Scientific evidence of wetlands' benefits for nature

- What role does science play to promote wetlands as effective NWRM?

- 25 September, Marjolein Sterk
- Aquatic ecology and Water management group, WUR
- @marjosterk

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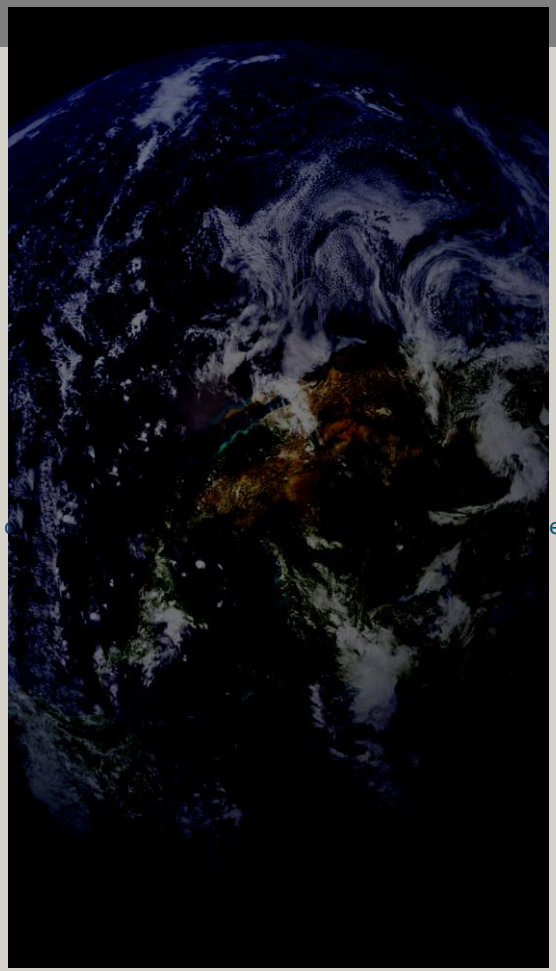
WAGENINGEN
UNIVERSITY & RESEARCH

100years
1918 — 2018

A bit about myself



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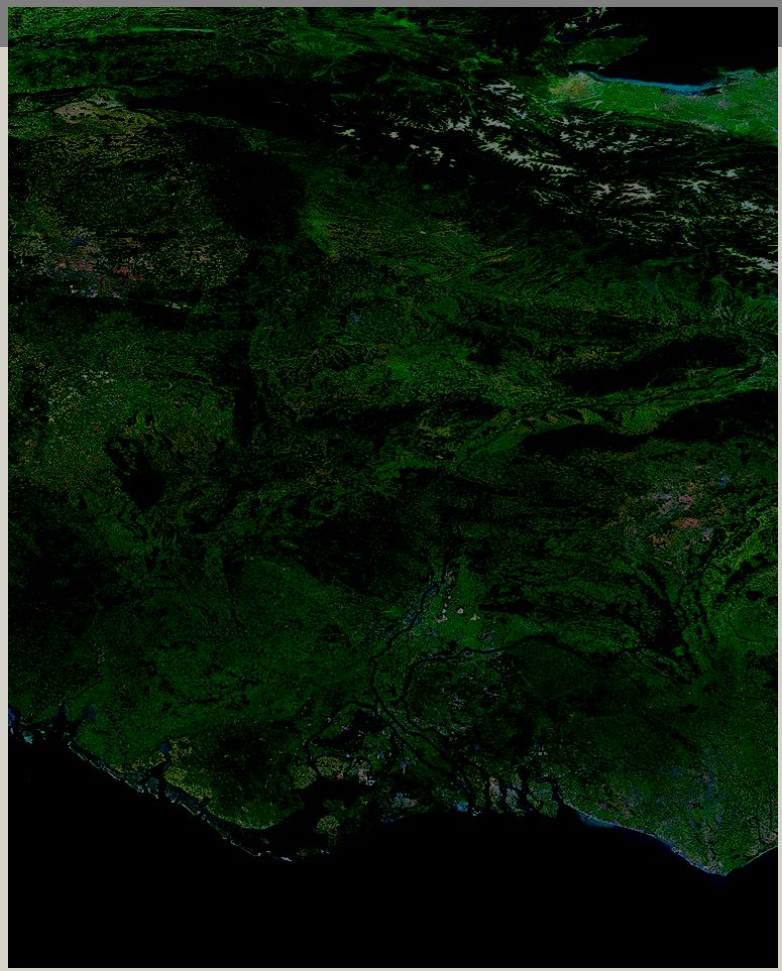


THE GEOGRAPHY OF DROUGHTS AND FLOODS

The impact of too little water

Drought occurrences 1996–2015
Droughts occur on all continents, but predominantly in the southern hemisphere.

Number of occurrences

10

Source: CRED

People annually affected by drought 1996–2015
Droughts lead to water scarcity for people, severe agricultural production loss, local food shortages, and wildfires.

Number of people affected, annually

10 million

Source: CRED

The impact of too much water

Flooding events 1996–2015
Flooding events lead to casualties, result in temporary displacement out of the area and high economic losses affecting both industries and households.

Number of occurrences

100

Source: CRED

People annually affected by flooding 1996–2015
Flooding occurs all over the world, but the majority of the people affected live in Southeast Asia.

Number of people affected, annually

35 million

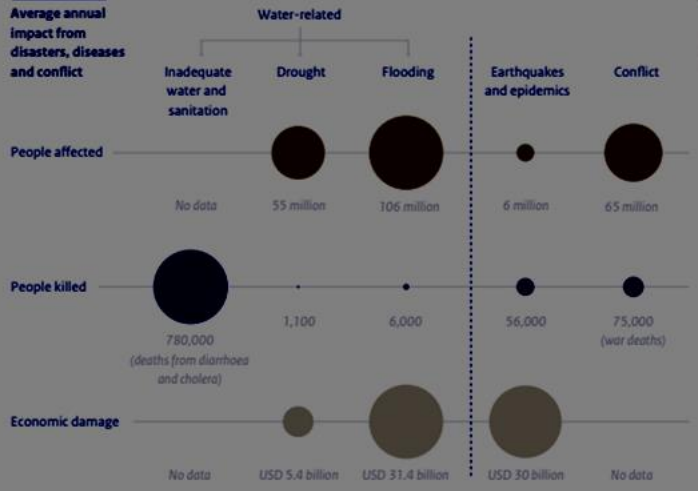
Source: CRED

THE SCALE OF WATER-RELATED DISASTERS

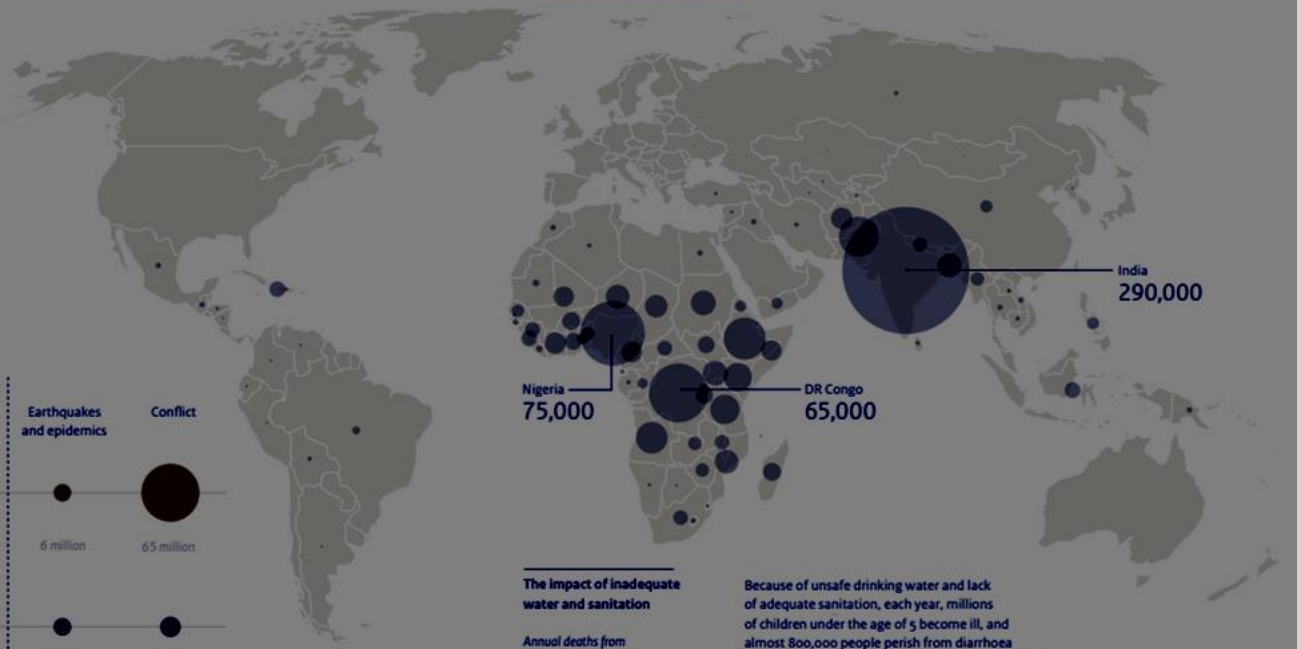
Water pollution and water-related weather extremes (drought, extreme rainfall, flooding, storm surges) affect the lives of millions of people and cause billions of euros in economic damage, each year.

Each year, water-related disasters, such as drought and flooding, affect approximately 160 million people, killing about 13,500 of them. Flooding affects most of these people (106 million, annually) and causes the largest economic damage (USD 31 billion, annually). Fortunately, due to improved early warning systems and increased disaster management capacity, the number of people killed by weather-related disasters has decreased, over the last decades.
Far more people are killed by other types of natural disasters, such as earthquakes and tsunamis, as well as by violent conflict.

Average annual impact from disasters, diseases and conflict



The impact of water that is too dirty



The impact of inadequate water and sanitation

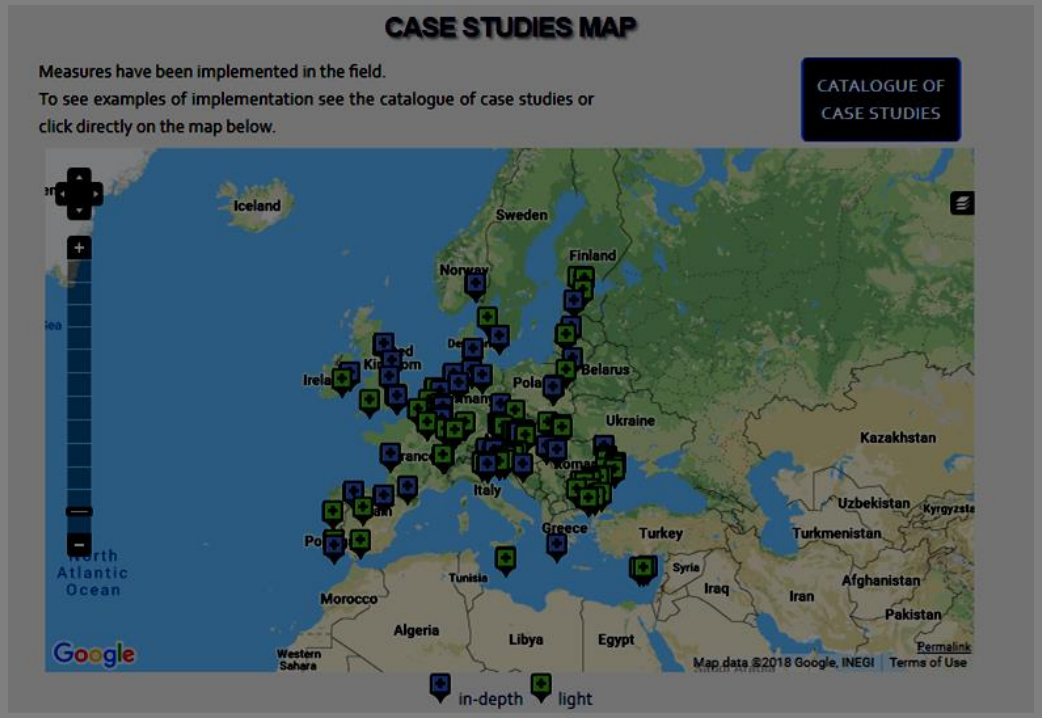
Annual deaths from diarrhoea (2012) and cholera (2008–2012)

100,000

Source: Prüss-Ustün et al., 2014, Ali et al., 2015

Because of unsafe drinking water and lack of adequate sanitation, each year, millions of children under the age of 5 become ill, and almost 800,000 people perish from diarrhoea and cholera. Africa has the highest annual deaths, but numbers are also high in Southeast Asia.

http://nwrm.eu/



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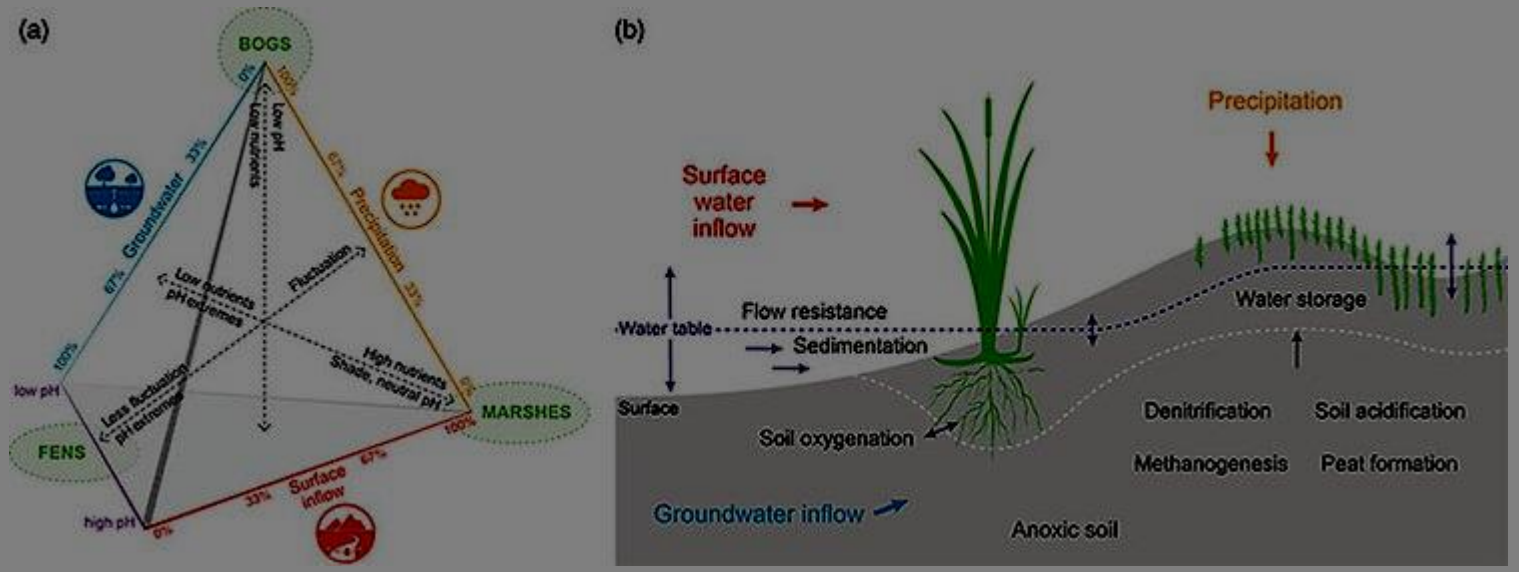
http://www.stockholmresilience.org/research/research-news/2017-02-02-the-work-of-wetlands.html



The role of science

- Globalization → Complexity → System thinking
- Mismatch between the scale at which knowledge is available and the scale at which policies and other decisions are made.
- What and how do we learn?

Systems Thinking

Credit: John Haslam - Flickr

Reality is systemic, complex and deeply interconnected. Systems are dense webs of relationship. Addressing any situation wisely requires understanding and tapping relevant participants and connections. Systems thinking can be cybernetic, ecological, social, physical, shamanic, cultural and more. So use it to help people take into account relevant fields of relationship.

Related: *17 Deep Time Stewardship, 37 Multi-Modal Intelligence, 40 Nature First, 52 Rich Feedback Dynamics, 59 Synergy Between Part and Whole, 67 Whole System in the Conversation, 69 Wise Use of Uncertainty*

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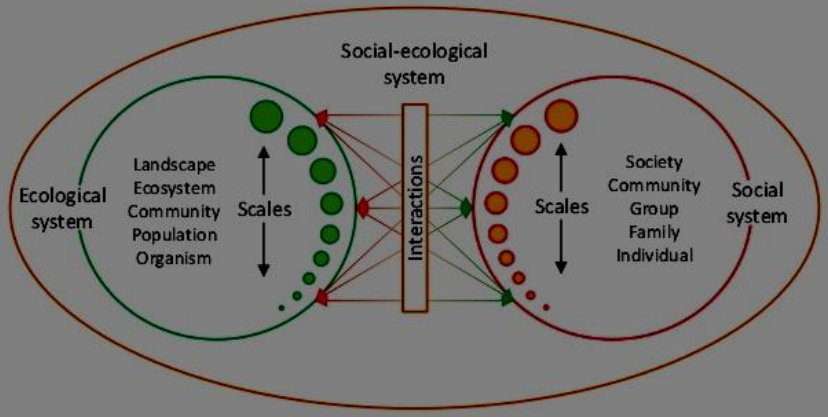
Grasping the social-ecological complexity of EIDs

Social-Ecological Systems (SES)



- **Nestedness:** system components may be subsystems with components of their own
- **Adaptiveness:** constant reorganization to maximize resource and energy efficiency
- **Nonlinearity:** manipulation may result in an outcome of unexpected magnitude
- **Emergence:** properties or behavior may only be explainable by the sum of dynamics at a higher level

What questions do you have?

Klik op het pictogram als u een afbeelding wilt toevoegen