

Adaptation: Risk management in Switzerland

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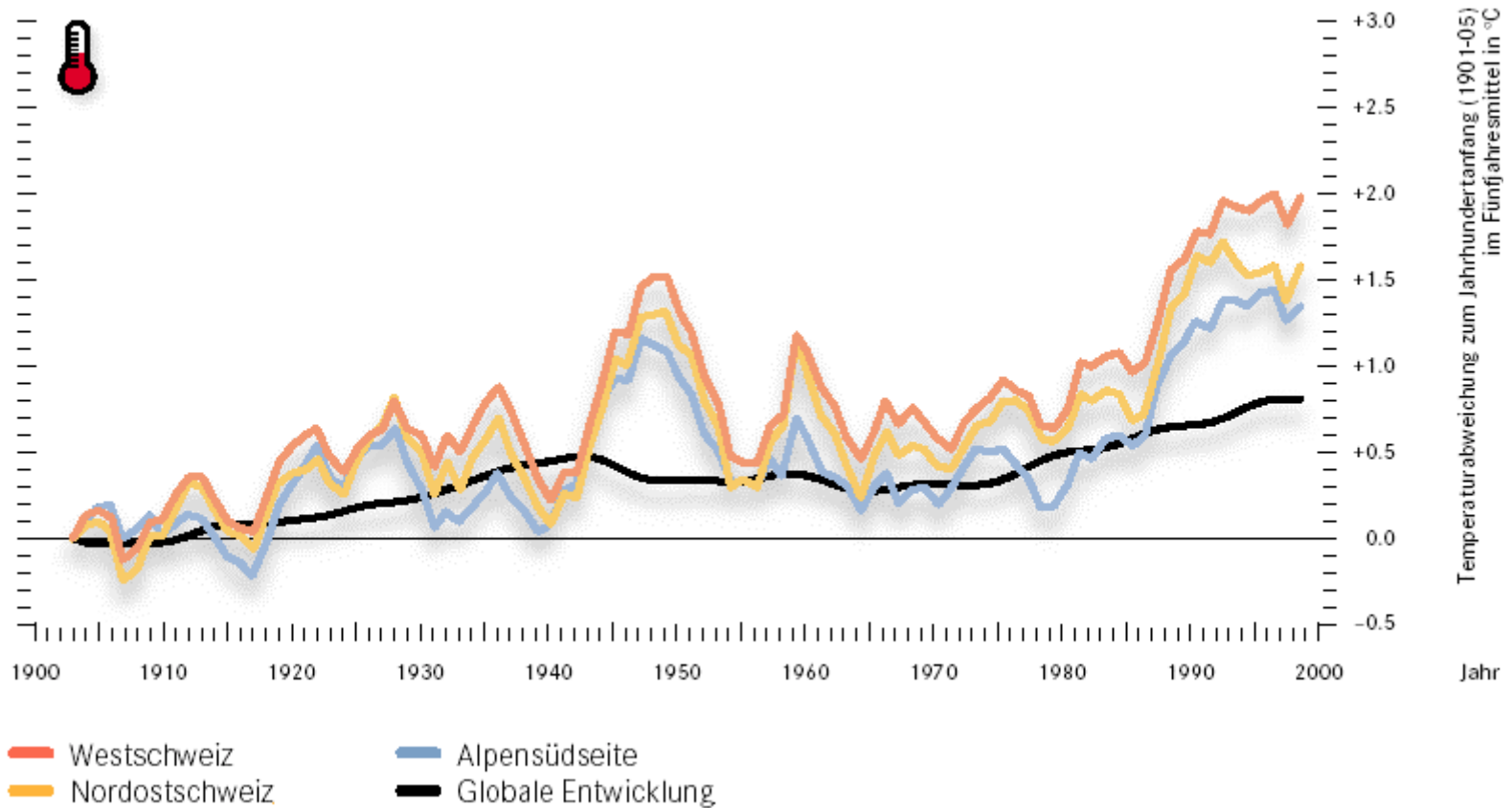


Switzerland

- **Federal system** : Confederation, 26 Cantons, cities
- Switzerland is a small **'hazard prone'** country exposed to natural disasters
- High **public awareness** in environmental issues
- **Experience with adaptation** measures (e.g. on debris flows, floods, landslides, rock falls, wind storms and snow and ice avalanches)
- **Implementation of measures**: local authorities, assistance is provided by the Confederation



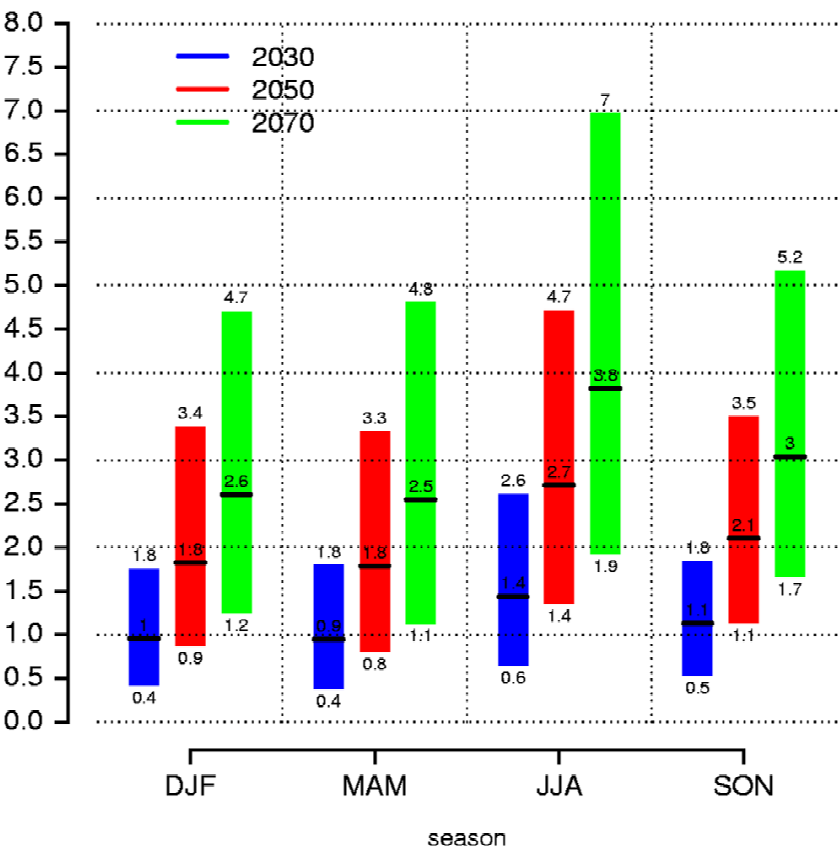
Temperature change in the three regions of Switzerland 1990-2000



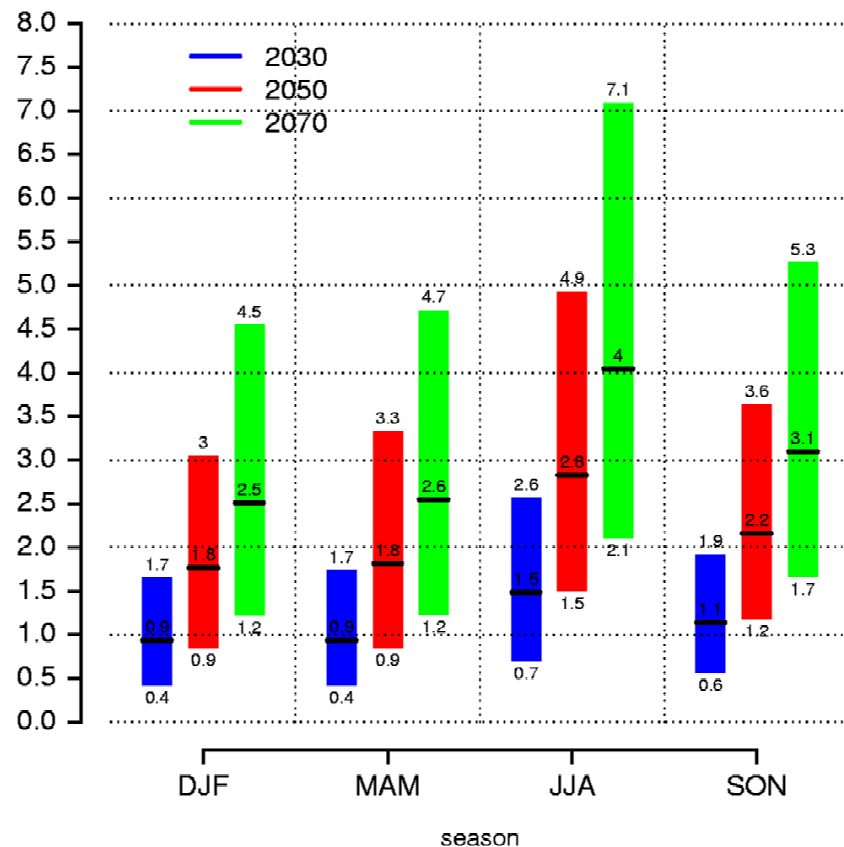
Climate Change in Switzerland in the 21st Century

Temperature Increase Compared to 1990

T-Scenario (Ts-Tc) CHN



T-Scenario (Ts-Tc) CHS

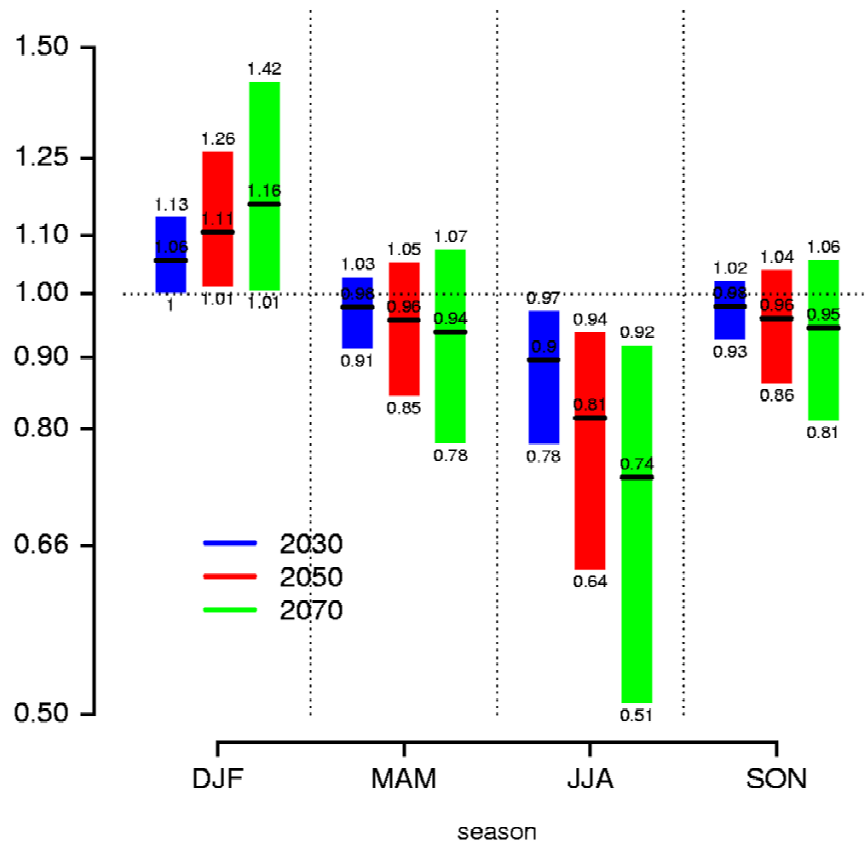
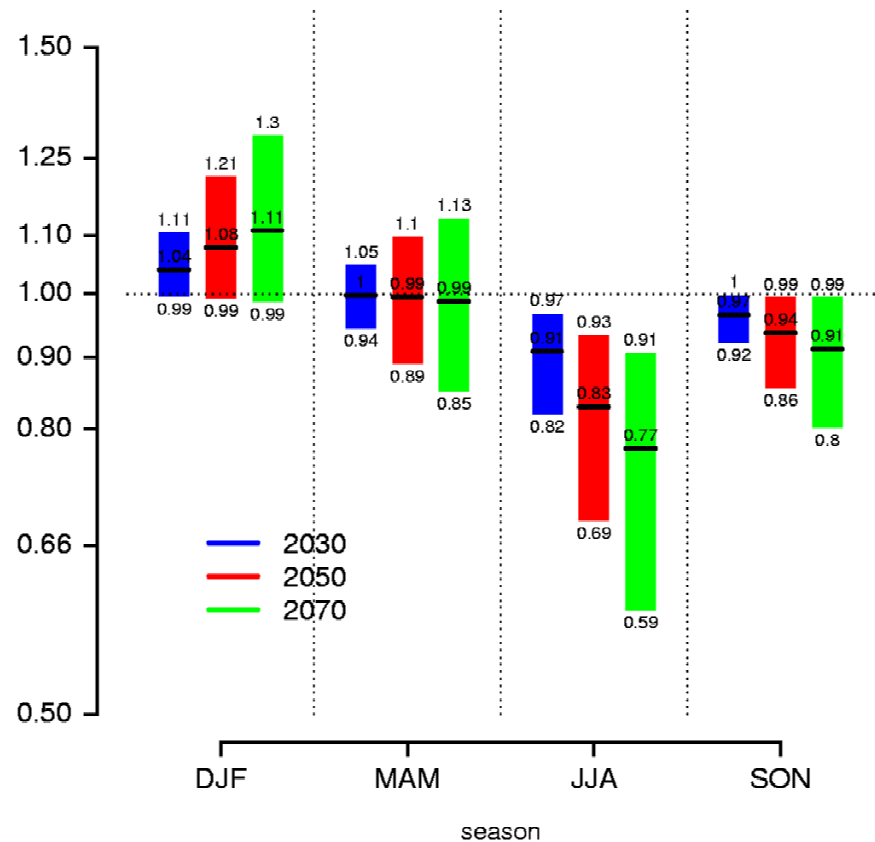


Climate Change in Switzerland in the 21st Century

Relative Change in Precipitation Compared to 1990

P-Scenario (Ps/Pc) CHN

P-Scenario (Ps/Pc) CHS



Swiss strategy to improve protection against natural hazards

a) **Integrated disaster reduction approach**

Addresses all hazards, vulnerabilities and risks, considers the disaster cycle, includes all stakeholders in the process, takes into account the principles of sustainability, is based on international solidarity

b) **Hazards, vulnerabilities and risks**

In-depth assessment of all prevailing hazards and of the respective vulnerabilities. Hazard maps and related products. Definition of protection goals (risk dialogue). Residual risks require special attention.

c) **Disaster reduction mechanisms**

An integrated disaster reduction approach equally addresses the three disaster reduction mechanisms of the disaster cycle:

(1) prevention/mitigation

(2) response

(3) recovery



Swiss strategy to improve protection against natural hazards

d) All actors including affected people

Involve actors of many sectors and levels, local to national authorities, of private sector entities, particularly the insurance sector, civil society, regional organizations, the international community and the public. Involve people affected by natural disasters should commit into disaster risk reduction. A risk dialogue among all stakeholders including the affected populations increases the overall awareness

e) Sustainability of efforts

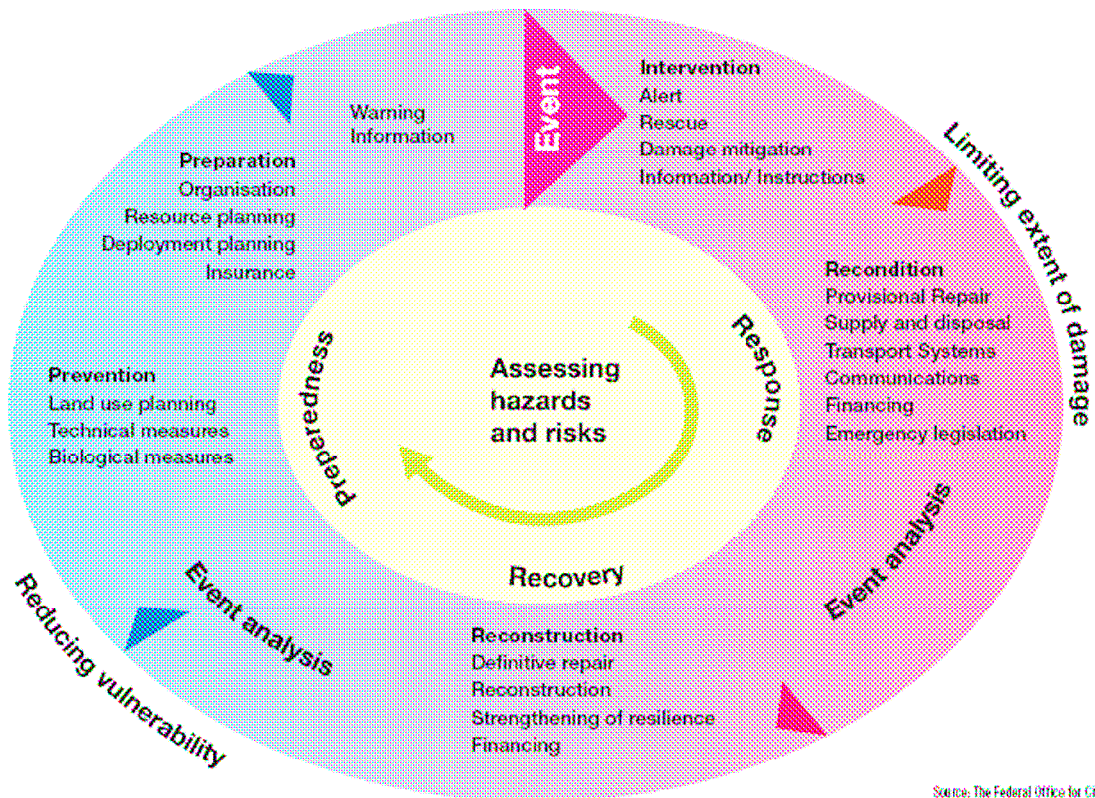
All activities in the field of disaster risk reduction obey the principles of sustainability

f) Solidarity

Natural disasters hit often unannounced and on such a scale that the local coping mechanisms are largely overwhelmed. External assistance, when required, to those affected during the disasters, in response and recovery is important



Adaptation measures: Natural hazards Cycle of Integrated Risk Management



Adaptation measures: Water and water management

- Large hydrological changes are expected. They should be included in long-term integrated river basin management in [spatial planning](#), [environment](#) and [agriculture](#).
- Adoption of “[no-regret and flexibility](#)” principle. [Anticipatory measures](#).
- Support [research](#) on integrated approaches, especially links between climate, hydrological and ecosystem models.
- The river basin is the unit to address impacts and policy options in view of water resources management. In such an approach, [international co-operation including free and unrestricted access to data and information](#) is a pre-requisite.
- Actively define, support and participate in activities, which address high priority water-related topics in [transboundary river basins](#).



Adaptation measures:

Climate change, water and water management

Example: Flood Protection Strategy

- **Analysis and documentation of the existing danger:** Hazard maps serve as a basis for prevention measures.
- **Safeguard of the required space for flowing water:** Sufficient space for extreme quantities of runoff water simultaneously guarantees space for the ecological function of watercourses.
- **Integral action planning:** It is imperative that the principles of sustainability be taken into account for planning and organisational measures as well as for technical safety constructions.
- **Minimisation of damage:** Maintenance of watercourses (= maintaining the existing safety conditions) as well as measures for spatial planning (= preventing a rise in the potential for damage by keeping space free or restricting the use of space) are of paramount importance.
- **Emergency planning:** Good preparation (forecasting, alerting and mobile measures etc.) can minimise the ever present residual risks. In addition, insurances can help make damages bearable.
- **Flood protection as a federal task:** Interdisciplinary cooperation among experts from all areas and inclusion at a sufficiently early stage of the political authorities as well as the concerned population are a precondition for sustainable protection policies.



Adaptation measures: Hydropower

- Although there is some concern about climate change on the part of the hydropower industry, **a strategy has yet to be developed**
- **Glacier retreat and permafrost degradation** could substantially increase sediment transport into the reservoirs. This has to be taken into account in the management of reservoirs (e.g. rinsing measures)



Agriculture:

Coping with increasing temperature and decreasing precipitation

- Selection of **alternative crops**, the selection of cultivars with a higher temperature requirement, or, more simply, shifts in the sowing dates, extension of **irrigation** over larger areas
- Consideration of local agricultural production conditions (evaluation of orographic and soil characteristics, local climate and cultivation techniques)
- Periodic reconsideration of the adaptation measures will also be essential
- However, adaptation options will also be **influenced by political developments**, especially the WTO regulations (e.g. open markets)
- Currently: Development of an a National Adaptation Strategy including agriculture



Adaptation measures: Forests and Forestry

1. Addressing ecological imperatives through forestry
 - Clear-cutting limited to small areas
 - Regeneration practices imitating the natural behaviour of a “virgin” forest (near-natural forest management)
 - Sustainable forestry with financial support for forest management, logging and hauling of timber, since the total costs of near-natural forest management are high. Average annual subsidies of CHF 57.8 million were provided in the period 2000–2003 (CHF 65.2 million from 1996 to 1999)
2. To maintain the vitality of forests, average annual subsidies of CHF 69.65 million were provided between 2000 and 2003 (CHF 51.5 million from 1996 to 1999) for the following measures
 - Measures to prevent and combat pests and parasites
 - Repairing damage where forest conservation might be threatened
3. Conservation of the genetic resources of forests (CHF 1.5 million average annual subsidies for 2000–2003) using the following measures
 - Establishment of a national register of seed tree stands on the basis of internationally defined parameters.
 - Launching of a gene conservation network.
 - Creation of seed orchards to improve the supply of indigenous reproductive material.



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Thank you for your attention

