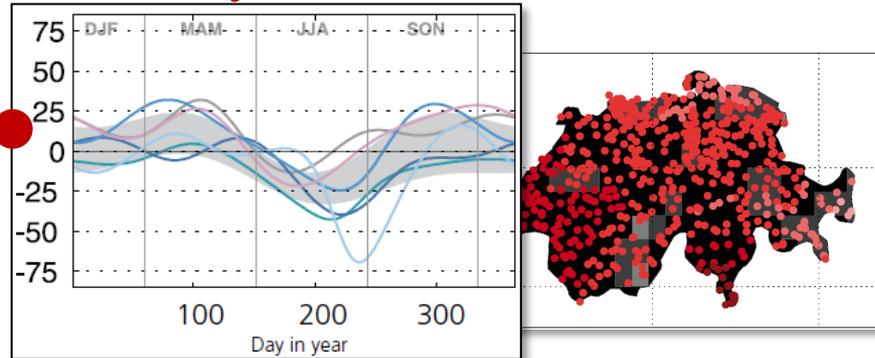
CH2011



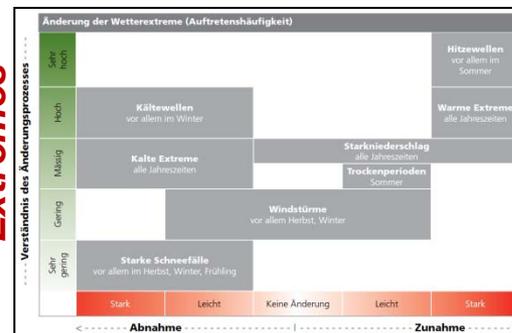
Regional / Seasonal



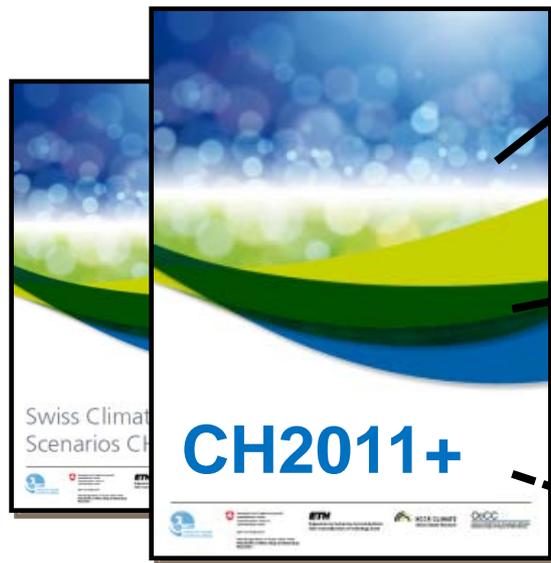
Local / Daily



Extremes



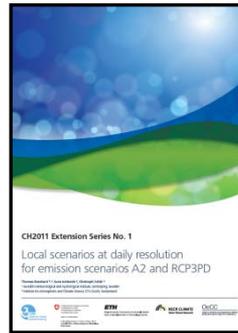
# Extensions of CH2011



(ETH, MeteoSwiss)

[www.ch2011.ch](http://www.ch2011.ch)

Coming soon...



*Ext. No. 1*  
**Local scenarios** at daily resolution for emission scenarios A2 and RCP3PD

*Bosshard et al. (2015)*



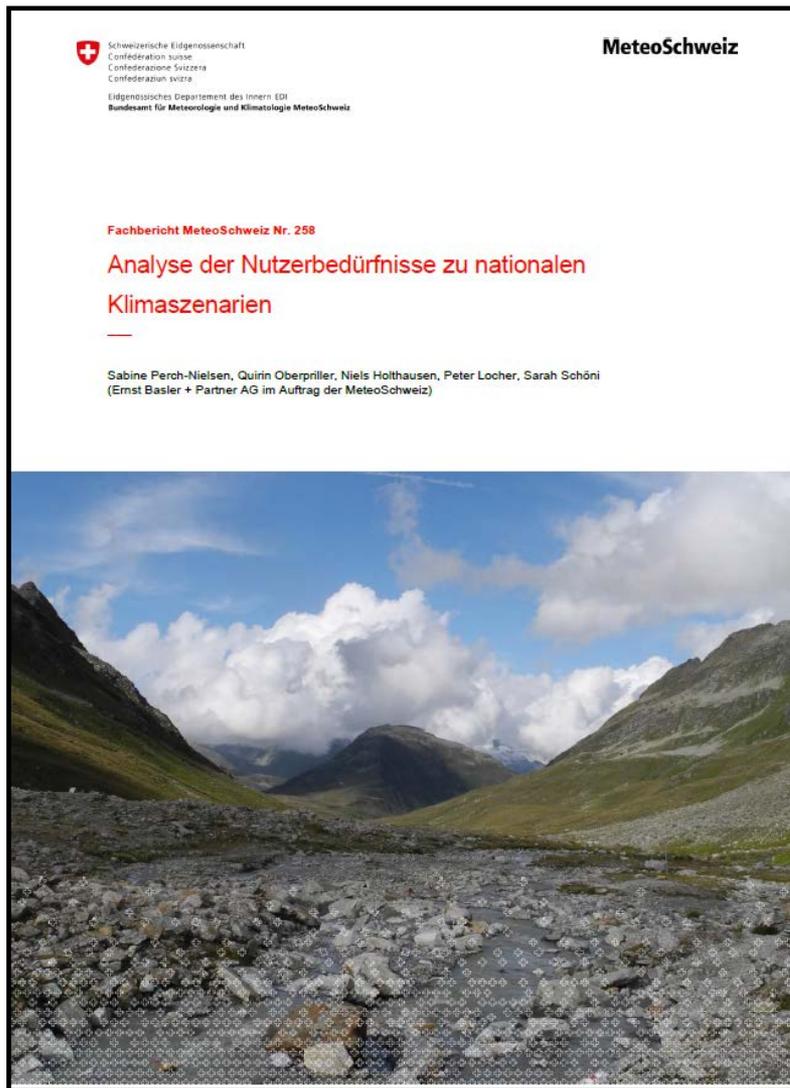
*Ext. No. 2*  
Climate scenarios of seasonal means: **extensions** in time and space

*Fischer et al. (2015)*

- Ext. No. 3: Climate scenarios of seasonal means: inter-variable and inter-seasonal correlations** of change estimates
- Ext. No. 4: Transient** bias-corrected scenarios at the local scale and at daily resolution
- Ext. No. 5: Projections of Extreme Precipitation** in Switzerland



# Survey on End User Needs



## User Survey

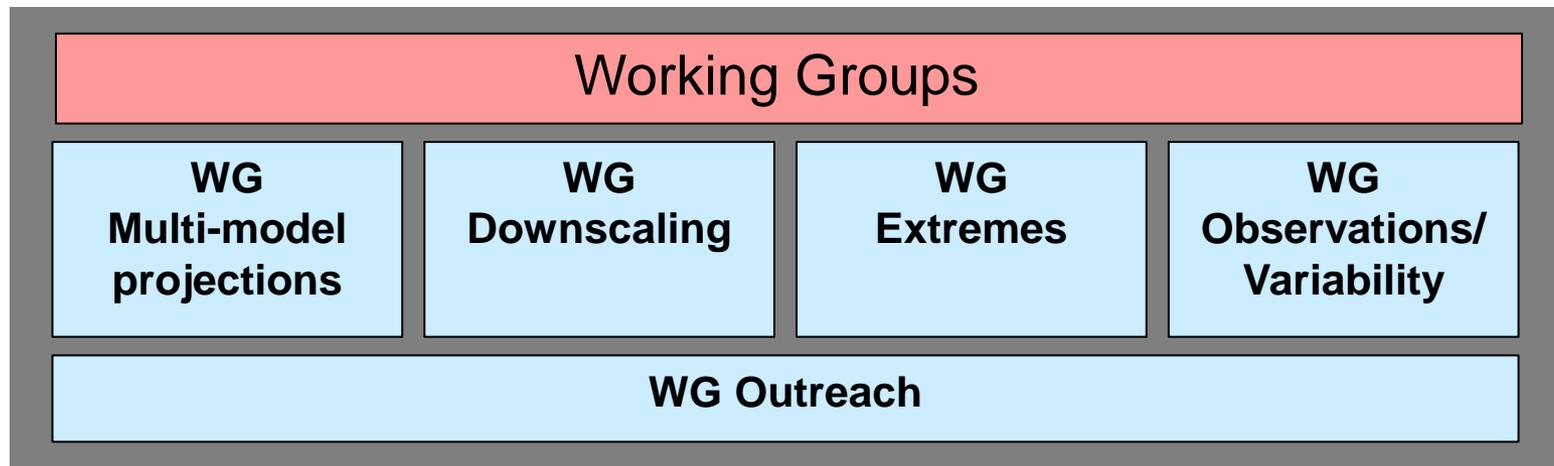
Ernst Basler + Partner

June 2015 – January 2016  
Conducted by EBP

- Identification of target group
- sector-specific needs
- Way of usage
- Needs in dissemination

# Organization of CH2018

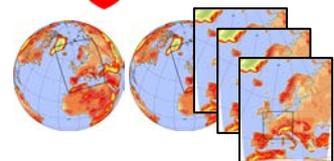
> 20 persons, organized in **5 Working Groups**



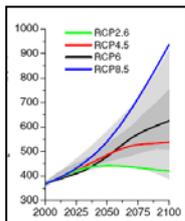
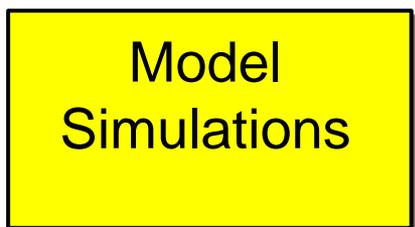
**Release in 2018**



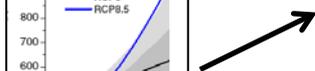
# Approach in CH2018



**Model selection**



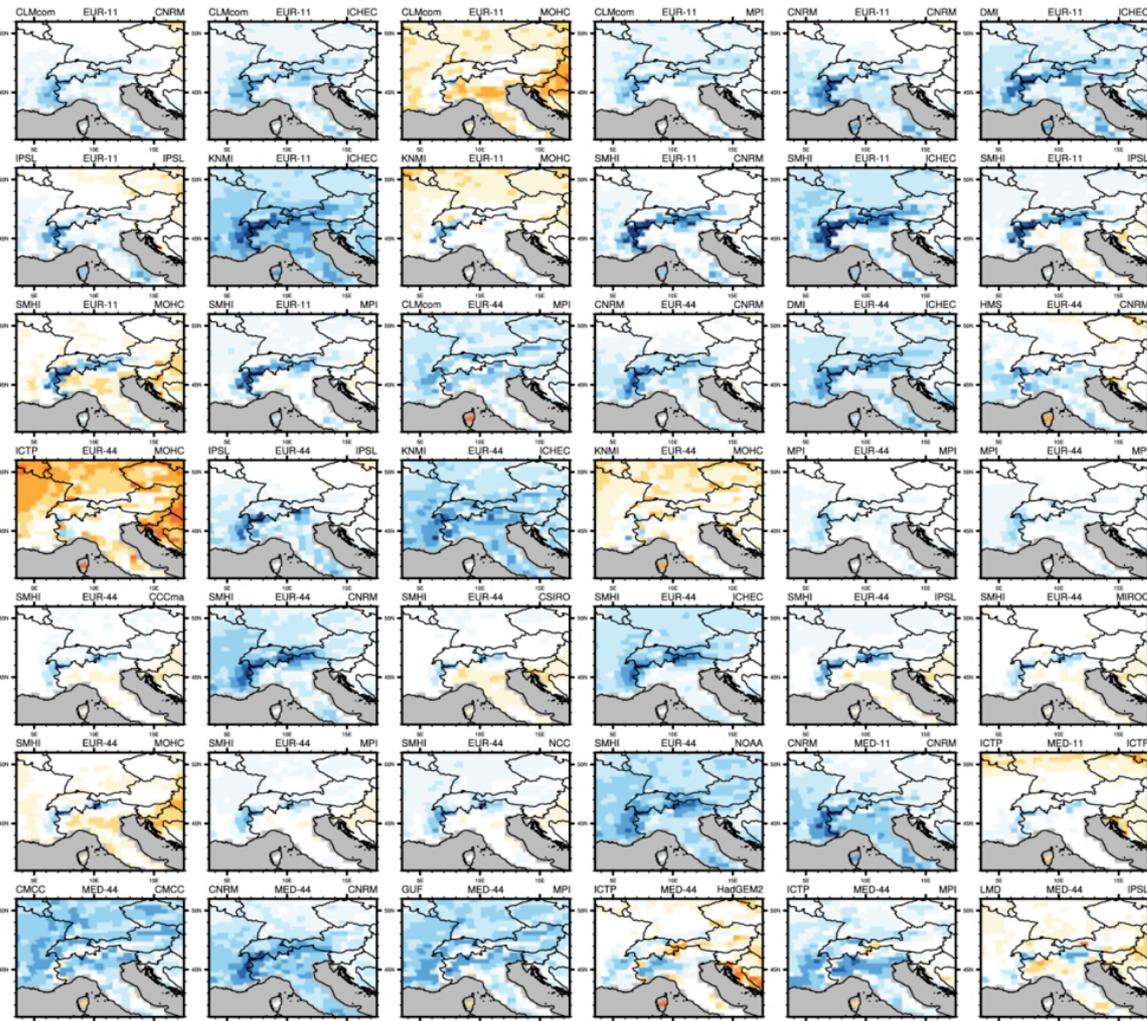
**Scenario selection**



*Under Development...*



# Multi-Model Analyses



Near-Surface Air Temperature Bias (°C)



## CH2018 Model Database

- Includes Regional Climate Model simulations at **higher spatial resolution** than CH2011
- **Higher number** of simulations
- Involves **latest generation of global models** (used for IPCC AR5)

→ *Bias-correction*

→ *Uncertainty Analysis*

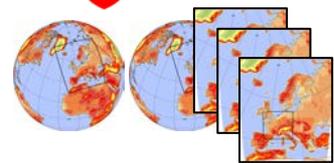


WCRP  
CORDEX

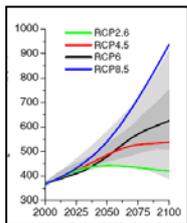
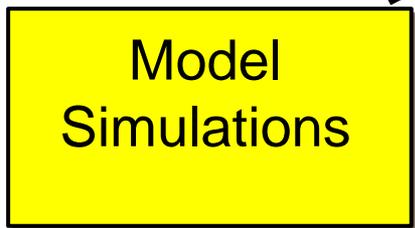
European Domain

Zubler et al.  
Knutti et al.

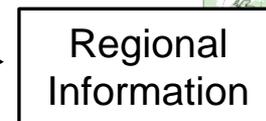
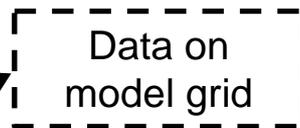
# Approach in CH2018



Model selection



Scenario selection



- e.g. Extreme Changes

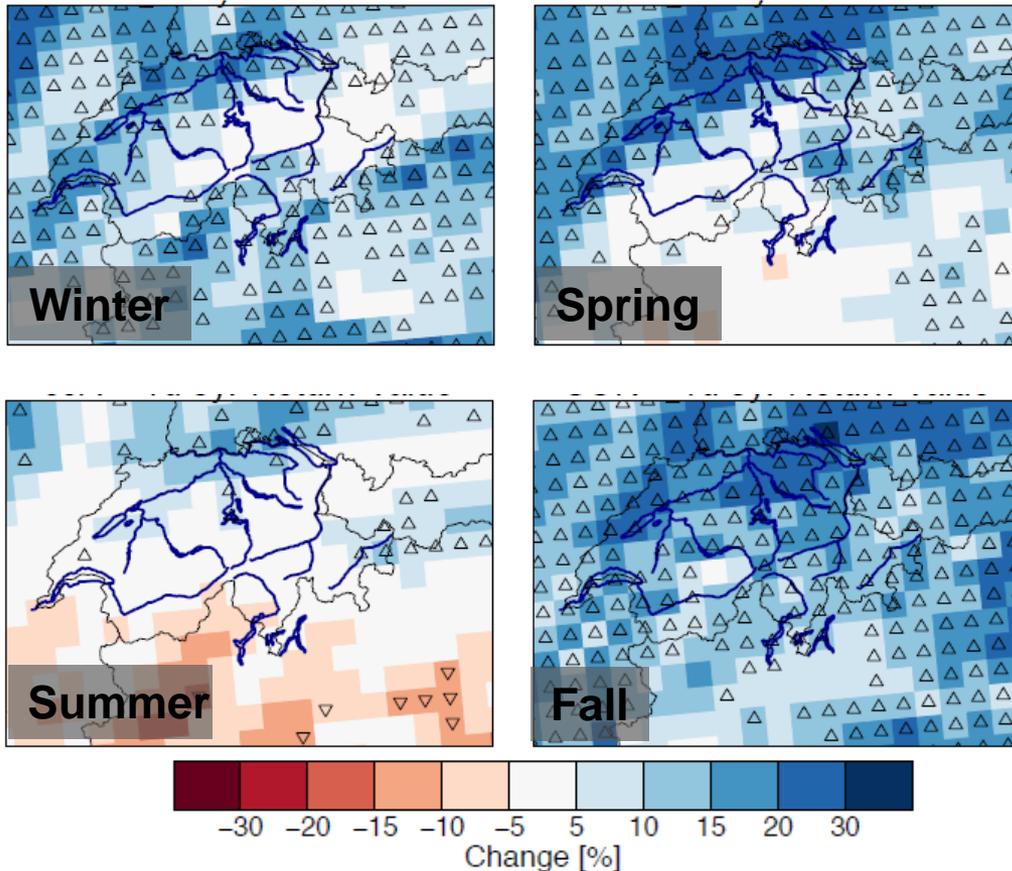
Under Development...



# Extreme Changes

## Extreme Precipitation

Changes in 5yr return value (1-day precip)

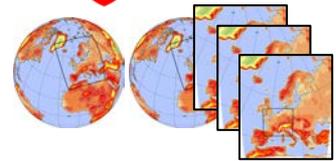


In CH2018

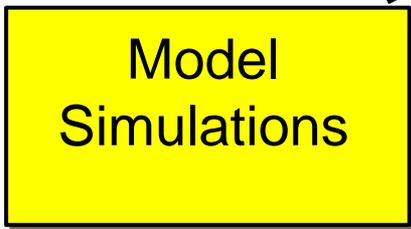
- Generally more quantitative information on extremes to be expected
- Focus: precipitation and temperature extremes

*(Rajczak et al. 2016; Schär et al.)*

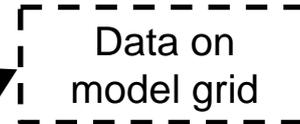
# Approach in CH2018



Model selection



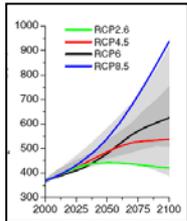
Model Simulations



Data on model grid

Regional Information

- e.g. Extreme Changes



Scenario selection

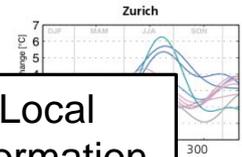
'Downscaling'



Local Time-Series

Local Information

- e.g. Indicators

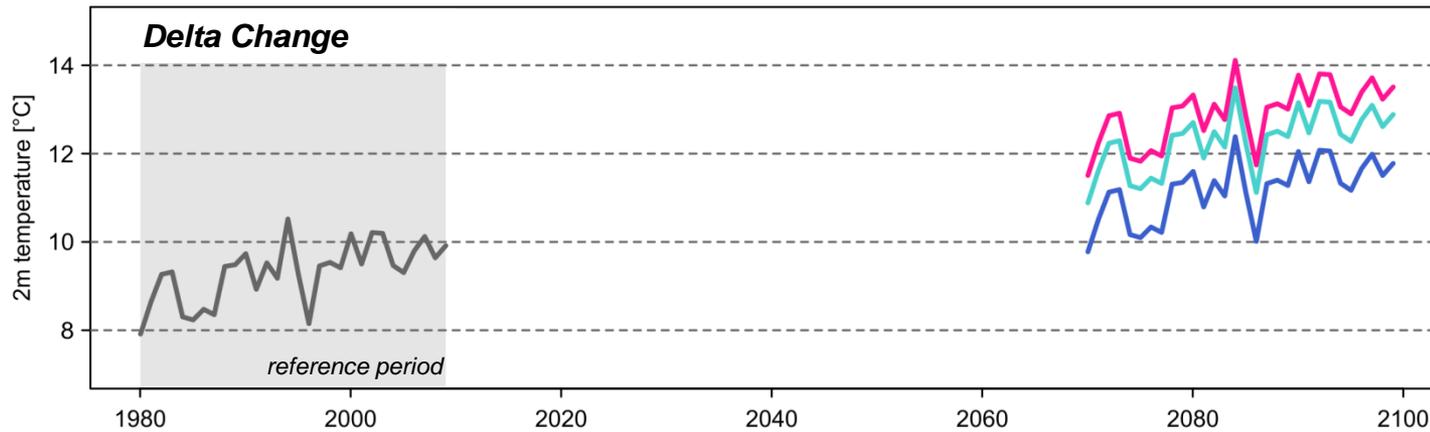


Under Development...

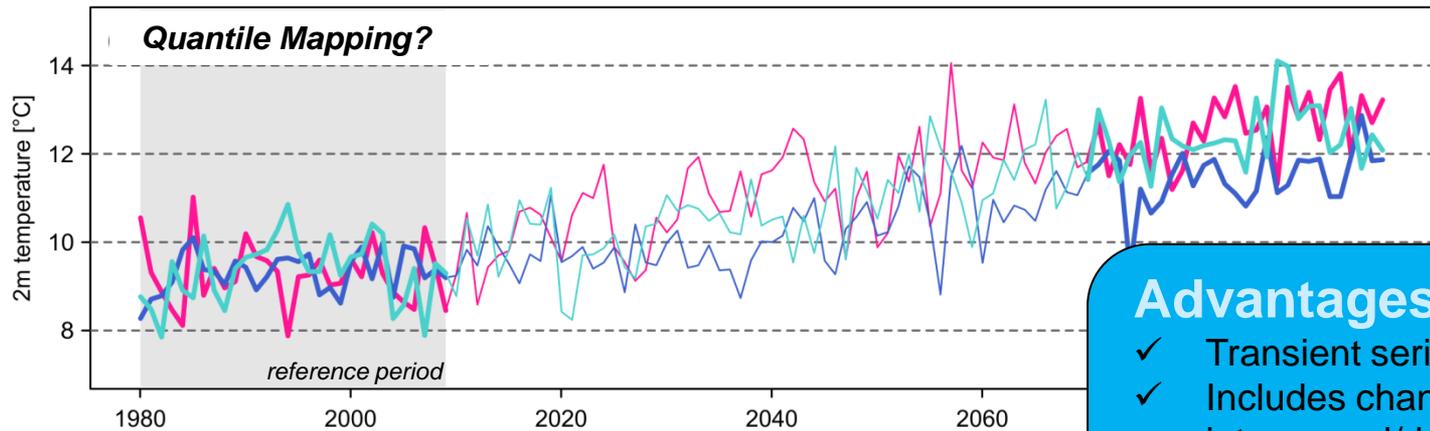


# Improved Downscaling

CH2011



CH2018



— Observations    — ETH-HadCM3Q0    — SMHI-BCM    —

under  evaluation...

- Advantages**
- ✓ Transient series
  - ✓ Includes changes in interannual/daily variability
  - ✓ Different Evolutions of future weather
  - Representation of Extremes?

# Which atmospheric Variables?

CH2011



under ?  
evaluation...

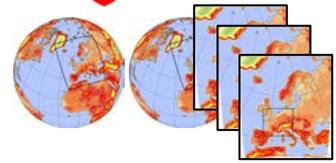
In CH2018

- Probably evaluation of mean **wind scenarios** and wind indices
- Other variables beyond temp/precip not yet clear
- But: generally **more climate indices** (Frost Days, Tropical Nights, Heat Days, etc.) will be provided

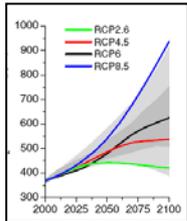
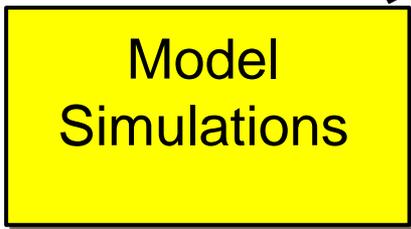


er Survey, MeteoSwiss 2016

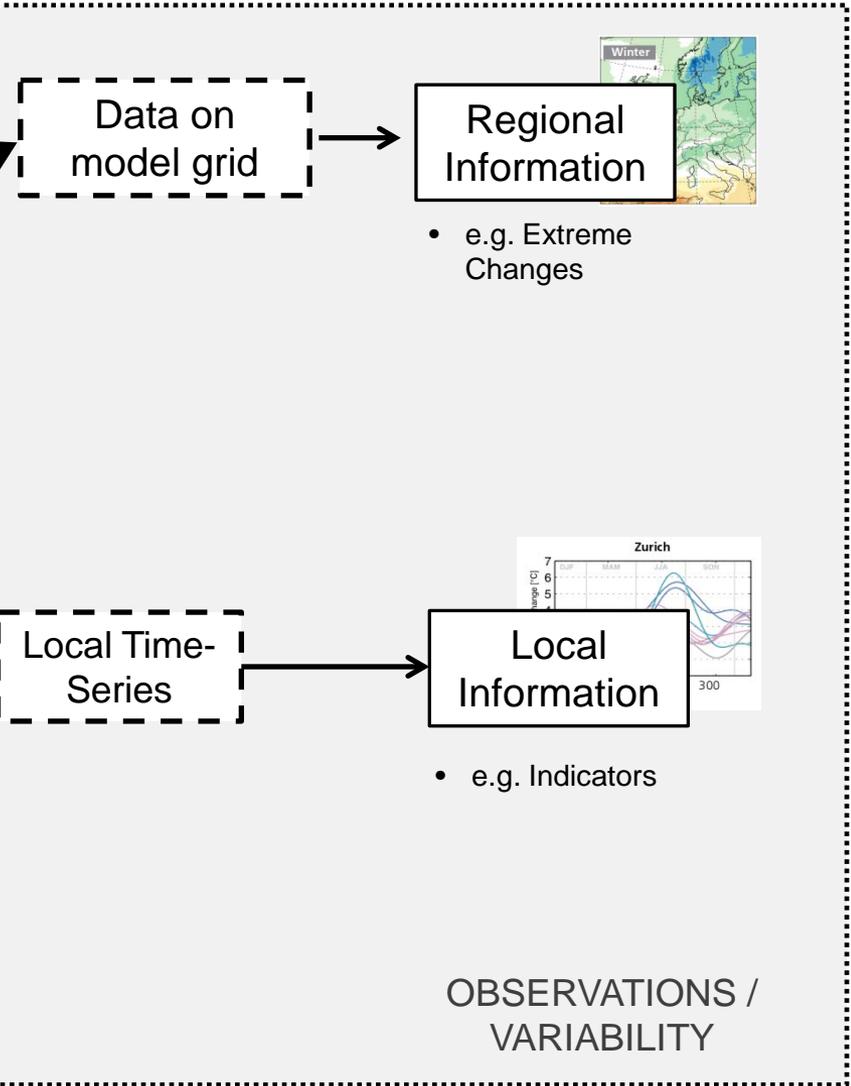
# Approach in CH2018



Model selection



Scenario selection

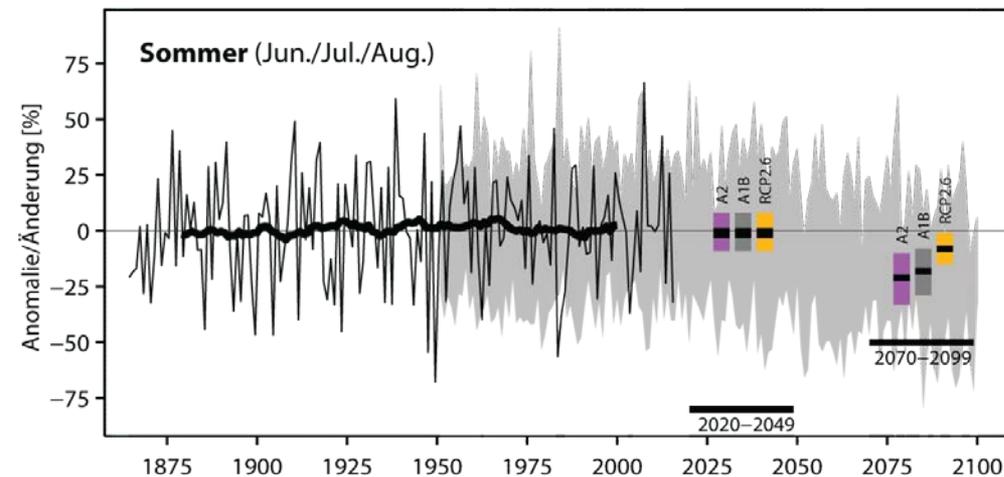


Under Development...

OBSERVATIONS / VARIABILITY



# Observations / Variability



In CH2018

- Aim: **interpret the scenarios** with respect to Swiss climate observations
- How do the changes relate to the **mean climate state**?
- How do the changes relate to **natural variability**?  
If possible: guidance for the next 10-20 years
- Provision of **absolute values** for a future climate

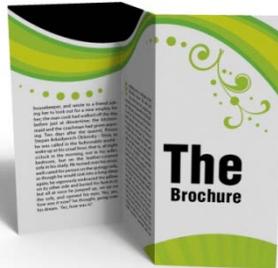
(Scherrer et al.)

# Concept of Dissemination



## Web

- Integrated into **NCCS-Web**
- Display of climate change information
- Emphasis on Guidance
- Data Access
- Interactive Tool?



## Brochure

- In Swiss Languages
- Presents the **main findings** of CH2018
- Reviewed by a stakeholder group
- Laid out
- Printed

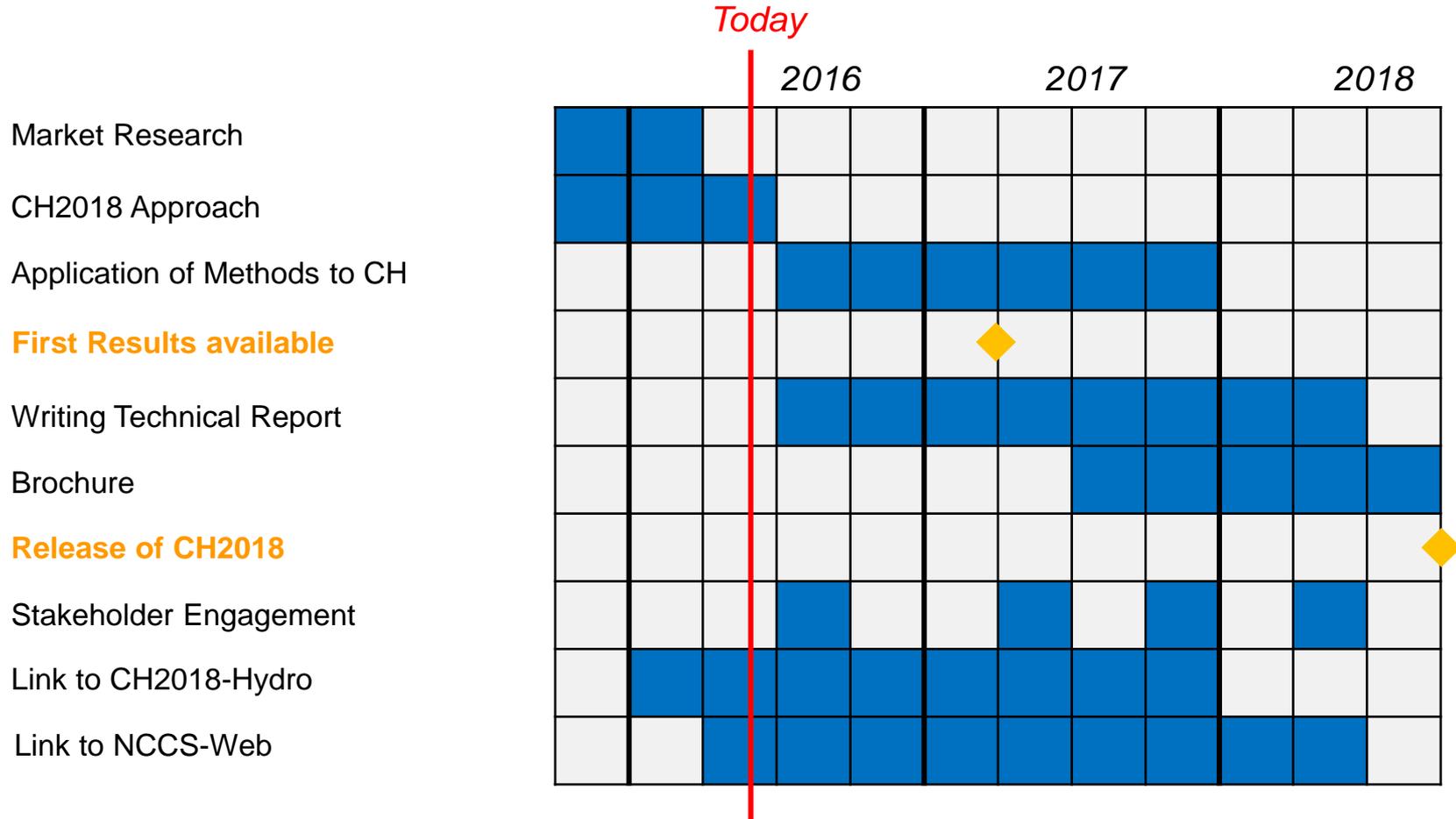


## Technical Report

- In English
- **Methodology** and Results in detail
- Reviewed by scientists
- Not Laid out
- Not Printed



# CH2018 Time Schedule





# Conclusions

CH2018 will not be «just» an update of CH2011 with new climate model simulations.

Important **added values** are:

- quantitative information on **extreme changes**
- elaborated **scenarios at the local scale** (downscaling)
- **sector-specific** climate indices
- interpretation with respect to **observations**
- user-oriented **dissemination** of results

For the workshop here:

Keen to hear your opinion and needs! Identification of low-hanging fruits of needs would be appreciated.



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