

symposium

bodem breed

expertise
bodem en ondergrond

Klimaat? Wat klimaat!

[logo]

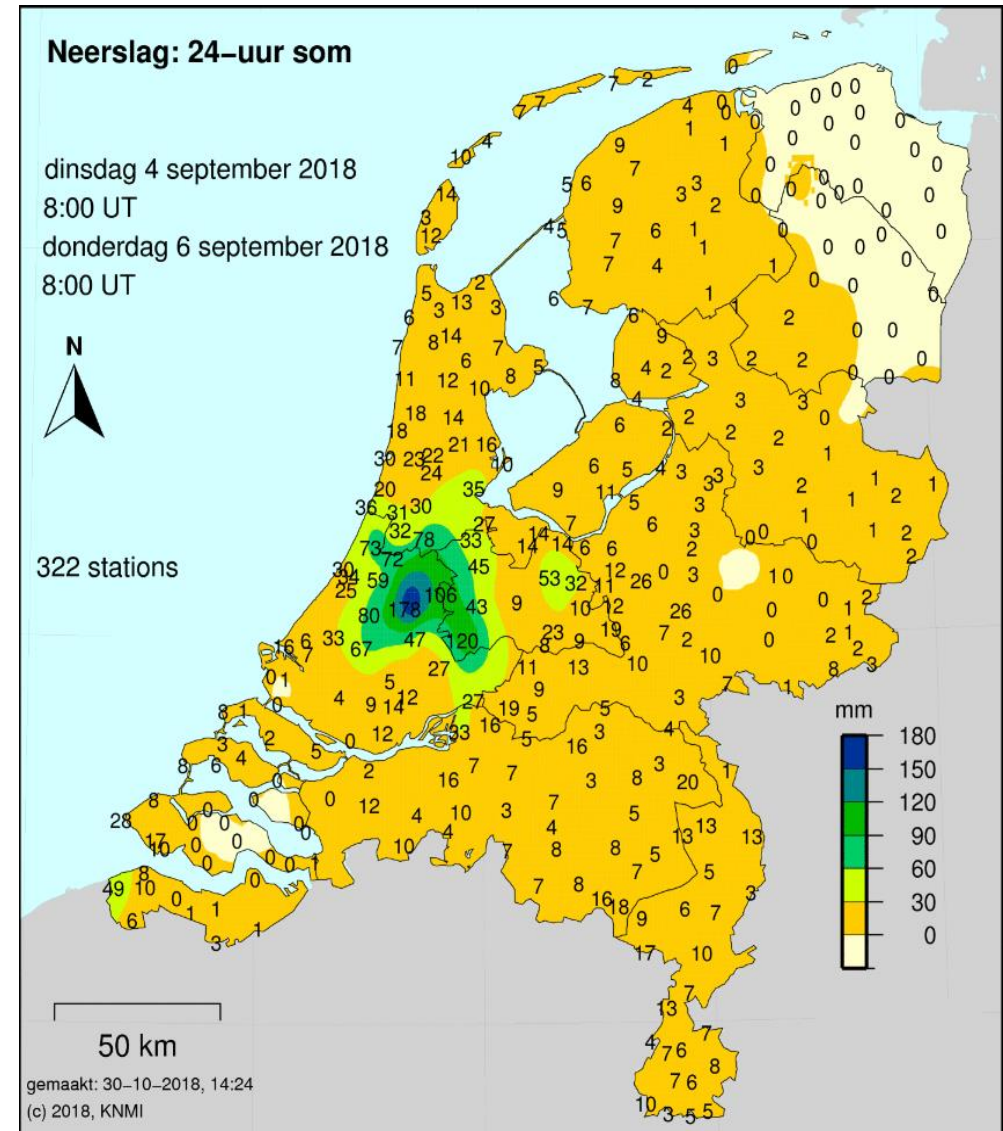
5 september 2018: Amsterdam aan ramp ontsnapt

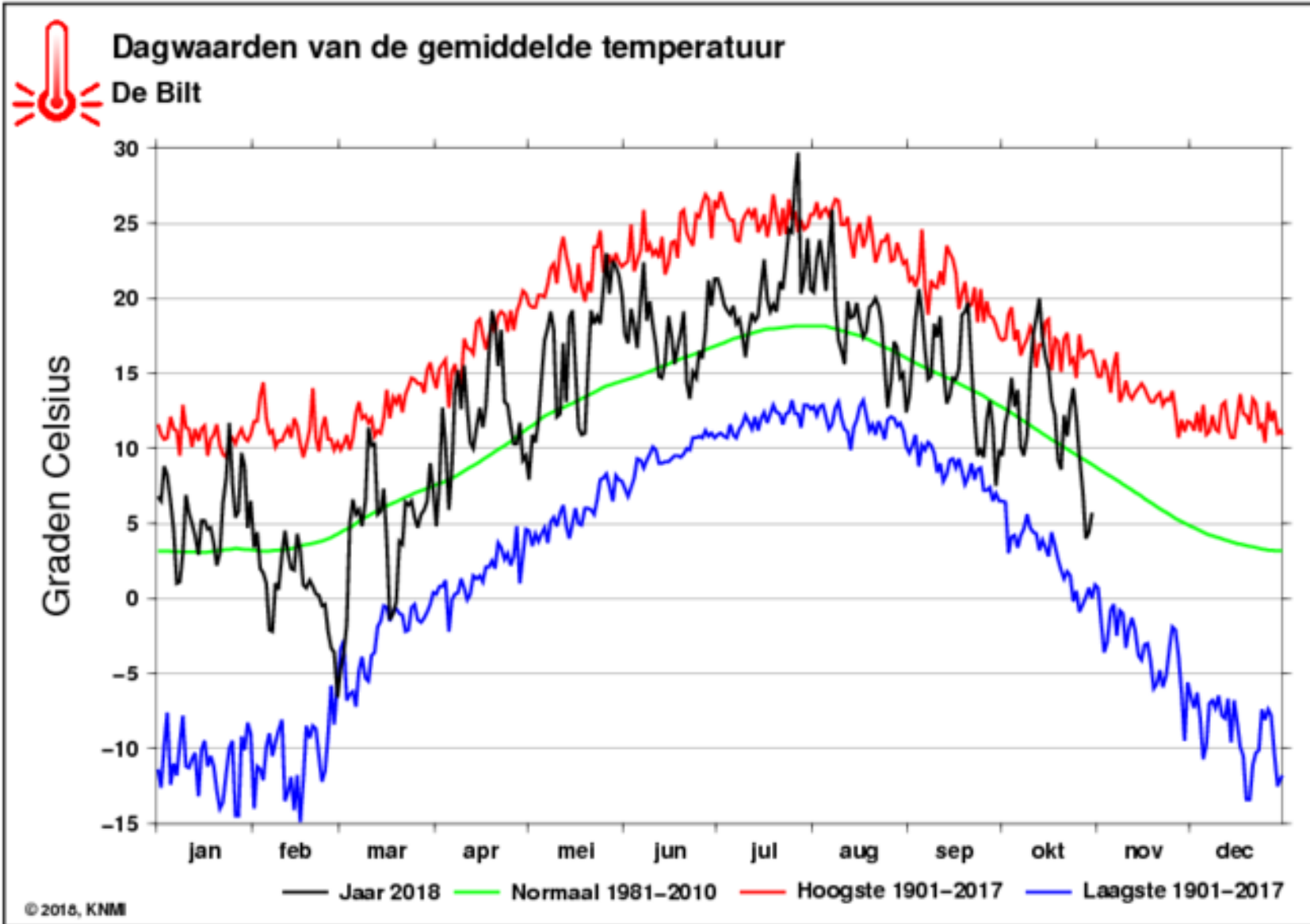
hoogste 3 aftappingen in ruim een eeuw

Kopenhagen 2 juli 2011:

150 mm in 2 uur

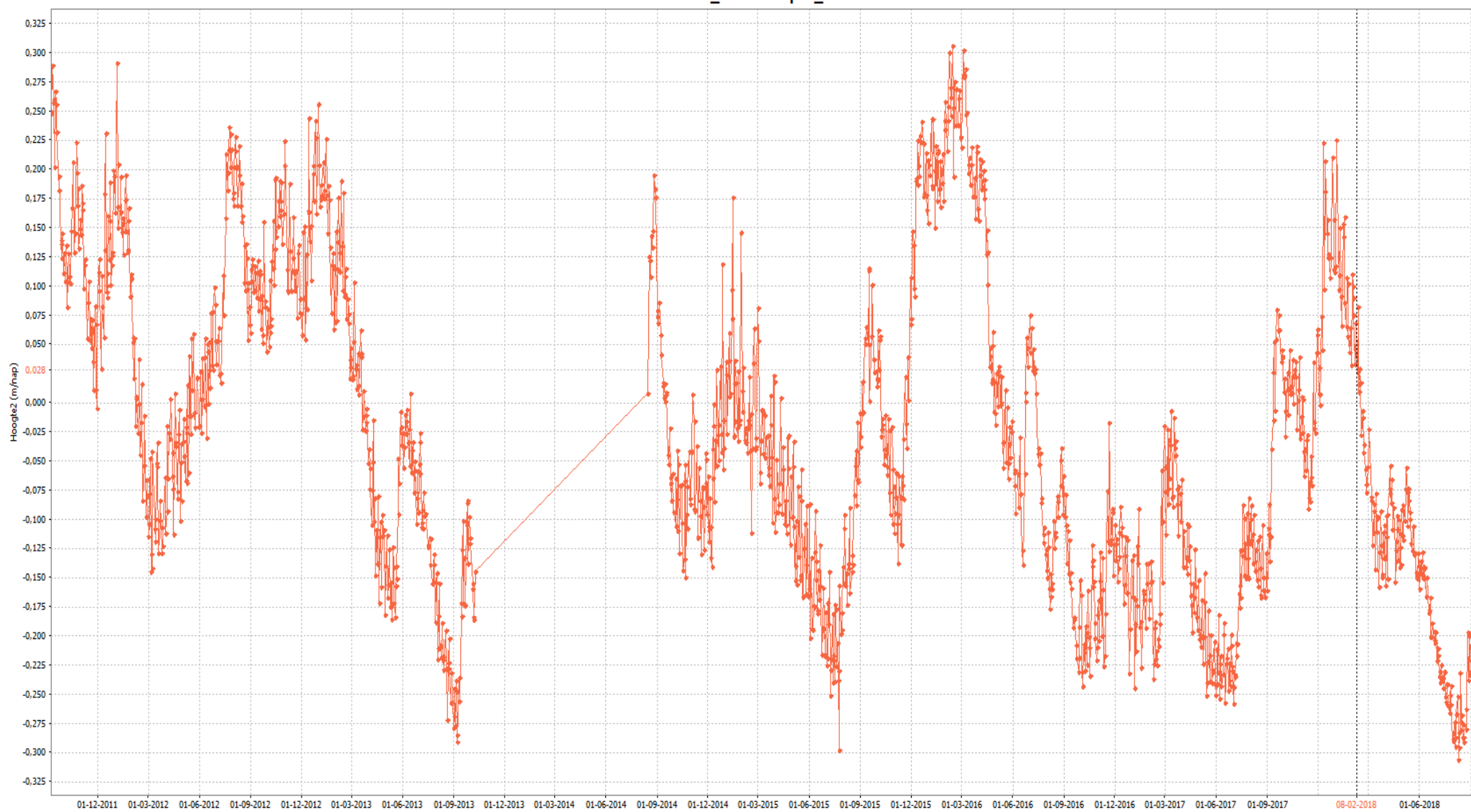
1 miljard schade



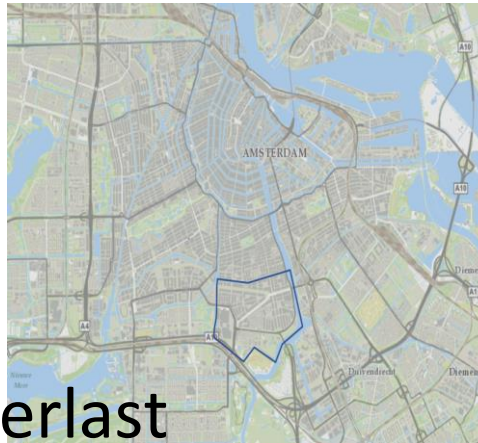


Grondwaterfluctuaties (2011-2018)

D06164A_WaterDiepte_D

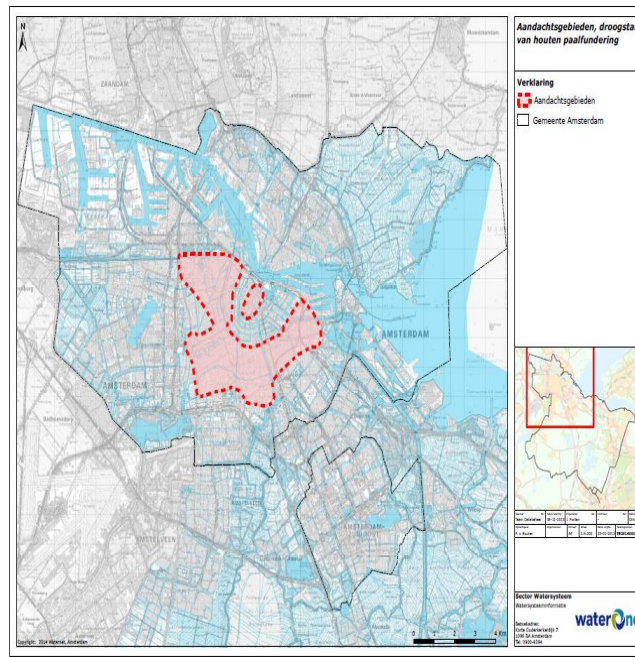
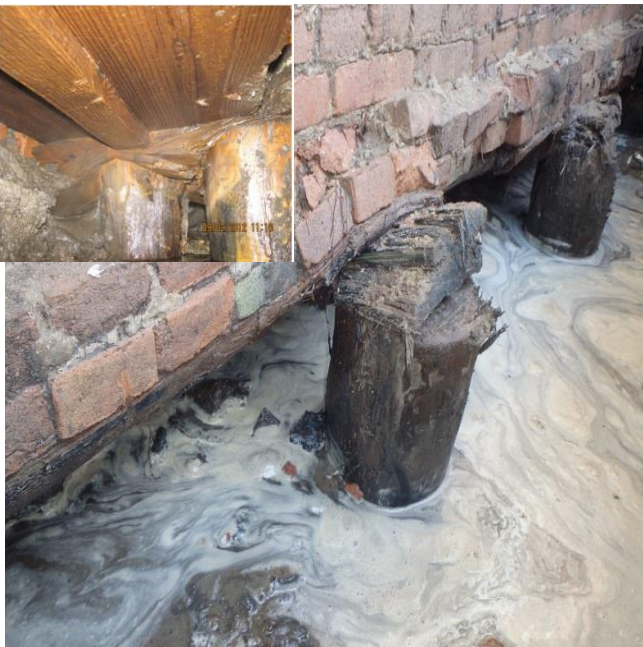


Rivierenbuurt



• Situatie

- (Grond) Wateroverlast
 - straten onder water
 - hoge grondwaterstanden natte kruipruimte
 - leefbaarheid
- Droogte
 - Funderingsschade



Wat gebeurt er allemaal ondergronds in Amsterdam?

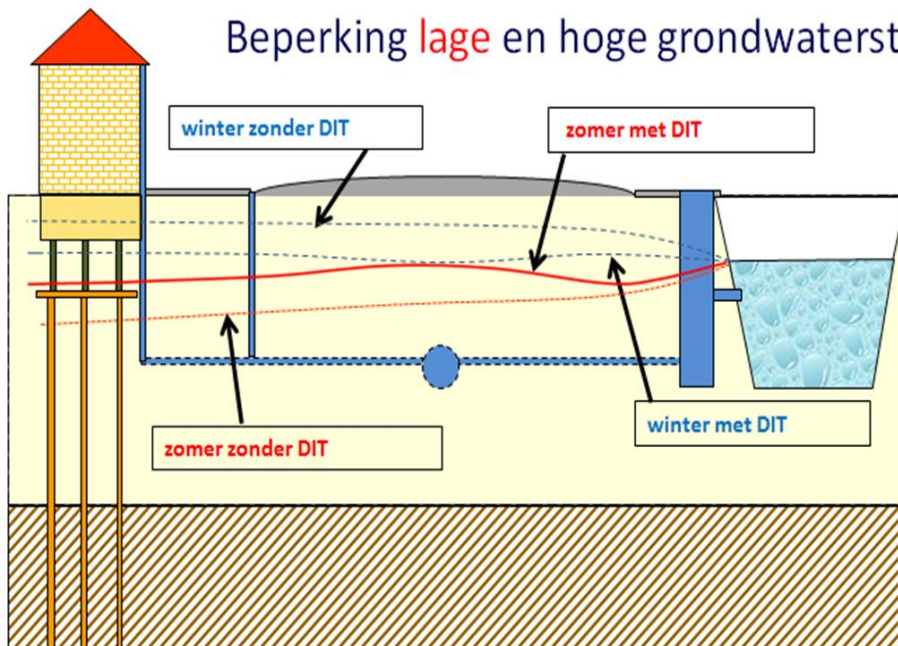


- DIT systeem
- Granudrain
- Waterdoorlatende verharding drainvast
- Verlaagde groenstroken
- Wadi's
- Bufferblock (geen kratjes!!)
- ...
- Open voor innovatieve ontwikkelingen en ideeën

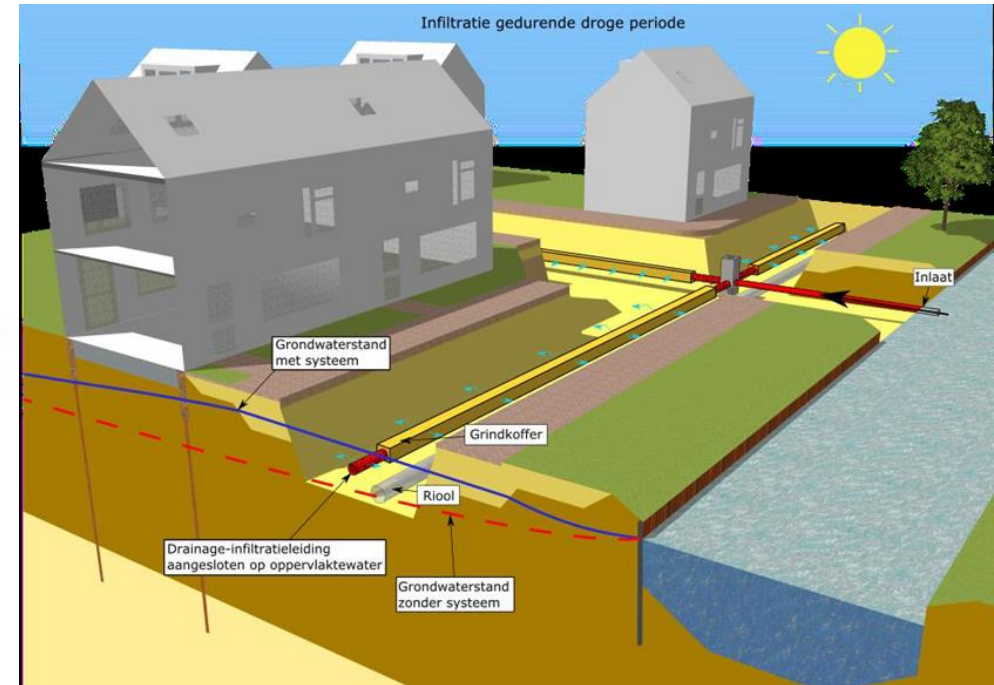
Actief grondwaterpeilbeheer



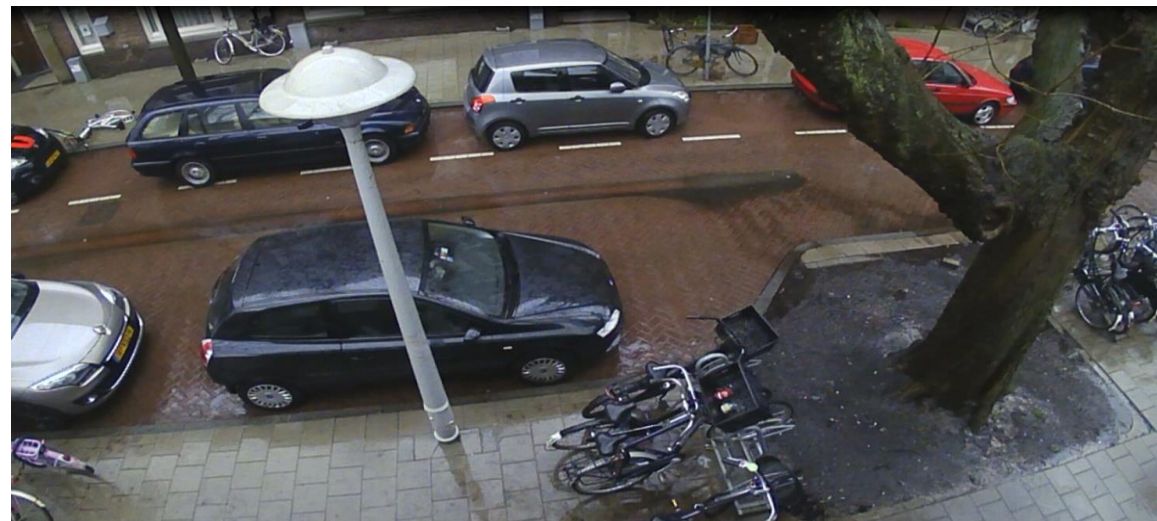
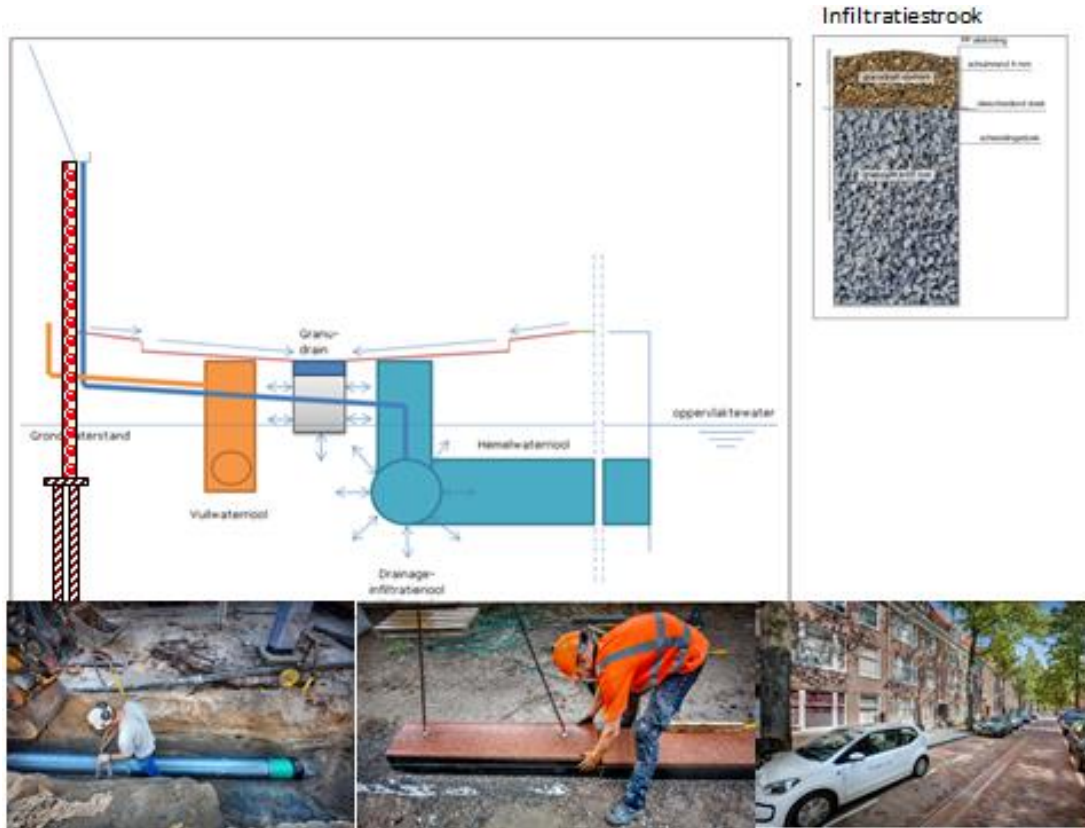
Beperking lage en hoge grondwaterstand



Drainage Infiltratie Tansport Riool



Granudrain met DIT systeem

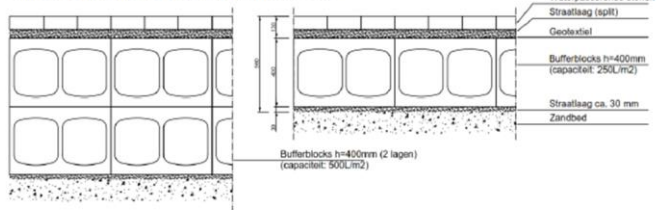




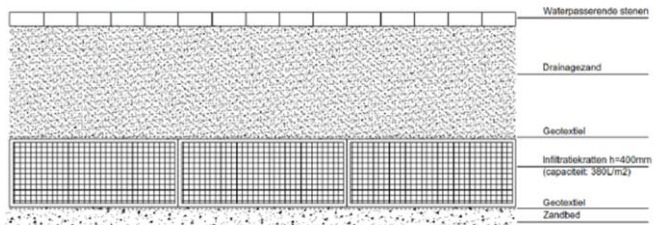
-  5 cm breukzand
-  7 cm split
-  20 cm faviasteen
-  duinzand

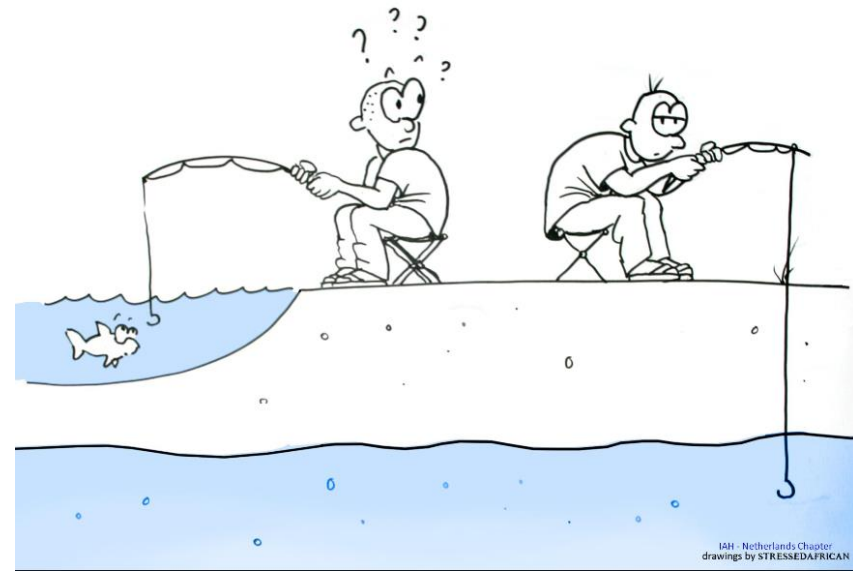
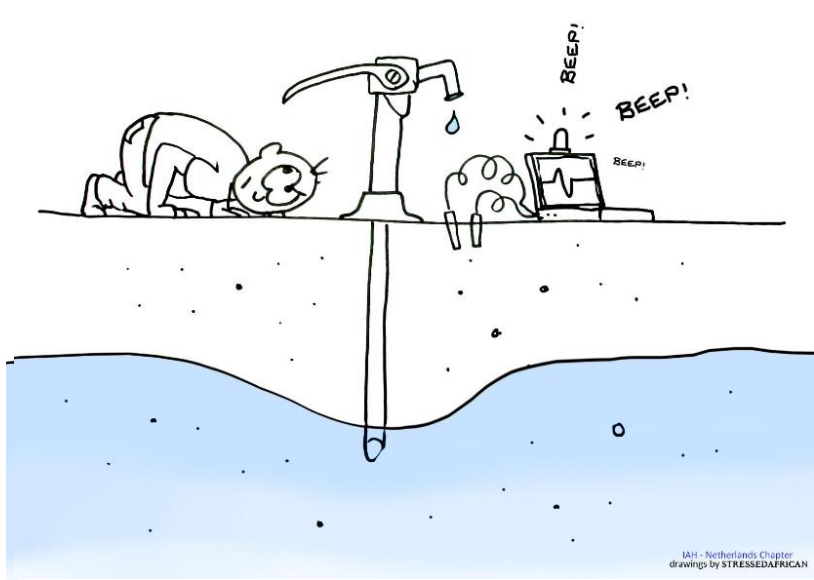


Opbouw verharding met fundering van Bufferblocks



Opbouw verharding met fundering van infiltratiekratten





IAH - Netherlands Chapter
drawings by STRESSED AFRICAN

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$$f(a) + \frac{f'(a)}{1!}(x-a) + \frac{f''(a)}{2!}(x-a)^2 + \frac{f^{(3)}(a)}{3!}(x-a)^3 + \dots$$

Is het echt zo complex?



$$\frac{\partial^2 \varphi}{\partial x^2} + \frac{\partial^2 \varphi}{\partial y^2} + \frac{\partial^2 \varphi}{\partial z^2} = 0.$$

$$\operatorname{csch}(x) = \frac{1}{x} - \frac{x}{6} + \frac{7x^3}{360} - \frac{31x^5}{15120} + \dots = \frac{1}{x} + \sum_{n=1}^{\infty} \frac{2(1-2^{2n-1})B_{2n}x^{2n-1}}{(2n)!}, \quad 0 < |x| < \pi$$

IAH - Netherlands Chapter
drawings by STRESSED AFRICAN

Kengetallen

steeembescrijving



waterpasserende
verharding



wadi

extra informatie



prestatie



kosten

kengetallen



ontwerp



onderhoud

Prijsvraag Klimaatadaptatie

- Oppassen dat je niet overmatig veel aandacht hebt voor Klimaatadaptatie
- Niets
- Flexibele verhardingen die bodemdaling opvangt
- Waarom alleen openbare ruimte?
- Kijk en leer van ervaringen buiten Amsterdam (Friesland Hamburg, enz)