



Royal Netherlands  
Meteorological Institute  
Ministry of Transport, Public Works  
and Water Management

## Climate services

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### Dutch experience in development and provision of climate data for the water sector

## Set up presentation



- Definitions of the term “climate services”
- Who provides which services in the Netherlands?
- Our view on the process of climate services
- Types of users
- A few examples
- International initiatives on climate services

## Definition of climate services



### Different interpretations

Provision of data and information for:

- Operational purposes
- Design, evaluation and strategic analyses (e.g. impact/adaptation)

Type of products:

- Standard products (e.g. climate atlas, internet tools)
- Tailored products (for specific sectors/stakeholders)

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## Who provides which services?



In the Netherlands:

	Weather	Climate
Standard products	Weather providers KNMI	KNMI (commercial parties)
Tailored for specific users	Weather providers KNMI	KNMI (commercial parties)

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## Climate services: interactive process



### Finding out the real question of the user

Precipitation extremes, but which one? Per hour? Per day?

### Pointing out limitations of knowledge

Climate information at the scale of hectare is not possible



### Guidance in interpretation and use

How to use different time horizons? What do details on maps mean?

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## Wide range of users and requirements



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	Energy	Urban water management	Coastal protection
Preferred climate data	Wind speed	Rainfall extremes	Sea level rise, wind extremes
Time resolution	Day-month-year	5-60 minutes	hours-year
Preferred time horizon	2015-2020	2050-2100	2050-2200

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## Users: range of purposes



### Purposes behind requests for information and data:

- To get informed: general information, what do we know and what not, how to judge information from the media, etc.
- Create "sense of urgency": especially interest in extremes
- Impact and adaptation research: need for specific data
- Develop policy: what is the most probable scenario?

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## Regional differences in extremes



Water boards: "Are there regional differences in rainfall extremes within the Netherlands?"



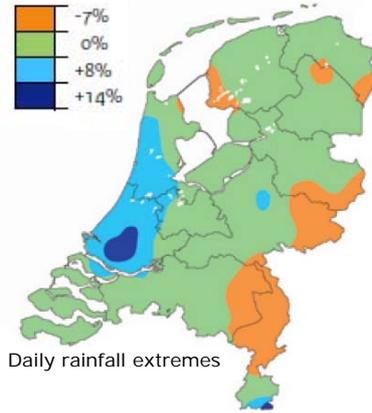
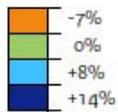
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## Regional differences in extremes

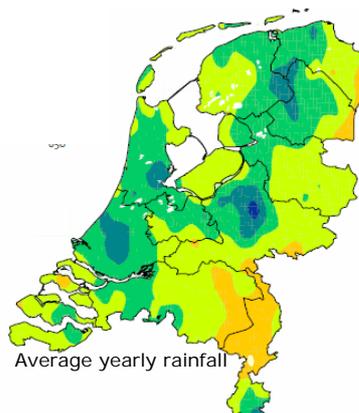


Indeed regional differences in daily extremes, not coupled completely with differences in yearly average rainfall

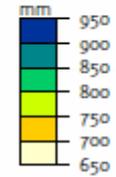
Deviation from De Bilt



Daily rainfall extremes



gemiddelde jaarlijkse neerslaghoeveelheid



Average yearly rainfall

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## Urban water management



Planners of sewage systems: "Will events with extreme rainfall in short periods occur more frequently in future?"



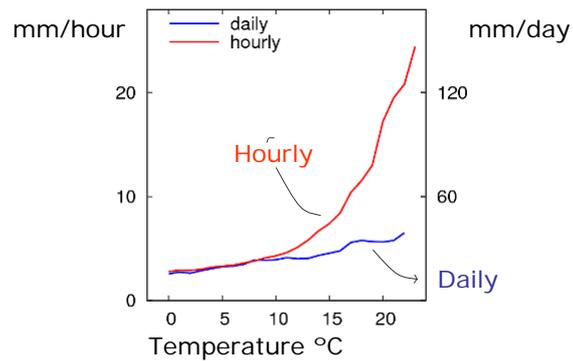
Egmond aan Zee, August '06

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## Urban water management



Result: The intensity of hourly extreme showers increases more than the intensity of daily extremes with increase of day temperature.



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## International initiatives



Several national initiatives to improve climate services. However, various user groups need data/information from several countries



Need for international cooperation

### Some existing examples in EU:

- EMS/ECAC: main theme Climate Services
- EU-projects: ECLISE, CLIMRUN, IS-ENES, ENSEMBLES, PRUDENCE, ...

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## 2009: Global Framework for Climate Services

**Aim:** "to strengthen production, availability, delivery and application of science-based climate prediction and services"

**Questionnaire:**

- Most used service: provision of climate data
- Most missing: scenarios of possible regional climate change
- Most important barrier: availability of climate data