

Adapting the industry to climate change: the role of climate services

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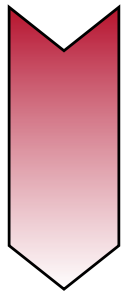
The emergence of climate services

A wide-ranging concept

The need for climate services is relatively new, as adaptation to climate change is still nascent

- A recent multiplication of initiatives, located in a few countries
- WMO Conference stressed the need for climate services (September 2009, Geneva)

What climate services cover



- Vulgarisation of climate science / information / awareness raising
- Dissemination of raw climate data
- Maps / standardised indicators
- “Sectoral” indicators, still often standardised
- Tailored climate indicators and studies

The need for climate services: a need for climate indicators

- To date, most indicators used by stakeholders come from external productions
- As a consequence, climate data is scarcely used in adaptation strategies, leading to suboptimal and often similar adaptations to a limited number of climate impacts
- Yet there is a demand for tailored information to better understand a system’s vulnerability, establish priorities, and adapt

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Defining industrial vulnerability with industrials

2006: opportunity and means for “climate services”, and leadership of some key climate scientists

Industrial vulnerability has been studied through 5 categories

- Resources availability
- Facilities and infrastructure design
- Demand for goods and services
- Industrial process
- Climate hazards

A 4-step methodology aimed at tailoring the work of climate scientists to the industrial partner

1. Identification and selection of climate vulnerabilities
 - What’s the problem?
 - Who are the inner human resources to tackle it?
2. Construction of a relevant climate indicator
 - That answers the industrial’s question
 - That is useable by climate scientists (feasibility study)
3. Detailed analysis of the climate indicator
 - Data identification
 - Trends and uncertainties
4. Communication and discussion with the user

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Distric heating case study: indicator

Dalkia: limits to the operation of district heating in Texas. Elsewhere in the future?

- Question : will district heating remain adapted and profitable under climate change?
- Relevant climate indicator for Dalkia: evolution of daily temperature variations
- The indicator has been defined after Dalkia's experience in Texas
- The study covered Europe and China

Chosen climate indicator: the DTR (“Diurnal Temperature Range”)

- Difference between the highest and the lowest temperature during 24 hours

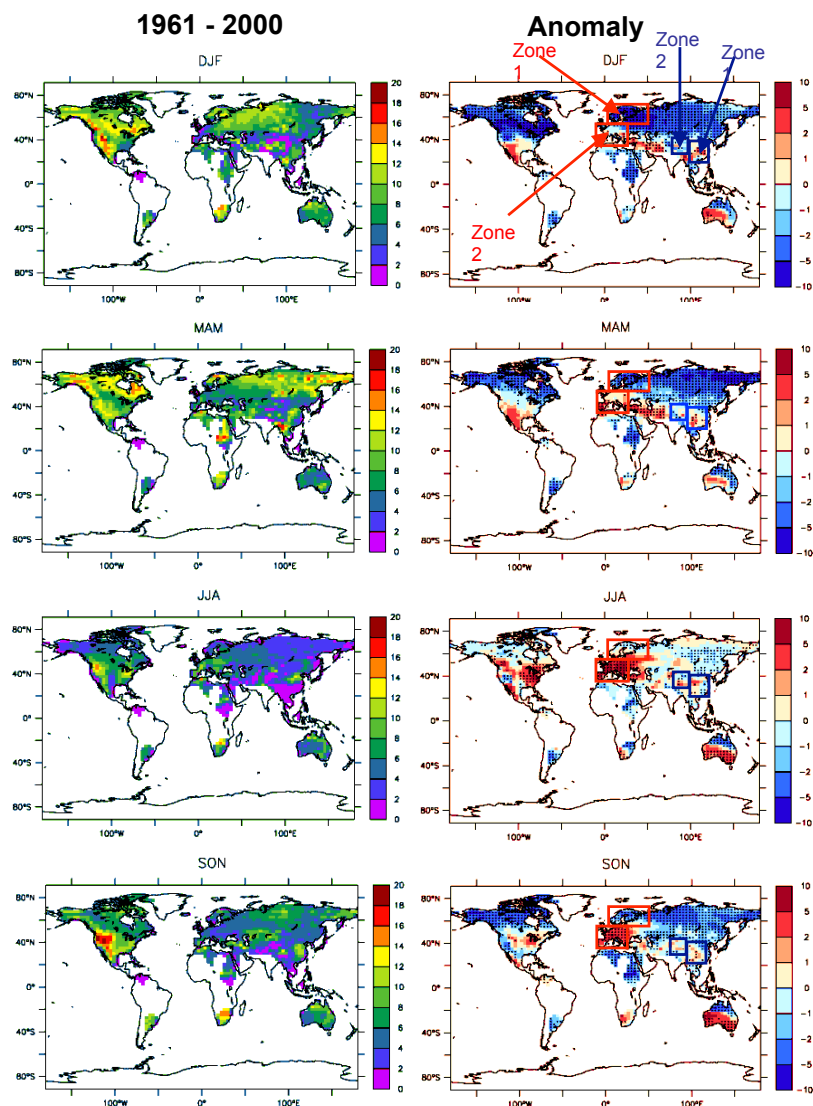
$$\text{DTR} = T_{\max} - T_{\min}$$

- More precisely, the indicator was defined as the number of days for which the DTR is unusually higher than its reference value (1961-2000 mean), i.e. the number of days where

$$\text{DTR} > \text{DTR}_{1961-2000} + \text{vulnerability threshold}$$

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District heating case studies: results



	Spring	Summer	Fall	Winter
Northern Europe	DTR ↓ Out of vulnerability zone (VZ) in 2100	?	DTR ↓ Out of VZ in 2100	DTR ↓ Out of VZ in 2040
Western and eastern Europe	?	DTR ↑ Still <<VZ in 2100	DTR ↑ Still <<VZ in 2100	?
China	?	?	?	?

Annual mean of the indicator for the 1961-2000 period (left column) and its anomaly between the 2071-2100 and 1961-2000 periods (right column). The results are shown in number of days per year. Dotted zones show an accordance of more than 80% of the models on the sign of the anomaly.
Source: Déandreis (2010)

Results of the project

Is the methodology workable / duplicable?

Benefits of the methodology:

- The end-users have more capacity and wil to take climate change into account
→ Re-analysis of their activity, through the lens of a changing climate constraint
- Better understanding of what can be done with climate data, and what cannot
- Essential preparation to not-so-distant future challenges

Limits of the project:

- The number of vulnerabilities studied remain too low to be usable
- The complete work is much more intensive
- There is a bias in the identification of vulnerabilities: past experience

There is a real need of upgrading the project to go further

Main lessons and outcomes

It is possible to have climate scientists and industrials work together to define relevant indicators

...

... But it is a very intensive work, clearly distinct on that point from other climate services ...

... And the result is ambiguous

- There are considerable uncertainties
- There is always a possibility to push the study further, and thus postpone the decision-making phase further
- There is a true challenge to have the information actually used by the industry and overcome the 'fashion' barrier
- It is only one piece of information needed to take a decision, and other pieces often do not have similar treatment

Question: is it always necessary to have precise climate information? How should the limit be defined? Is it possible to adapt using this climate information?

Thank you

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