

Salt-marsh sedimentation affected by storm surges and anthropogenic impacts

D. Tognin, A. D'Alpaos, M. Ghinassi, M. Marani, L. Carniello

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UNIVERSITÀ
DEGLI STUDI
DI PADOVA



DEPARTMENT OF CIVIL,
ENVIRONMENTAL AND
ARCHITECTURAL
ENGINEERING



DEPARTMENT OF
GEOSCIENCES

MARSHES, STORM SURGES AND BARRIERS

Sea Level Rise

Sedimentation

Storm-surge barriers

Salt marshes

Coastal urban areas

MARSHES, STORM SURGES AND BARRIERS

? Which is relative contribution of tide and storm surges to marsh sedimentation?



? How do storm-surge barriers affect salt-marsh sedimentation?

FIELD MEASUREMENTS IN THE VENICE LAGOON, ITALY



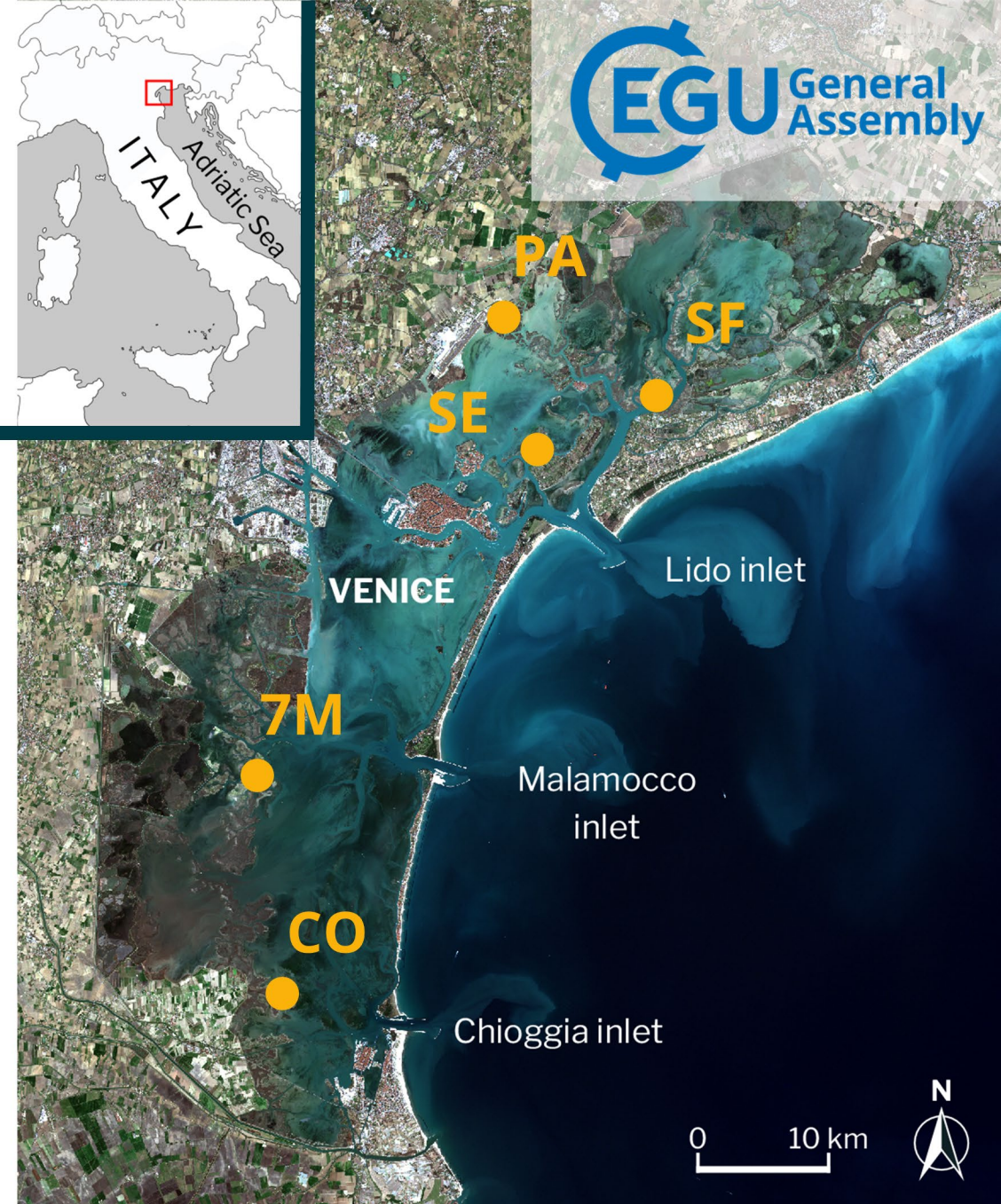
5 study areas



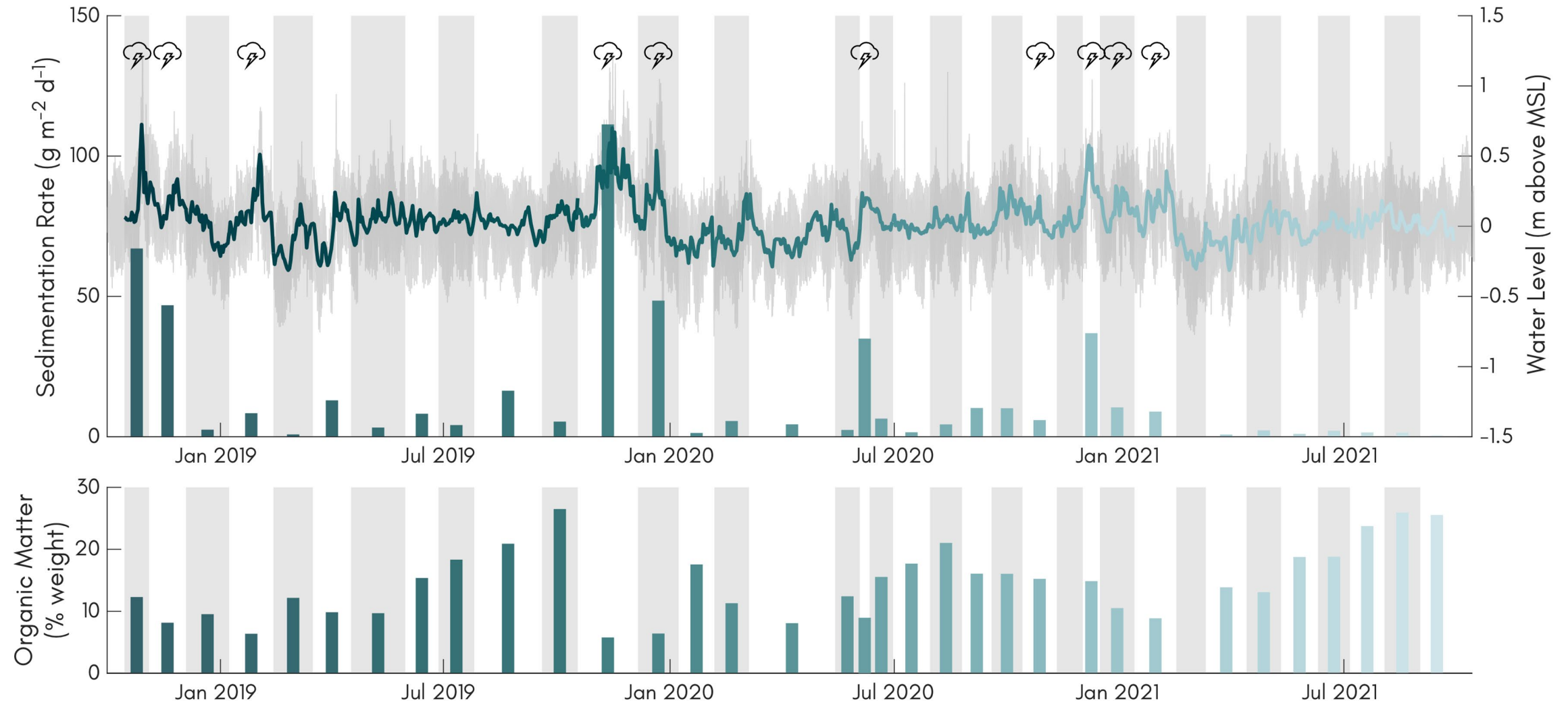
3 years (Oct-2018 – Oct-2021)
monthly sampling or
after storm surges



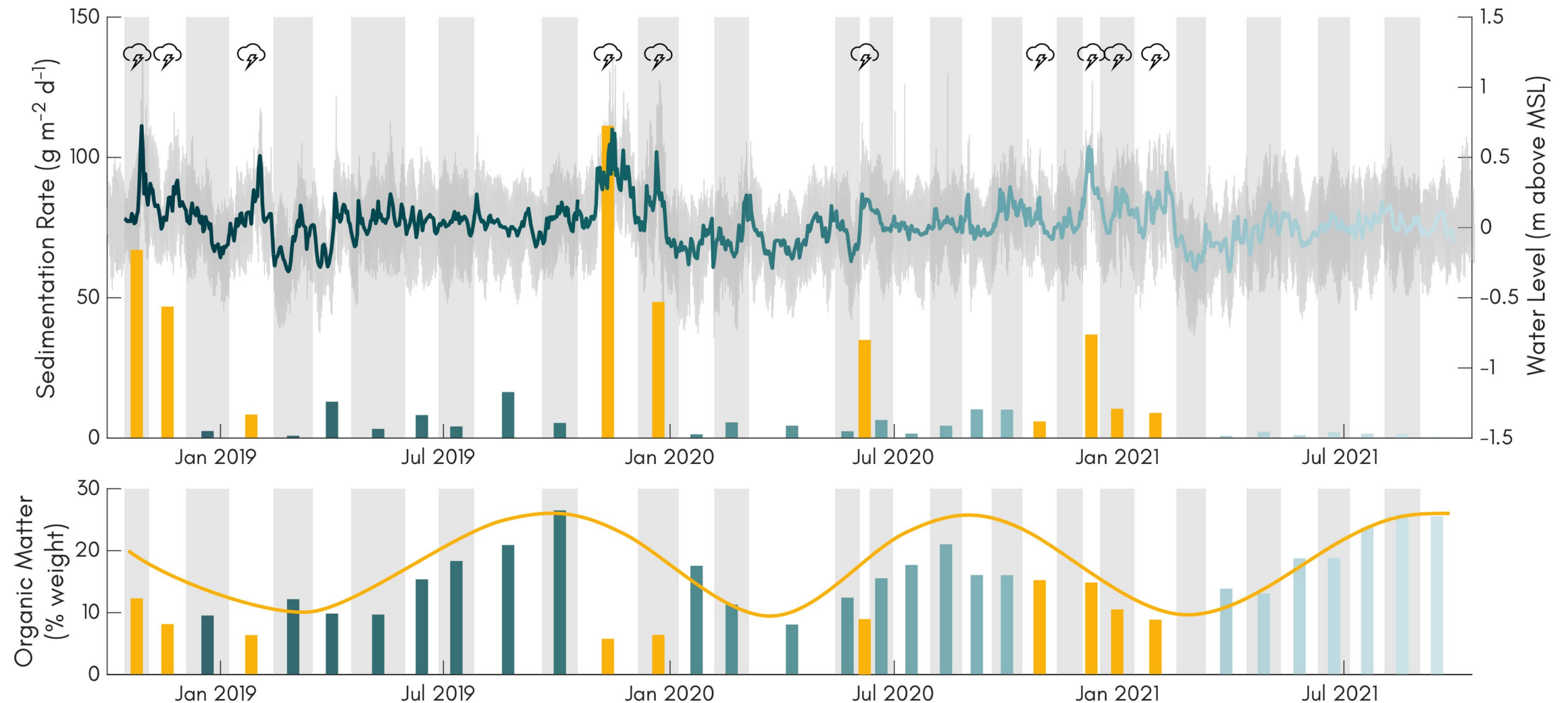
2556 samples



SEDIMENTATION VARIES OVER TIME



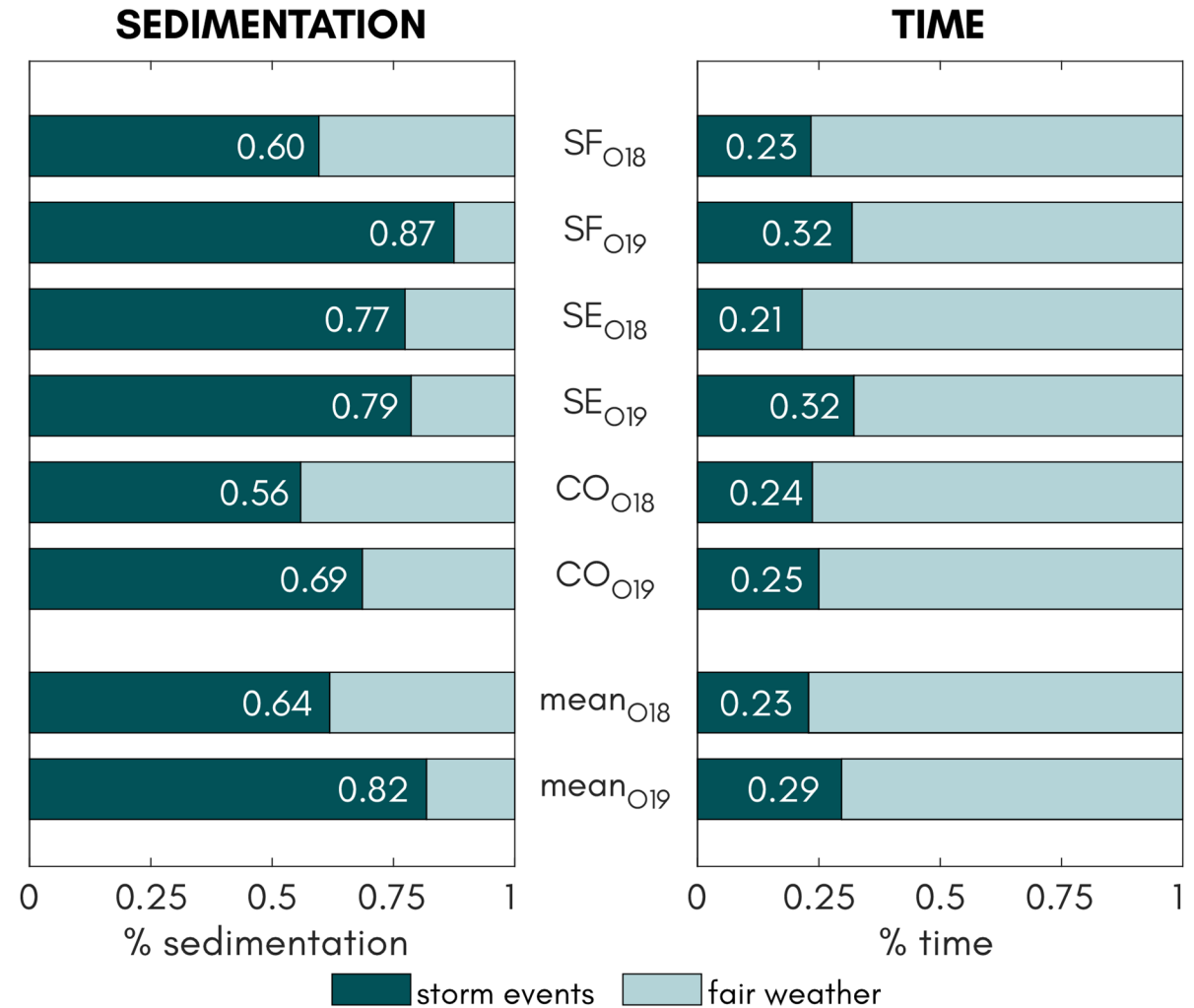
SEDIMENTATION VARIES OVER TIME



IS MARSH SEDIMENTATION STORM-DRIVEN?

70%

of yearly sedimentation
occurs during storms



STORM-SURGE BARRIERS REDUCE MARSH RESILIENCE TO SEA LEVEL RISE

Storm-surge barriers



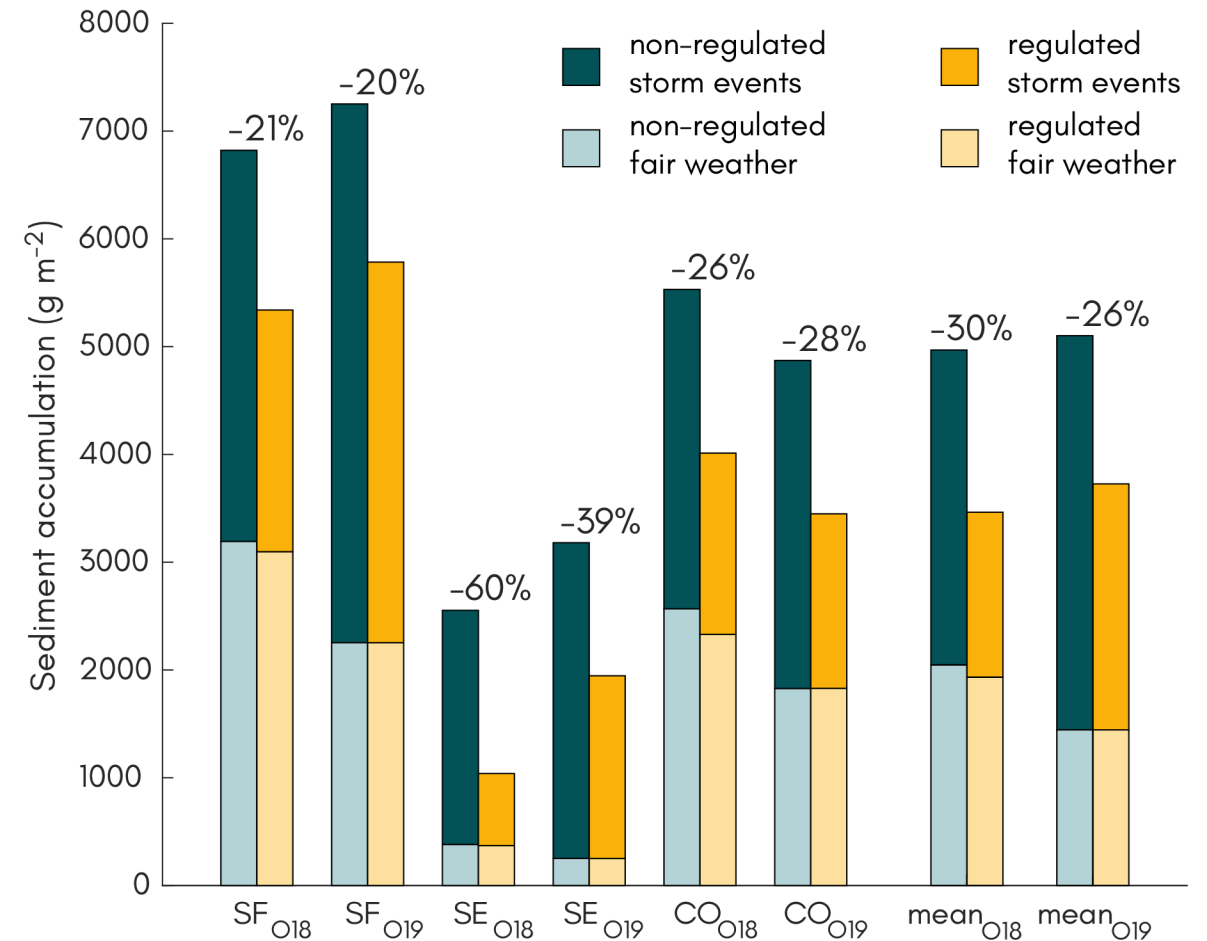
water levels during surges



marsh flooding

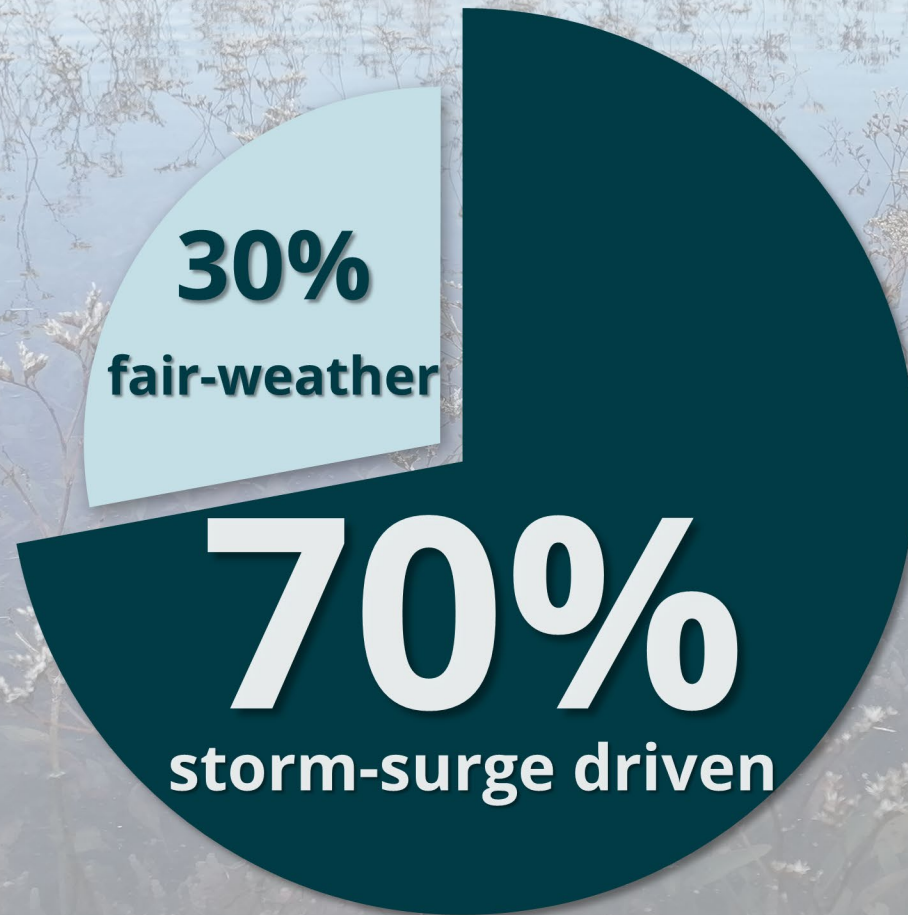


sedimentation

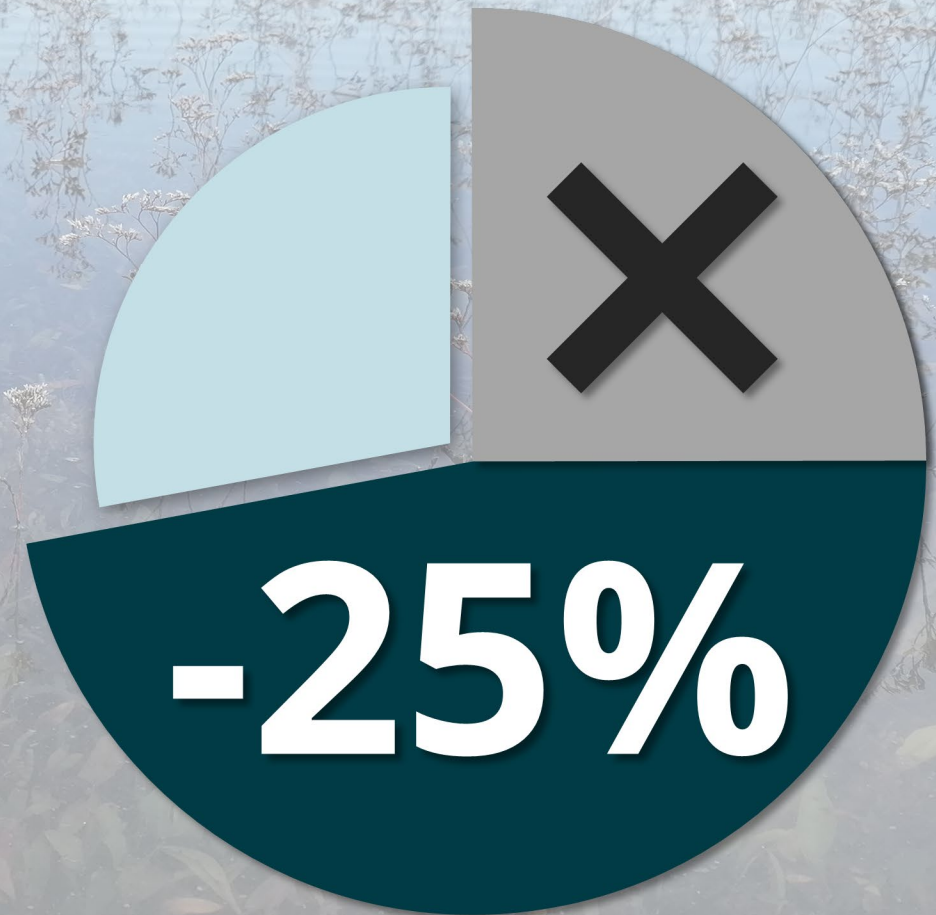


TAKE-HOME MESSAGES

Non-regulated



Flood-regulated



Thank you for your attention
Any questions?

davide.tognin@phd.unipd.it

Further details:

nature
geoscience

ARTICLES

<https://doi.org/10.1038/s41561-021-00853-7>

 Check for updates

Marsh resilience to sea-level rise reduced by storm-surge barriers in the Venice Lagoon

Davide Tognin ^{1,2}✉, Andrea D'Alpaos ^{2,3}, Marco Marani ^{1,2} and Luca Carniello ^{1,2}