Opportunistic sensing in hydrometeorology

EGU General Assembly 2020, session ITS2.10/NP3.3, abstract EGU2020-20583

4 May 2020, Remko Uijlenhoet, Lotte de Vos, Aart Overeem, and Hidde Leijnse

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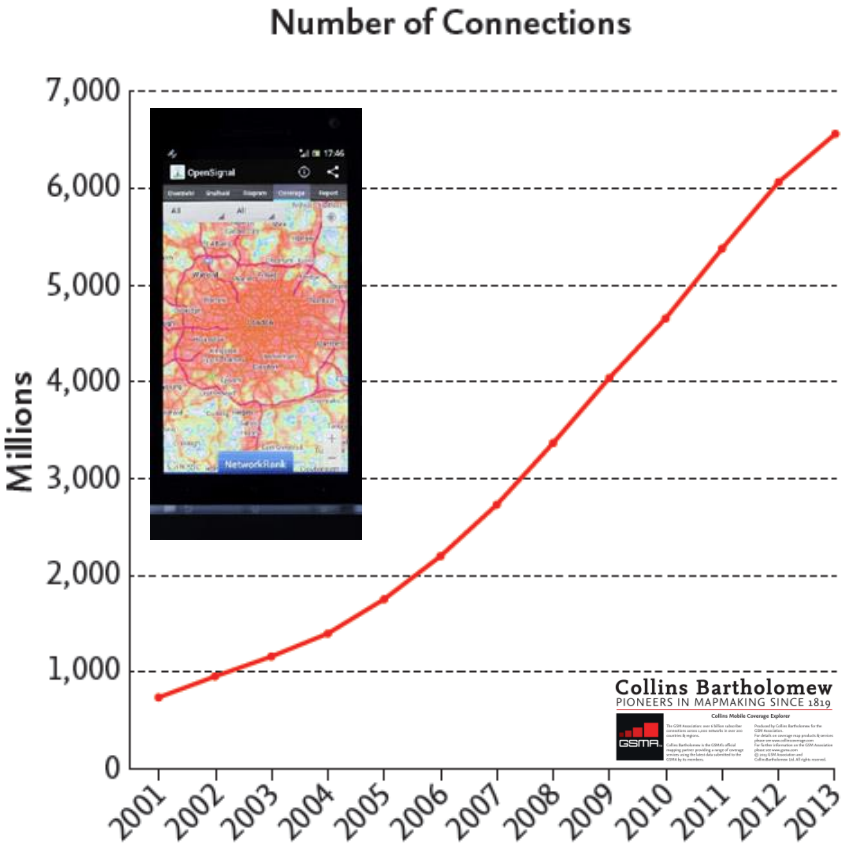
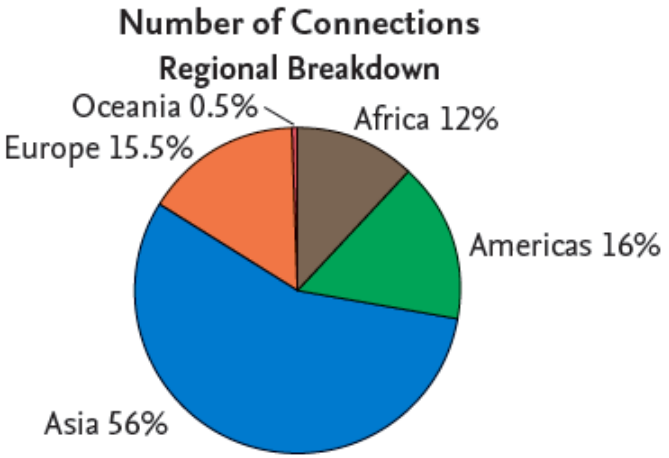
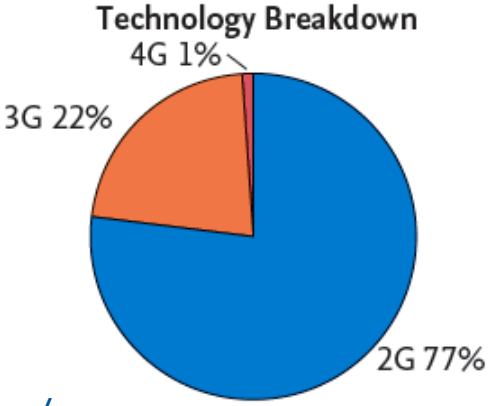
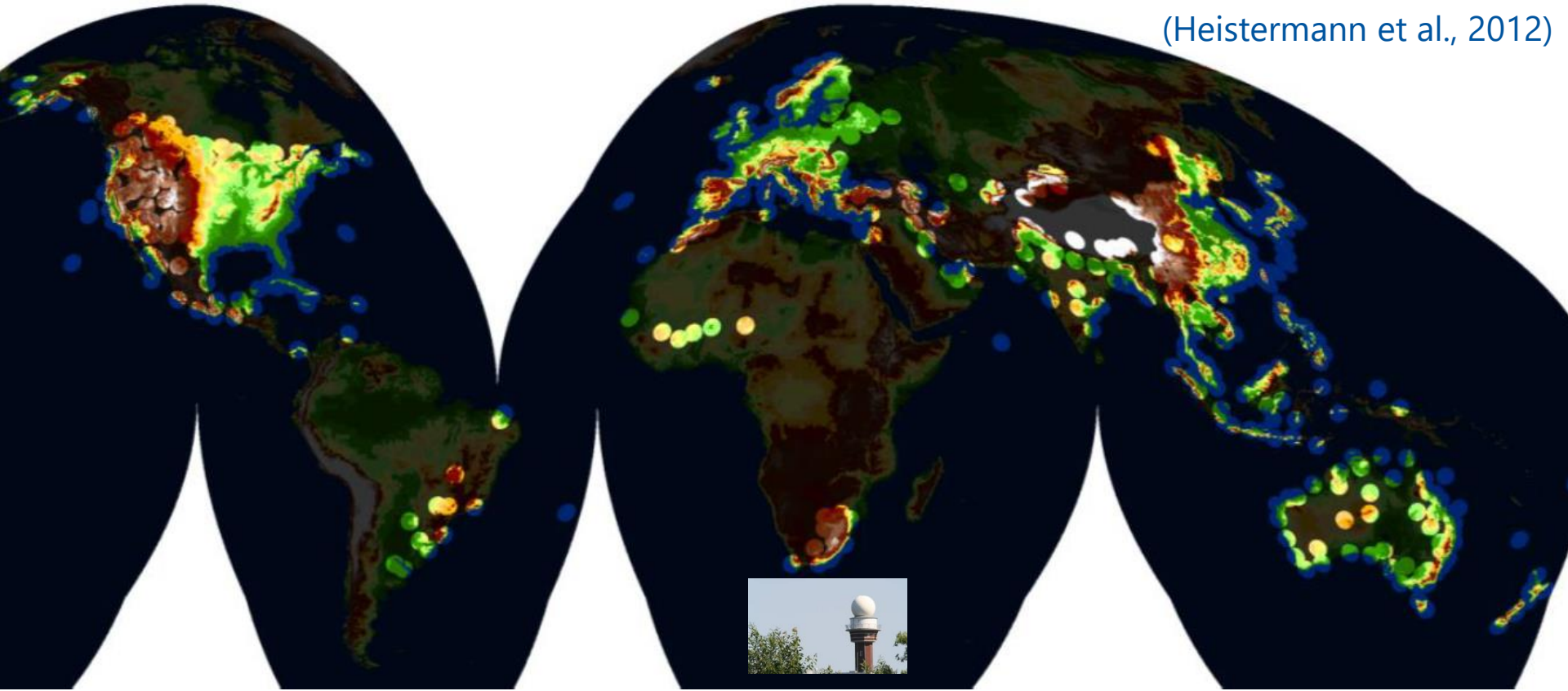






(Collins Bartholomew / GSMA, 2013)

(Heistermann et al., 2012)



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- → **Can microwave links from cellular communication networks be employed to monitor our environment?**
- → Can smartphones be employed as environmental sensors?
- → What can citizen science bring to hydrologic science and applications?

(Uijlenhoet et al., 2018)

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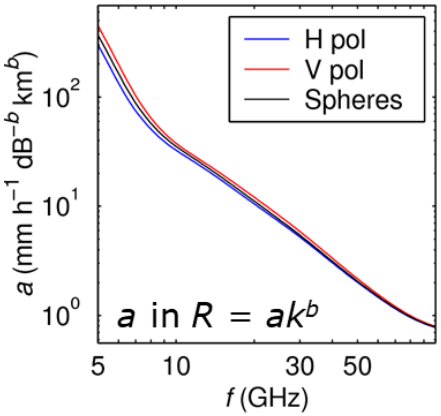
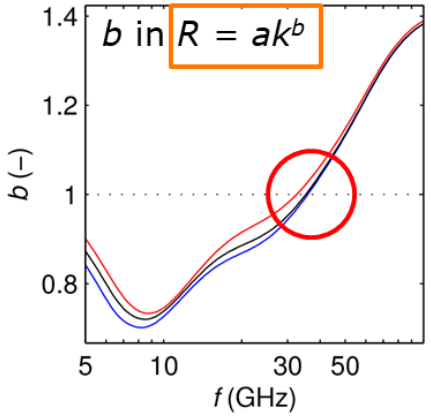
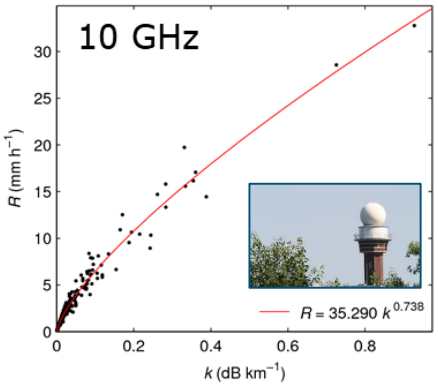
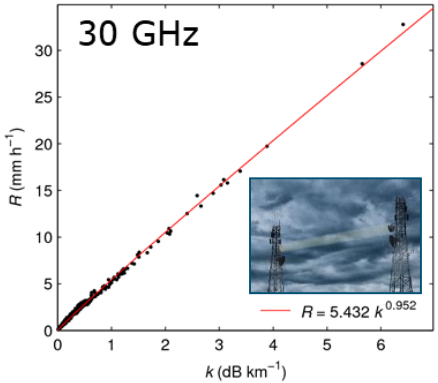




→ Microwave links from cellular communication networks can be used as path-average rain gauges





(Leijnse et al., 2008)

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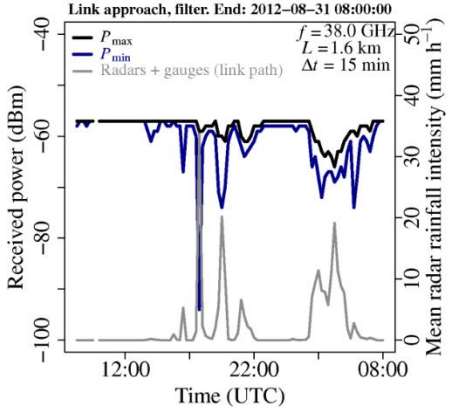
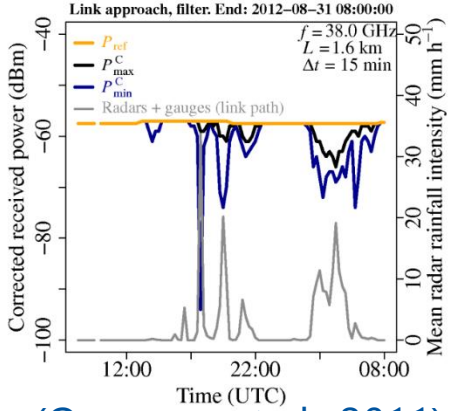
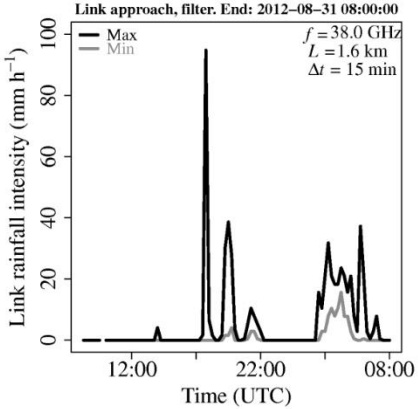
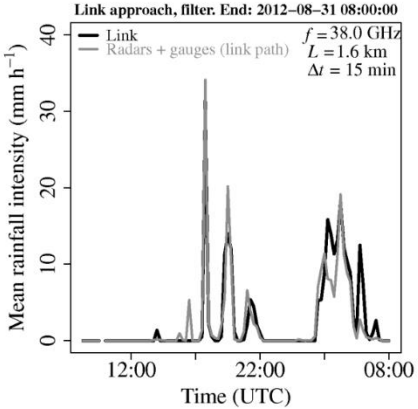
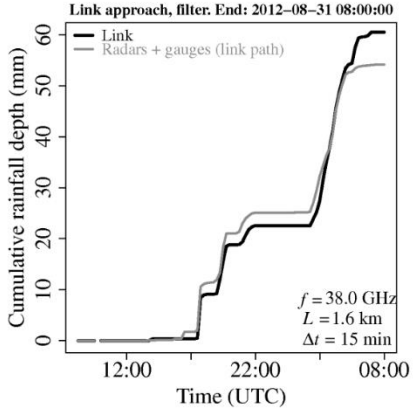


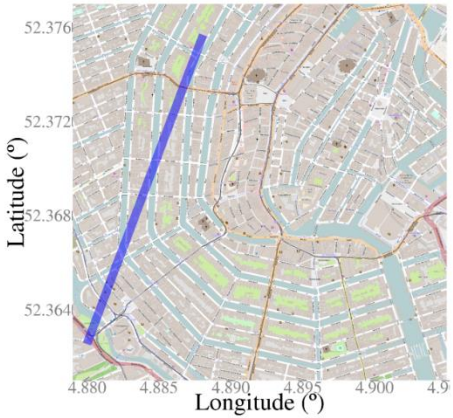




(Overeem et al., 2011)







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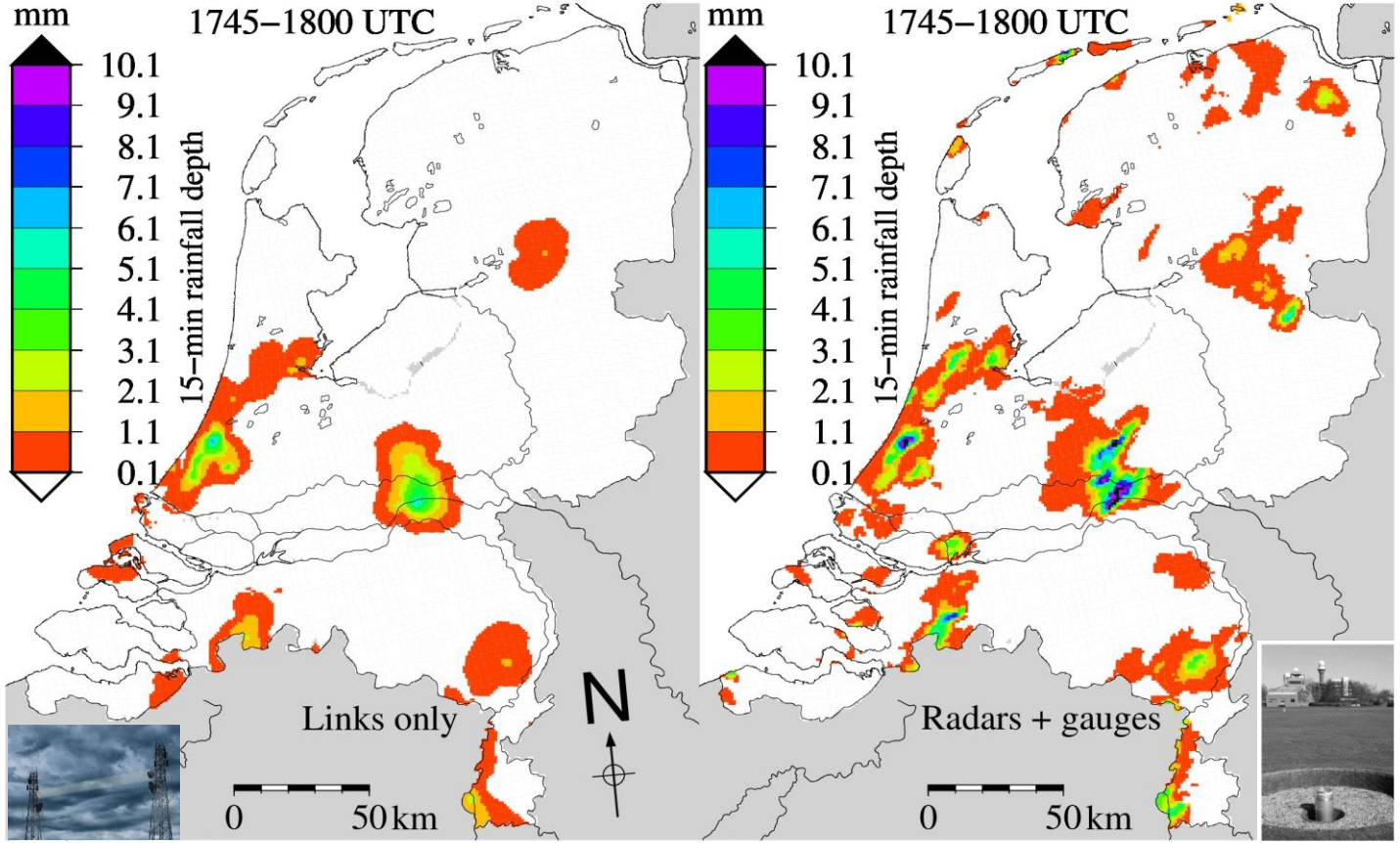
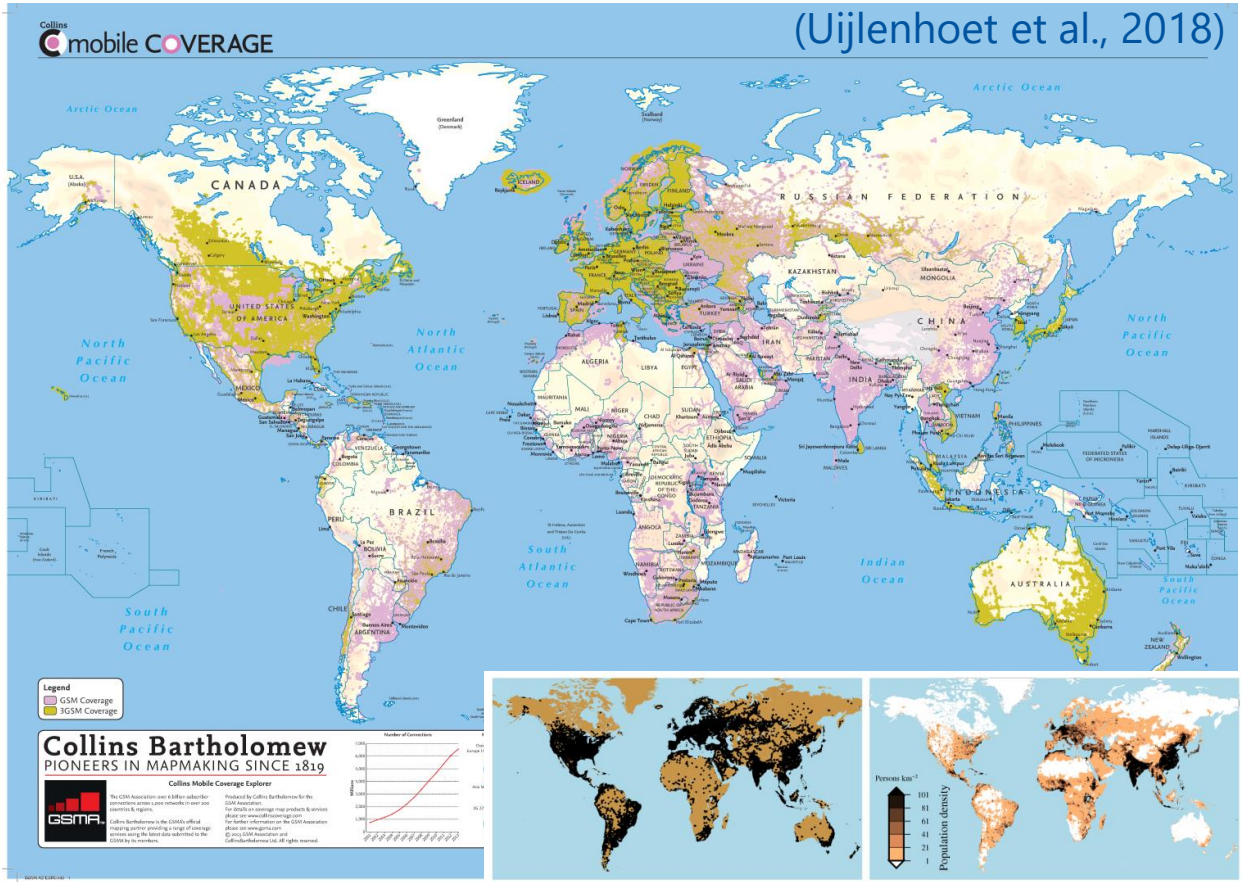


(Overeem et al., 2013)



(Uijlenhoet et al., 2018)

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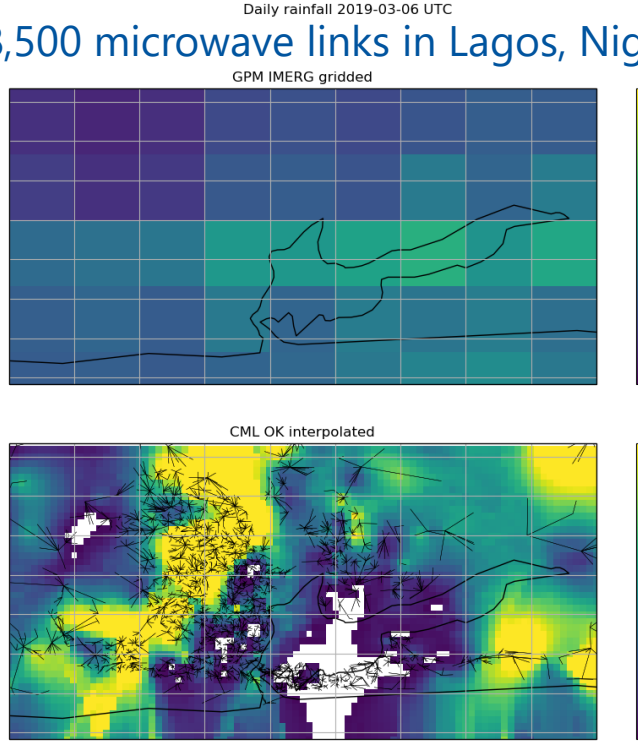
Raincell Africa Training School (Ouagadougou, Burkina Faso, 30 March – 2 April 2015)

(Gosset et al., 2016)

8,500 microwave links in Lagos, Nigeria



(Overeem et al., 2019)

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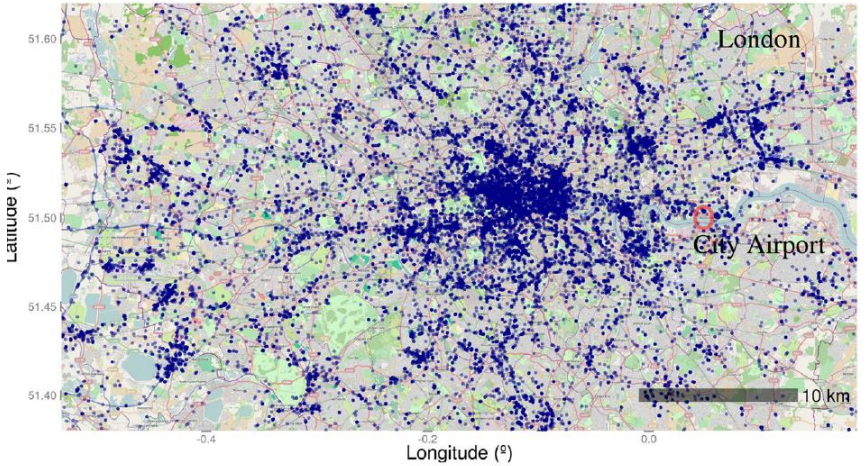
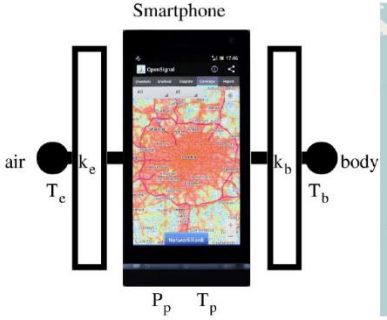
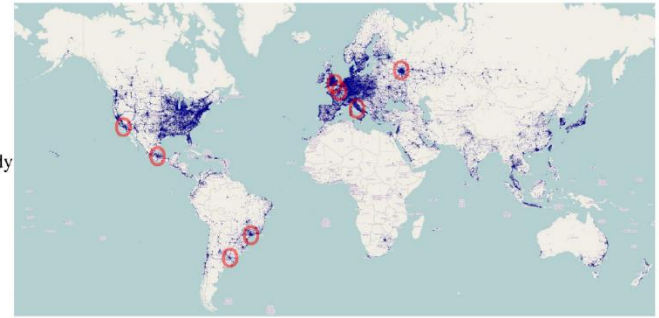
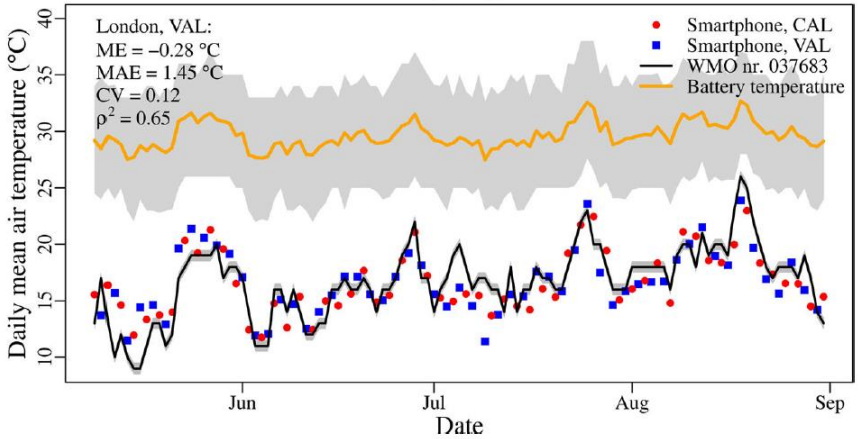
→ Smartphones can be employed to estimate average inner-city air temperatures







(Overeem et al., 2013)



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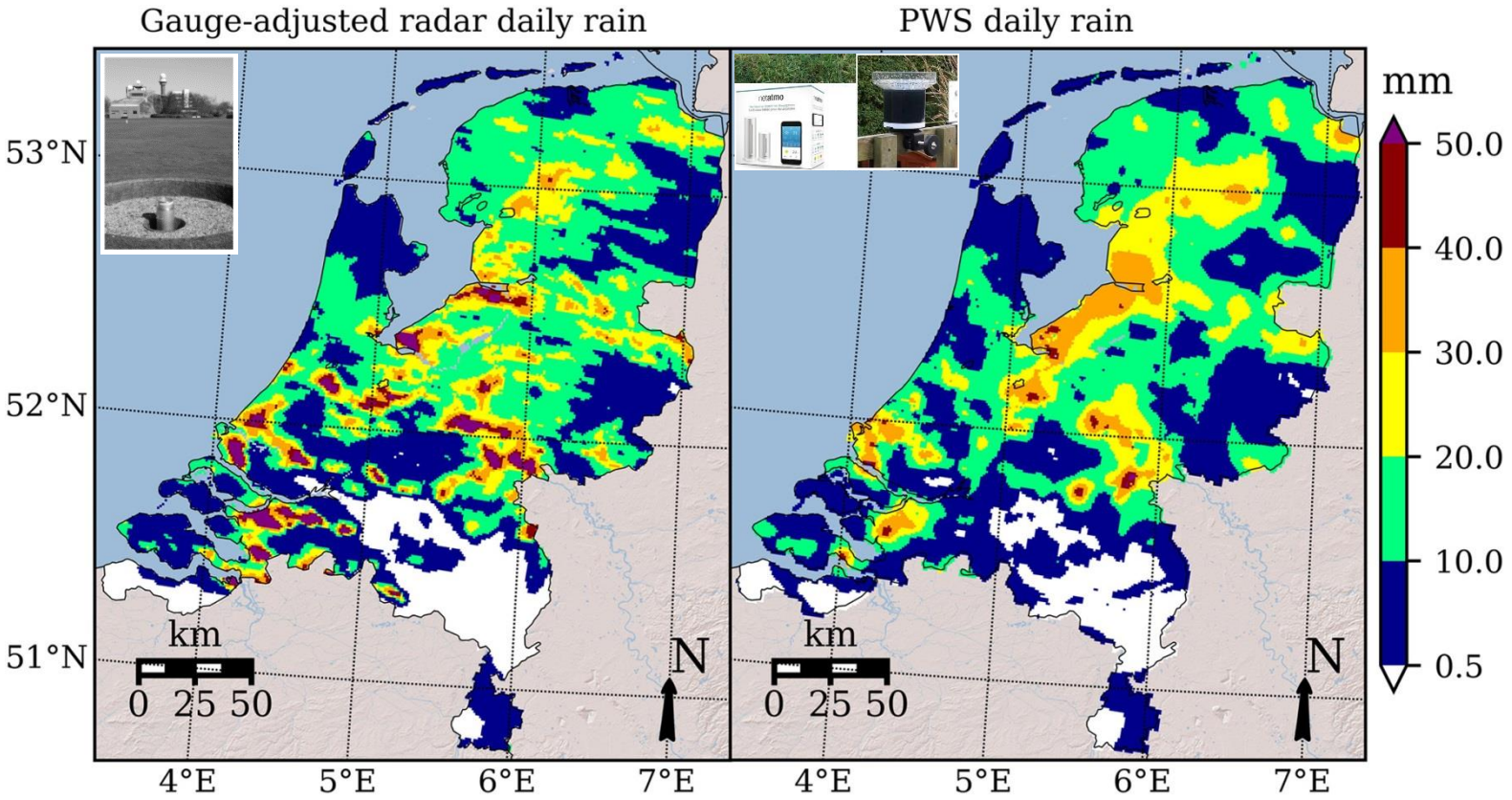

(De Vos et al., 2019)

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- Opportunistic sensors complement dedicated sensor networks
- Cellular communication revolution (5G and beyond) provides opportunities for hydrologic monitoring
- Real-time data access requires business models for mobile network operators
- Paradigm shift: government agencies no longer have monopoly as data providers for hydrologic sciences and applications

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Thank you

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100years
1918 — 2018

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Meteorological Institute
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