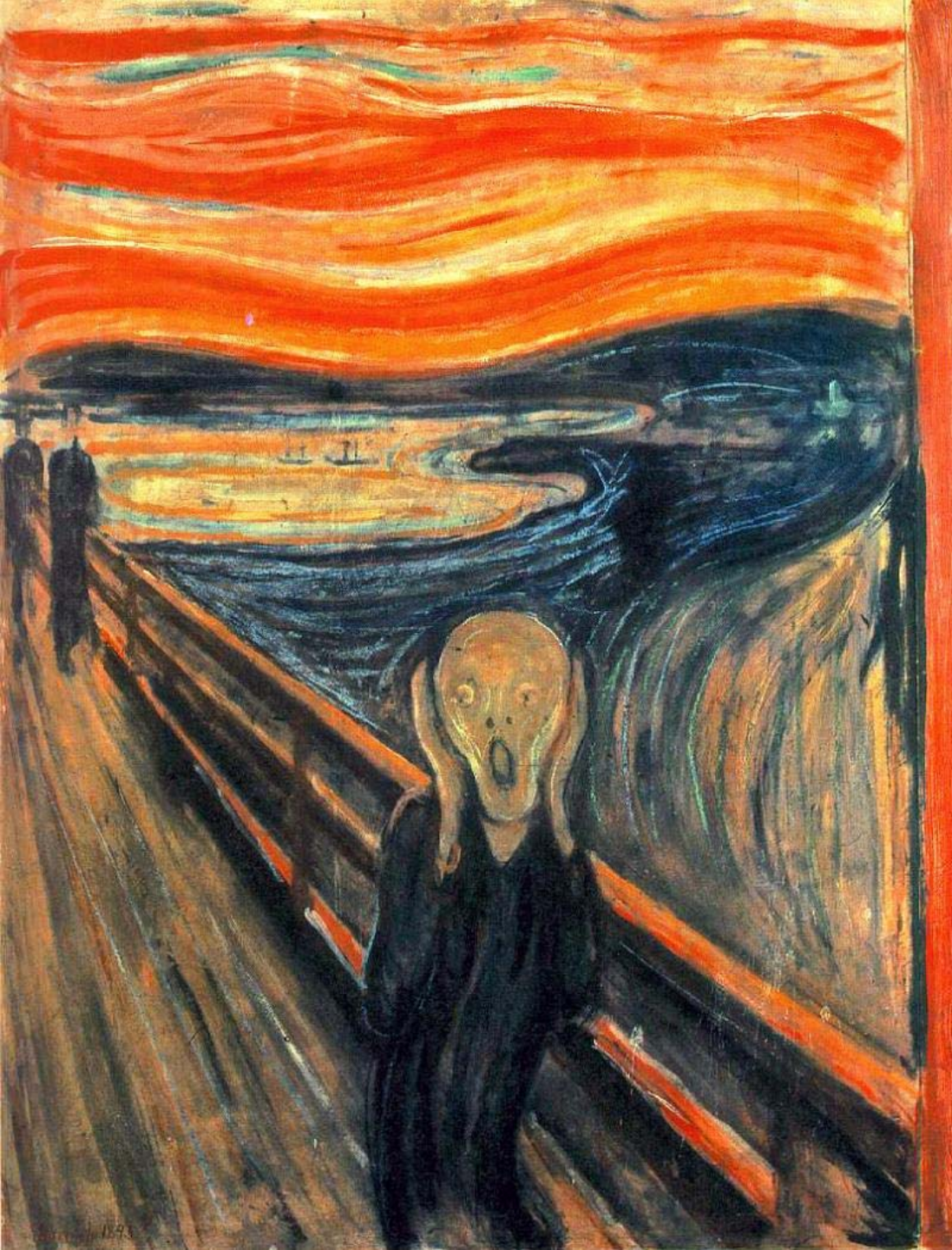




Managing change:

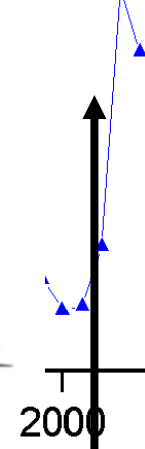
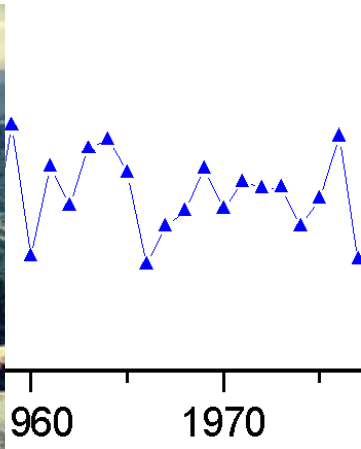
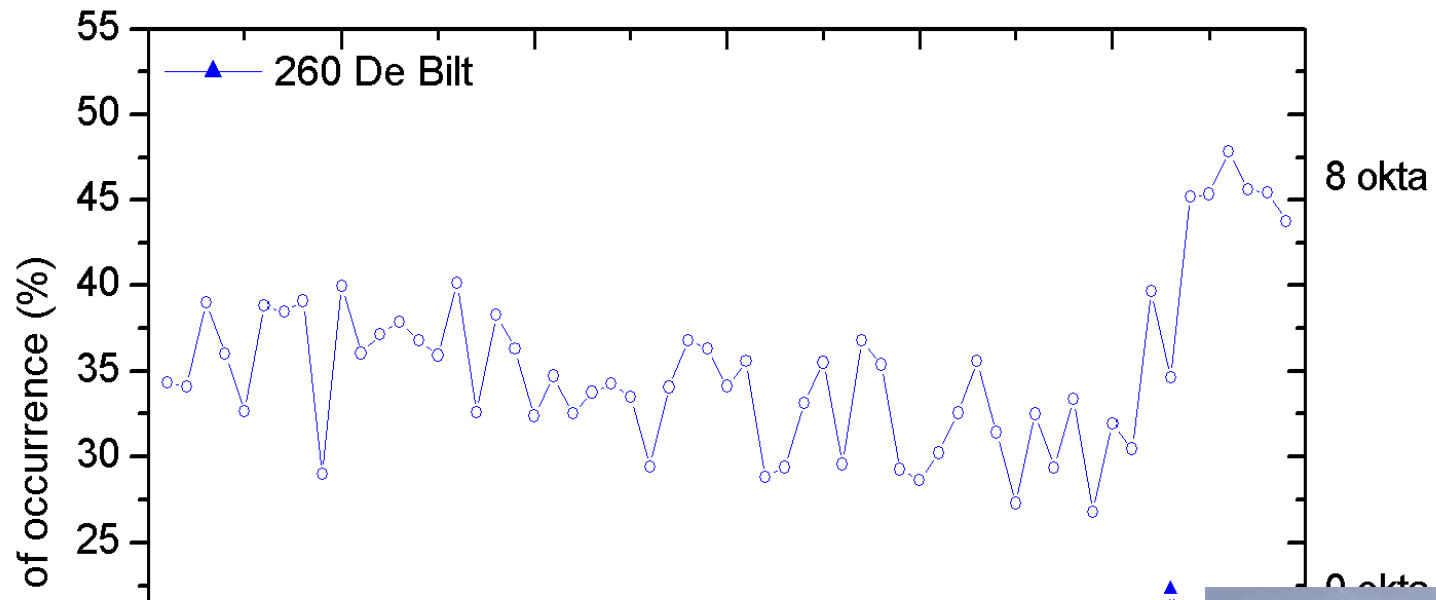
Horrorstories,
Absent meta-data,
Potential succes stories,
Free-data policy and the public

Reinout Boers [KMNI]



A horror story: the sad case of the lost Observer

Time series of occurrence 0 and 8 okta [1951-2009]



The Observer died, the Ceilometer was born



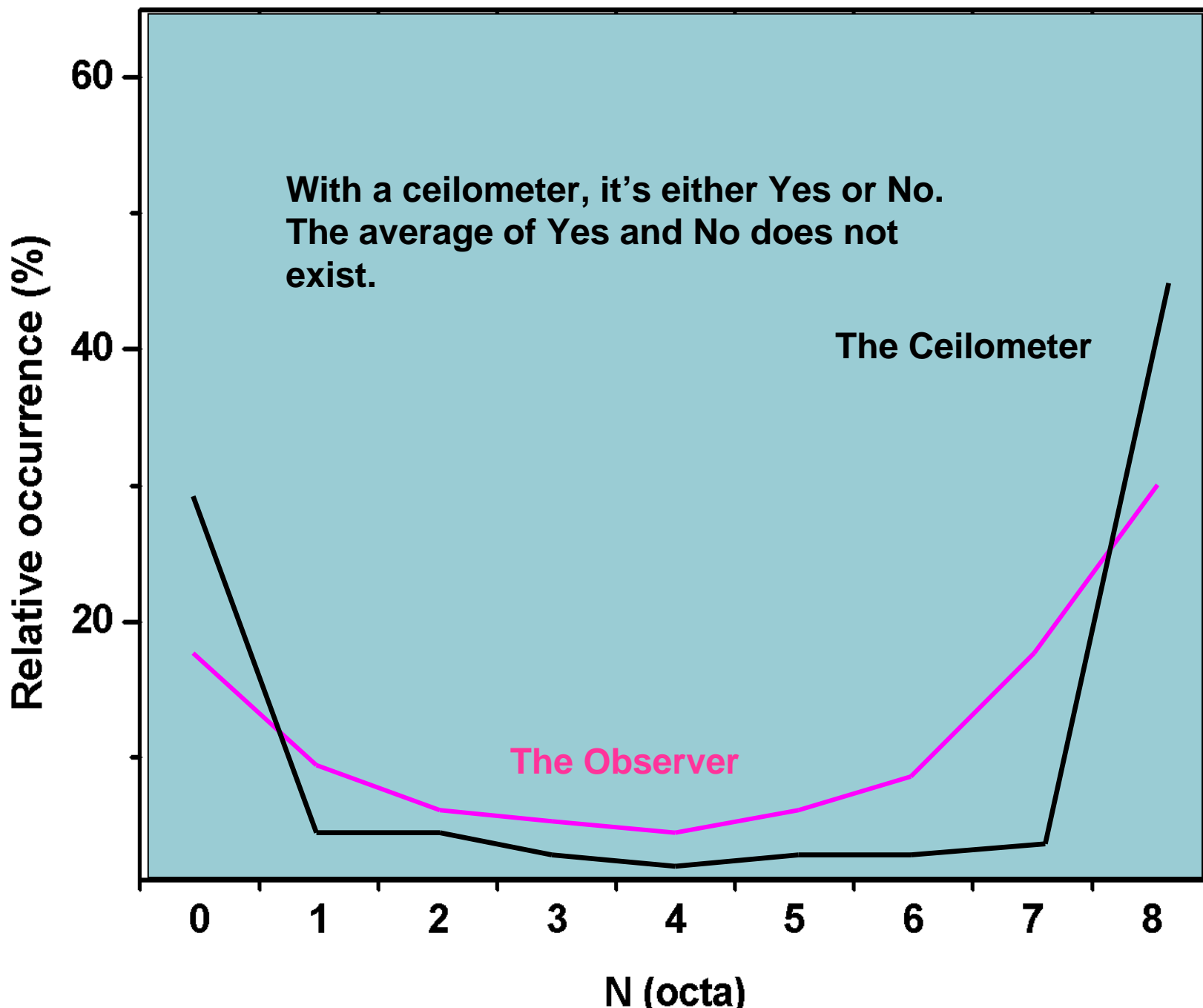
Observer





A Ceilometer is a colourblind Observer with a telescope and a serious spinal injury







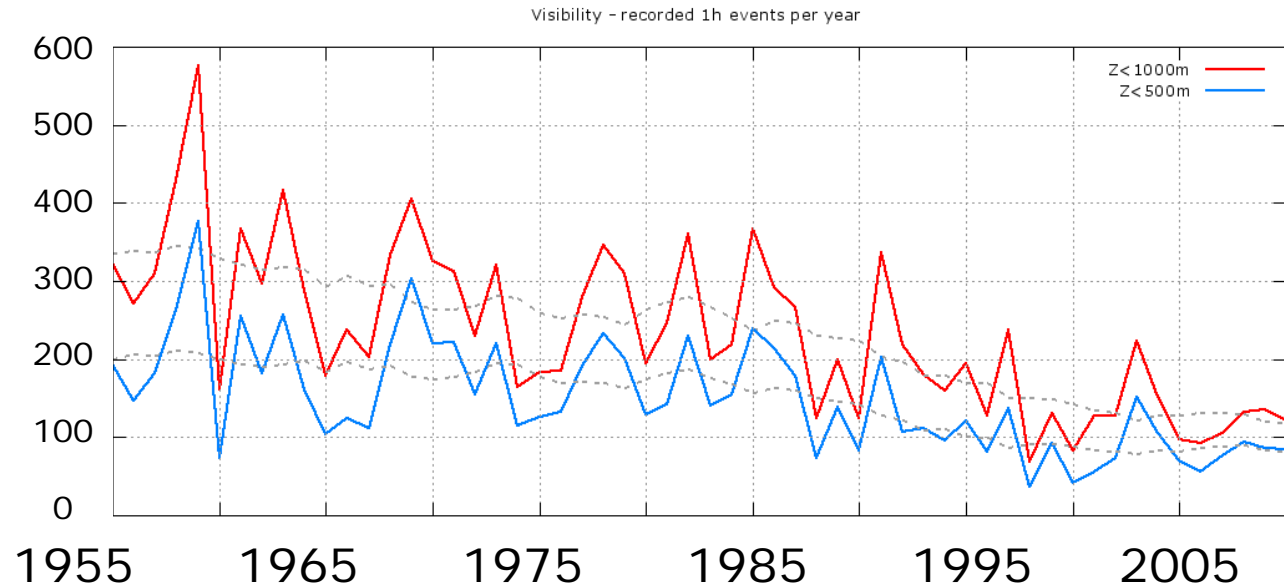
The continuity of 150 years of cloudiness observations has been irretrievably lost



Absent meta-data

Visibility record at Schiphol Airport between 1955 and 2010, number of events of 1 hour duration

- Red: Vis < 1000m
- Blue: Vis < 500 m

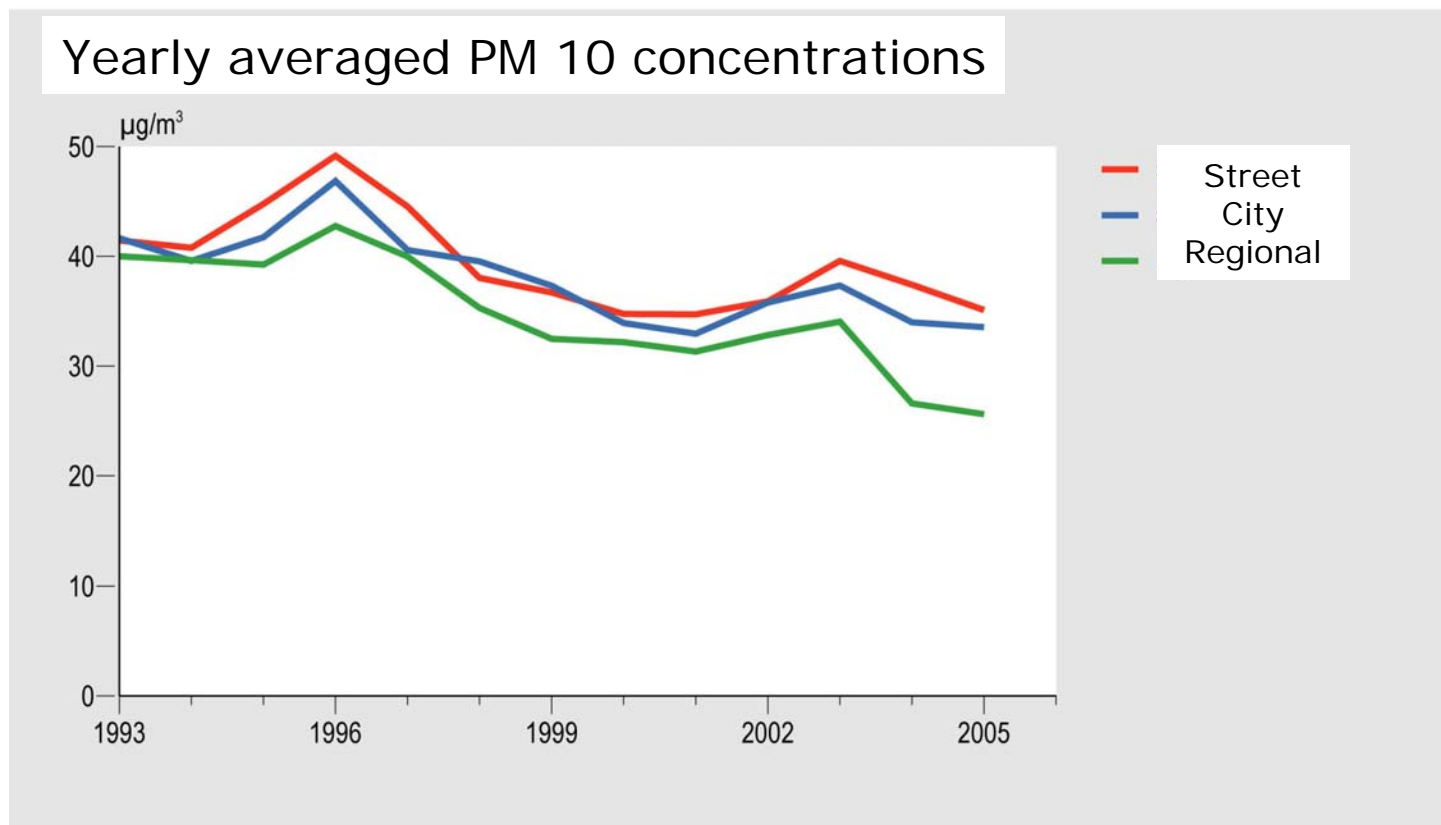


Common assumption [for all of western Europe]:

The aerosol concentration has decreased, therefore
the number of fog events must have decreased, but.....



- Indeed, PM10 levels have decreased over the years in the Netherlands [source MNP]



...but a lot more has happened!
Changing land use in the Netherlands [source Alterra]

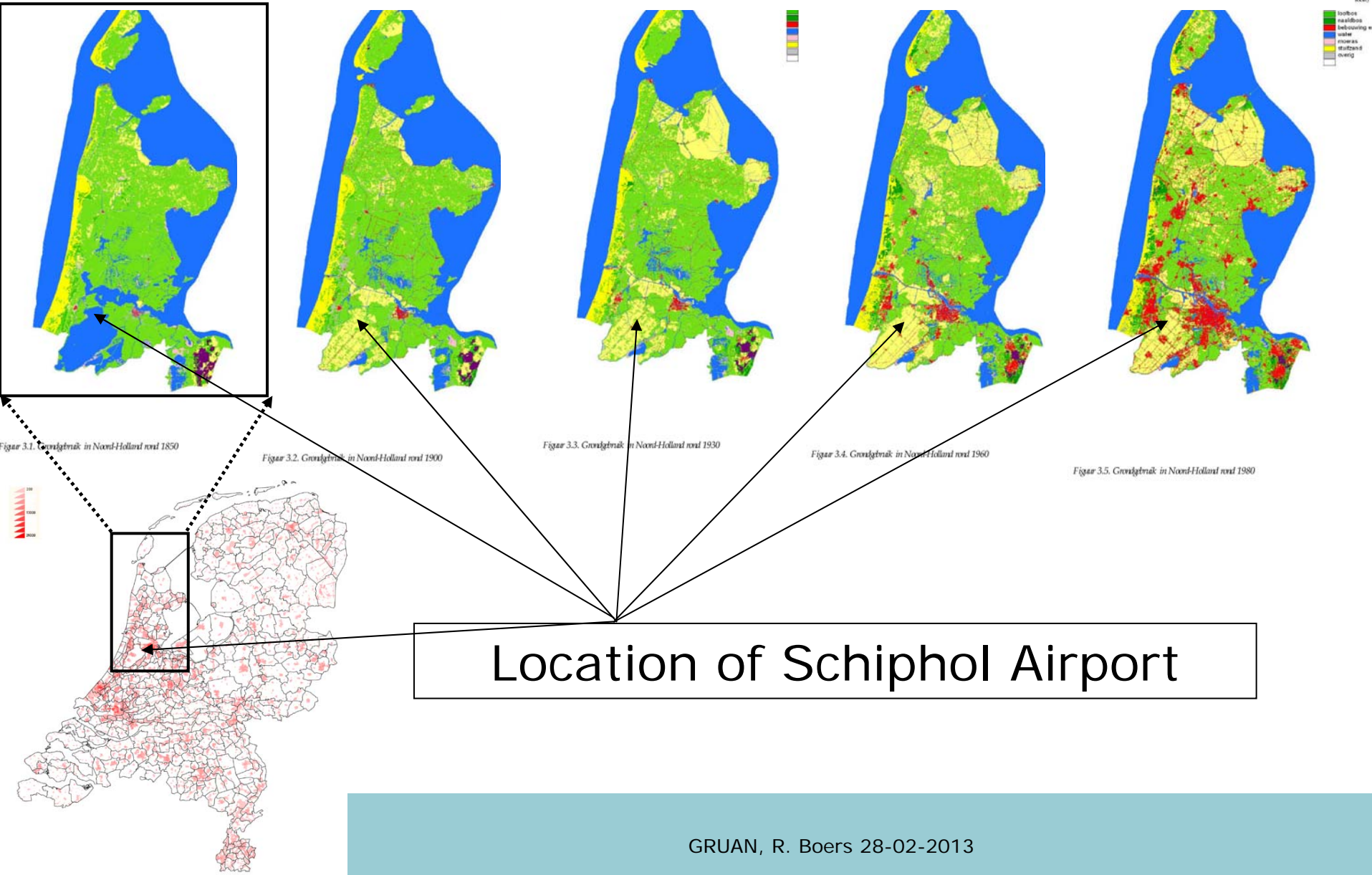
1850

1900

1930

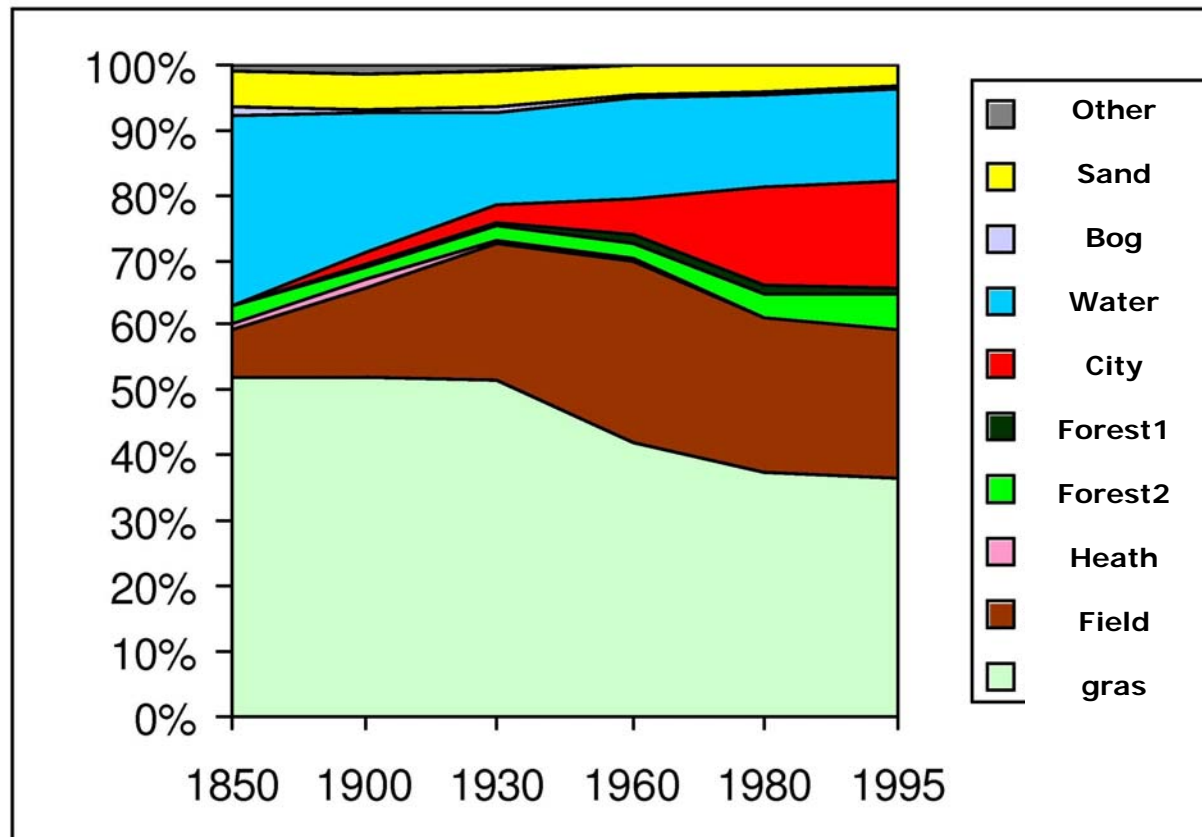
1960

1980





From water to concrete

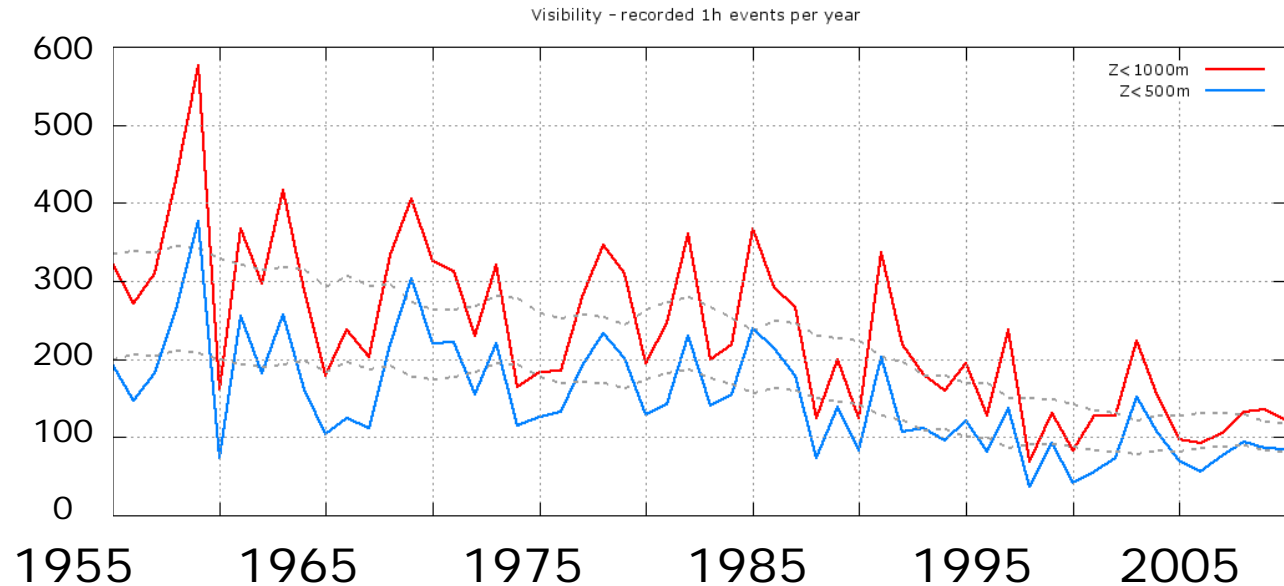


Changing land use in North Holland

[Source Alterra]

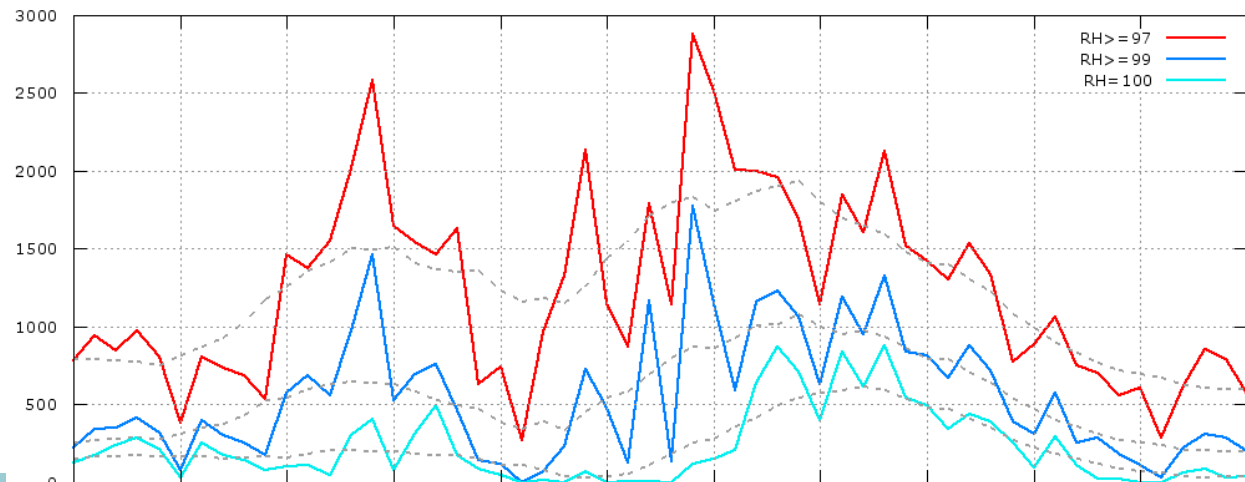
Visibility record at Schiphol Airport between 1955 and 2010, number of events of 1 hour duration

- Red: Vis < 1000m
- Blue: Vis < 500 m



- Red: RH \geq 97%
- Blue: RH \geq 99%
- Green: RH = 100%

*position of instruments
has changed, runways
were built!*



Relative humidity has decreased



But when and how were instruments changed??

Has been impossible to determine.

So, the RH connection to visibility changes
remains uncertain



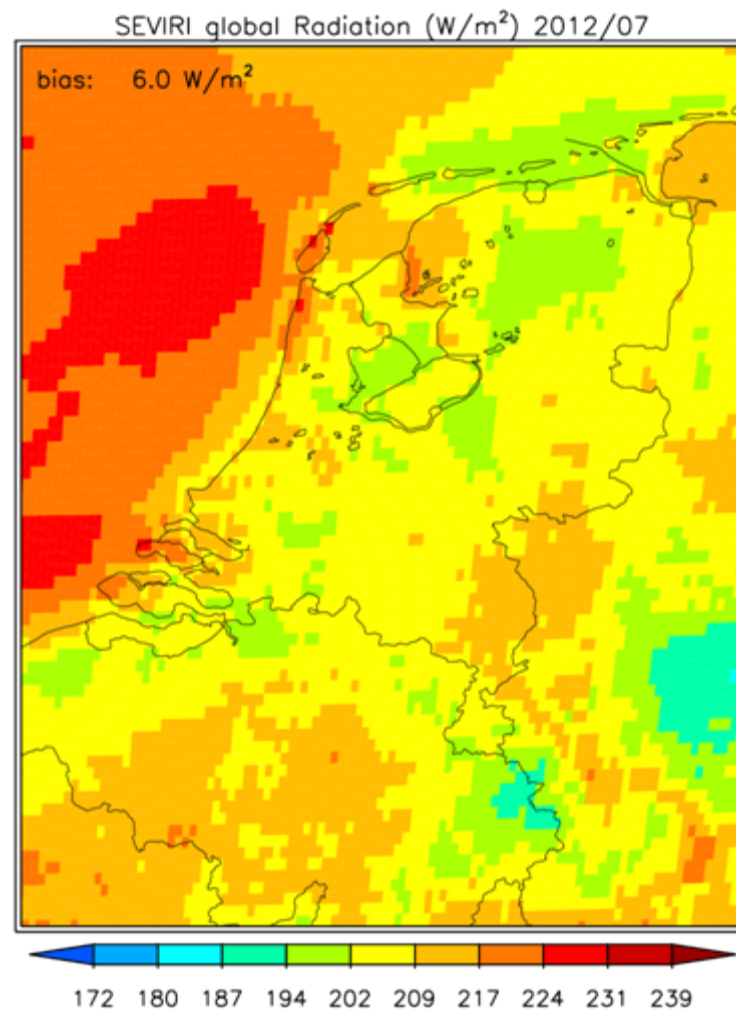
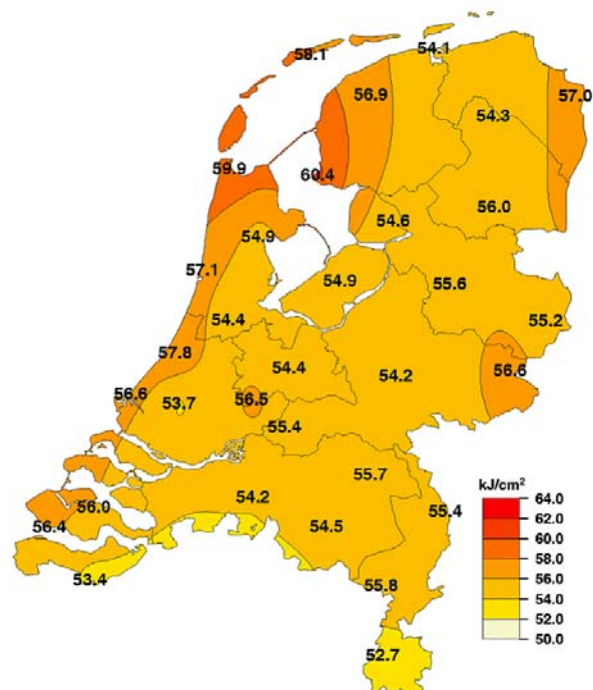
A potential success story:

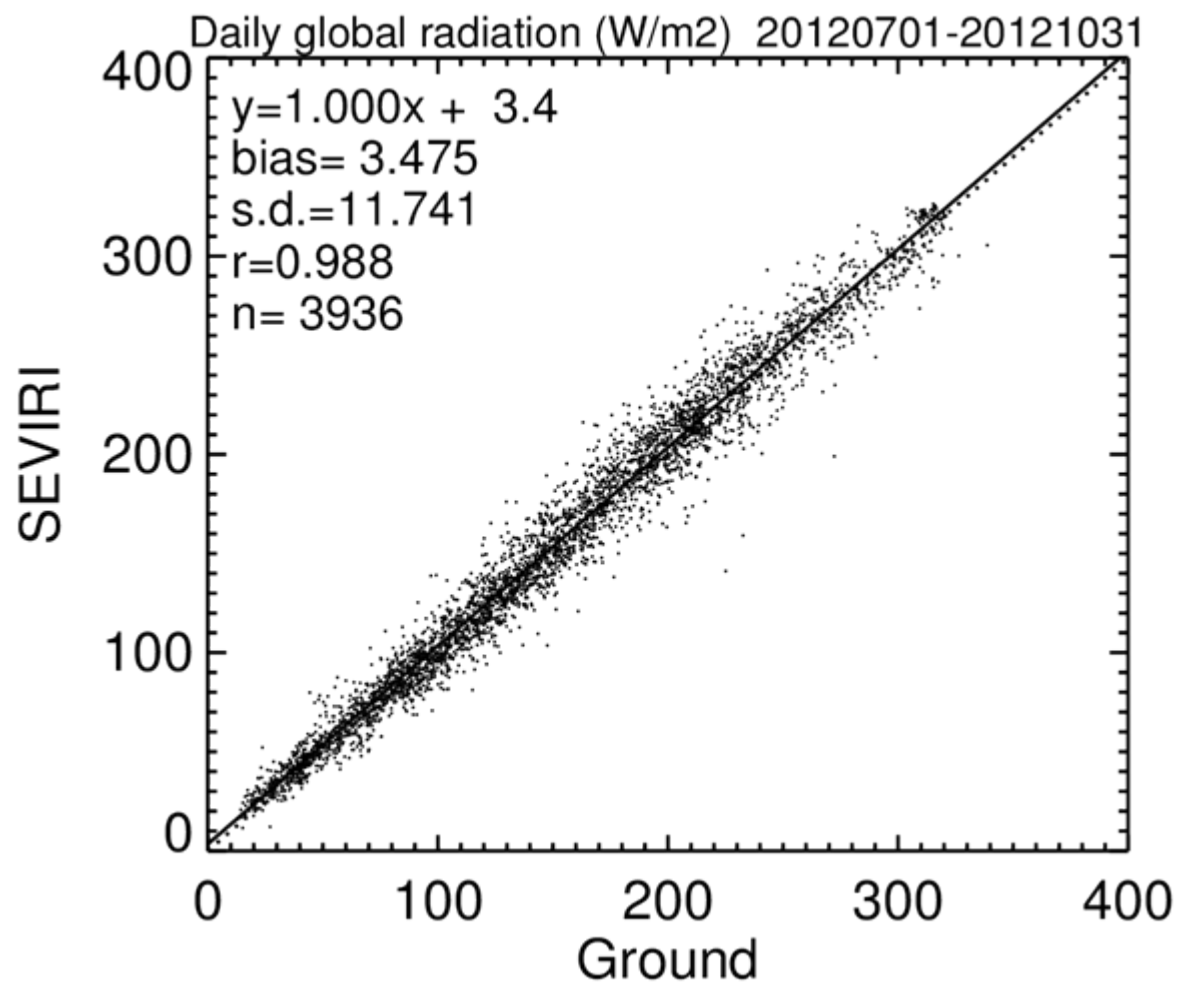
Satellite data as a proxy for shortwave
irradiance at the surface.



Juli 2012

Maandsom globale straling, juli 2012







With good management

Satellite data may be able to [partly] replace a network of surface irradiance observations



Free-data access and the public

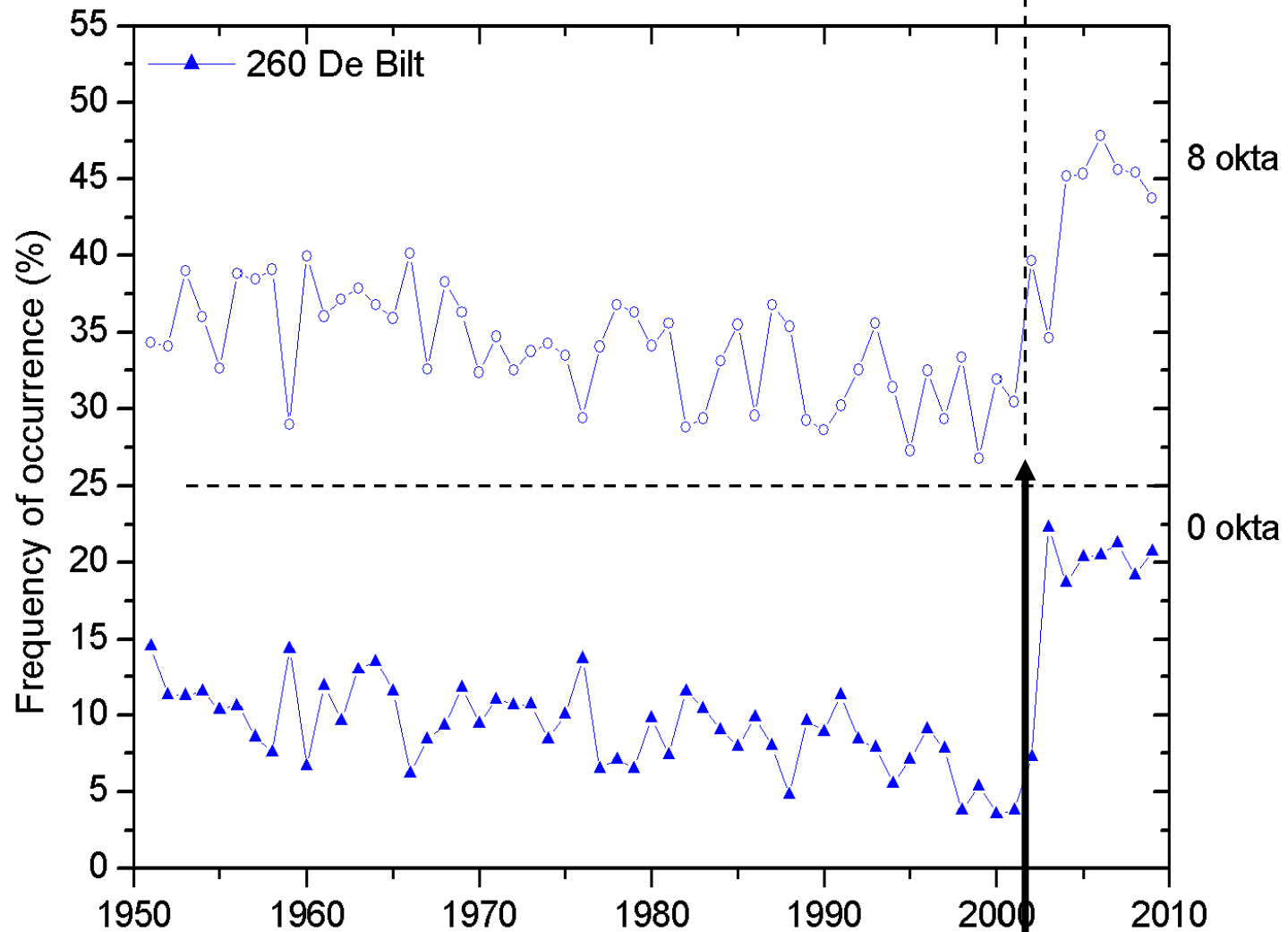
Someone who is a little computer literate can compose the following graph by Googling some data from the Internet

true

true

true

Time series of occurrence 0 and 8 okta [1951-2009]



**Climate
change**

Year

**A management
decision**

**Climate
change**



So, the graph conveys two truths:

About climate change

About a management decision to change observations

The public is asked to discern between these two truths

Can they do that????



Confirmation bias

I *believe* that sudden climate change might happen. After all, it was in the news the other day.

I don't think the weather guys are doing a good job. After all, I read on the internet that the IPCC was wrong.

The graph looks very good. After all, I made it myself. It has nice fonts and nice colors and shows a sudden change.

The graph confirms what I believe.

“Contrary to the rules of philosophers of science, who advise testing hypotheses by trying to refute them, people (and scientists, quite often) seek data that are likely to be compatible with the beliefs they currently hold.”

[Daniel Kahneman](#), Nobel Prize Winner in Economics, 2002



In summary, managing change

- observation networks have often more than one purpose [climate, NWP, airport], conflicting interests
- financial considerations [climate is longterm, often hard to defend, money not dedicated exclusively to climate purpose]
- political considerations [in politics climate science represents a truth that is the size of a postage stamp]
- pressures from the public
- different GRUAN stations fall under different budget / ministerial regimes, and thus will manage change differently