How can science contribute to cost effective climate change adaptation?

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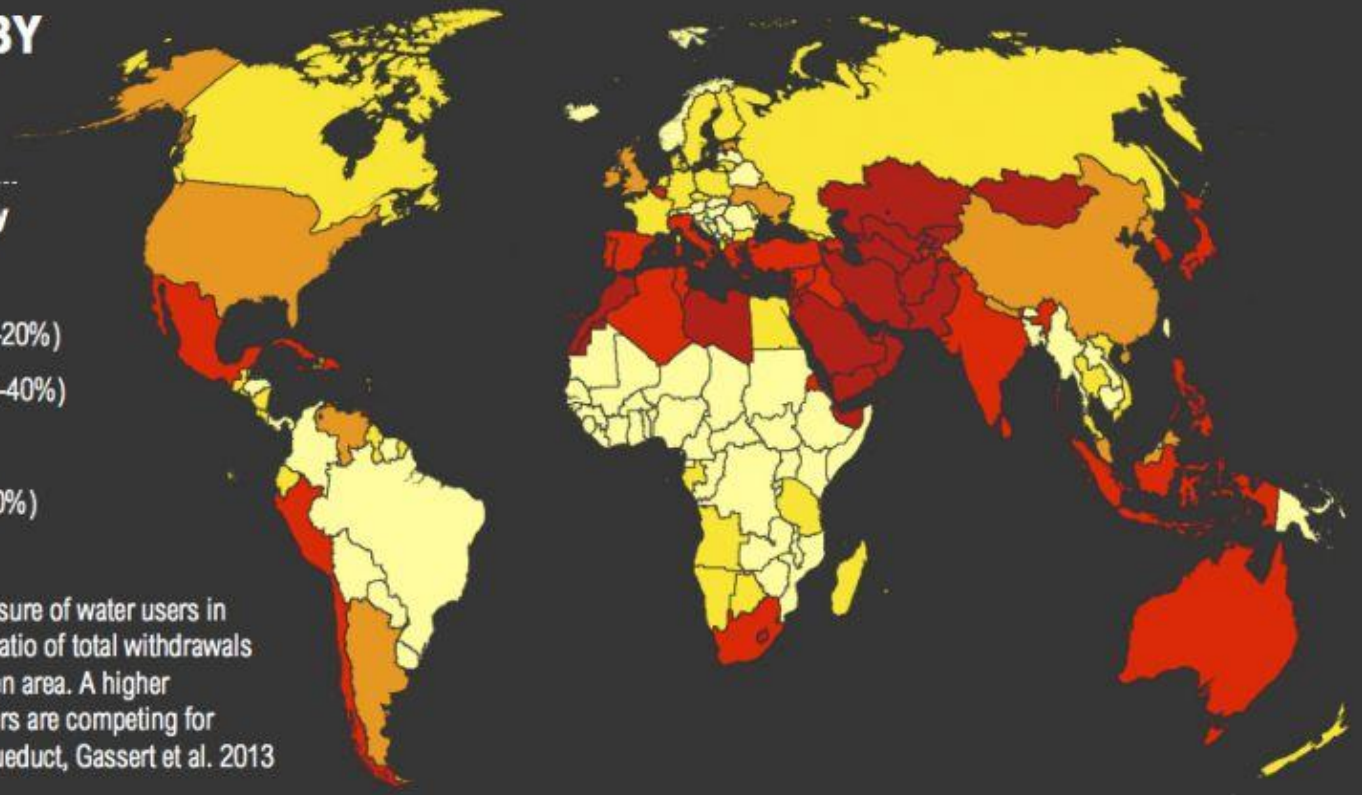
2017

UN Development Goals

WATER STRESS BY COUNTRY



ratio of withdrawals to supply

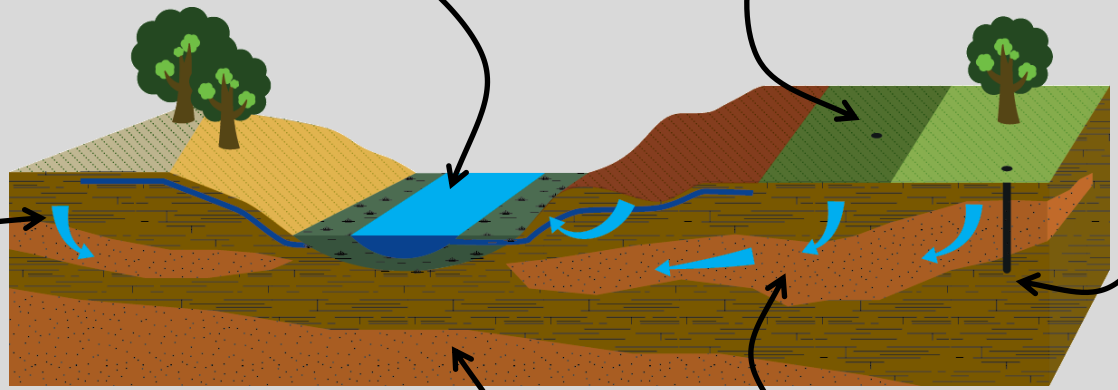
- Low stress (< 10%)
- Low to medium stress (10-20%)
- Medium to high stress (20-40%)
- High stress (40-80%)
- Extremely high stress (> 80%)

This map shows the average exposure of water users in each country to water stress, the ratio of total withdrawals to total renewable supply in a given area. A higher percentage means more water users are competing for limited supplies. Source: WRI Aqueduct, Gassert et al. 2013

AQUEDUCT

WORLD RESOURCES INSTITUTE

Measuring and monitoring the subsurface



Raw materials

Pollution

Nitrate vulnerability

Groundwater buffering

Groundwater infiltration

Groundwater flow

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The role of science for solving water problems

- **Adapt existing technologies to solve new problems**
- **Communicate technologies to “society” (public and private interties)**
- **Research to push boundaries beyond state of the art**

Drivers for the science

- **3 drivers: “Societal” needs, regulation and funding**

- **Project like Topsoil are key to communicate practice**

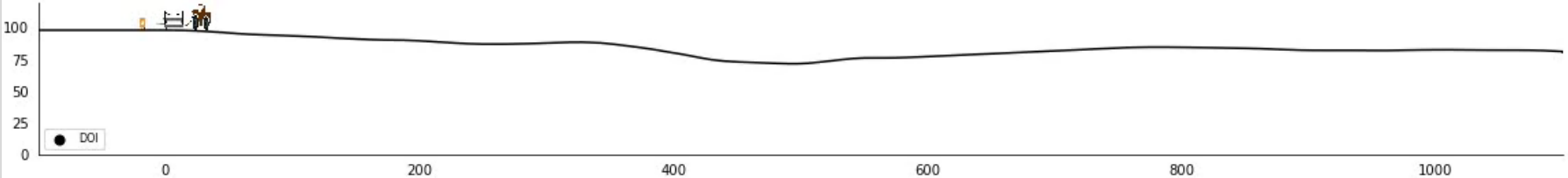
Data data data data data data - and models

- **Lack of data feeds lack of trust in models**

- **New technology provides the missing data for complex hydrological systems**

- **Examples of data:**
  Geophysics: subsurface structures and properties
  Hydrology: stream flow, precipitation and evapotranspiration
  Water quality: water chemistry

tTEM – imaging the subsurface on the 10 m scale



Innovative instruments built in-house

- **tTEM**

tTEM September 2017

tTEM first experiments 2015

So does science has a role?

- **YES!**

- **Communication to “society” is key to success**

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