

**Effects of Climate Change on Ecosystems and Nature Protection Areas – Methodological Development, Risk Assessment and Conception of Mitigation Measures for Saxony**

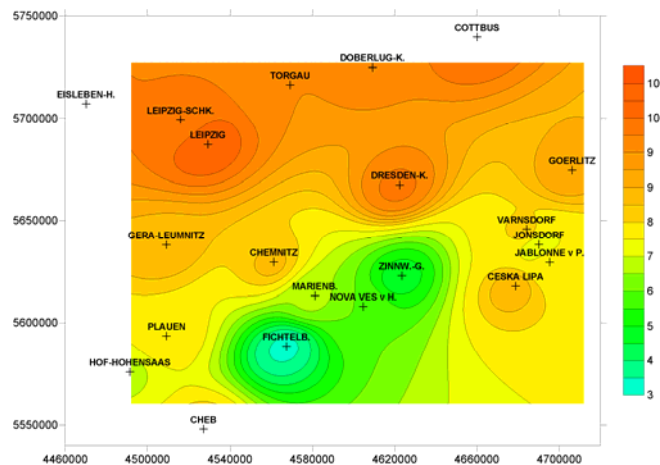
C&E · Consulting und Engineering GmbH



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**Project Objective:** The company “AG Klimadatenreihen” (AG climate data sets) has provided 21 sites in Saxony and the bordering regions to implement the research project "effects of climate change for nature" for the current time (measurements) and for the forecast period 2041-60 (the result of a regionalized climate model). Meteorological and hydrological calculations were carried out using these data. The data and results were presented in the form of actual condition, differences and forecast maps for the area of the Free State of Saxony. Further activities were to analyse the water dependent ecosystem.

**Objective:** Saxony  
**Client:** Environmental Authority of Saxony  
**Beneficiary:** Environmental Authority of Saxony, Department for Nature Protection  
**Year:** 2005  
**Budget:** 25.000 €



**Initial Situation:**  
 Based on the data of meteorological stations in the past decades you can see some medium-term changes, in particular the changes of the air temperature. Using the global climate models, which form a reason-effect-complex of the climate change, the forecasts for the different scenarios of the development of anthropogenic CO<sub>2</sub>-emission were calculated and regionalised for the area of the Free State of Saxony. Now using these results of this calculation we can imagine the possible climatic changes until 2050.

With the local authority of Saxony it was started a Climate Impact Research Program to concretise the effects of the forecasted climate change on agriculture and forestry, water management as well as vegetation development in Saxony. The environmental and nature protection administration of Saxony does not have any sufficient knowledge about the potential effects of climate change on nature, ecosystems and species. Within the R & D project the essential bases will be worked out. Thereby the results of climate models were used and the climatic and hydrological changes from the data of the climate model were evaluated

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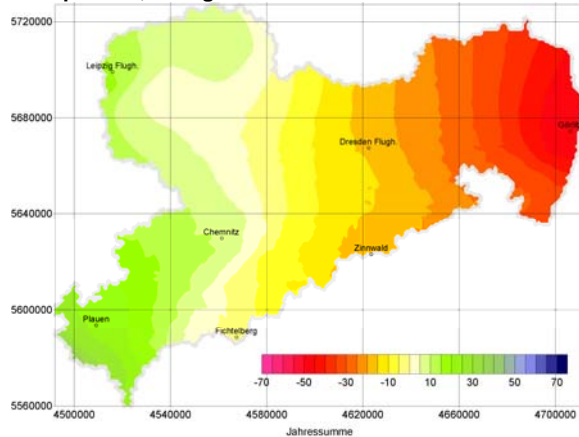


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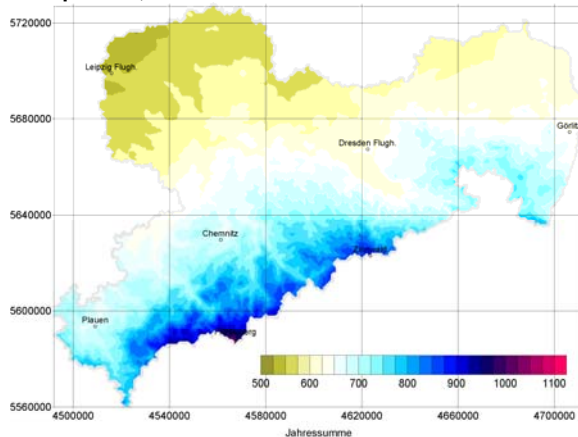
## Services Provided:

- **Climate diagnosis** for the Free State of Saxony (18.415 km<sup>2</sup>), **Regional climate prognosis** for the time span of 2010 to 2050 and 2050 to 2100 using ECHAM data base and climate scenarios
- **Water balance prognosis** for the time span of 2010 to 2050 and 2050 to 2100
- Analysis of current situation and prognosis of future impacts
- Evaluation of concerned ecosystems and nature protection areas, **risk assessment** for all types of ecosystems with special topic on water dependent ecosystems
- elaboration of an **conception of mitigation measures and action plan**
- Establishment of GIS and a database to collect, to archive and to demonstrate the climate change effects, the risks and the proposed measures for mitigation

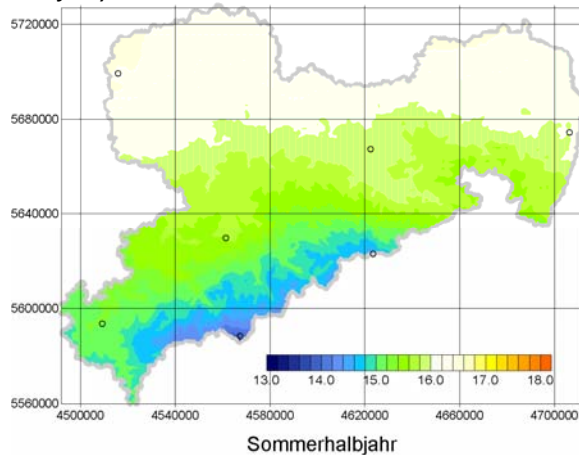
Precipitation, change



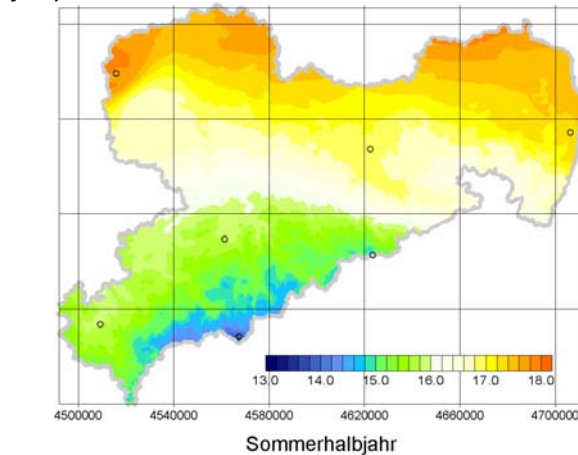
Precipitation, forecast



Average long-term dry spells, current situation (summer half-year)



Average long-term dry spells, forecast (summer half-year)



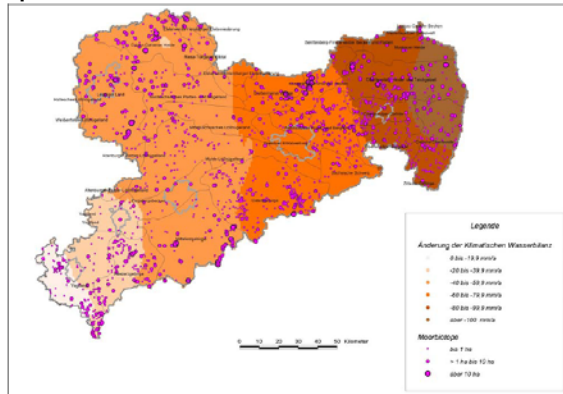
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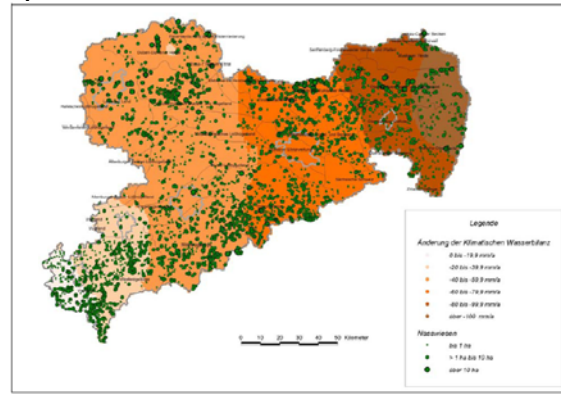


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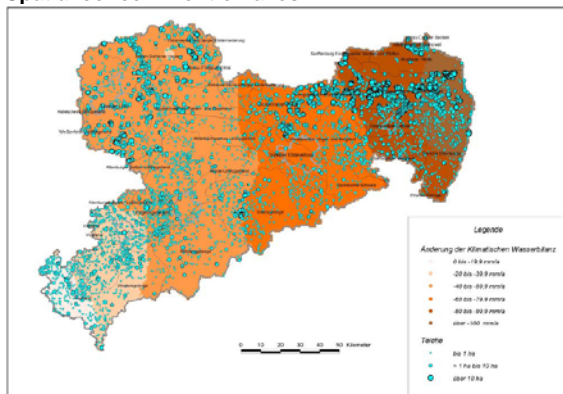
Spatial concernment of moors



Spatial concernment of wetlands



Spatial concernment of lakes



Spatial concernment of near to nature deciduous forest

