

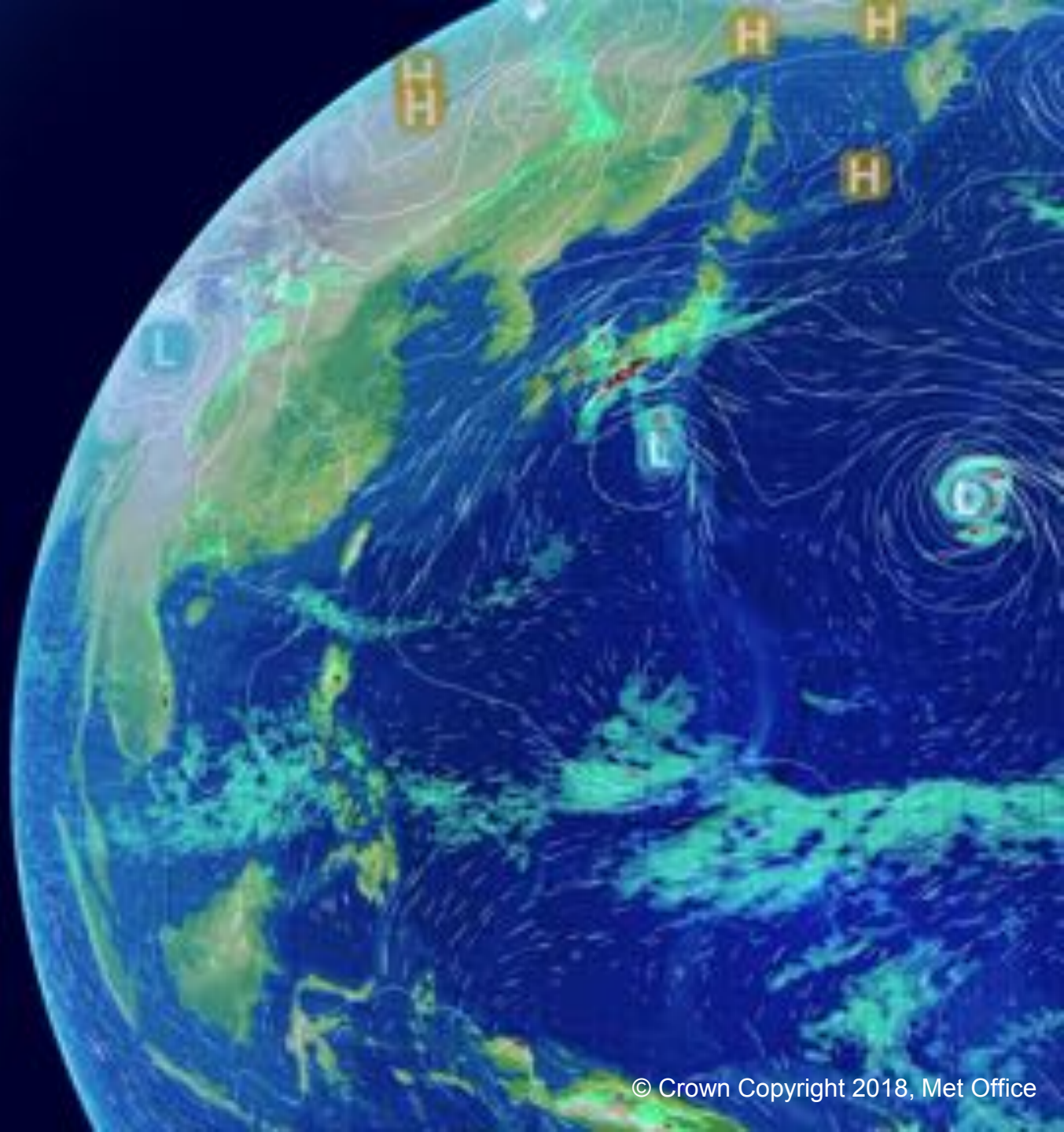
Types of climate services

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and

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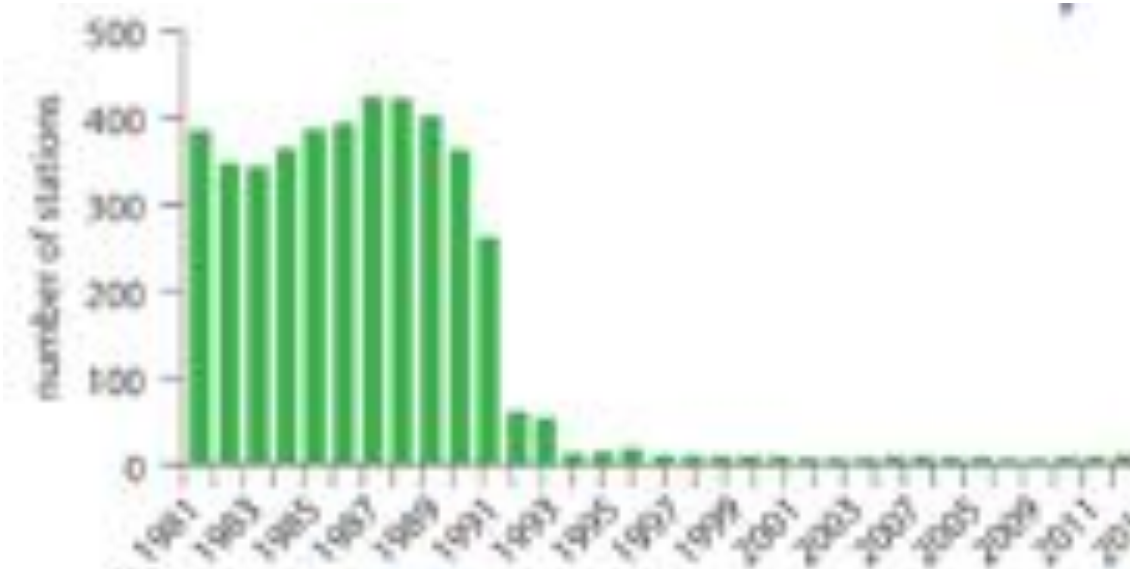
Today

- Climate services as an octopus
- Some real world examples
- Drawn from personal experience
- And my perspective on the way forward



It starts with good data

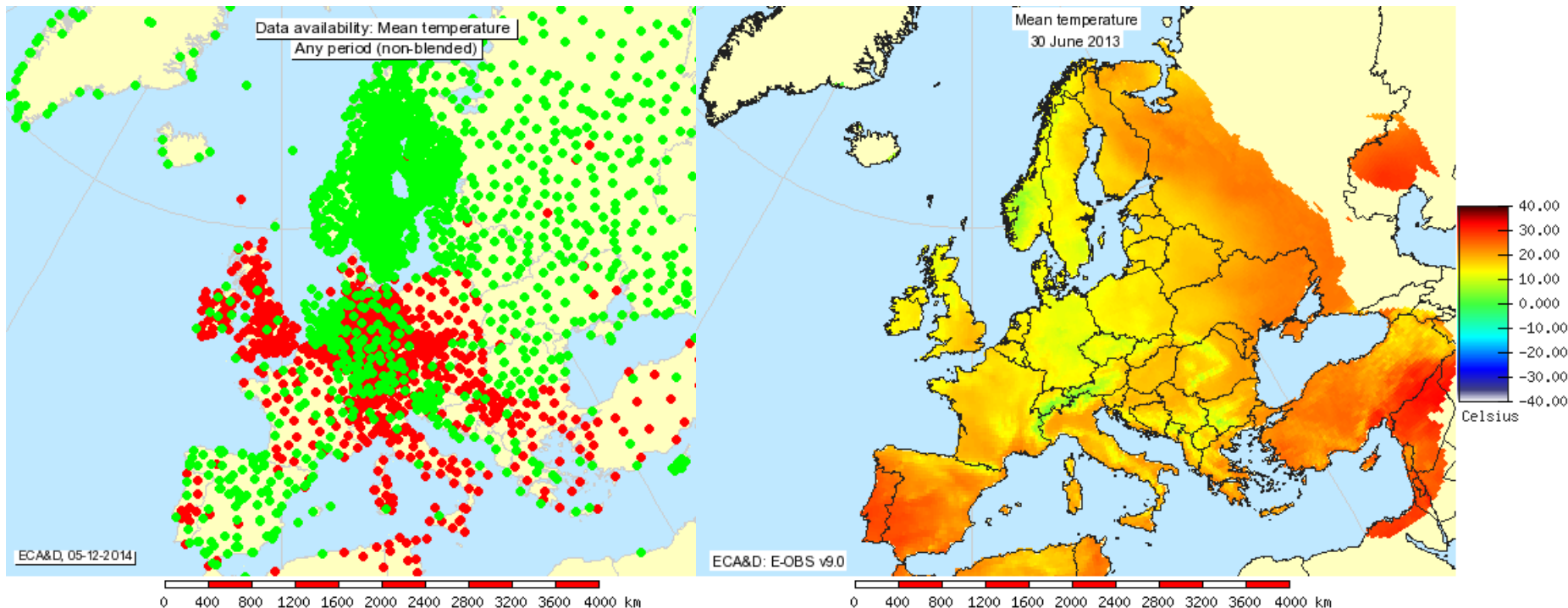
Rwanda rainfall
stations in
international
databases



Rwanda rainfall
stations available
at the local Met
Service

It starts with good data

At KNMI, we developed a European repository for daily observation records and a web portal for data access and derived indicators of extremes: www.ecad.eu

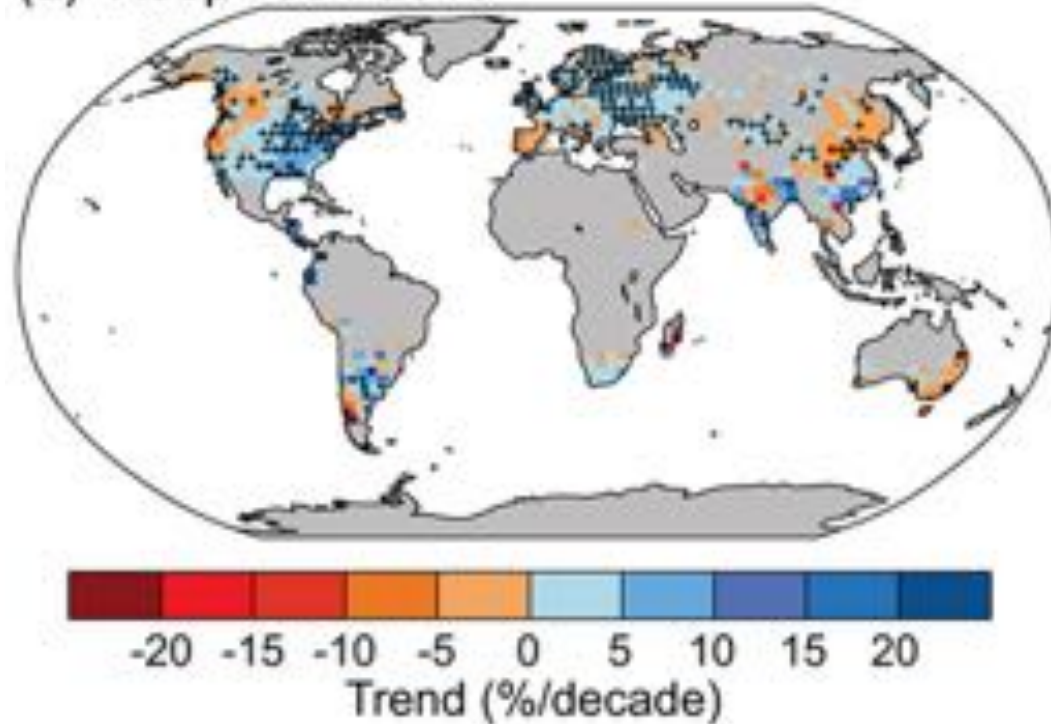


...and a
gridded
dataset
E-OBS

Services have been built on top of ECA&D and ECA&D also provides input to the IPCC

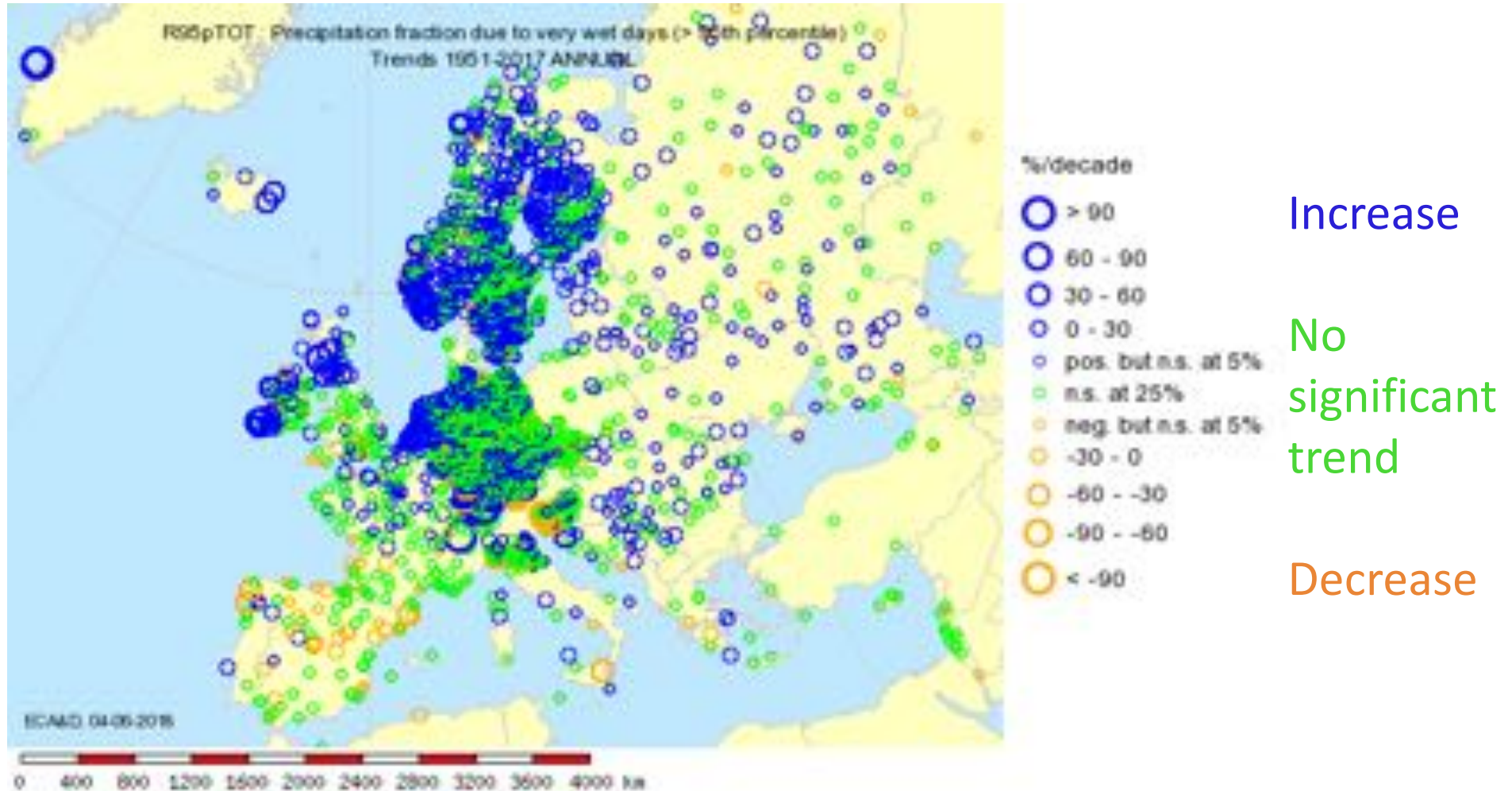
Indicator for % of rain in heavy events

(a) R95p 1951-2010



“It is likely that since about 1950 the number of heavy precipitation events over land has increased in more regions than it has decreased”

Trends (1951-2015) in the index for long-term heavy rainfall for weather stations in Europe



Klein Tank et al.,
J. Climate, 2003

The ECA&D concept has been transferred to other regions of the world, in particular Southeast Asia, Latin America and West Africa

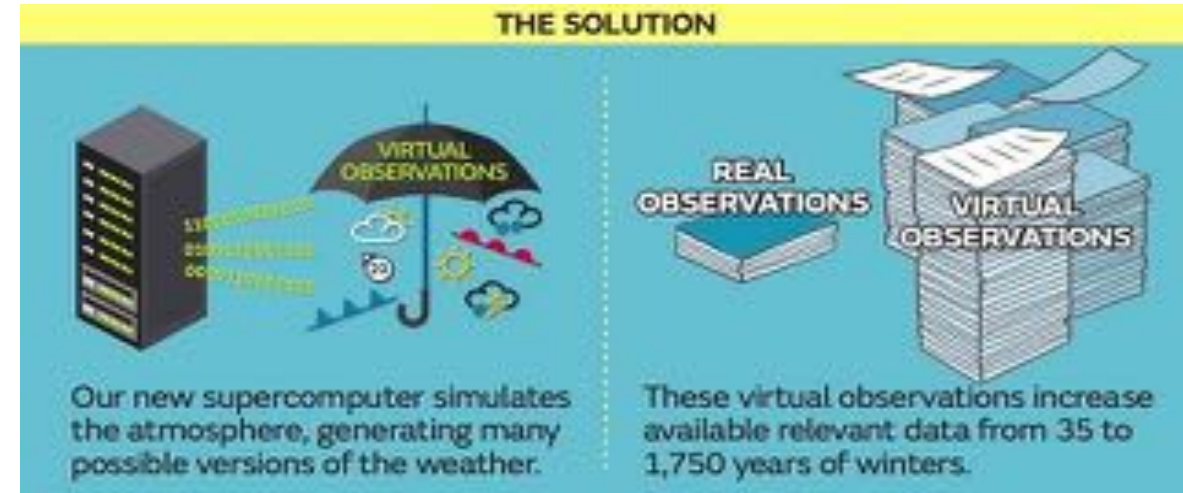
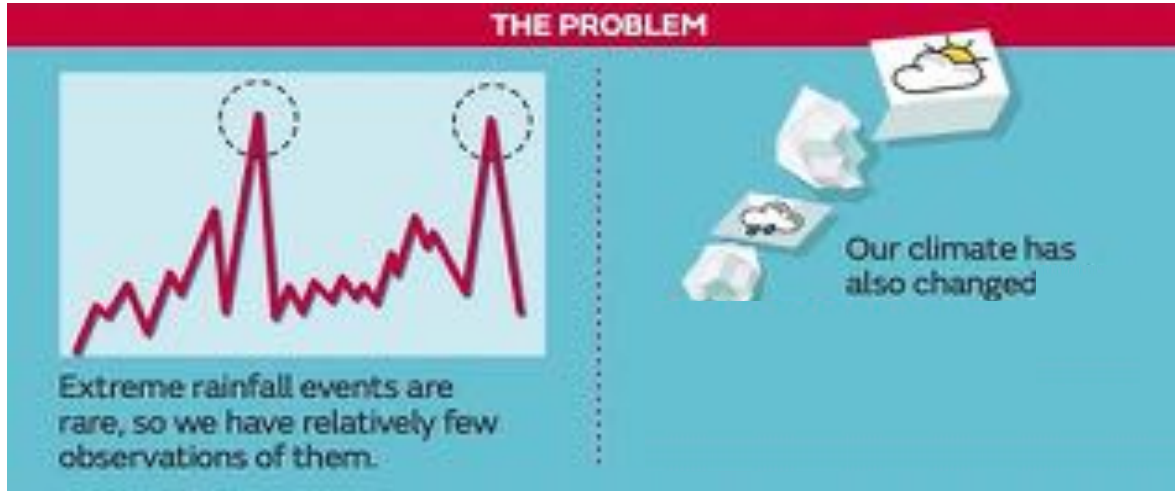


DATA ACCESS

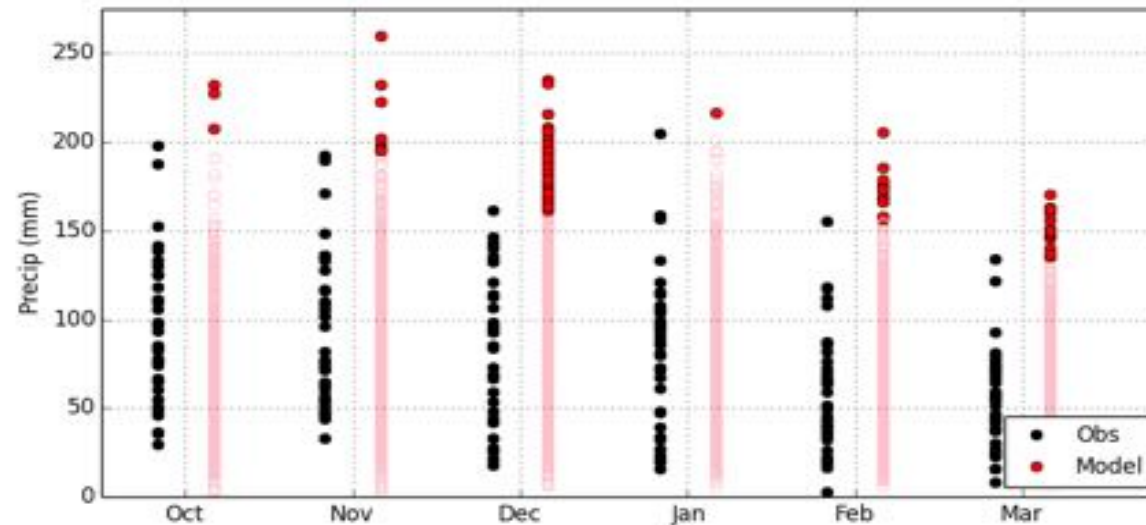
INTERNATIONAL CLIMATE ASSESSMENT & DATASET: CLIMATE SERVICES ACROSS BORDERS

BY ELSE J. M. VAN DEN BESSELAAR, ALBERT M. G. KLEIN TANK, GERARD VAN DER SCHRIER,
MARIAMA S. ABASS, OMAR BADDOUR, ARYAN F.V. VAN ENGELN, ANDREA FREIRE, PEER HECHLER,
BAYU IMBANG LAKSONO, IQBAL, RUDMER JILDERDA, ANDRE KAMGA FOAMOUHOUE, ARIE KATTENBERG,
ROBERT LEANDER, RODNEY MARTÍNEZ GÜINGLA, ALBERT S. MHANDA, JUAN JOSÉ NIETO, SUNARYO,
ARIS SUWONDO, YUNUS S. SWARINOTO, AND GÉ VERVER

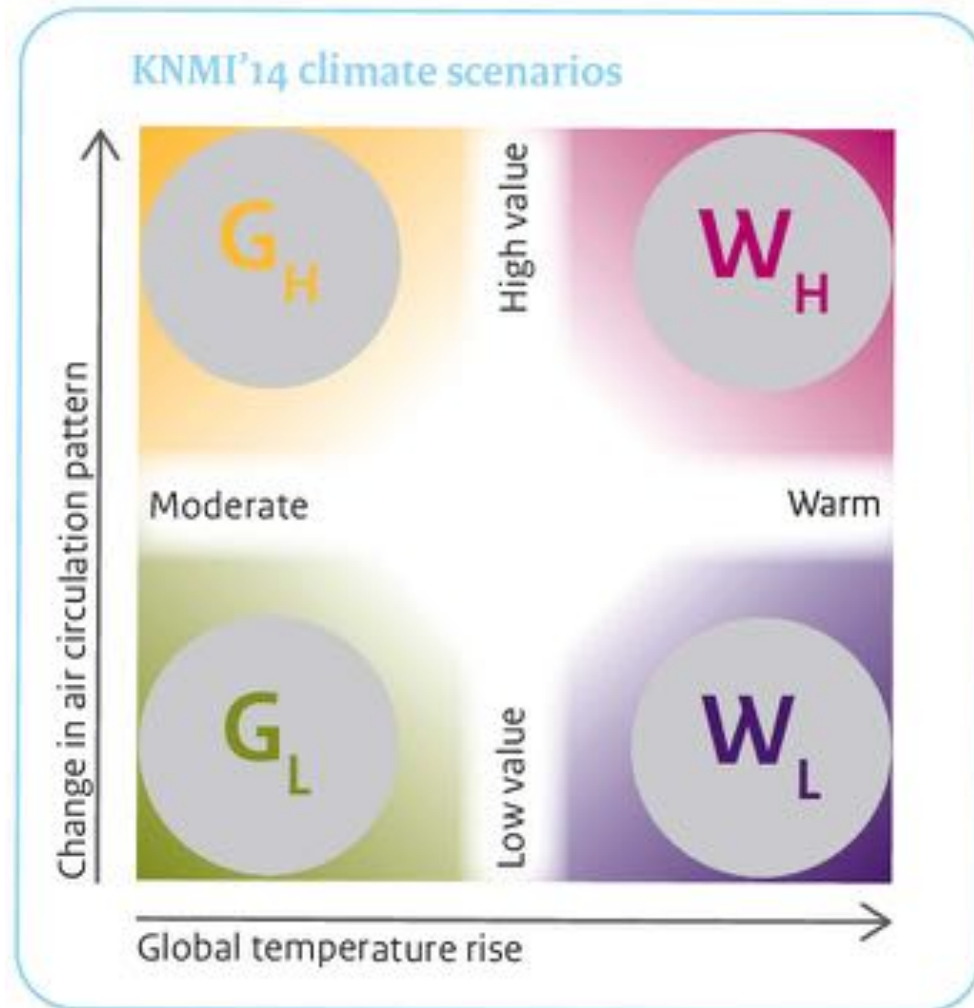
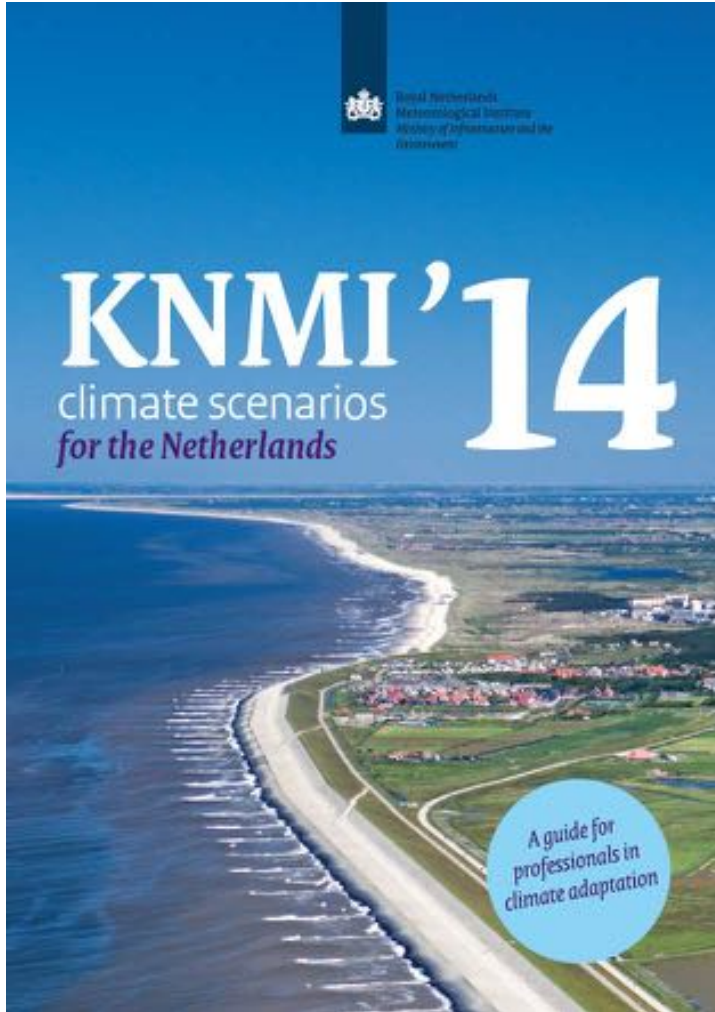
Assessment of the risk of extremes



UKMO example:
present-day risk of
record-breaking
rainfall in South east
England



KNMI14 future climate projections / scenarios



IPCC-
projections
downscaled
to the
national scale



Storylines or
narratives
of future
weather

Requirements
differ per
sector



Agriculture



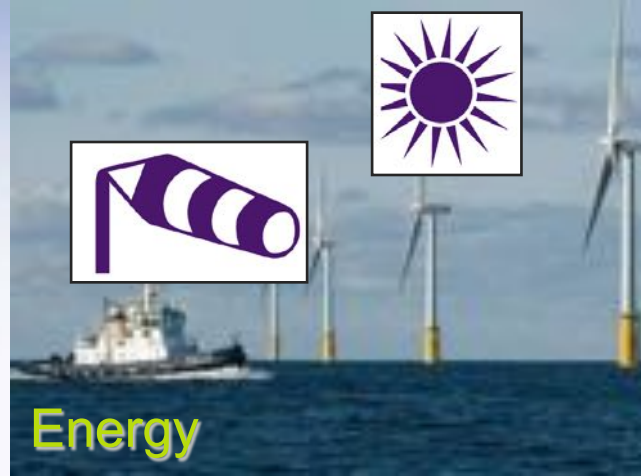
Health



Aviation



Fresh water



Energy



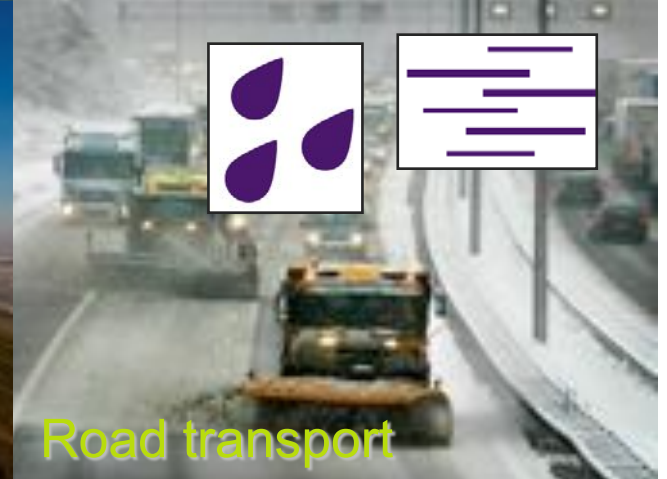
Rail transport



Water management



Industry



Road transport

Future climate projections for the UK

MO will publish
UKCP18
in November 2018
(to replace UKCP09)

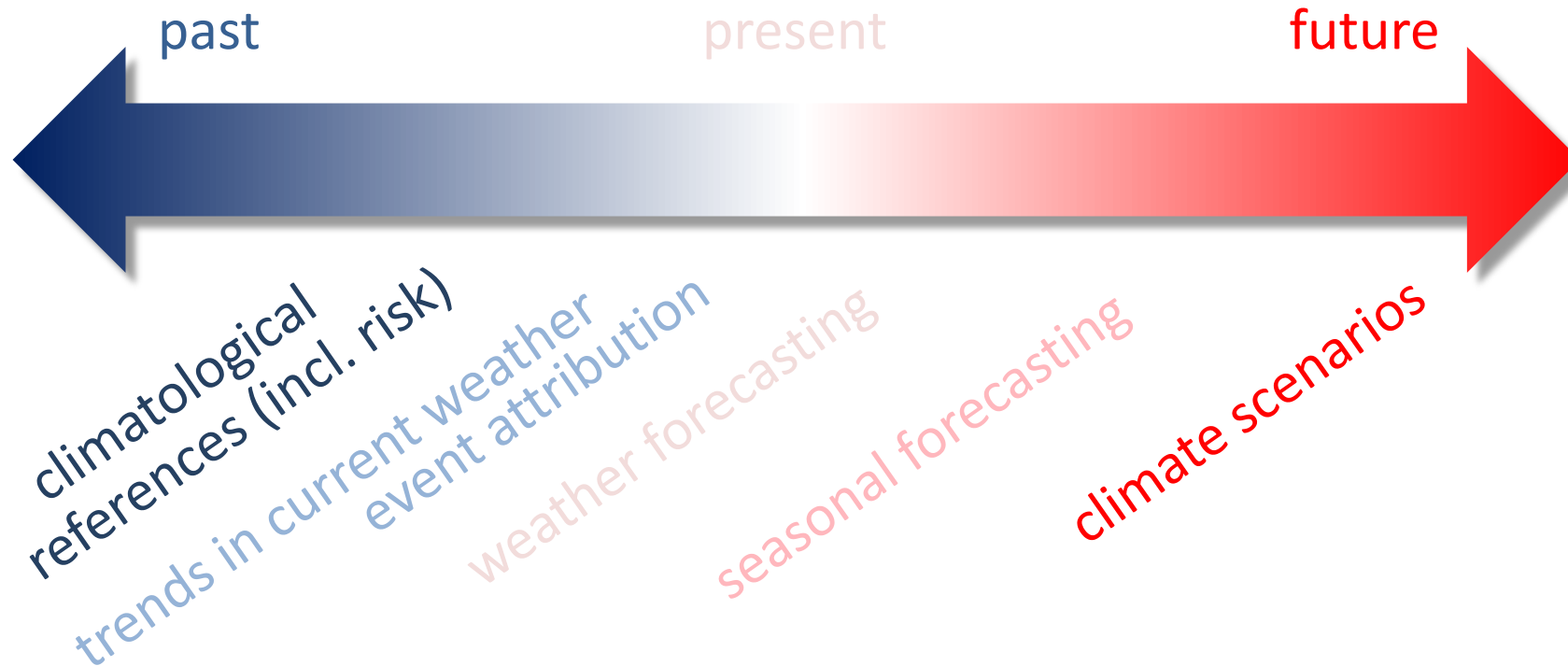


Climate services

- Come with many different faces
- Target risk and vulnerability analyses
to build resilience and preparedness
and seasonal prediction and scenario development
for early warning and adaptation strategies
- *Are about “providing data, information and knowledge on climate variability and change (and its impacts) in a way that assists decision making by individuals and organizations” (GFCS definition)*
- So, an **activity rather than a product** !



Seamless approach



Climate services that integrate these timescales in a seamless way are most effective (linking observations, forecasts, predictions and projections)

Adaptive management



Building long-term resilience through adaptive management requires:

- **Assessment** of the risk of extremes
- **Projections** of future climate change at regional scale
- **Careful monitoring** of change

Climate services

- Must make **better use of observations** (requires that quality indicators and uncertainty measures are included in the data products in a way that builds confidence for decision-making)
- Should **help maintain observation networks** (in particular for critical in-situ and satellite measurements) and **trigger data rescue** and quality control of historical data

Climate services

- Must **respond** in a timely manner **to user needs** (this requires appropriate engagement and dialogue and outreach / capacity building activities)
- Are not a matter of either **demand-driven** or **supply-driven** (the challenge is to find a good balance)
- **Require coupling** of cutting-edge climate research and applied research, overcoming the long-standing, relative separation of the two realms

Some additional thoughts

- Climate services evolve because of **changing needs** (Paris Agreement, Sendai DRR Framework, UN Agenda for Sustainable Development)
- To avoid proliferation, **standards** for quality assurance are required (as in weather forecasting services)
- Important to make (both public and private) services **affordable** to countries in transition
- Don't underestimate the value of training and education (**capacity development**)
- Continue research and innovation for the services to **remain state-of-the-art**

Thank you and questions?

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