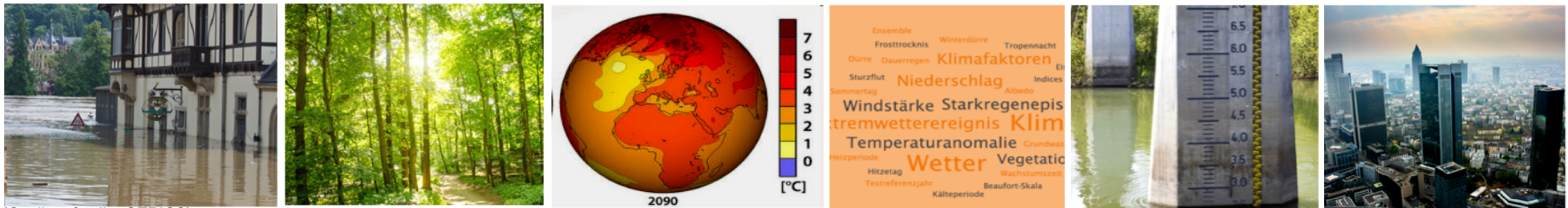


# GERICS-Stadtbaukasten (Adaptation toolkit for cities)

## What do we need to apply it in São Paulo?

Jörg Cortekar



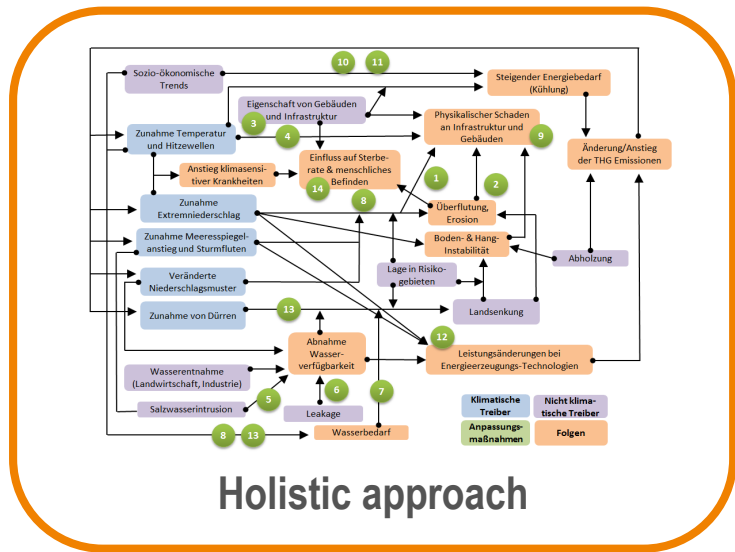
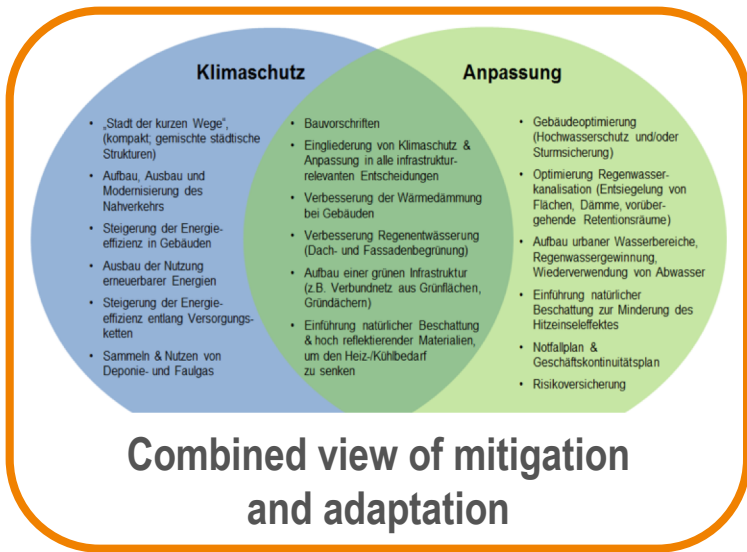
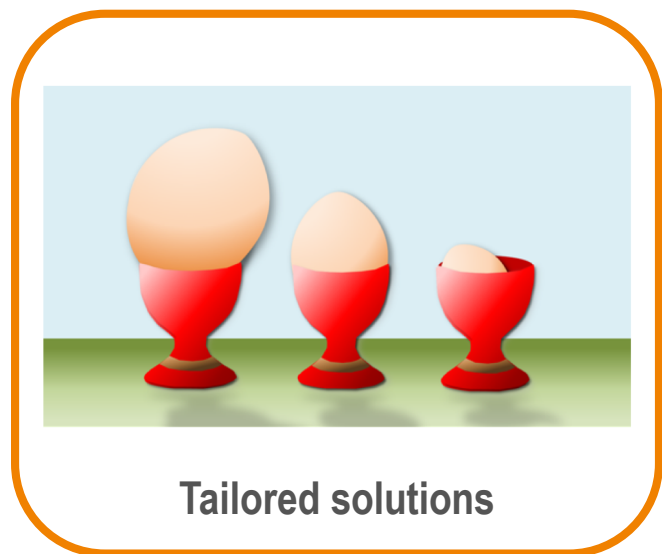
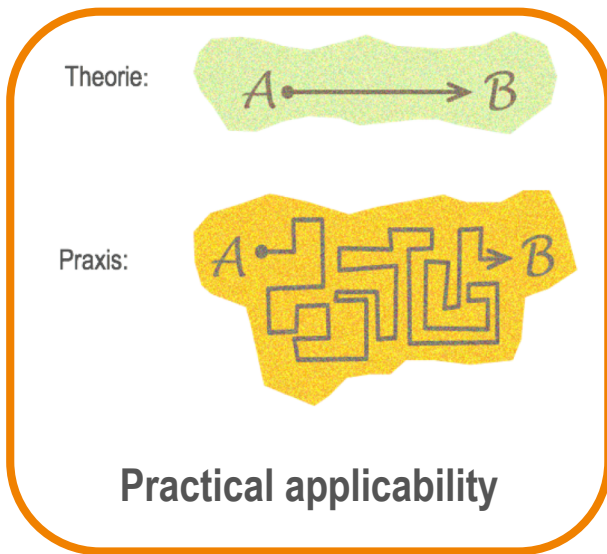
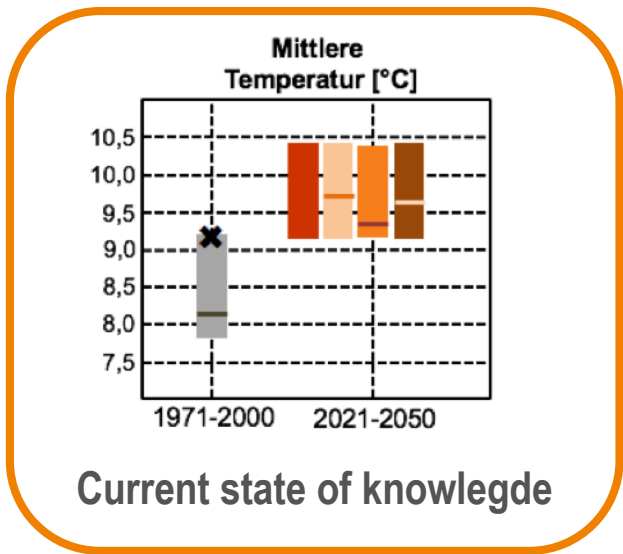
(Quellen: fotolia, GERICS)

# Adaptation toolkit for cities - Der GERICS-Stadtbaukasten



GERICS-Reports:  
30, 31, 32

# Fundamental principles



## ■ Example 1 (City of Rostock)

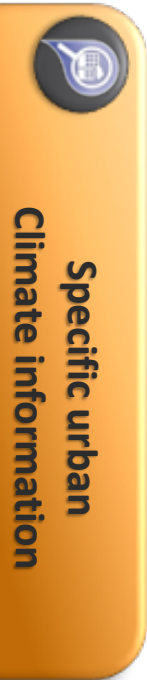
### Issue:

Updating the current adaptation strategy?

### Question:

What are the latest regional climate information for the city of Rostock?

**Cooperation:** Agency for Environmental Protection,  
Department Immission Control and  
Environmental Planning



## ■ Summary of the results for Rostock

- **55 regional climate projection** (16 RCP2.6, 15 RCP4.5, 24 RCP8.5) were used to describe the future changes (2036 bis 2065).
- Significant **increase of the annual mean temperature**, with regular seasonal distribution.
- **Possible increase of summer days, heat days and tropical nights** (in the worst case the number of days can be multiplied compared to today). Thus the factors „thermal stress and heat stress“ become more important.
- Precipitation-based climate parameters show small changes only. But, there was evidence for a possibility of **changing precipitation patterns** (temporal distribution and intensity). This can influence the local water balance.
- **Duration of vegetation period is extended.** In many respects, there are impacts on the urban green..

## ■ Example 2 (City of Bleckede)

### Question:

How well prepared is the city of Bleckede with respect to floods?

**Cooperation:** Environmental and Energy  
Consultative Committee of the  
City of Bleckede (9,400 inhabitants)



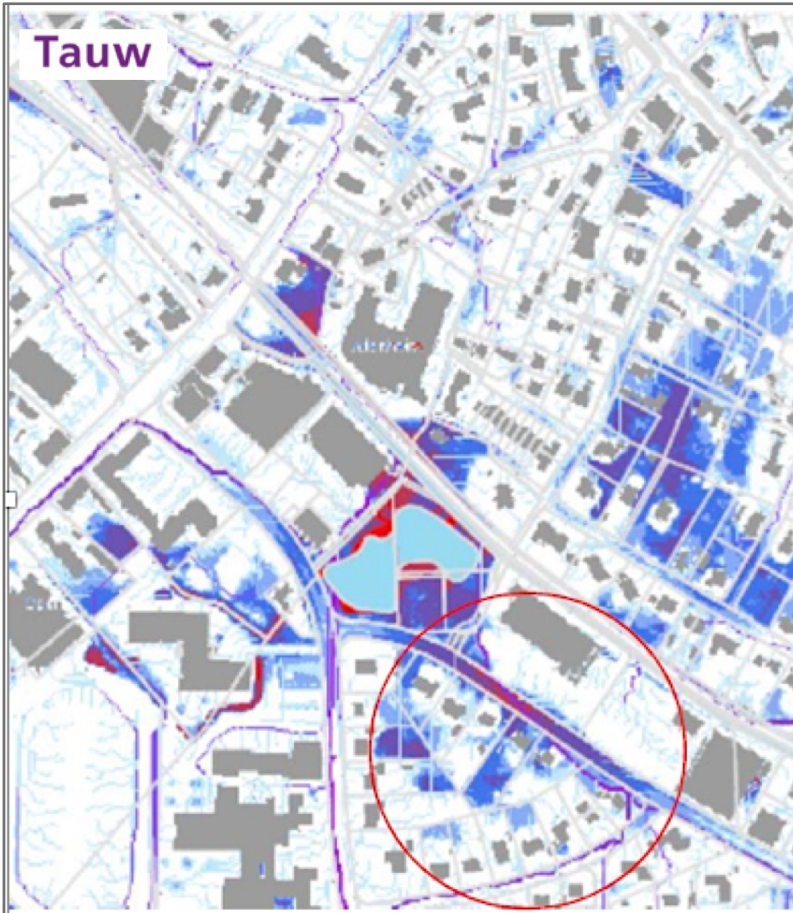
Consulting and Engineering  
Office, TAUW GmbH, München



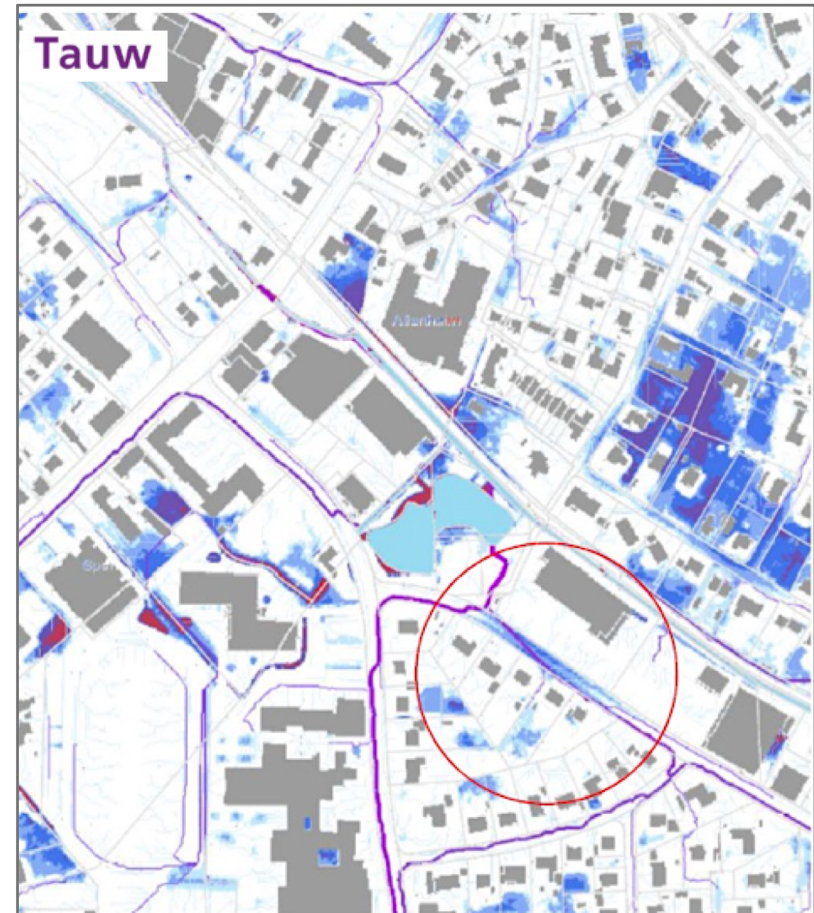
# Runoff modelling of a heavy rain event



## Impact of maintenance work



Blocked drainage channels



Operative drainage channels



## ■ The Adaptation Toolkit in a nutshell

- Aims at integrating latest **climate information** into decision-making (GERICS expertise)
- By combining climate information with **other relevant information** (if needed) (mainly **partners**)
- In order to support **climate change adaptation** in cities
- Involves the **development of new and innovative approaches and methods**

**!!! The Adaptation Toolkit (and GERICS)  
is not an operational service applying methodologies 100 times!!!**

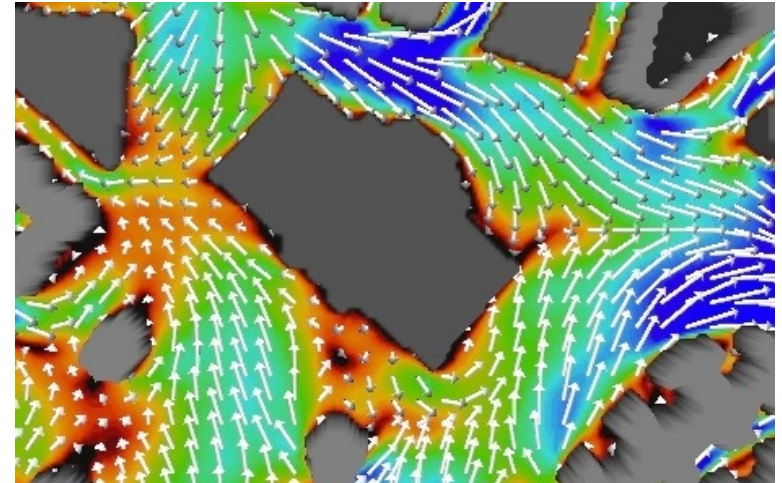
**!!! The Adaptation Toolkit does not include  
planning and implementation of adaptation measures!!!**

## ■ How to get started in São Paulo?

- What are climate change related hot topics – flooding, erosion, health, heat?
- Are decision makers aware of probably having an issue or do we have to „convince“ them they have?
- How important is climate change at all? How can it be packaged to be important?
- Do we have contacts to relevant decision makers in the city administration or a district council?
- Which partners are needed to address the identified hot topic?
- What about data? Which data is available and accessible?
- What do we want to achieve: Raise awareness? Implementation of adaptation measures? Develop an adaptation strategy first?

## Supporting activities

- Urban climate under change:  
<http://www.uc2-program.org/en>
- Development of an innovative urban climate model (PALM-4U);
  - Energy balance solvers for building and paved surfaces
  - Radiative transfer within the urban canopy layer,
  - Wall material model for heat transfer between atmosphere and building
  - Indoor climate module, predicting indoor temperature, energy demand, and waste heat
  - Chemistry module for the transport and conversion of reactive species
  - A multi-agent system for urban residents, allowing for biometeorological studies and escape scenarios
- <https://youtu.be/y1sSRXFBN7k>



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*Thank you very much!?*