

# AFOK: The Berlin Concept for Adaptation to the Impacts of Climate Change

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Climate Change Adaption – Strategies, Actions and Challenges, November 23 – 24, 2015 Berlin

# Overview

1. The AFOK project
2. Future climate change scenarios for Berlin
3. Future climate change in Liverpool, Lyon and Barcelona
4. Major climate change impacts & vulnerability in Berlin
5. Goals of climate change adaptation
6. Strategies and measures
7. Implementation

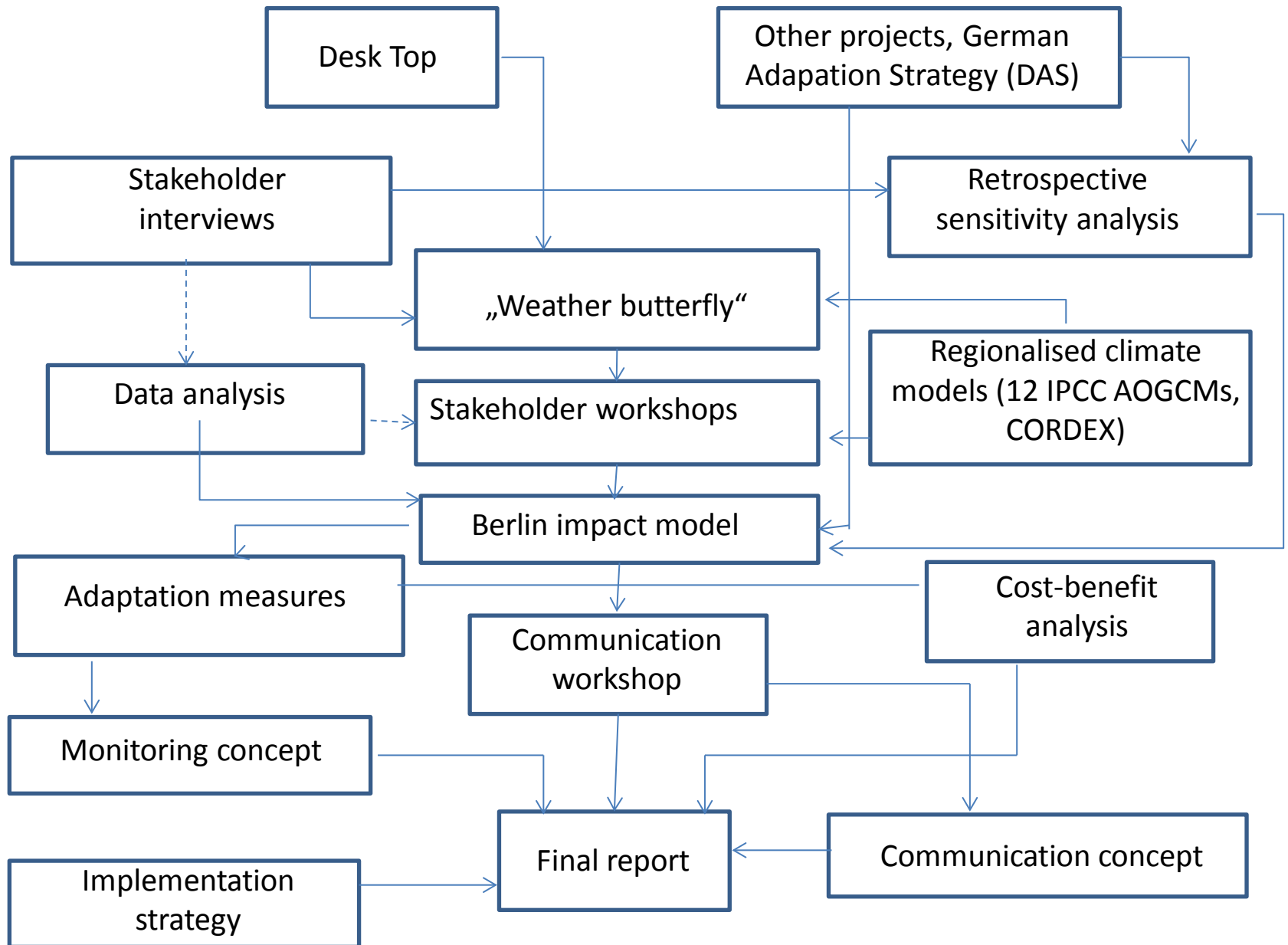
# The AFOK project

- **Principal:** Senate Department for Urban Development and Environment, SR KE
- **Sponsor:** Berlin Senate, Federal Government  
Projektträger Jülich (PtJ)
- **Duration:** Dec 2014-Jan 2016
- **Consortium:**
  - Potsdam Institute for Climate Impact Research (PIK) (head)
  - LUP GmbH
  - Institute for Ecological Economy Research (IÖW)
  - Bgmr Landscape architects
  - L.I.S.T. GmbH



# Method

AFOK

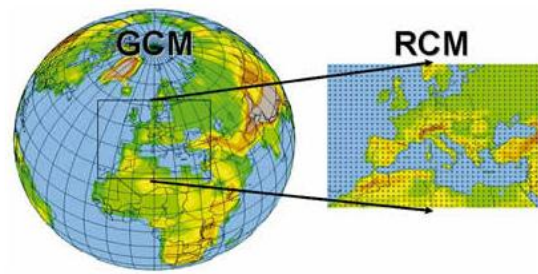


# AFOK: Sectors

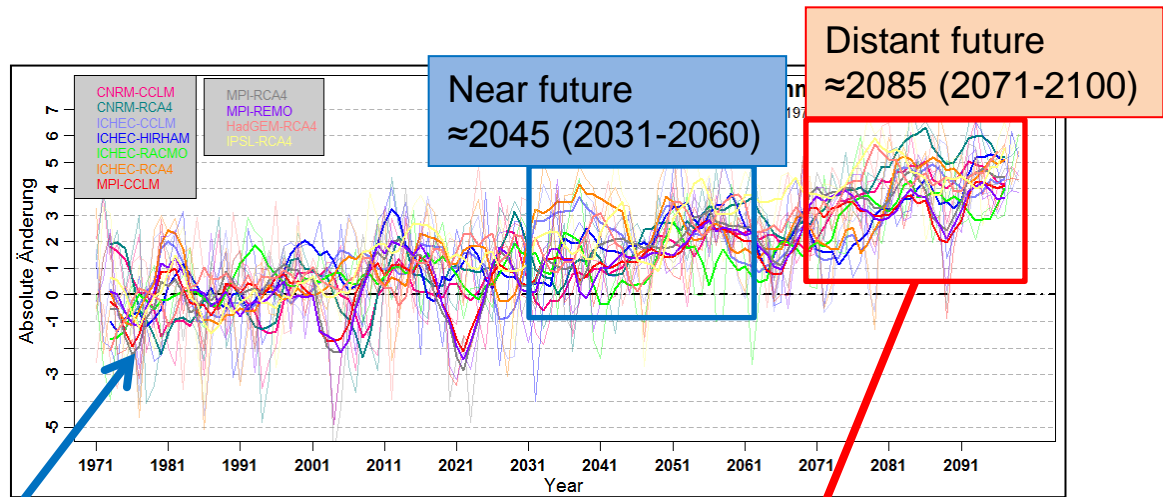
1. Human health, civil protection
2. Buildings, urban development, green space
3. Hydrology, water management
4. Nature and environment
5. Energy and waste management
6. Industry, services, financial economy
7. Traffic, traffic infrastructure
8. Tourism, culture, sports
9. Education

# Ensemble runs: 12 IPCC models (AR5) and regionalisation for Berlin according to CORDEX (EU downscaling project)

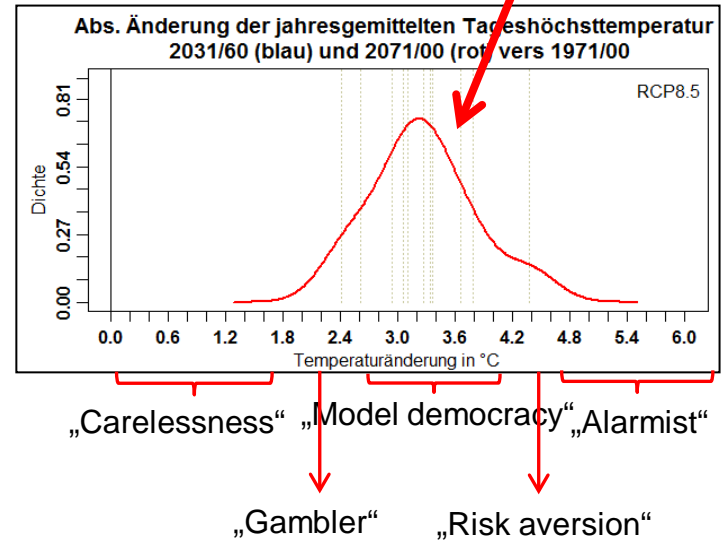
AFOK



Downscaling of global climate models  
Quelle: [http://www.wmo.int/pages/themes/climate/climate\\_models.php](http://www.wmo.int/pages/themes/climate/climate_models.php)



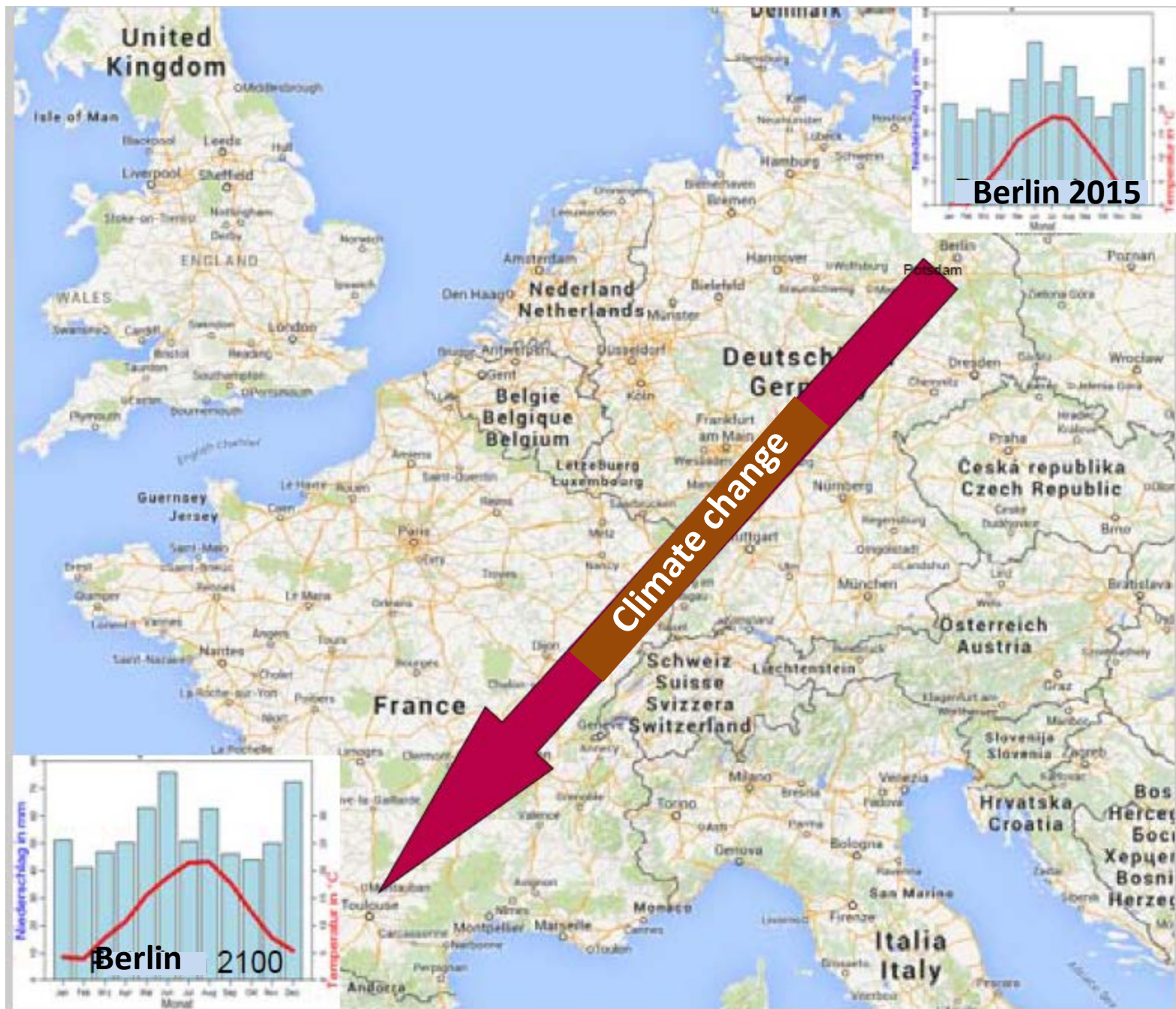
Time series of regional models



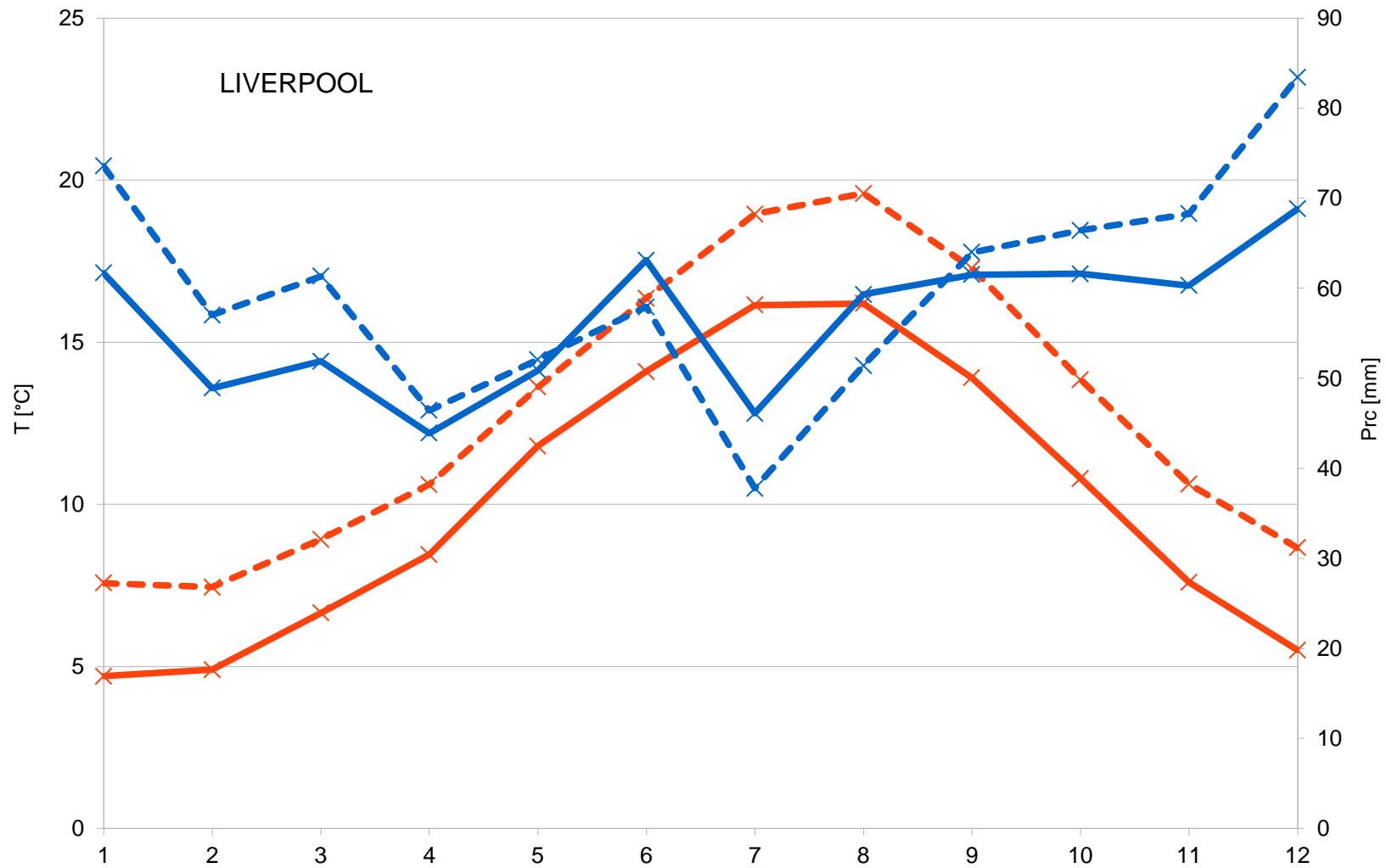
# Changes in weather variables (overview)

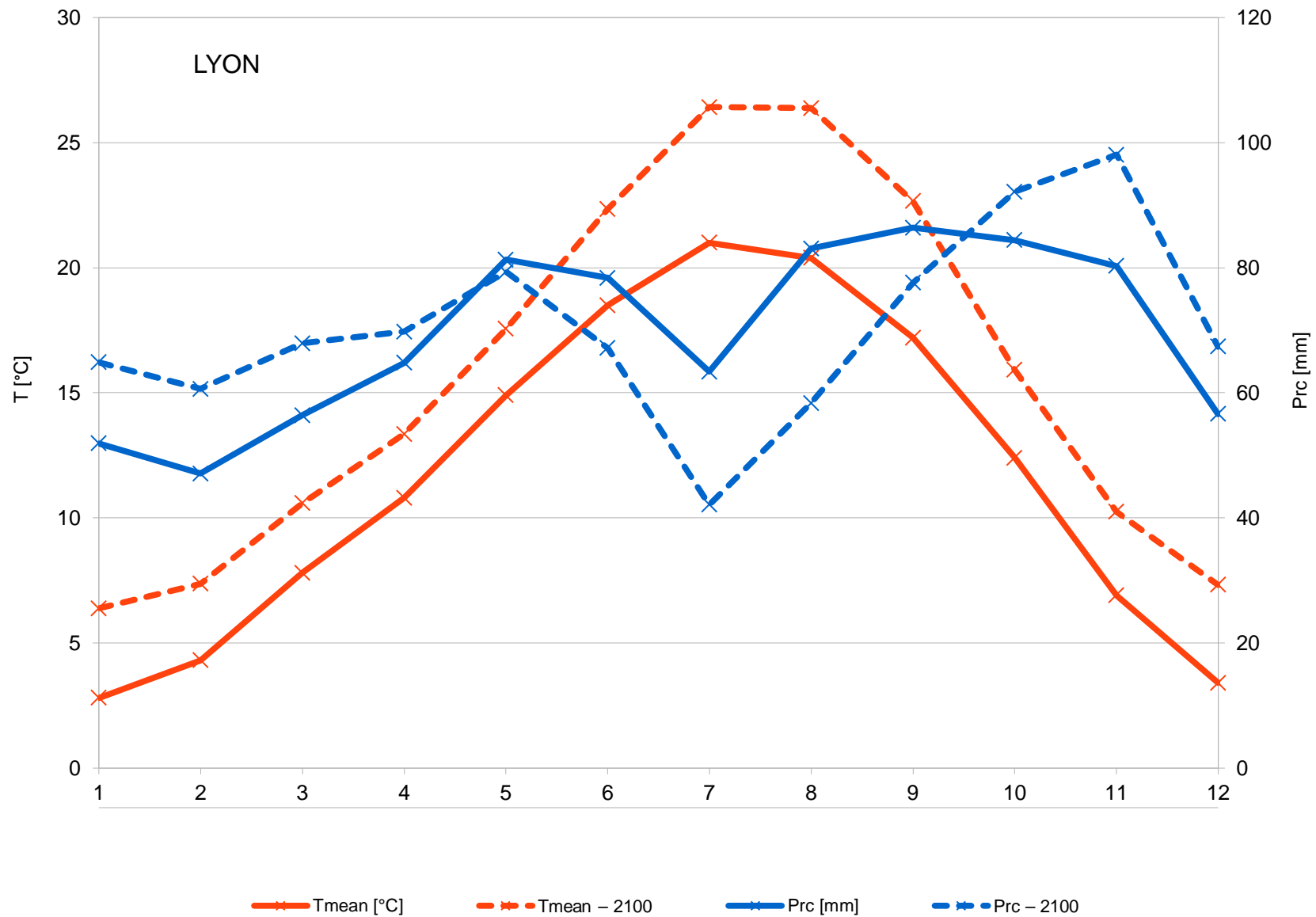
	Changes in 1971-2000 (Trend*30a*100)/Mean (*) (MIN-MAX 6 WS)	Changes until 2031-2060 (*) (MIN-MAX 9 GZ)	Changes until 2071-2100 (*) (MIN-MAX 9 GZ)	Qual. Trend
Annual mean Tmax	+0,02 to +0,04°C/a	+1,2 to +1,9°C	+2,9 to + 3,7°C	warmer
Spring mean Tmax	+0,04 to +0,06°C/a	+0,9 to +1,8°C	+2,3 to +3,1°C	warmer
Summer mean Tmax	+0,02 to +0,04°C/a	+1,0 to +1,7°C	+2,3 to +3,5°C	warmer
Fall mean Tmax	+0,00 to +0,03°C/a	+1,3 to +2,1°C	+3,0 to +4,1°C	warmer
Winter mean Tmax	+0,02 to +0,04°C/a	+1,1 to +2,5°C	+3,5 to +4,4°C	warmer
Heat days	+0,05 to +0,14 d/a	+56 to +115 %	+155 to +274 %	Clear increase
Heat waves		+35 to +282 %	+171 to + 830 %	Clear increase
Frost days	-0,06 to -0,22 d/a	-33 to -62 %	-76 to -89 %	Clear decrease
Snow (P an Tagen unter 1°C)		-34 to -45 %	-62 to -76 %	Clear decrease
0°C – passages		-28 to -49 %	-63 to -79 %	Clear decrease
Annual precipitation	-0,13 to +1,34 mm/a	+2 to +10%	+ 6 to +19 %	Slight increase
Spring precipitation	-0,21 to +0,13 mm/a	+9 to +19 %	+15 to +26 %	Increase
Summer precipitation	-0,31 to +0,99 mm/a	-7 to +10 %	-9 to +9 %	Indifferent
Fall precipitation	-0,04 to +0,51 mm/a	-5 to +12 %	+6 to +20 %	Slight increase
Winter precipitation	+0,17 to 0,62 mm/a	+1 to +18 %	+13 to +30 %	Increase
Max P in 5 days/ continual rain	-0,32 to +0,13 mm/a	+2 to +19 %	+5 to +29 %	Slight increase
Days with heavy rainfall	-0,04 to +0,09 d/a	+6 to +42 %	+13 to +85 %	Clear increase
Dry periods (CDD; P<1mm)	-0,02 to +0,12 d/a	-9 to +1 %	- 8 to +3 %	Indifferent
Dry spells		+22 to +72 %	+66 to +140 %	Clear increase
Total runoff	/	+0,5 to +26%	-2,7 to +52%	Increase
Rel. humidity / sensed temp.				
Hail	/	/	/	/
Thunderstorms	/	/	/	/
Wind	Slight decrease	Indifferent	Indifferent	Indifferent

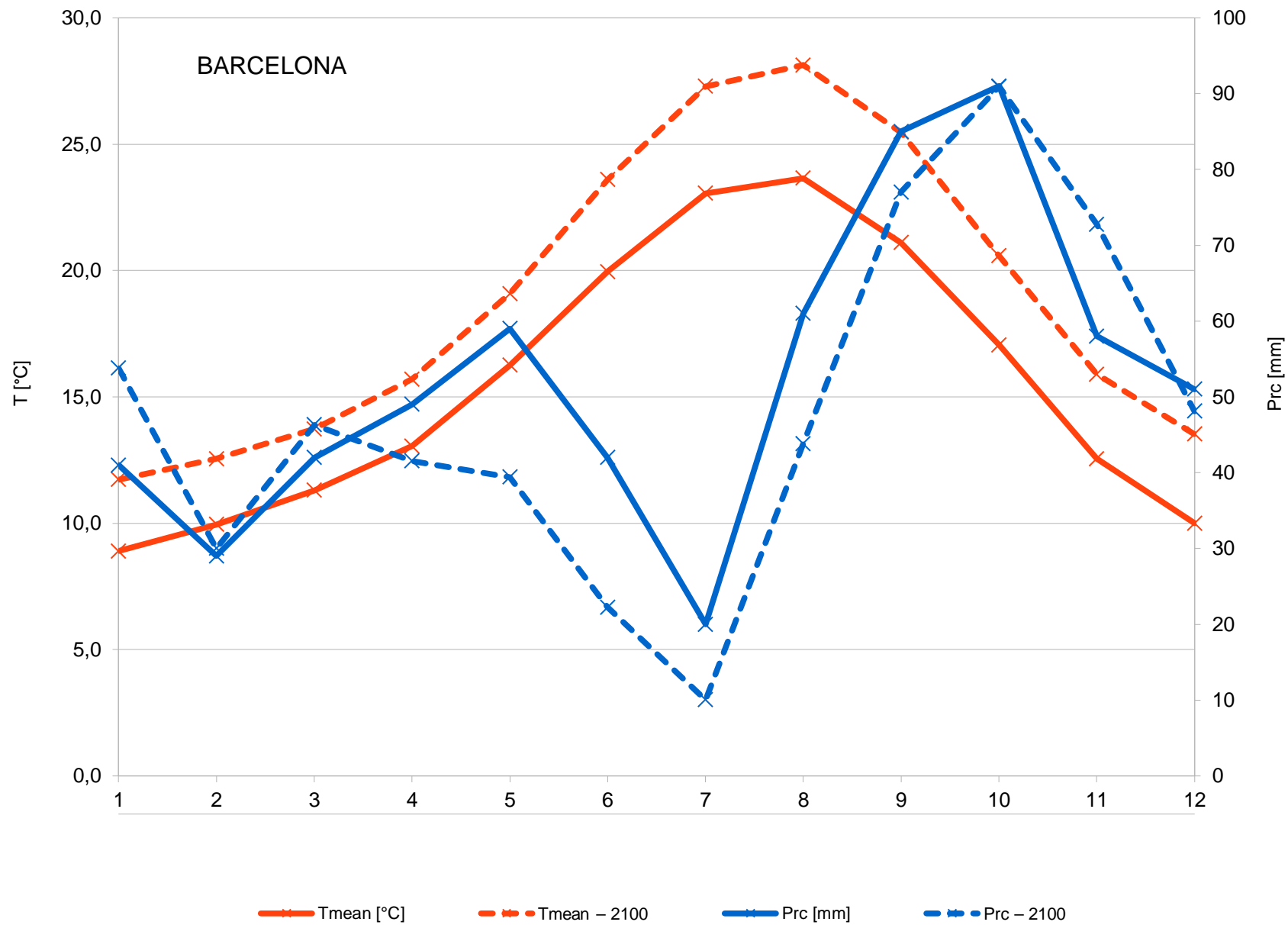


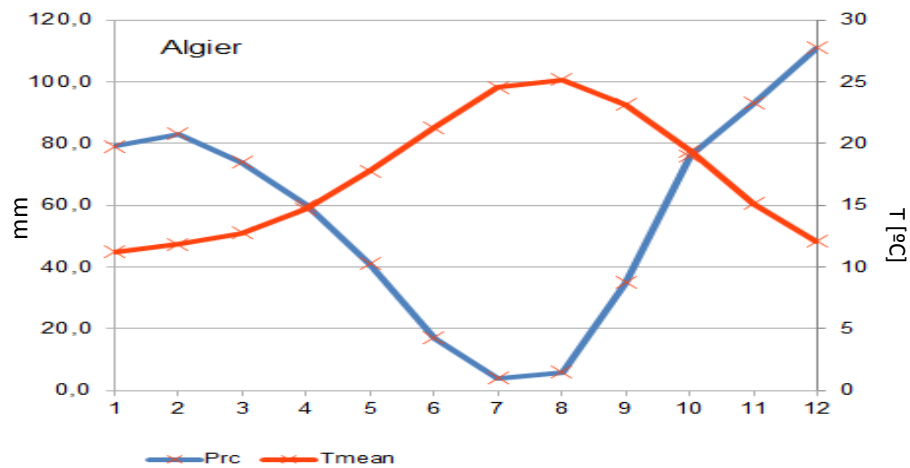
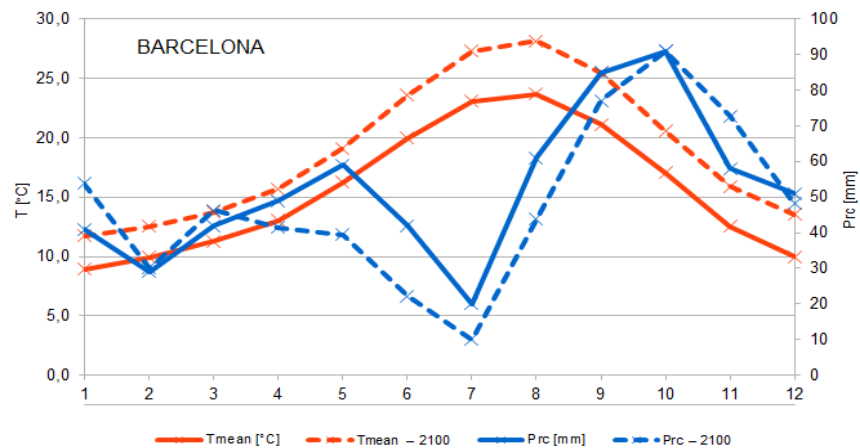
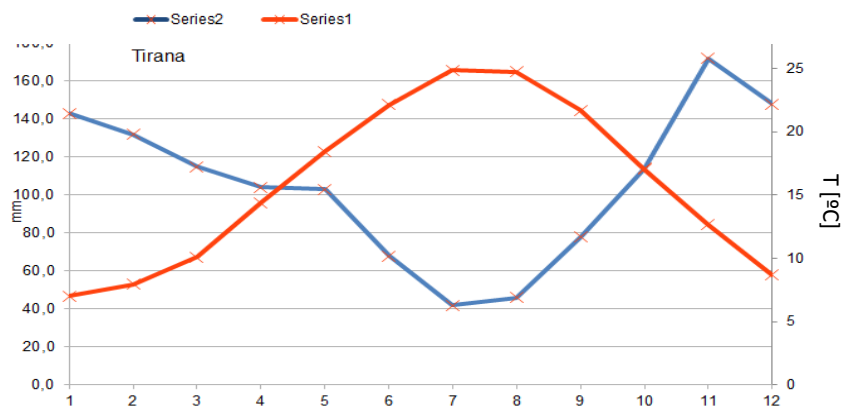
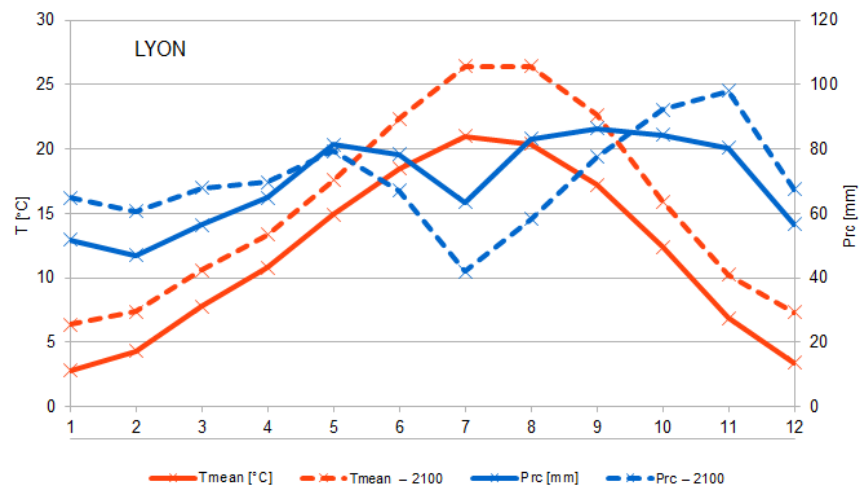
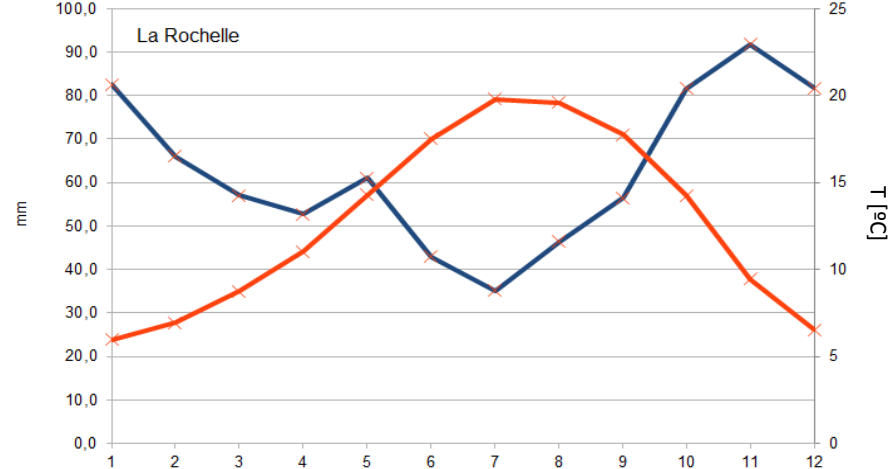
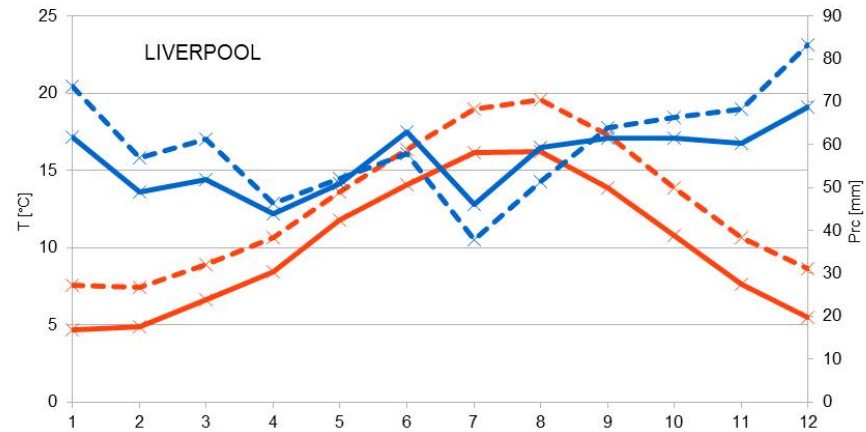




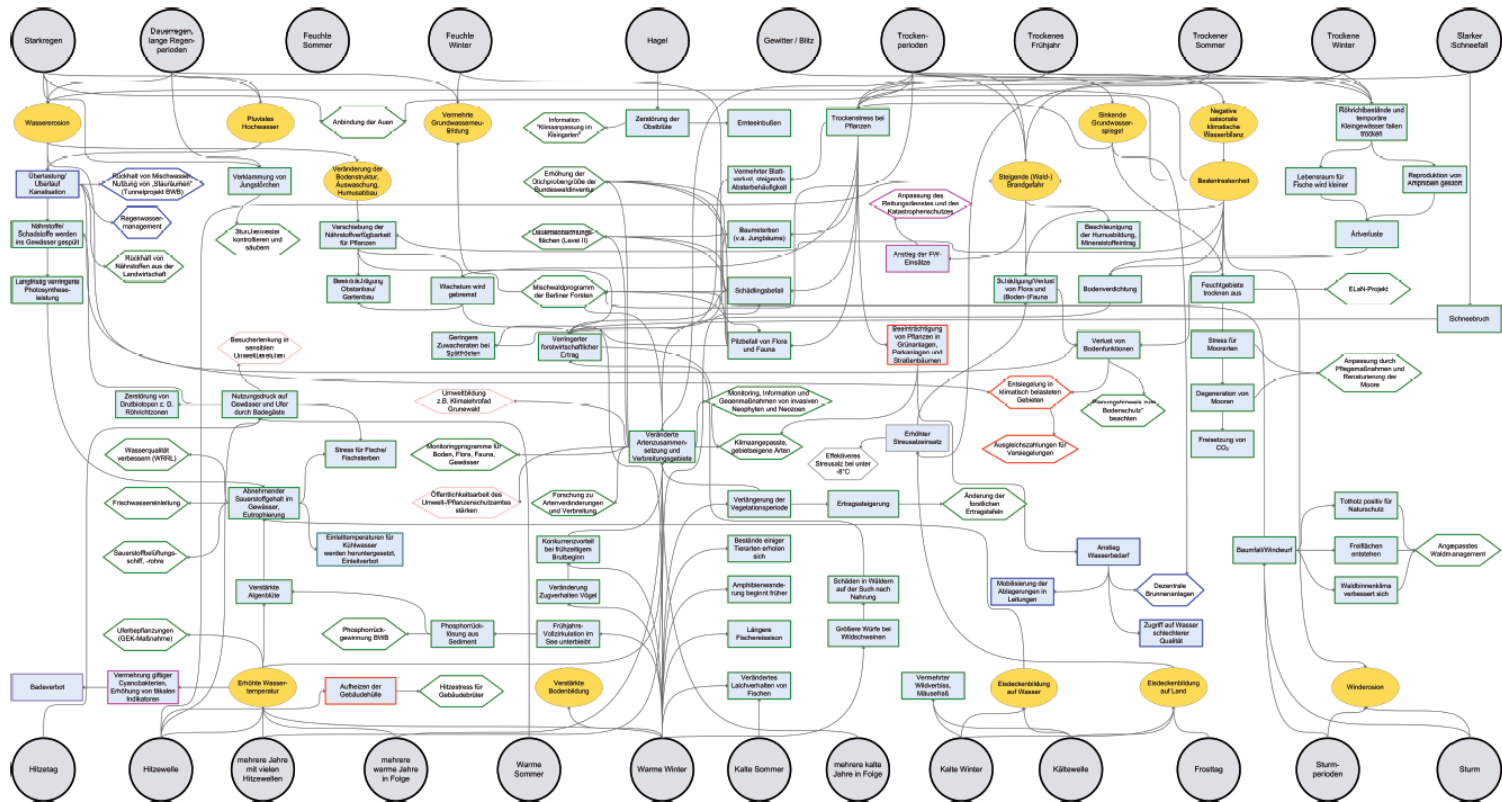












## Ebenen

- 1. Ebene: Wettervariablen
- 2. Ebene: Physische Wirkungen
- 3. Ebene: Sektorale Wirkungen
- 4. Ebene: Anpassungsmaßnahmen
- Richtung der Auswirkung

## Sektoren

- Bildung & Öffentlichkeit
- Energie- & Abfallwirtschaft
- Umwelt & Natur
- Gebäude & Stadtentwicklung
- Industrie, Gewerbe & Finanzwirtschaft
- Mensch. Gesundheit & Bevölkerungsschutz
- Tourismus, Kultur & Sport
- Verkehr & Verkehrsinfrastruktur
- Wasserhaushalt & Wasserwirtschaft

Bearbeitung:

LUP GmbH Potsdam, Stand: 03.09.2015



# Berlin's strenghts

