



# KLIMAAT EN WOESTIJNEN

Wim Cornelis, Unesco-trefdag, 14 oktober 2021, Brussel

# 1. EREMOLOGIE?





foto: M. Coppens

Van de Woestijne, P. (1994). Meetjeslandse Toponiemen tot 1600 - Deel IV: De Keuren van Eeklo-Lembeke en Kaprijke - Band 3: Eeklo. Bijgeezant door Achiel De Vos en Luc Stockman, aangevuld en verklaard door lic. Paul van de Woestijne. Gent: Stichting Achiel De Vos.



Theodore Monod, founder in 1938 of IFAN (Institut Français d'Afrique Noire), Senegal 5

## 2. WOESTIJNEN EN WOESTIJNVORMING

Erg Chebbi, Sahara, Marokko



McMurdo Dry Valleys, Antartica



foto: Touristlink

Centraal-Azië



foto: T. Kewitsch

watererosie



winderosie



bodemverdichting



verzilting



Badopal village of Fatehabad, India

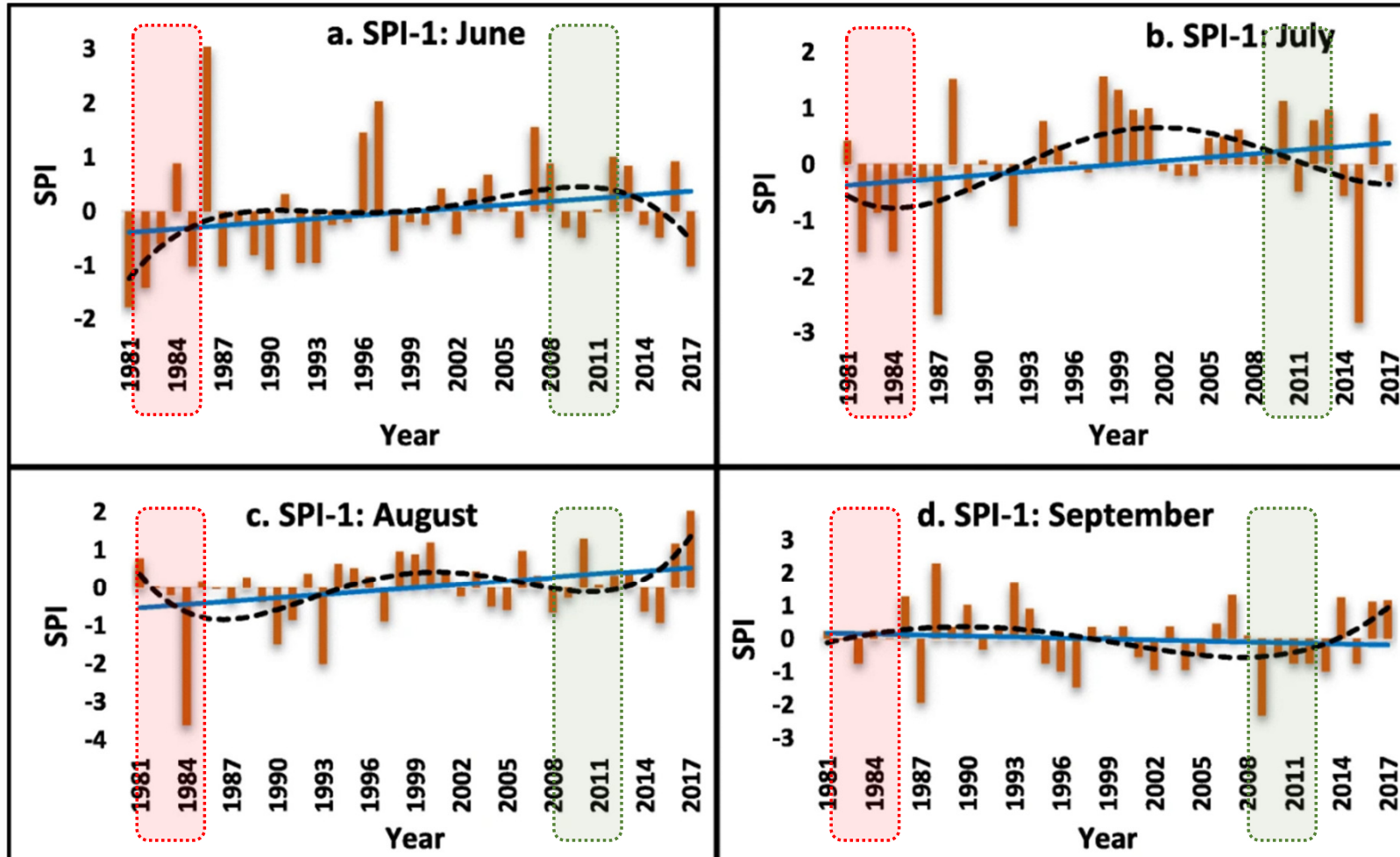
Woestijnvorming (UNCED, 1992):

Landdegradatie in aride, semi-aride en droge subtropische gebieden ingevolge klimaatschommelingen en menselijke activiteiten



neerslag-anomalie Kiremt-regenseizoen Ethiopische NO hoogvlakte

$$SPI = \frac{P_i - \bar{P}}{\sigma}$$



Mekonen et al. (2020). Geoenvironmental Disasters

Ethiopische  
NO hoogvlakte

1984

2011

1984





agrarische droogte (Zuid-Afrika)



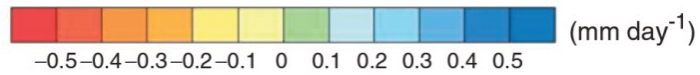
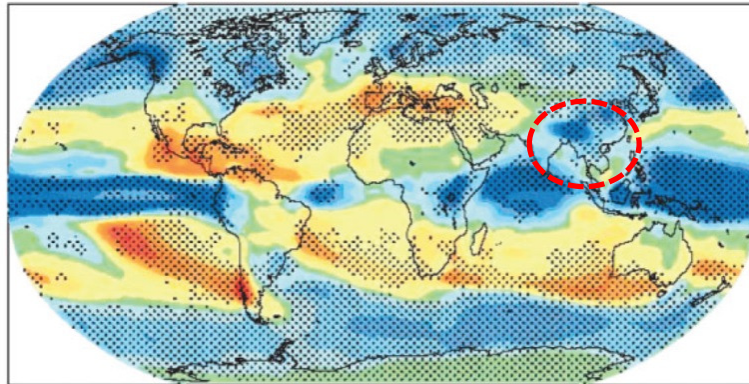
hydrologische droogte (USA)



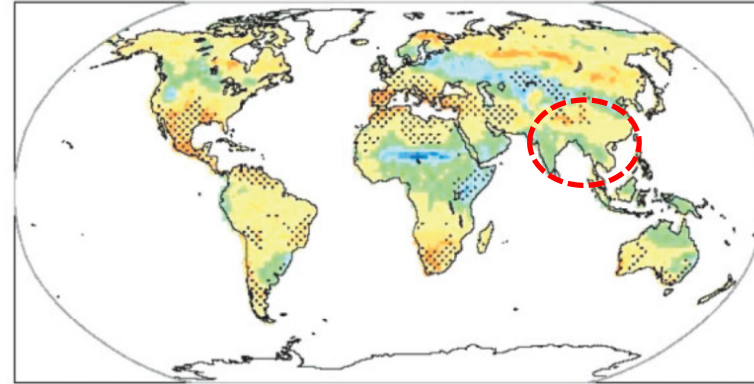
meteorologische droogte (USA)

# toekomstige trends in componenten van de waterbalans (1980-1999 tot 2080-2099)

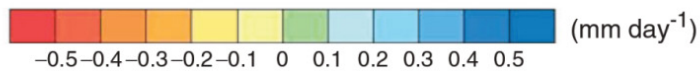
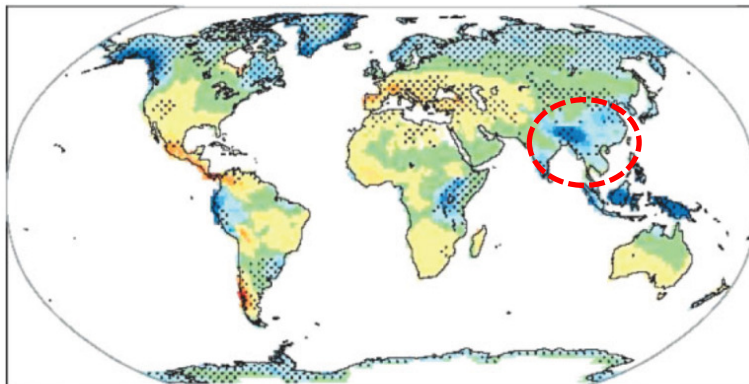
(a) Precipitation



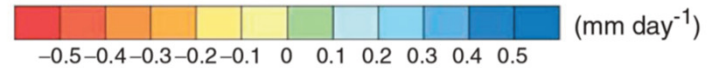
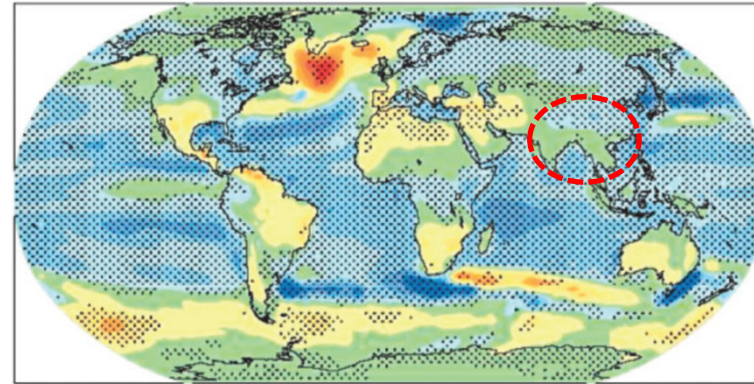
(b) Soil moisture



(c) Runoff



(d) Evaporation

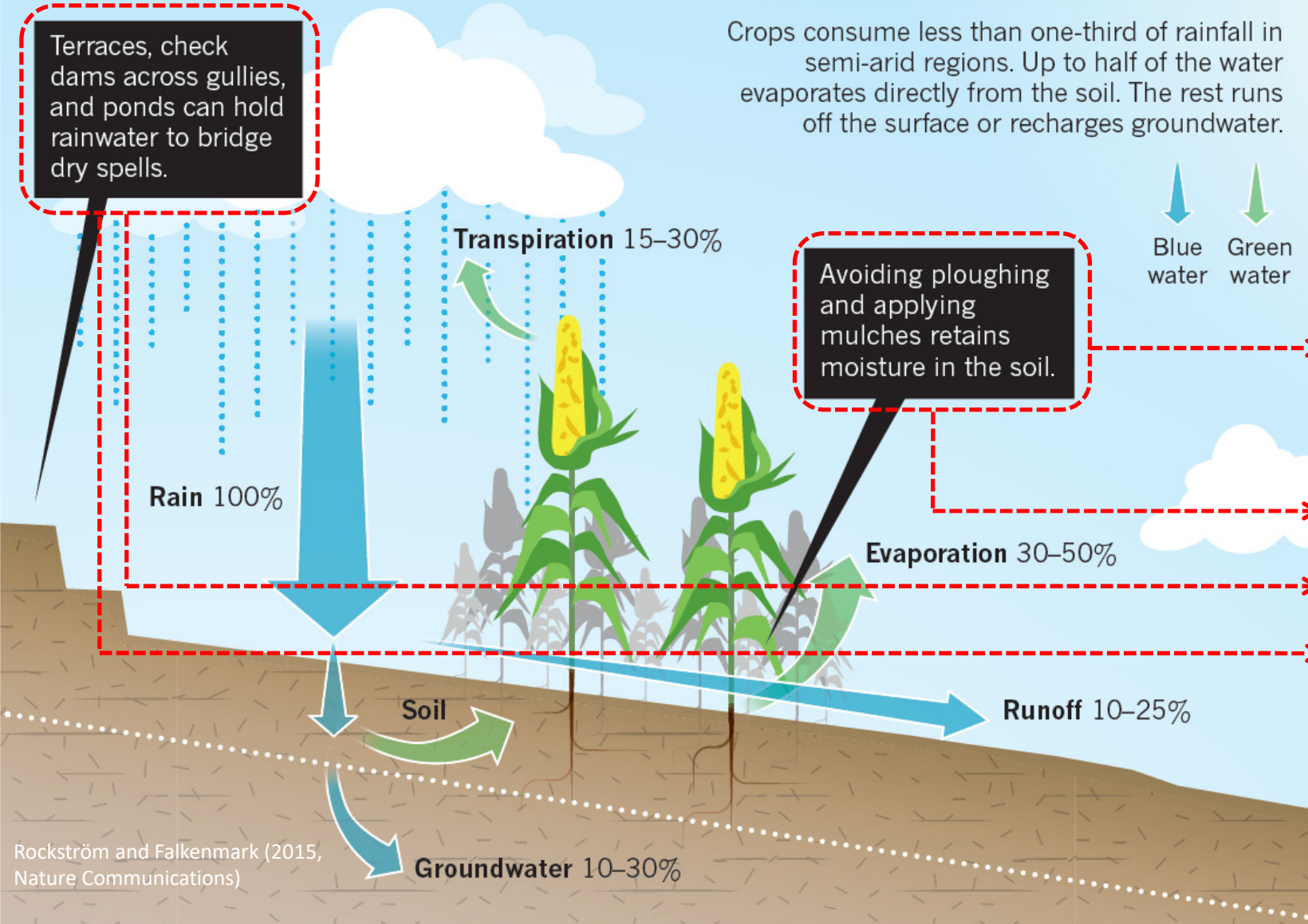


Dai (2011, WIREs  
Climate Change)

# 3. VEERKRACHT?

# SUB-SAHARAN WATER BALANCE

Crops consume less than one-third of rainfall in semi-arid regions. Up to half of the water evaporates directly from the soil. The rest runs off the surface or recharges groundwater.

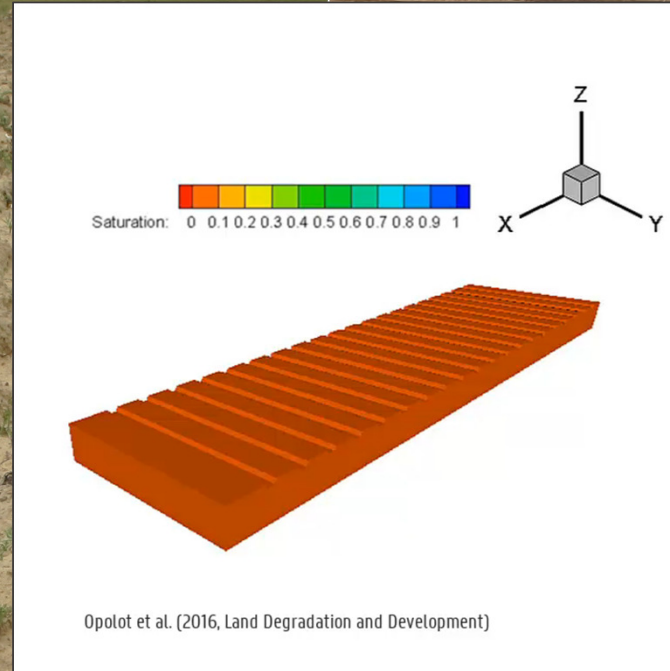
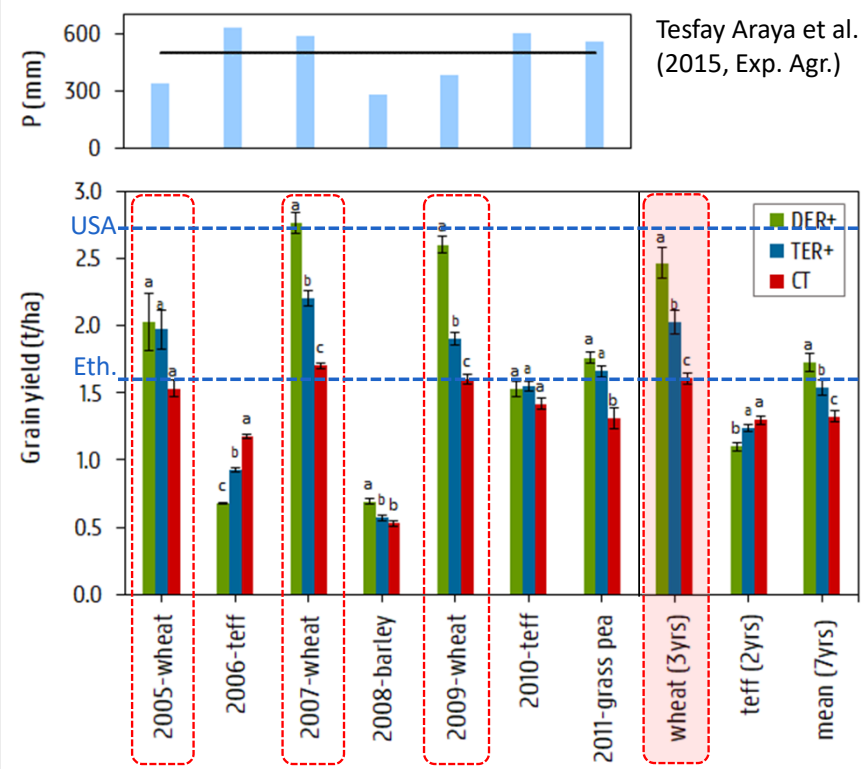
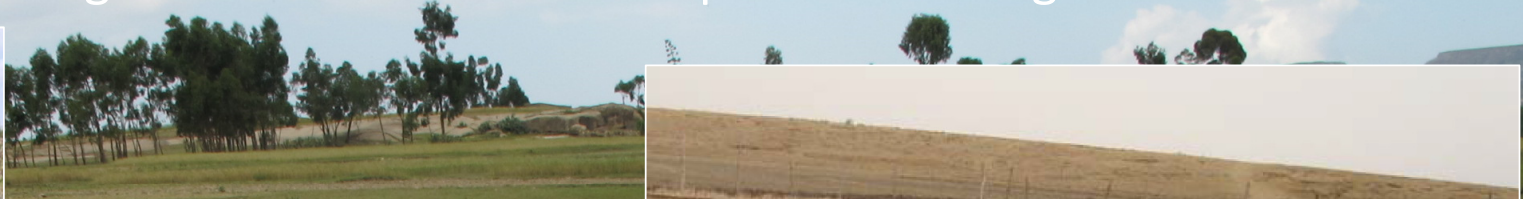


1. preventie & remediëring van bodemstructuurbederf (behoud & herstel van bodemkwaliteit = infiltratie + opslag water in bodem)
2. verminderen van bodemevaporatie
3. watercaptatie (harvesting)
4. suboptimale irrigatie

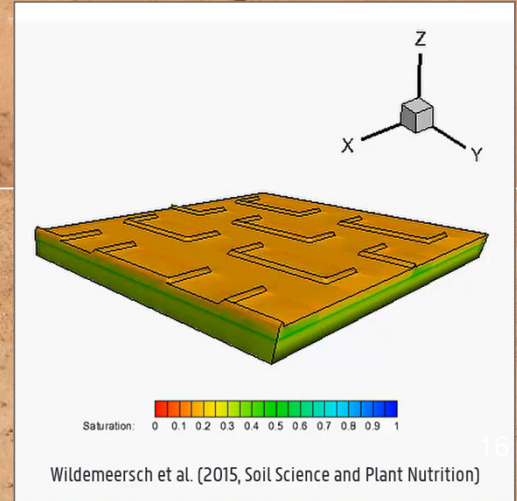
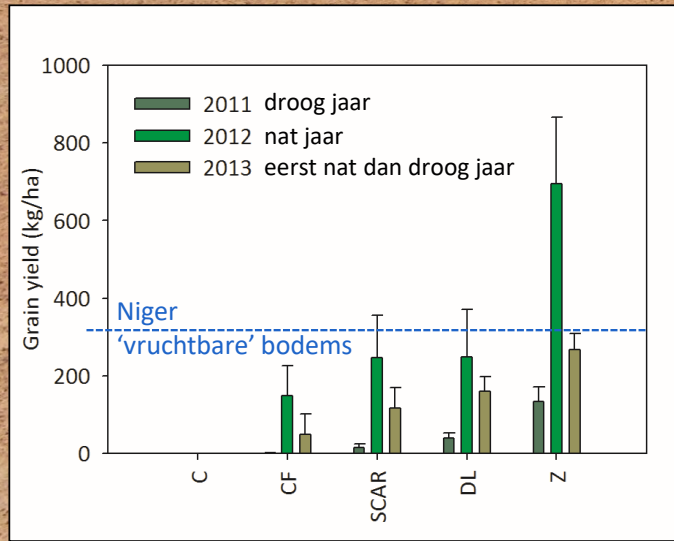
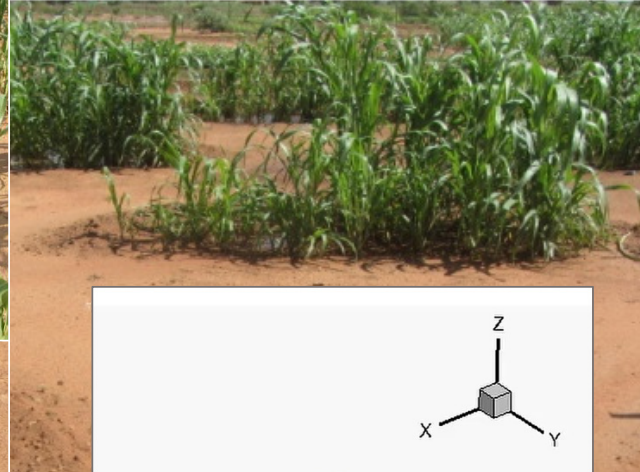
= beheer bodemwater

Rockström and Falkenmark (2015, Nature Communications)

# door menselijke activiteit gedegradeerde bodems in Ethiopische NO hoogvlakte

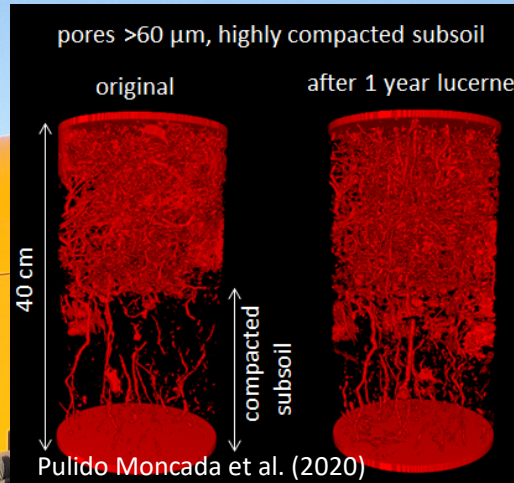


# natuurlijk gedegradeerde 'gangani' bodems in Tillaberi, Niger



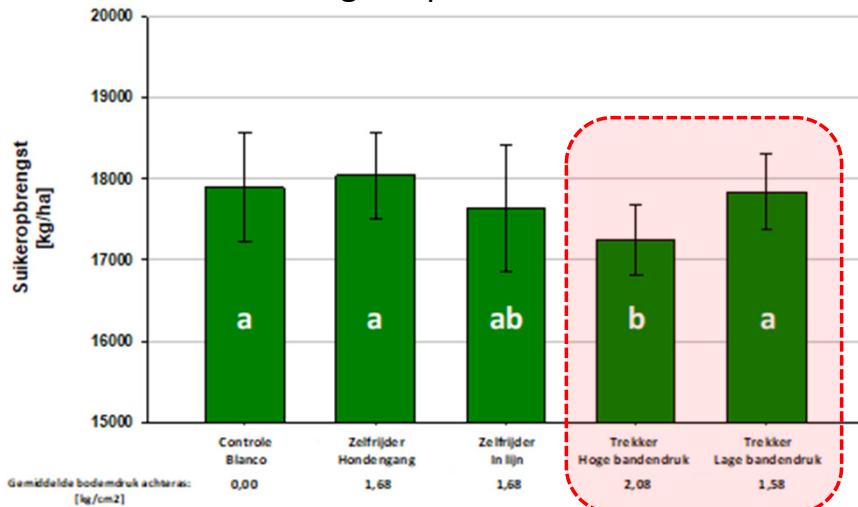


# gedegradeerde bodems in Vlaanderen

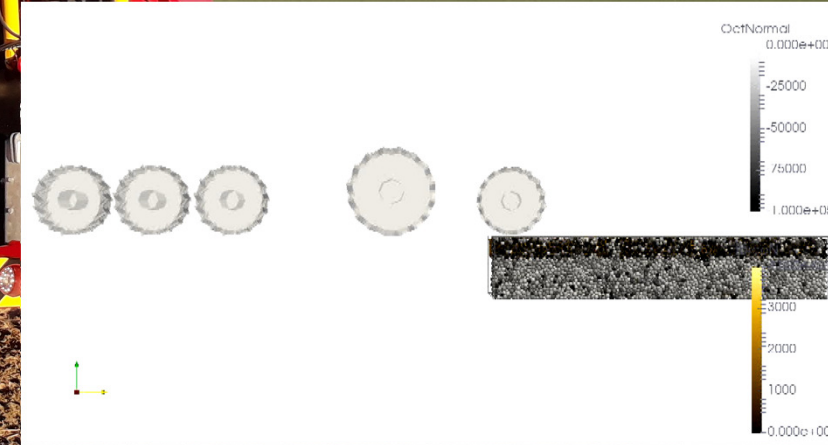
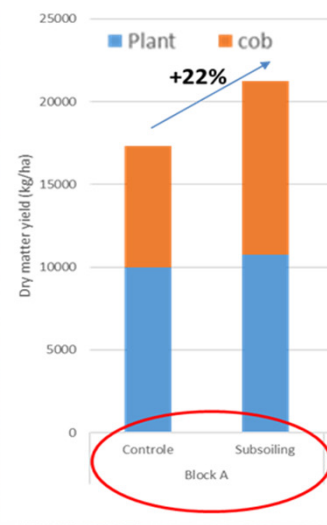


Michele (2020)

oogst sept. 2019

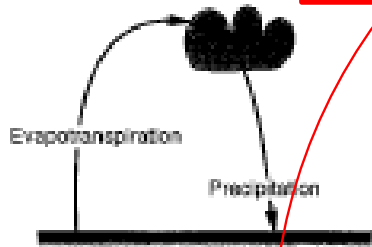


oogst sept. 2020



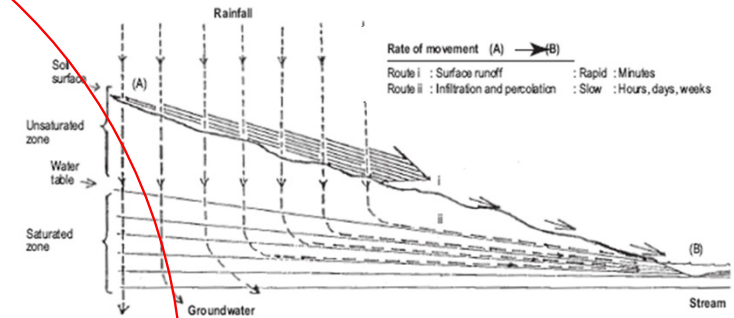
# 4. TOT SLOT...

meteorologische droogte



bodem-  
evapotranspiratie-  
neerslag feedback

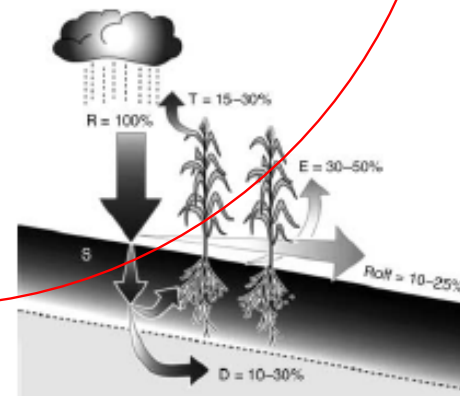
runoff: piekafvoer  
bodemwater: permanente afvoer



bestrijden  
landdegradatie =  
beheer bodemwater

hydrologische  
droogte

agrarische  
droogte



waterregime  
wortelzone

bedankt! vragen?



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<https://www.ugent.be/bw/environment/en/research/sophy>