POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH

P I K

In cooperation with EIT/Climate-KIC and WetterOnline GmbH

Knowledge & Innovation Community Climate-KIC

WetterOnline

ClimateImpactsOnline: A web platform presenting regional climate and impact information for Germany

Abstract: Climate services providing reliable regional climate information have recently become of rising importance. As a solution, we have developed an internet portal that is easy to use and combines interesting information about climate impacts in Germany.

Author: Thomas Nocke **English version:** www.climateimpactsonline.com **German version:** www.klimafolgenonline.com

INTRODUCTION

One of the key tasks is to present the current state-of-the art of climate science to the public. This gives rise to the challenge that the complex information must be presented such that it is commonly understood. Besides providing climate information globally, regional climate impact information becomes of increasing interest for local decision making regarding awareness building and adaptation options.

For the region Germany, numerous individual studies on climate change have been prepared by various institutions, differing in terms of their aim, region and time period of interest. Thus, our goal is to provide a synthesized, coherent view on for different sectors (climate, hydrology, agriculture, forest, energy, tourism, and health), in particular targeted at German public authority requirements [1].

THE MODEL CHAIN

We use an established model chain consisting of individual simulation models that are specifically tuned to each other, having been interconnected in past studies and projects (see [2], [3], and [4]):

- **STARS** - **ST**atistical **A**nalog **R**esampling **S**cheme (climate sector)
- **SWIM** - **S**oil and **W**ater **Integrated** **M**odel (water and agricultural sector)
- **IRMA** - **I**ntegrated **R**egional **M**odel **A**ssessment (agricultural sector)
- **4C** - **FORESEE** - **FORES**t **E**cosystems in a changing **E**nvironment (forest sector)

THE STATISTICAL CLIMATE MODEL STARS

The STARS model [5] calculates regional climate projections of daily meteorological variables for the next 40 to 100 years. The model uses historical observations from weather stations and a prescribed future trend of a meteorological variable in order to assemble a new meteorological data set that fulfills the trend prescription.

CLIMATE AND CLIMATE IMPACT DATA

The climate and impact variables are available on a decadal time resolution for the period from 1901 to 2100, combining observed data and future projections, interpolated from the station positions to a grid and mapped to administrative units (national, federal state, district).

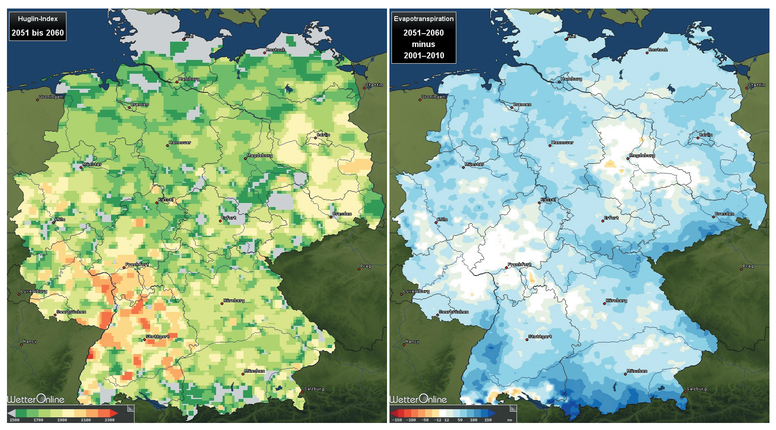

Fig. 1 *Examples for agriculture (Huglin index, left) and water sector (difference of evapotranspiration to ref. period, right)*

THE WEB PORTAL

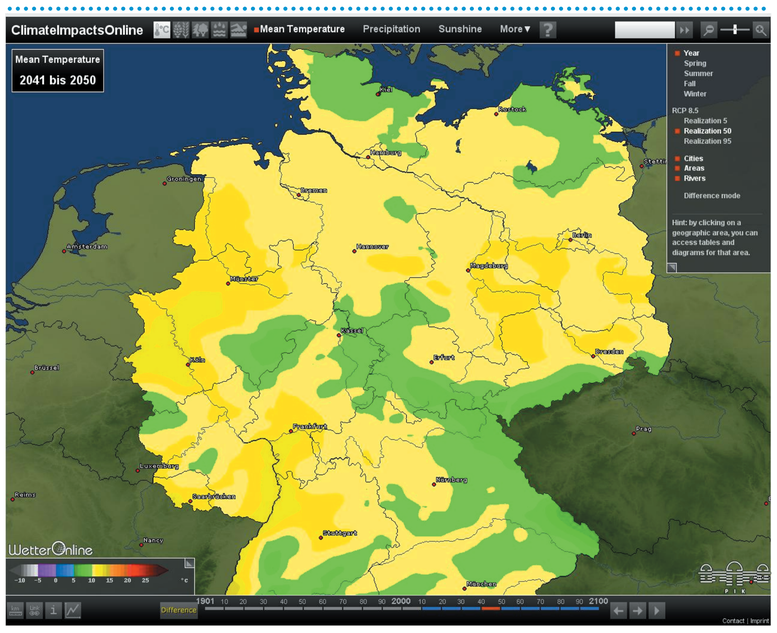

Fig. 2 *Screenshot of the ClimateImpactsOnline.com portal (map view, daily mean temperature 2041-2050)*

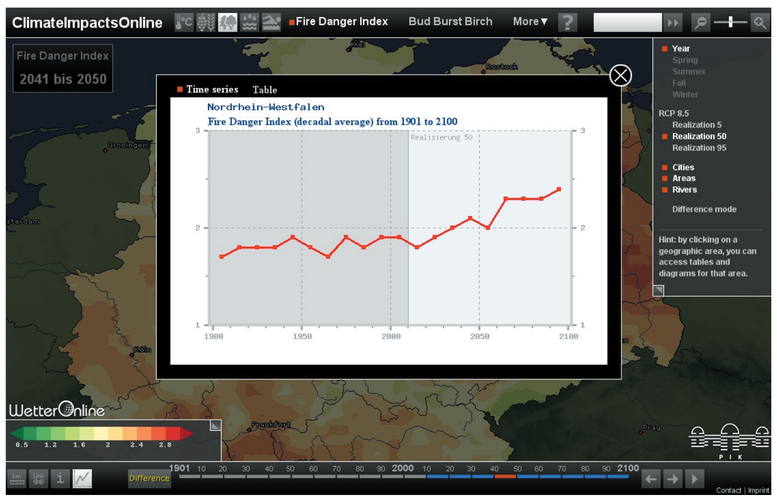

Fig. 3 *Screenshot of the ClimateImpactsOnline.com portal (time series view, fire danger index, 1901-2100)*

In addition, the web portal provides textual tables with bandwidth information for individual decades and manifold background information.

CURRENT DEVELOPMENTS

We executed a multi-phase evaluation process based on public authorities presentations, an online questionnaire and web portal email feedback. Based on this, we are currently improving the portal in the following directions:

- image labeling (provenance issues)
- inclusion of a second time averaging (30 y.)
- new representations (gauge maps, Walter diagrams, monthly diagrams)
- bandwidth information.

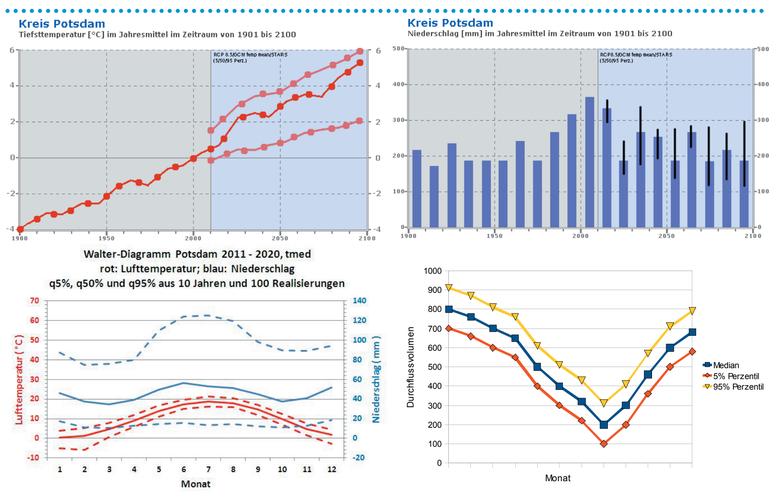

Fig. 4 *Schematic representations (German labels) of improvements under development: uncertainty information in time series (top row), Walter diagrams and monthly diagrams (bottom row), all with explicit bandwidth coding*

FUTURE WORK

For 2014, we plan to (1) integrate the CORDEX runs, (2) improve our statistical climate model with respect to trend statistics and others, (3) extend the agricultural, energy and tourism sectors, and (4) extend the approach to other countries/ regions.

ACKNOWLEDGMENTS

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REFERENCES

[1] P. Gräfe (eds.), 2014, Special issue of “Meteorolog. Zeitung”, under review

[2] A. Lüttger et al., 2011, PIK-Report No. 121 - Klimawandel in der Region Havelland-Fläming , January

[3] F. Wechsung, F.-W. Gerstengarbe, P. Lasch, A. Lüttger (eds.), 2008 PIK-Report no. 112: Die Ertragsfähigkeit ostdeutscher Ackerflächen unter Klimawandel, December

[4] M. Stock (eds.), 2005, PIK-Report No.99: KLARA - Klimawandel - Auswirkungen, Risiken, Anpassung, July

[5] B. Orlowsky, F.-W. Gerstengarbe, P.C. Werner, 2008, A resampling scheme for regional climate simulations and its performance compared to a dynamical RCM. Theor. Appl. Climatol. 92, No. 3-4, 209-223

Contact Thomas Nocke
Telegraphenberg A51 | 14473 Potsdam | Germany
nocke@pik-potsdam.de

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