

ROADS AS URBAN WATER BUFFERS

PERMEABLE PAVEMENTS AS PART OF A WATER SENSITIVE URBAN DESIGN

EGU Display, 2021

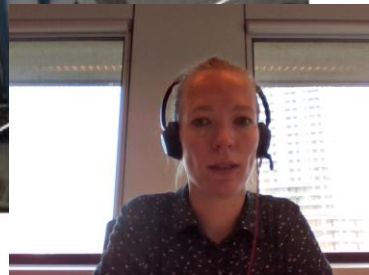
Ted Veldkamp (t.i.e.veldkamp@hva.nl)

Centre of Expertise Urban Technology

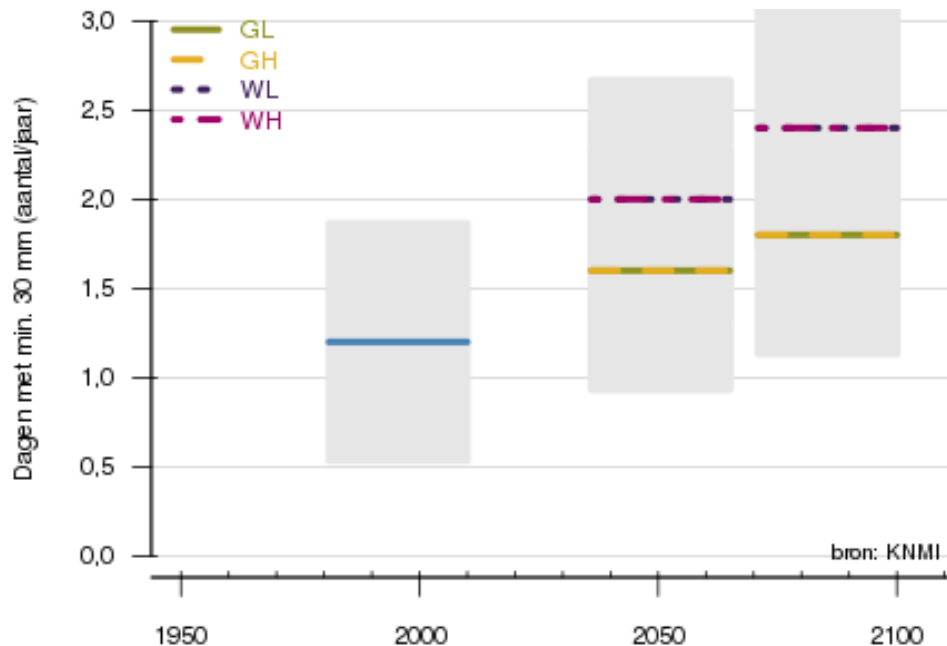
Amsterdam University of Applied Sciences

www.hva.nl/klimaatbestendigestad

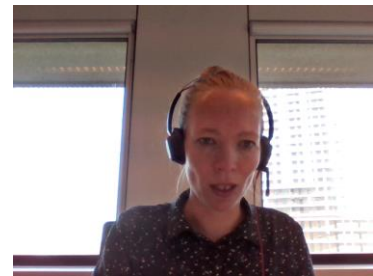
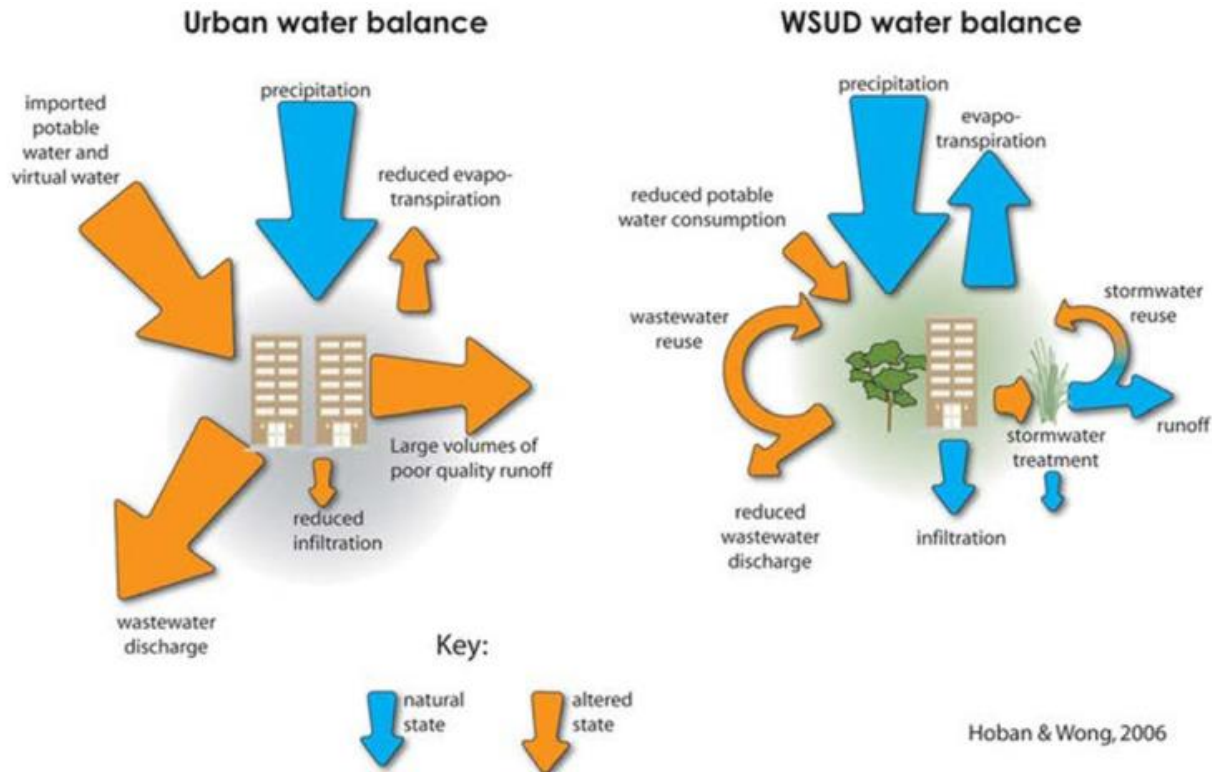
CREATING TOMORROW



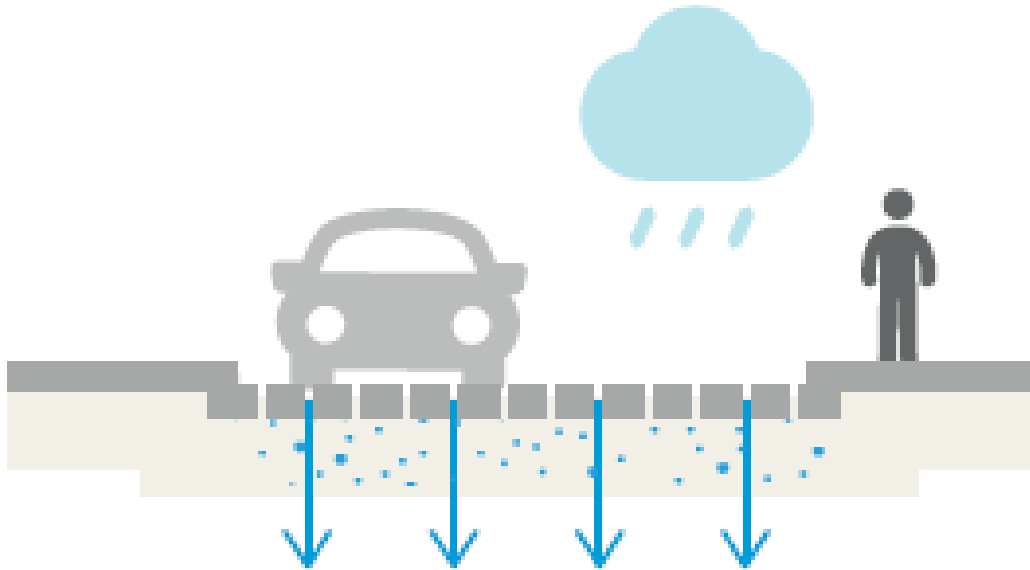
EXTREME PRECIPITATION IN THE NETHERLANDS



CALLS FOR A WSUD



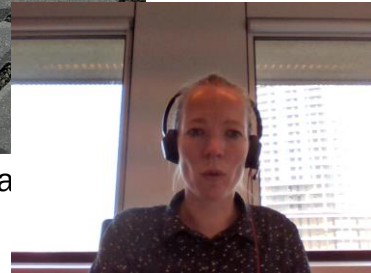
IMPROVING URBAN INFILTRATION CAPACITY - ROADS



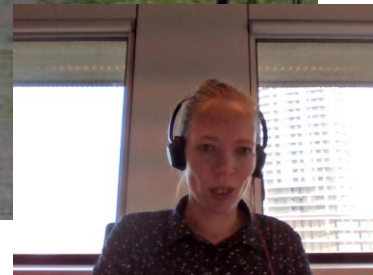
(1) ZOAK



(2) Drainva

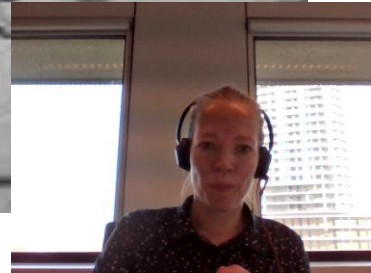
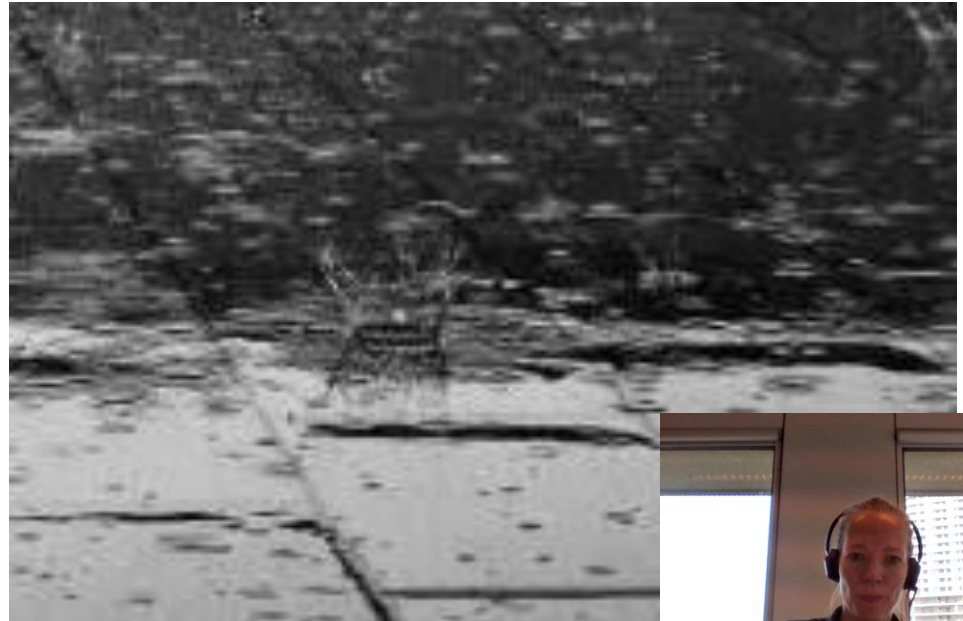


IMPROVING URBAN INFILTRATION CAPACITY - ROADS



How to convince municipalities to implement infiltrating pavements in their urban design?

1. How do infiltrating pavements function?
2. What maintenance is needed to maintain functioning of infiltrating pavements?



INFILTRATION CAPACITY TESTS

Full-scale infiltration tests:

- With(out) maintenance
- (Un)saturated conditions

Registration of:

- System characteristics
- Environmental factors

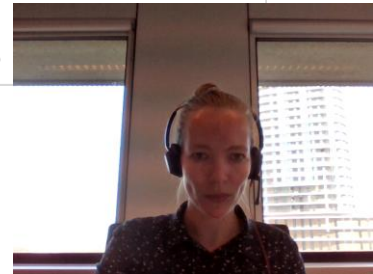
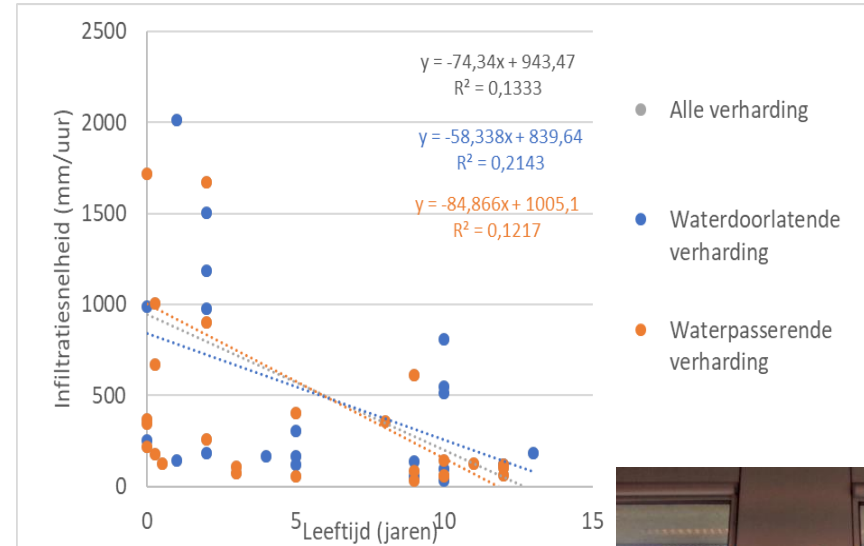
> 100 infiltration tests in NL



INFILTRATING PAVEMENTS – FUNCTIONING

How do infiltrating pavements function?

- Infiltration speed: 540 mm/hr
 - 97% > NL requirements (60 mm/uur)
 - 64% > EU requirements (194 mm/uur)
- Participating innovations: 738 mm/hr
- Infiltration speed decreases over time
 - 74 mm/hr per year
 - Age
 - Environmental factors (urban green, traffic-density)

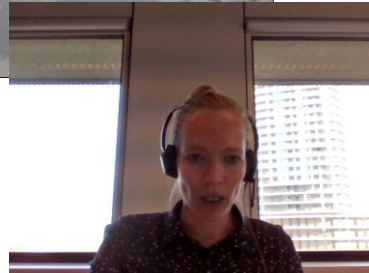


INFILTRATING PAVEMENTS – MAINTENANCE

What maintenance is needed?

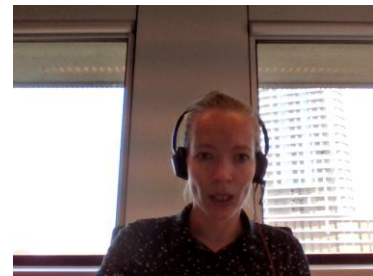


Maintenance (ZOAB-cleaner) significantly improves infiltration speed: +380%



CONCLUSIONS

- ▶ Better understanding of:
 - ▶ Functioning of infiltration pavements in reality
 - ▶ Influence of environmental factors on decay infiltration speed through time
 - ▶ Effectiveness of various maintenance measures
 - ▶ Added value of infiltration pavements *and* extensive maintenance
- ▶ Starting point for both municipalities and small business for further implementation
- ▶ Recommendations:
 - ▶ Long-term monitoring functioning of infiltration pavements at location



LEARN MORE OR COLLABORATE?

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