Characterising Drought in East Africa

Putting Earth Observation data to work.

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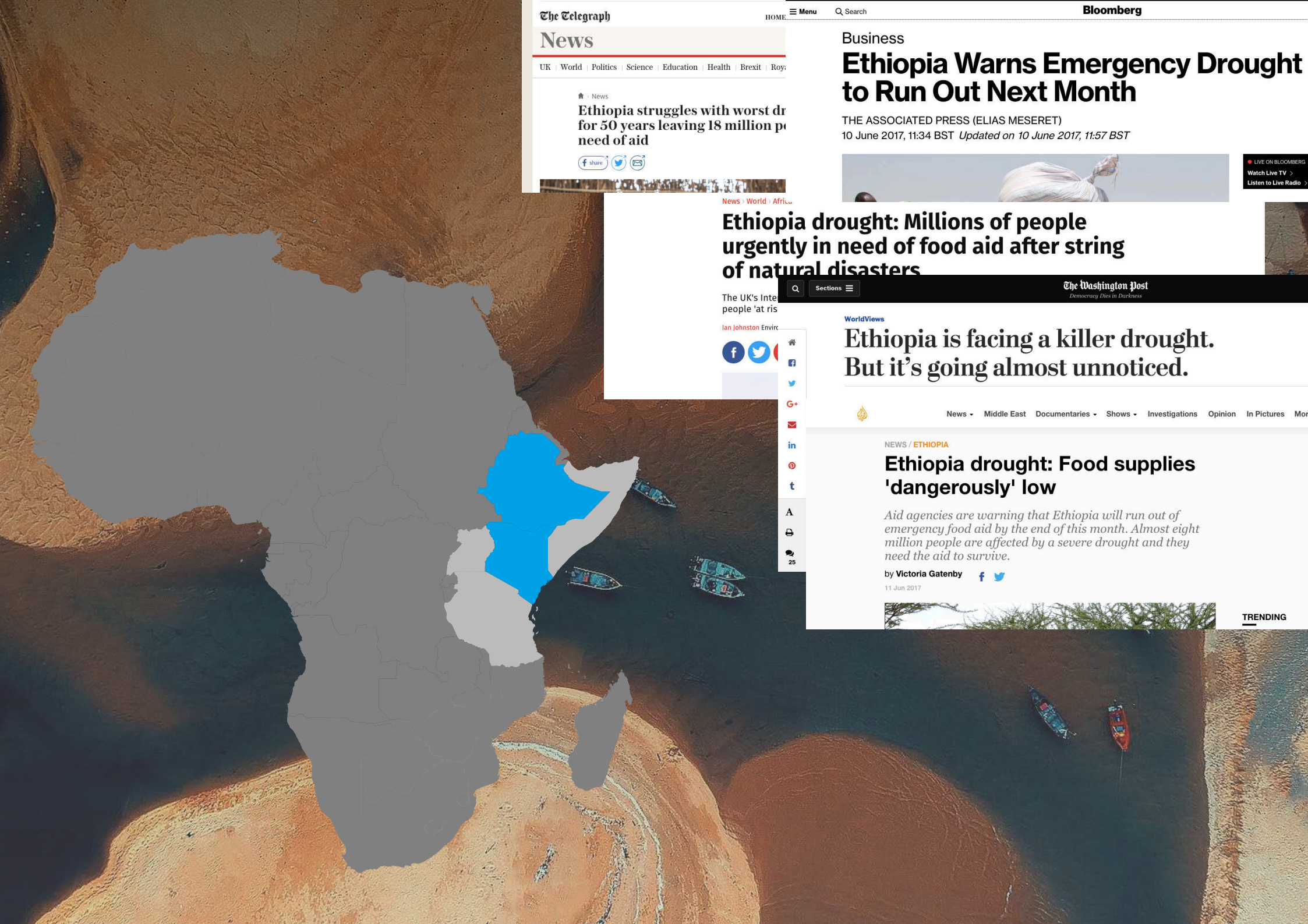

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Ethiopia Warns Emergency Drought to Run Out Next Month

THE ASSOCIATED PRESS (ELIAS MESERET)

10 June 2017, 11:34 BST *Updated on 10 June 2017, 11:57 BST*

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NEWS / ETHIOPIA

Ethiopia drought: Food supplies 'dangerously' low

Aid agencies are warning that Ethiopia will run out of emergency food aid by the end of this month. Almost eight million people are affected by a severe drought and they need the aid to survive.

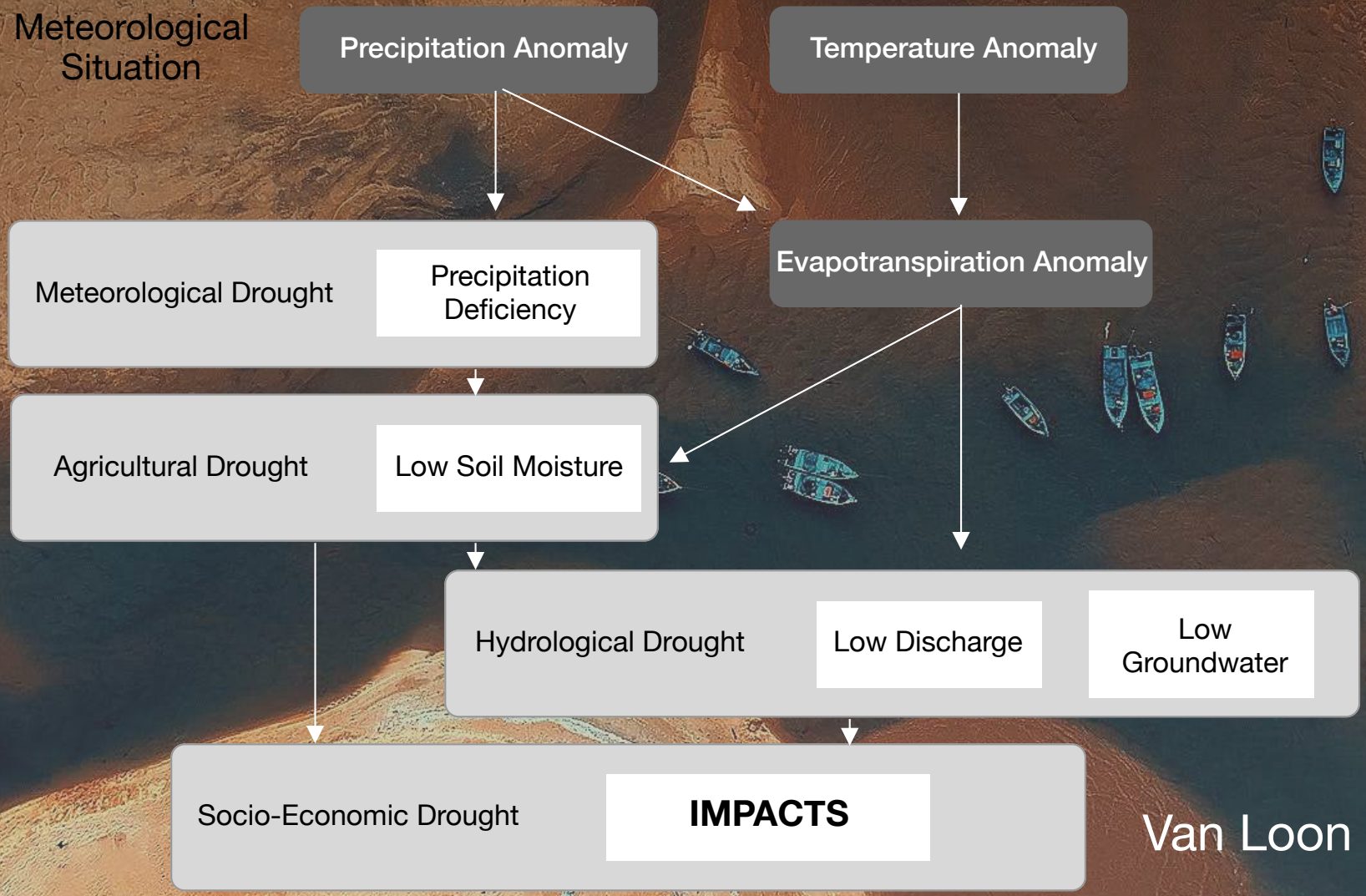
by **Victoria Gatenby**

11 Jun 2017

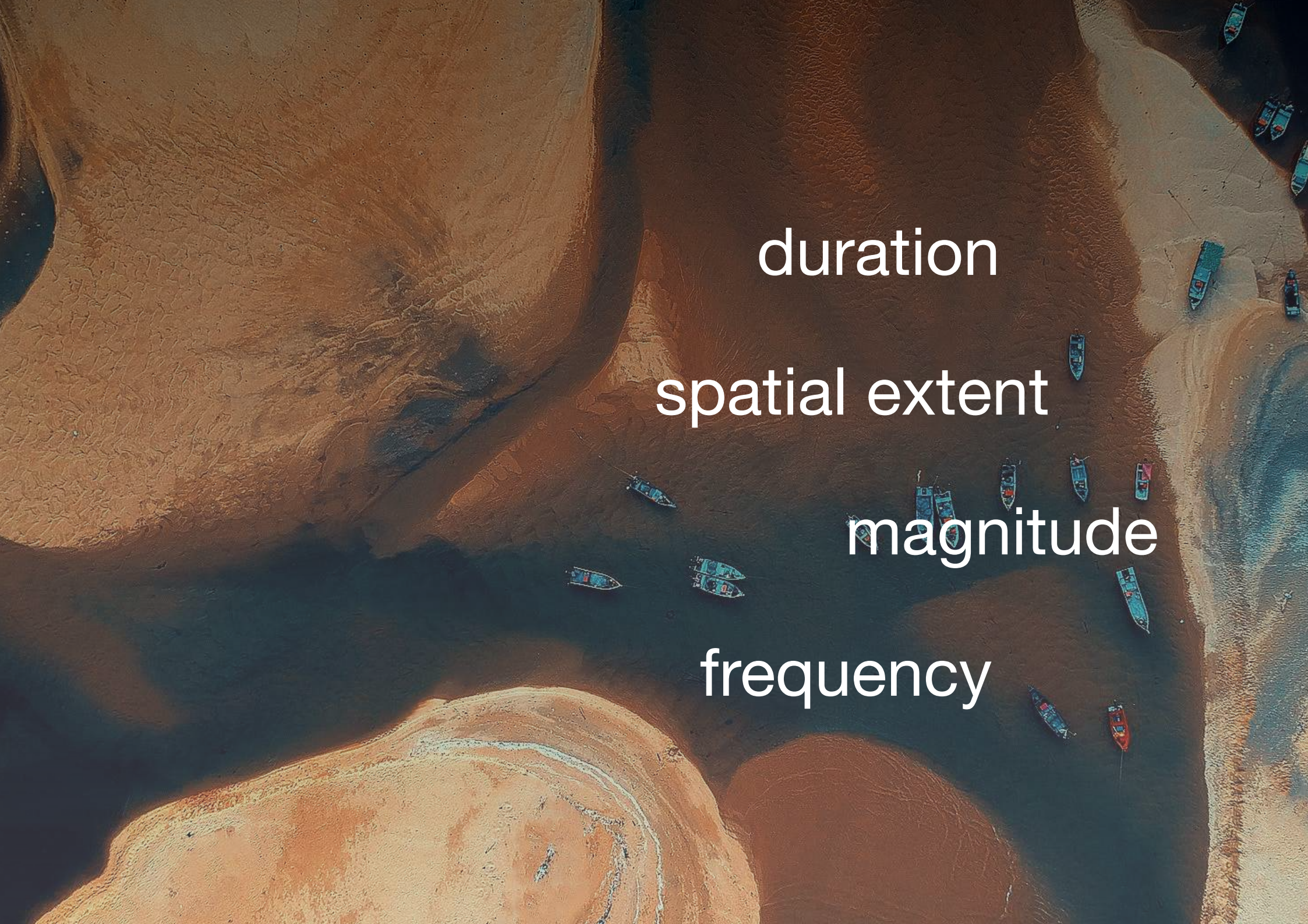
TRENDING

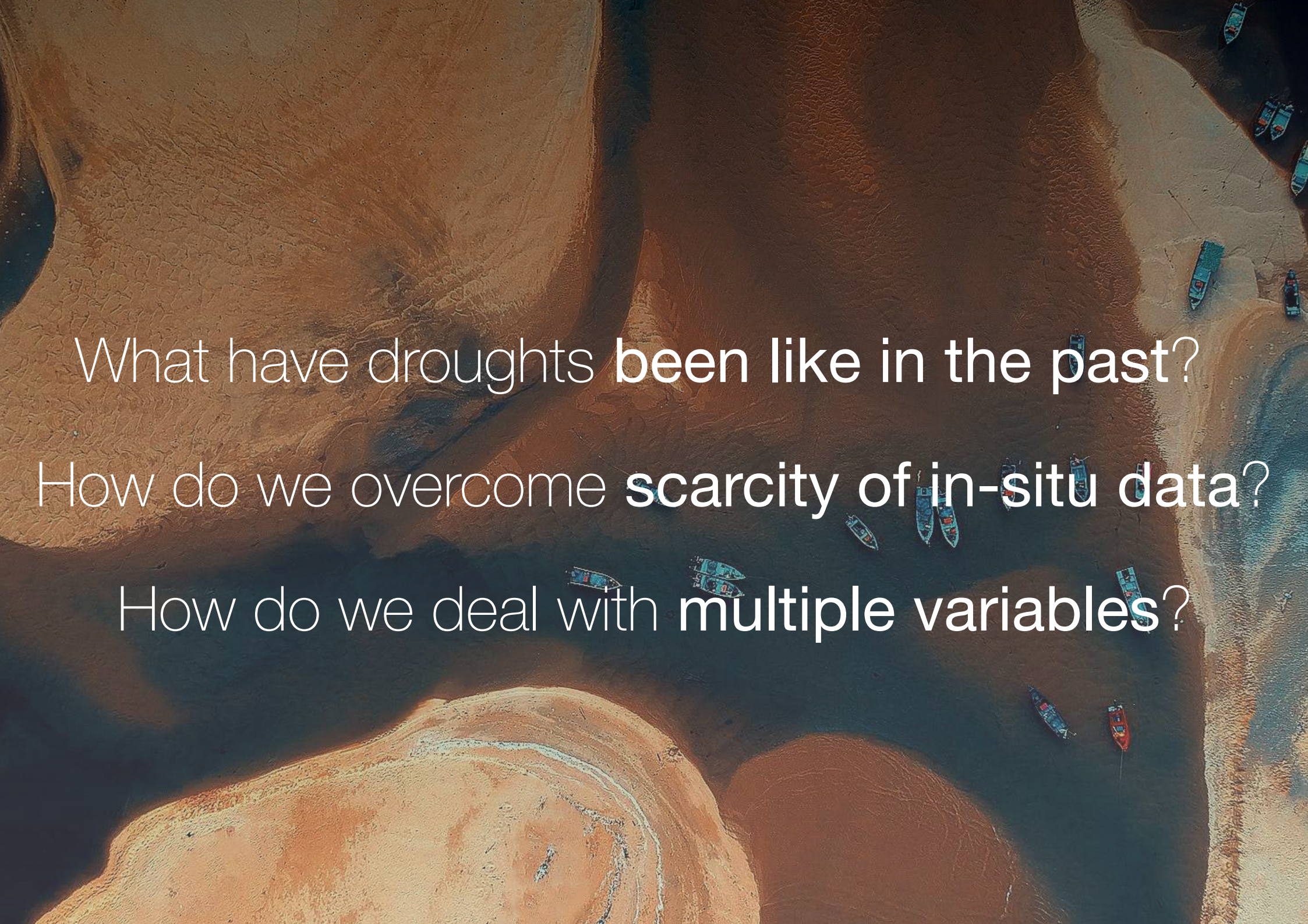
"the creeping disaster"

Sheffield and Wood (2011)



Van Loon (2015)


duration
spatial extent
magnitude
frequency

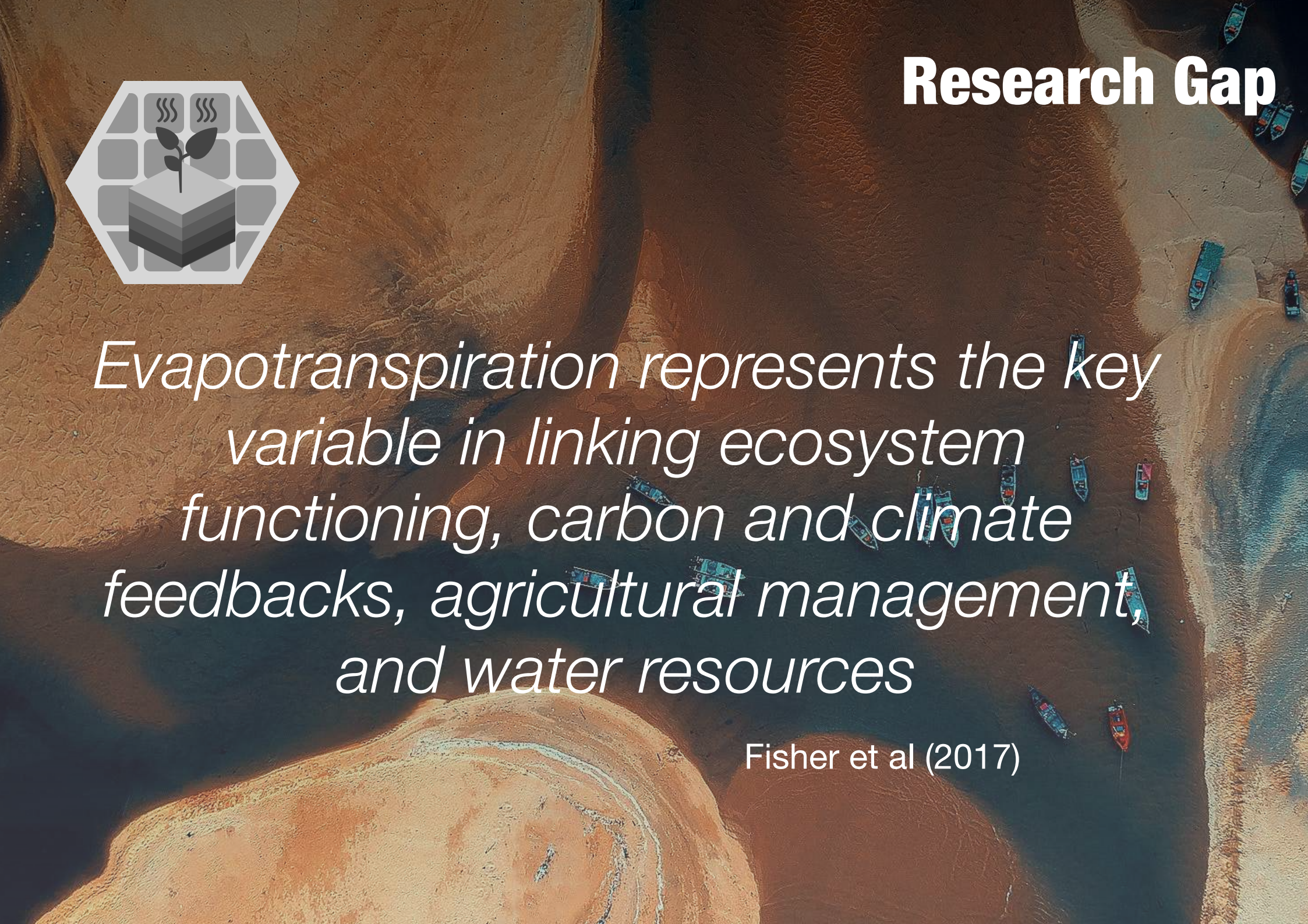

What have droughts been like in the past?
How do we overcome scarcity of in-situ data?
How do we deal with multiple variables?

High Resolution evapotranspiration data product

Consecutive drought days as a new framework for drought monitoring

Improved Soil Moisture estimates in East Africa

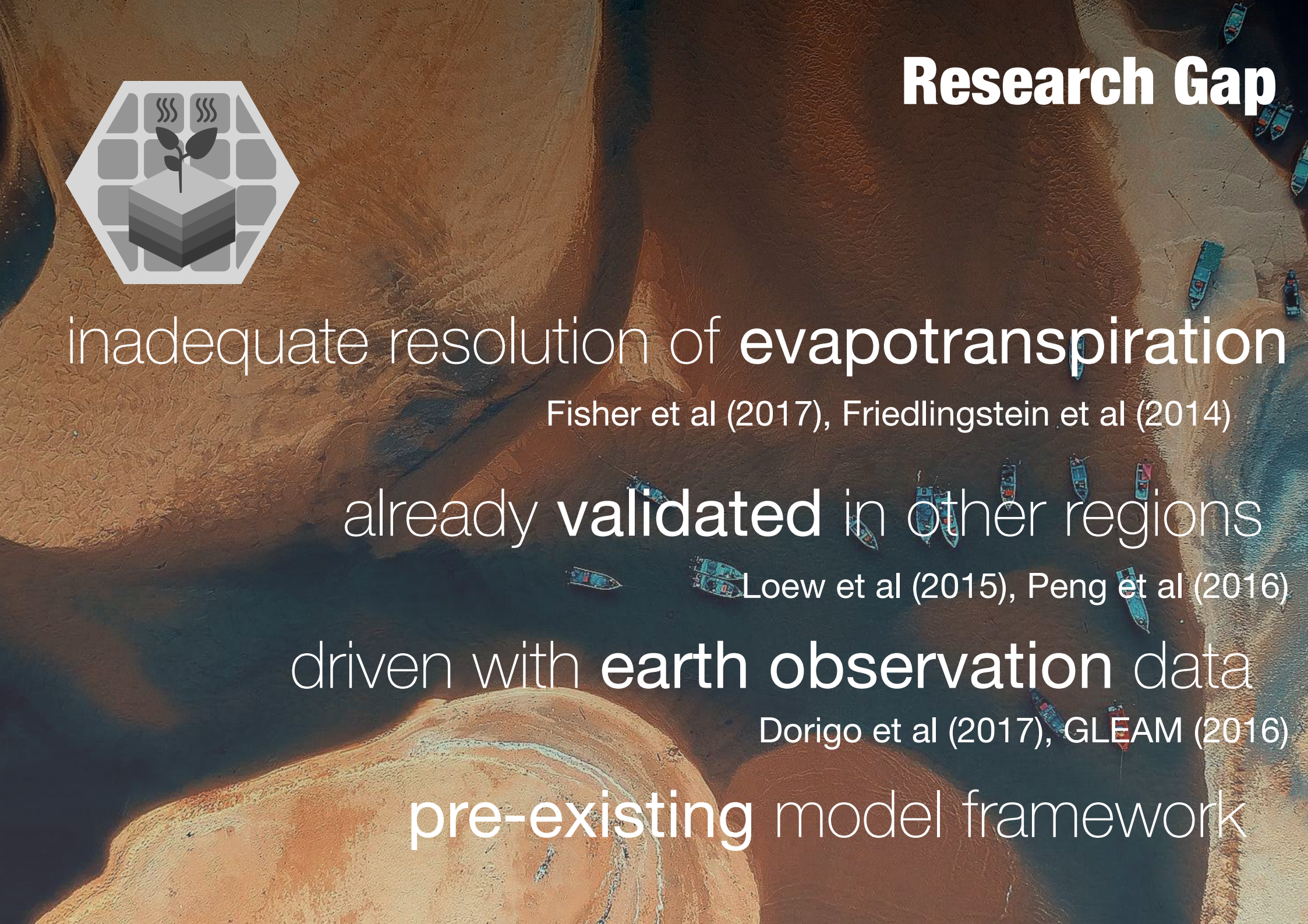
Quantified impact of drought on crop yield



Research Gap

Evapotranspiration represents the key variable in linking ecosystem functioning, carbon and climate feedbacks, agricultural management, and water resources

Fisher et al (2017)



Research Gap

inadequate resolution of **evapotranspiration**

Fisher et al (2017), Friedlingstein et al (2014)

already **validated** in other regions

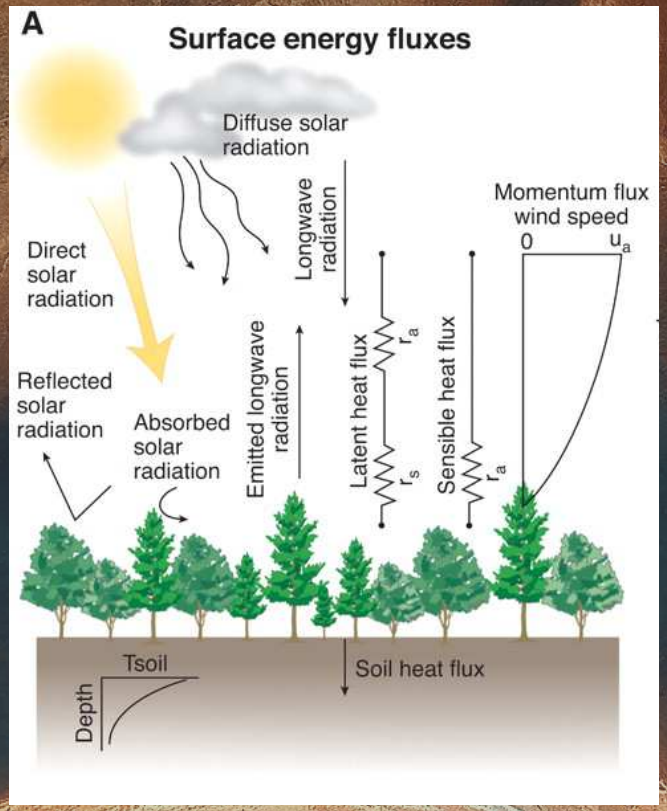
Loew et al (2015), Peng et al (2016)

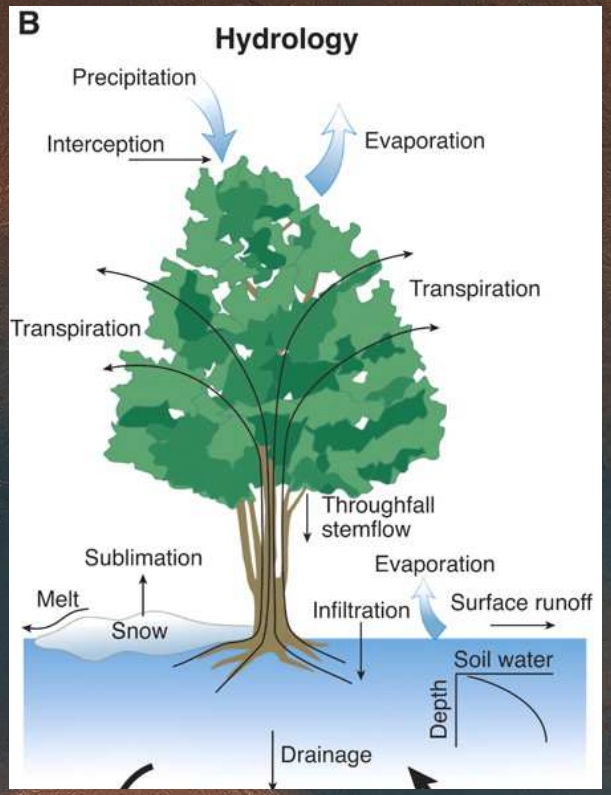
driven with **earth observation** data

Dorigo et al (2017), GLEAM (2016)

pre-existing model framework

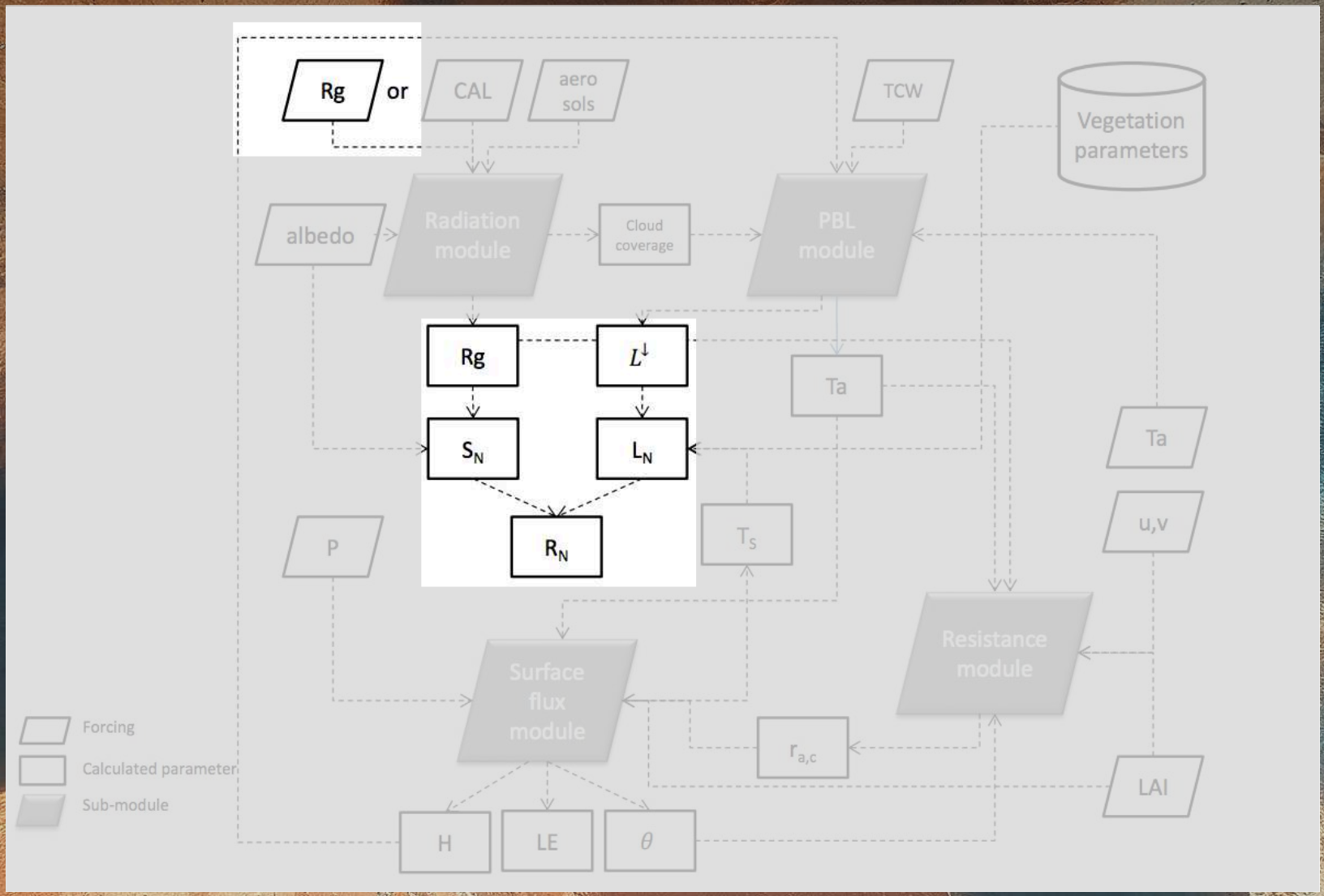
Method





Bonan (2008)

Method



Loew et al (2015)

Research Gap

lots of **different drought indices**

Van Loon (2014), Sheffield and Wood (2011)

focus on **extreme** events

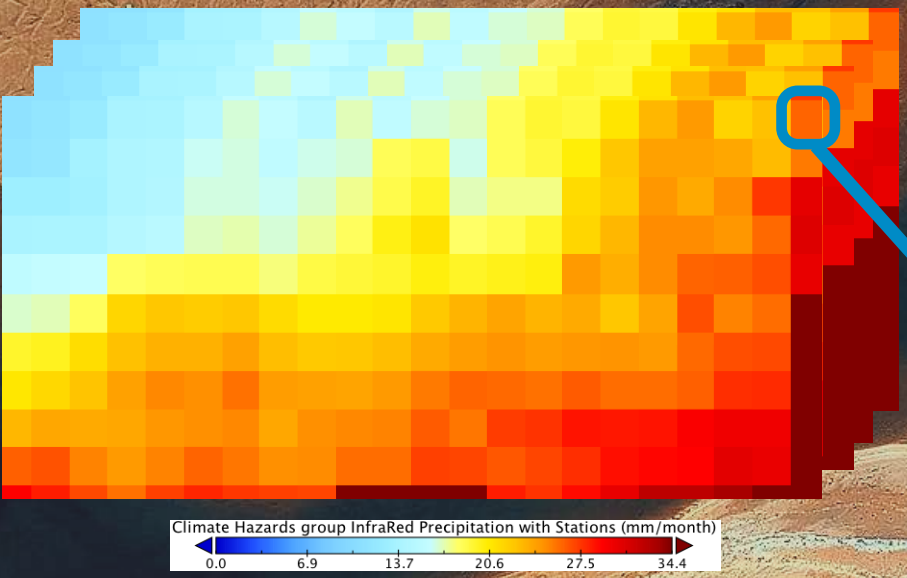
Anderson et al (2012)

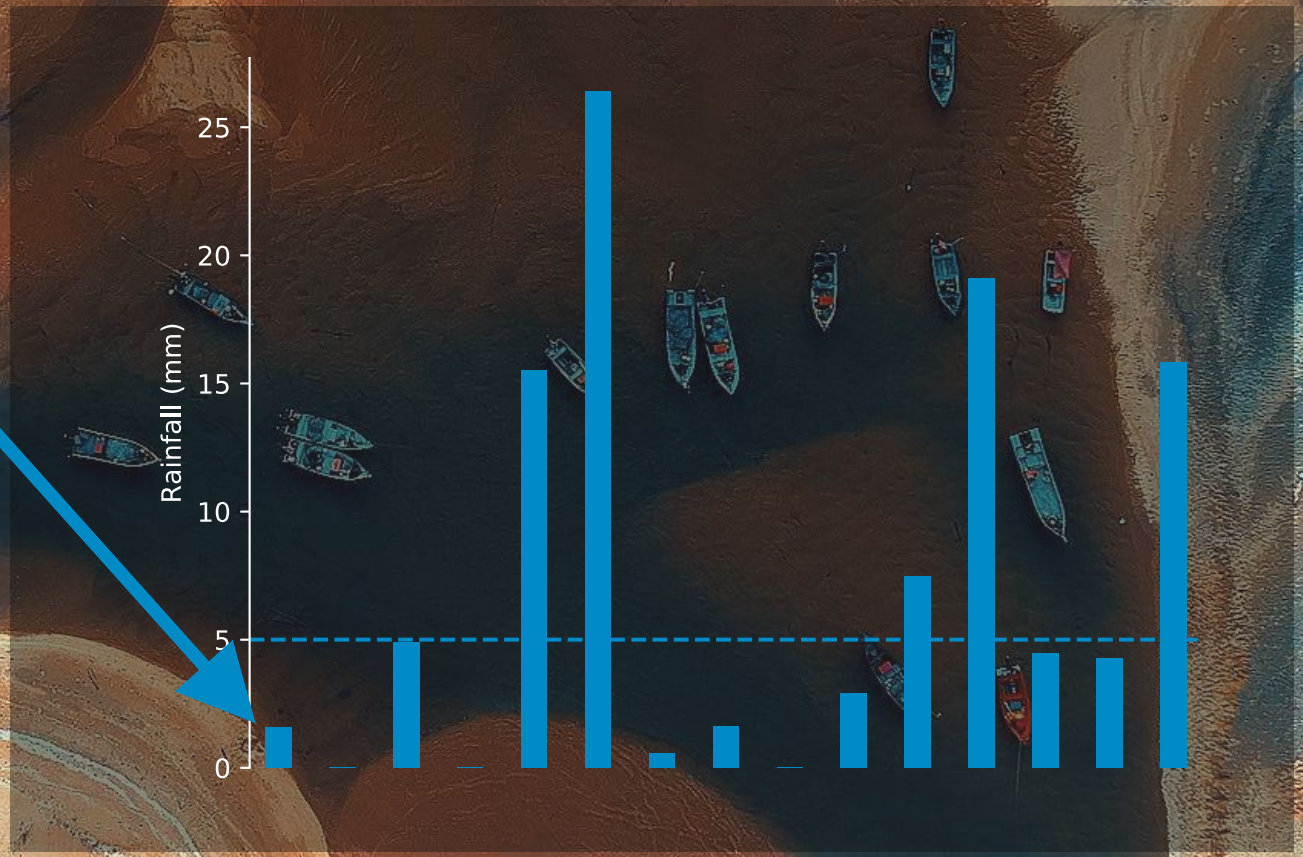
move to **incorporating multiple** variables

Vincente Serrano et al (2016)

Method

persistence & risk

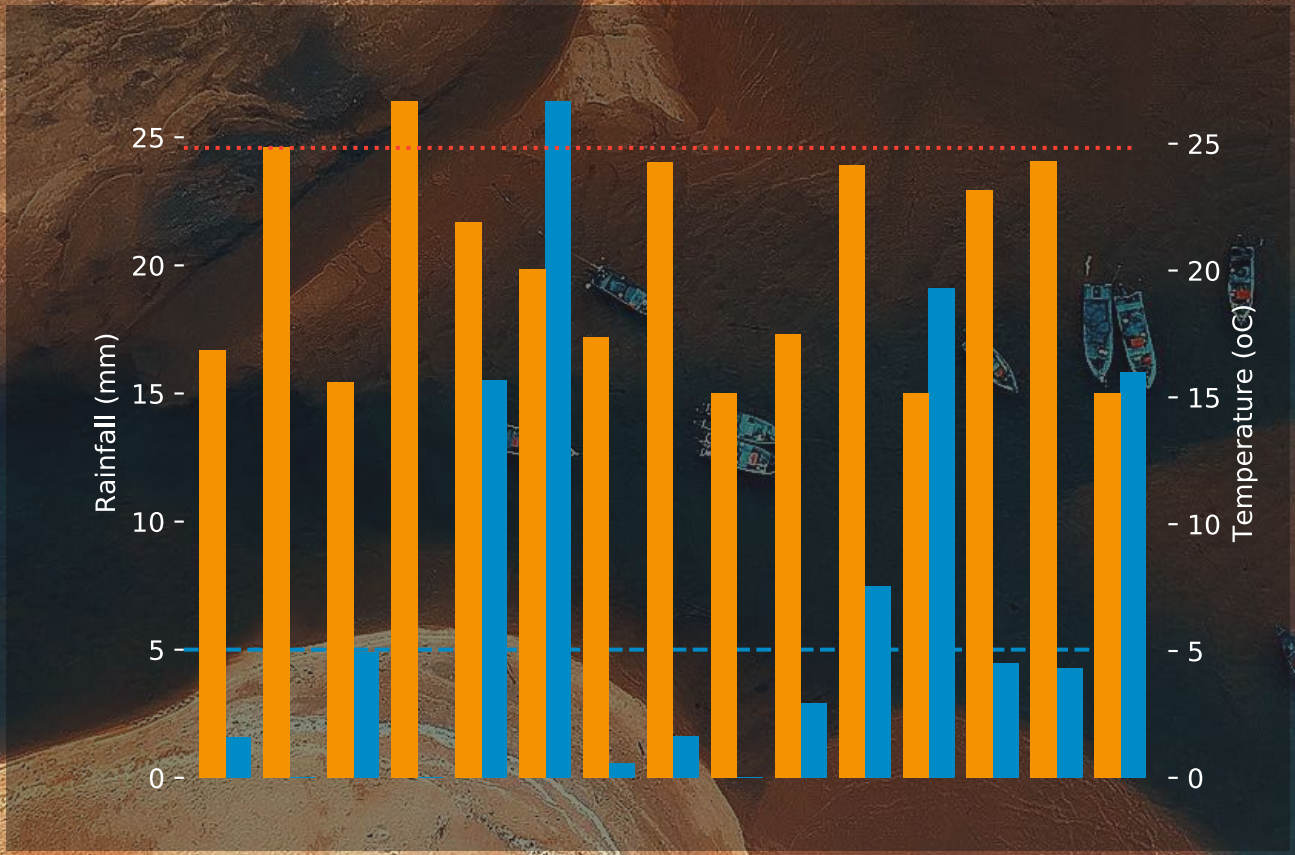




Dyer (personal communication)

Method

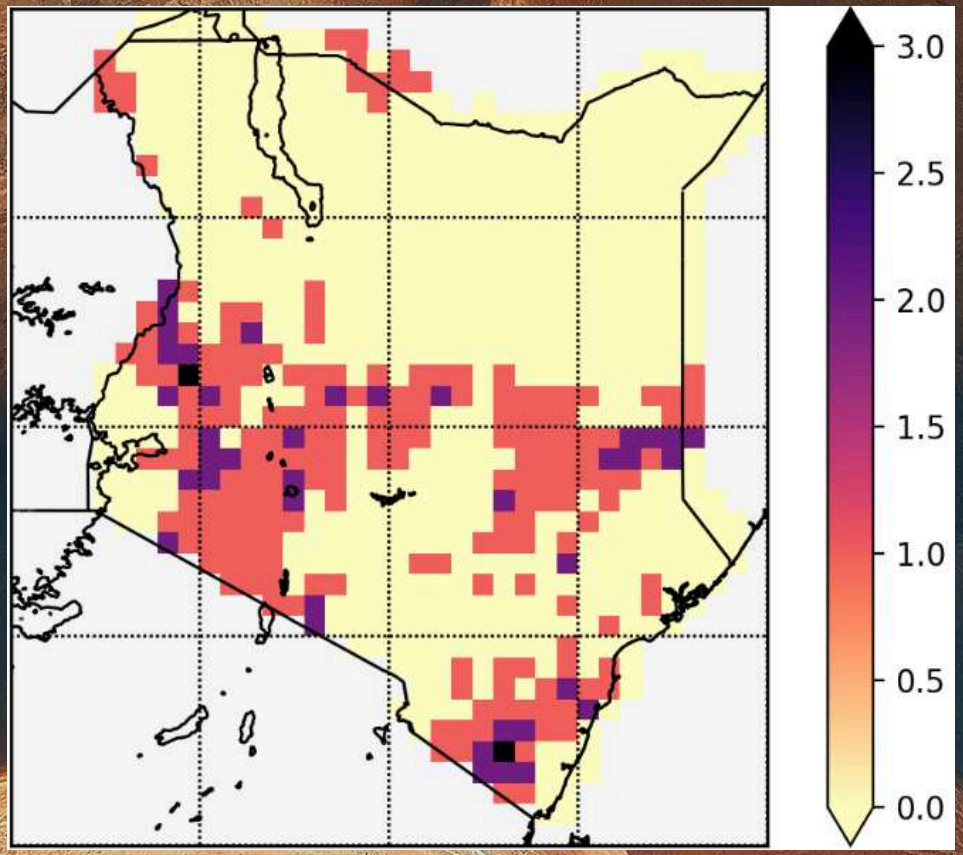
persistence & risk



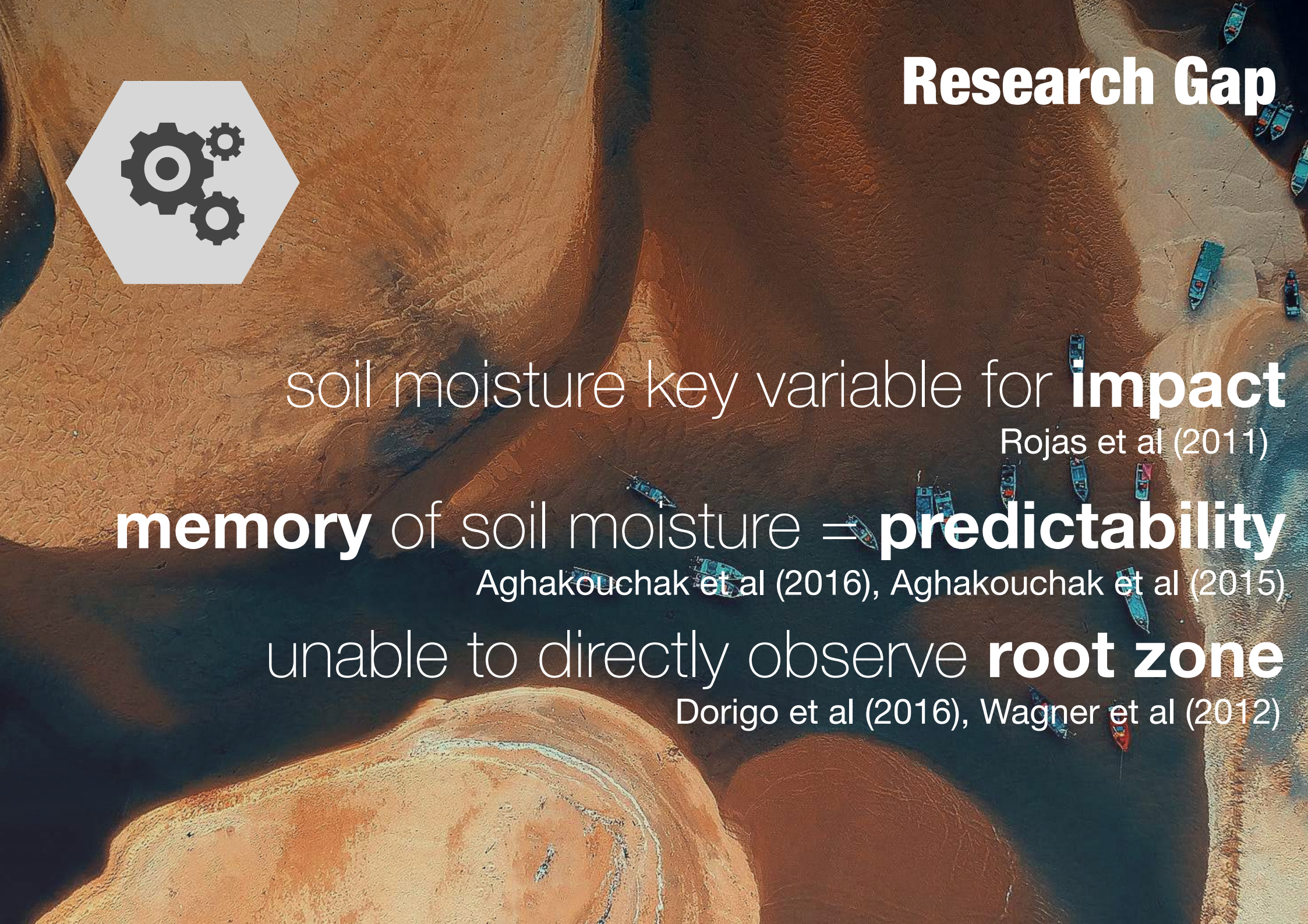
Dyer (personal communication)

Method

How often is a **dry MAM** followed by a **dry OND**?



Ellen Dyer (2018 REACH)



Research Gap

soil moisture key variable for **impact**

Rojas et al (2011)

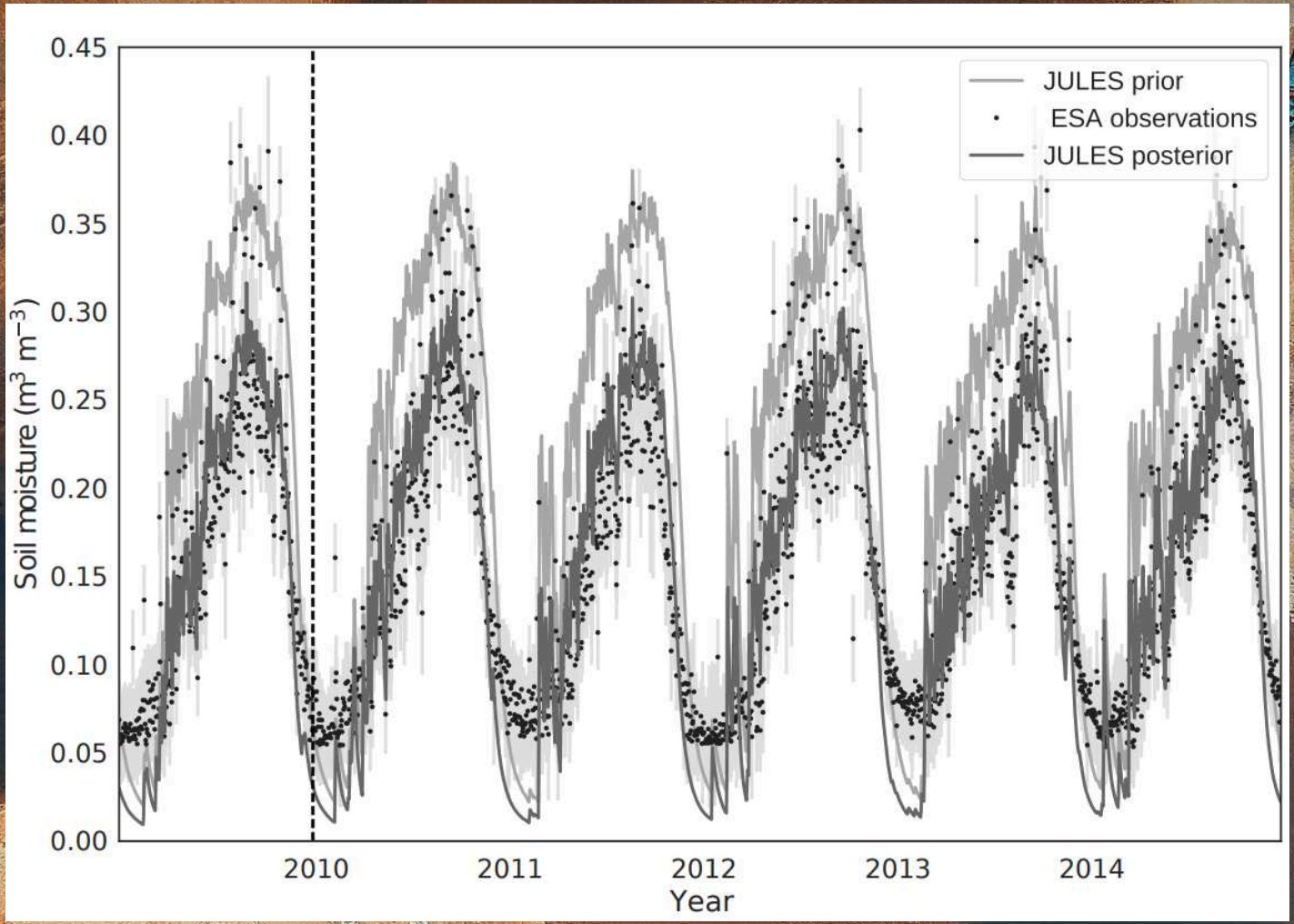
memory of soil moisture = **predictability**

Aghakouchak et al (2016), Aghakouchak et al (2015)

unable to directly observe **root zone**

Dorigo et al (2016), Wagner et al (2012)

Method



Pinnington et al (2018)

Research Gap

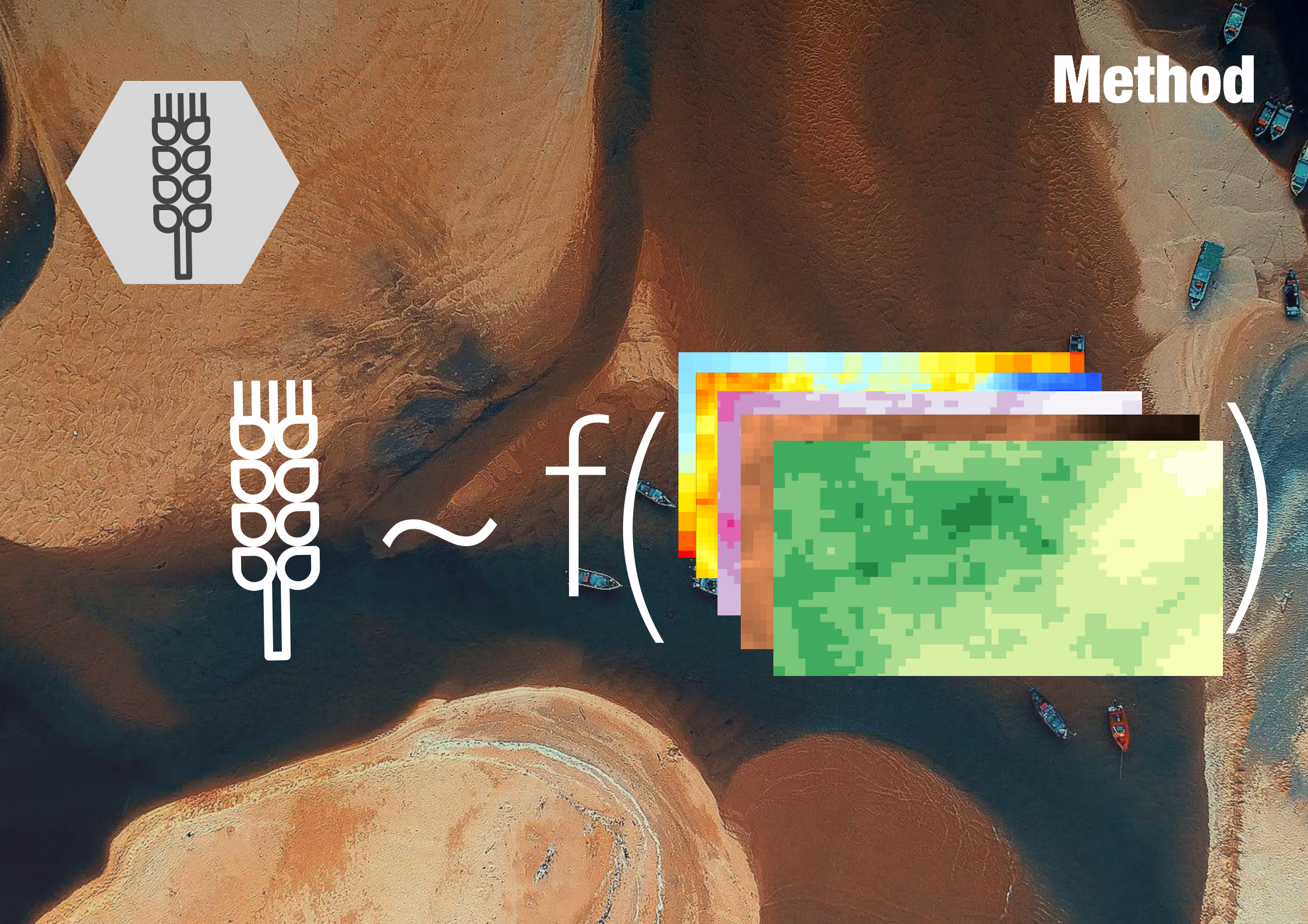
impact often considered at **national scale**

Enenkel et al (2011)

Increased predictive **accuracy using GPs**

J, You et al (2017)

Method



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