

Westerschelde vs. Oosterschelde: *how management affects benthic habitat quality*

Francesco Cozzoli, Sven Smolders, Menno Eelkema,
Tjeerd J Bouma, Tom Ysebaert, Vincent Escaravage,
Stijn Temmerman, Patrick Meire & Peter MJ Herman

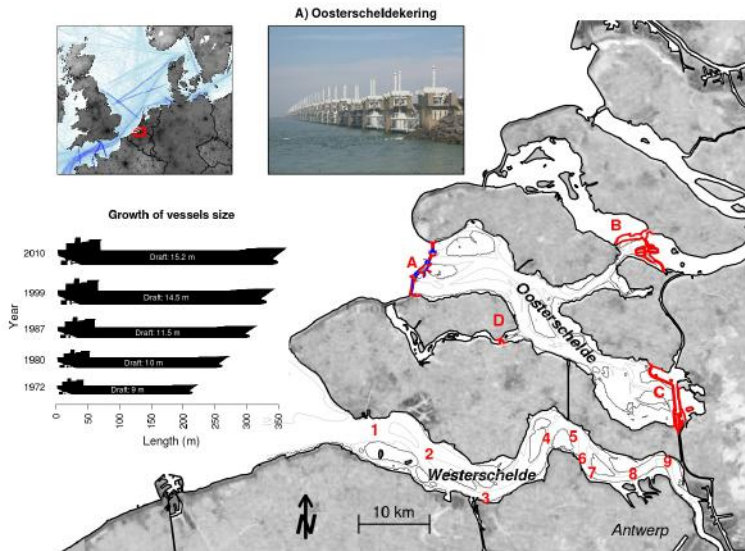
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December 11, 2013

A younger Zeeland



Recent developments (ca. 1960 - present)

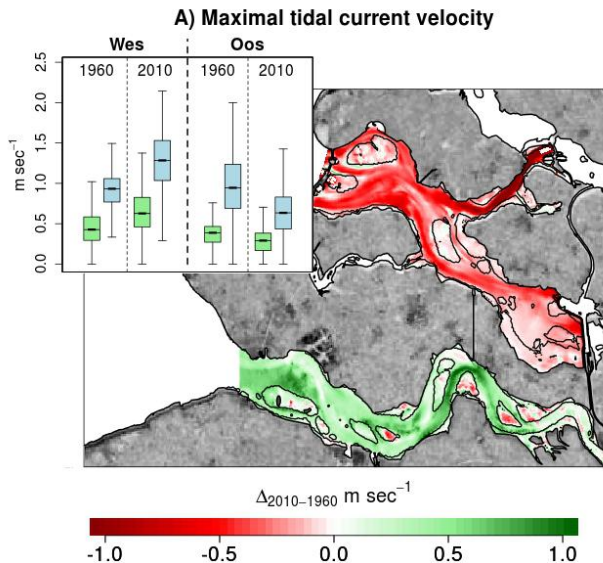


Changes in abiotic variables

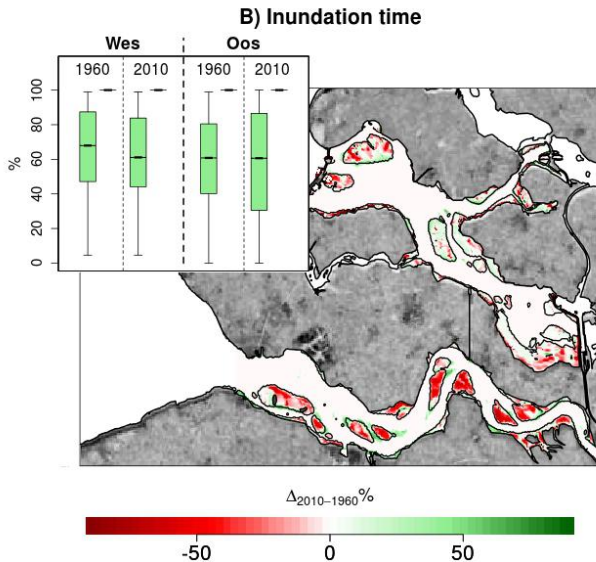
Morphology & Hydrodynamics

Numerical modeling

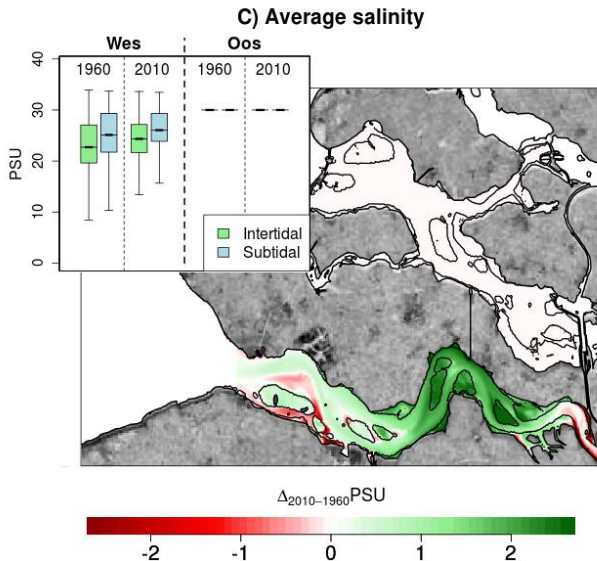
Strong effect on hydrodynamics



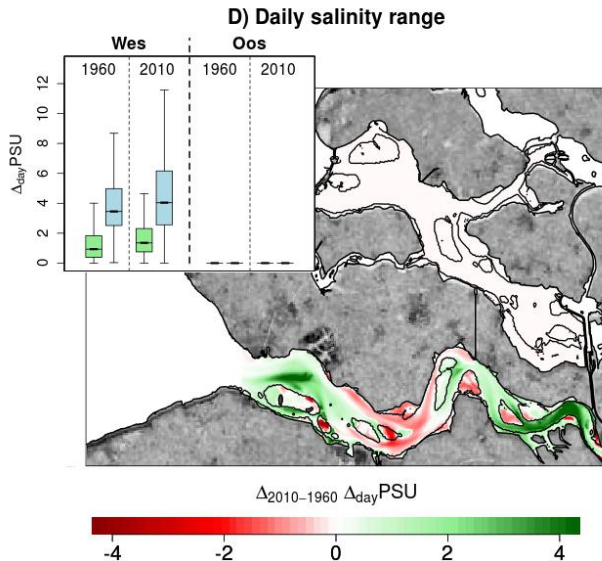
Strong effect on hydrodynamics



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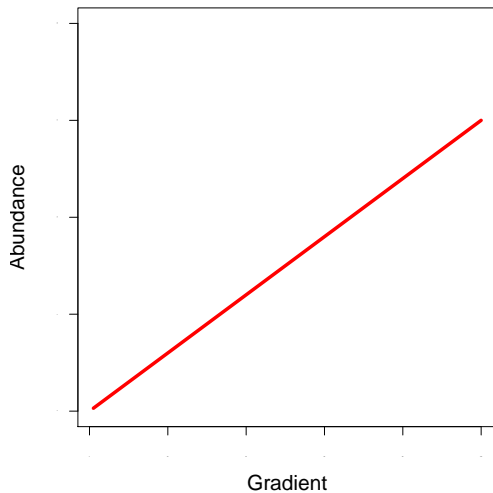


Biotic responses

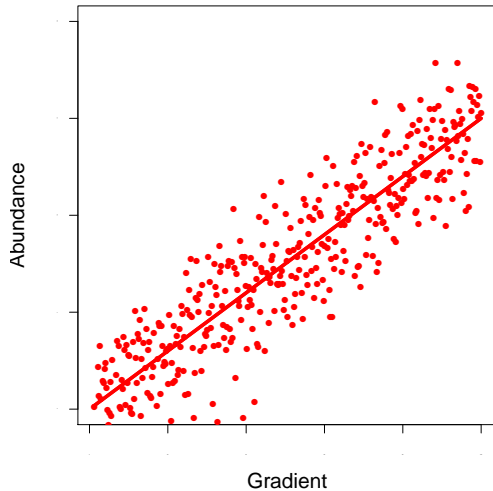
Macrozoobentos

Species distribution modeling

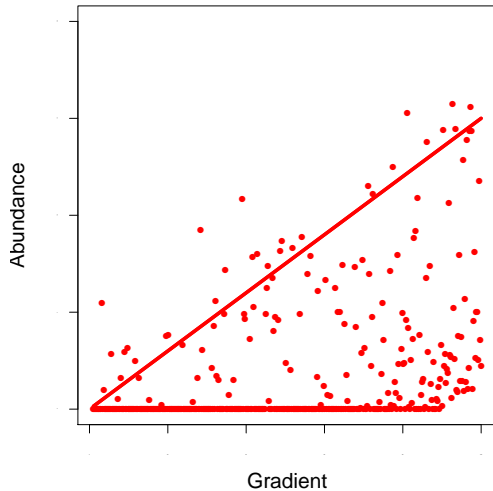
SDM: quantile regression



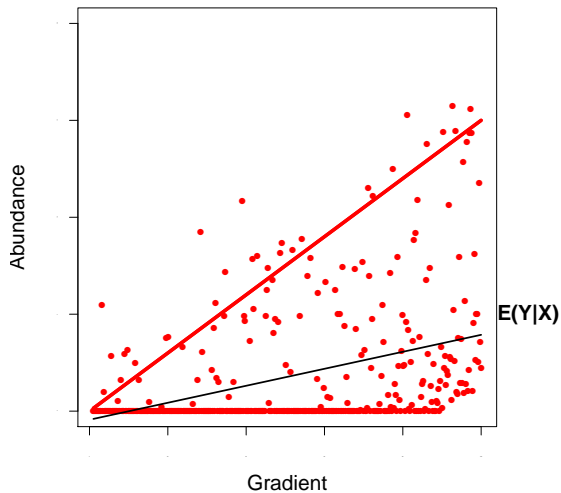
SDM: quantile regression



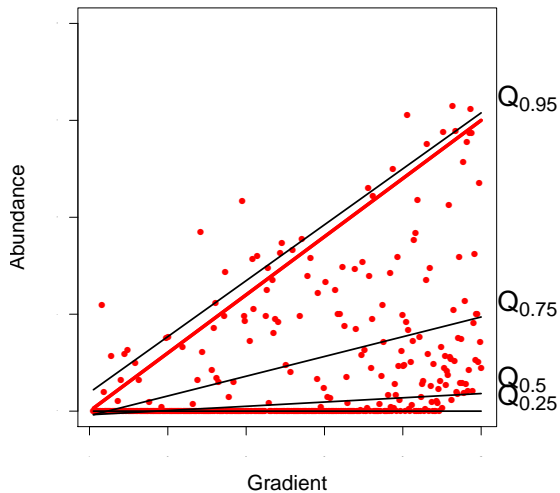
SDM: quantile regression



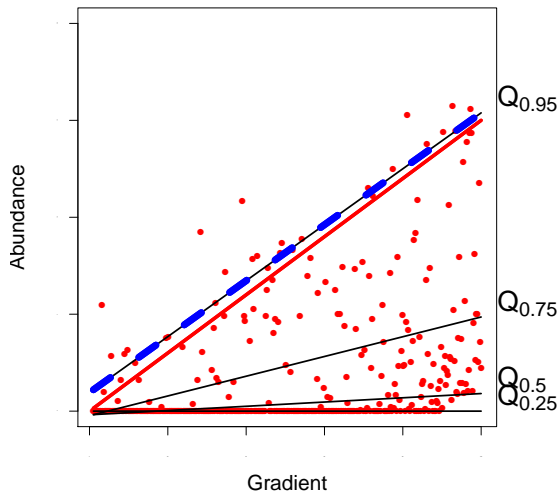
SDM: quantile regression



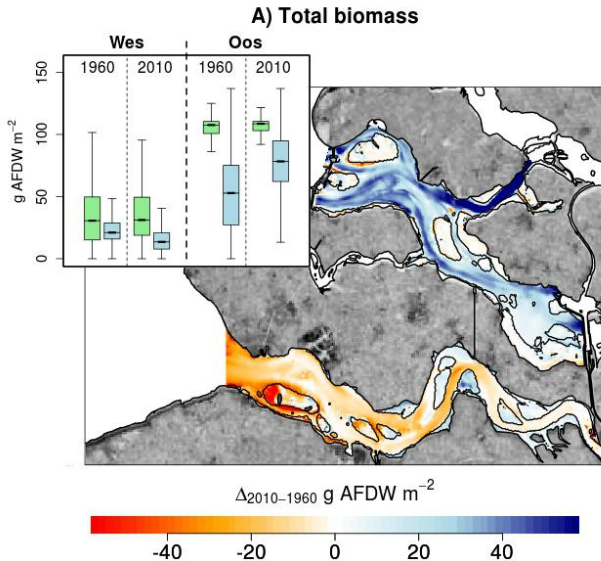
SDM: quantile regression



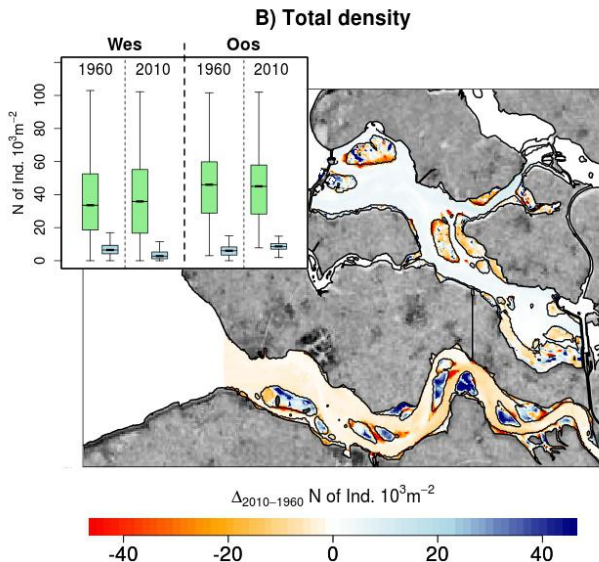
SDM: quantile regression



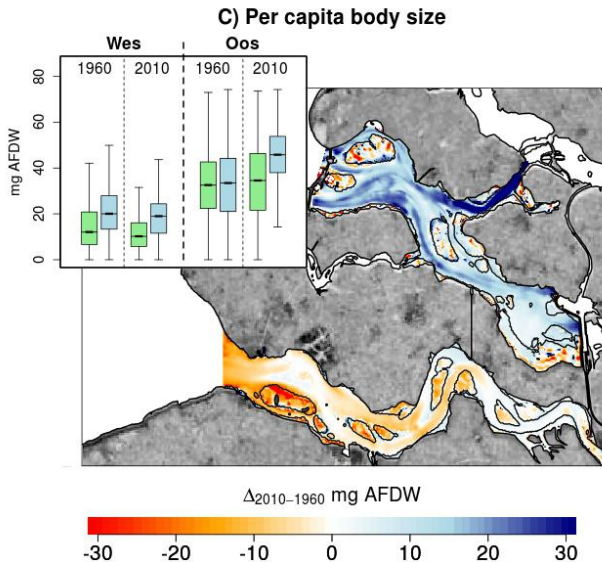
Benthic communities responses



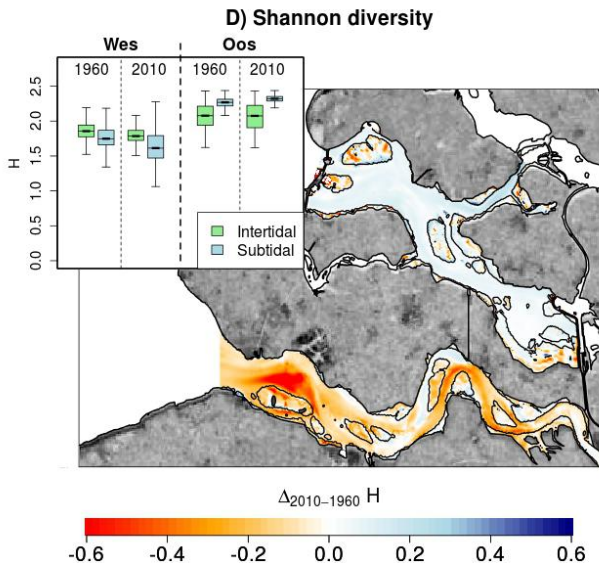
Benthic communities responses



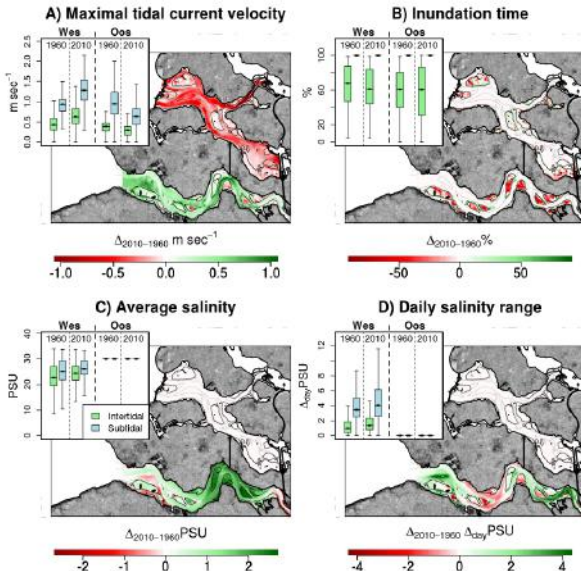
Benthic communities responses



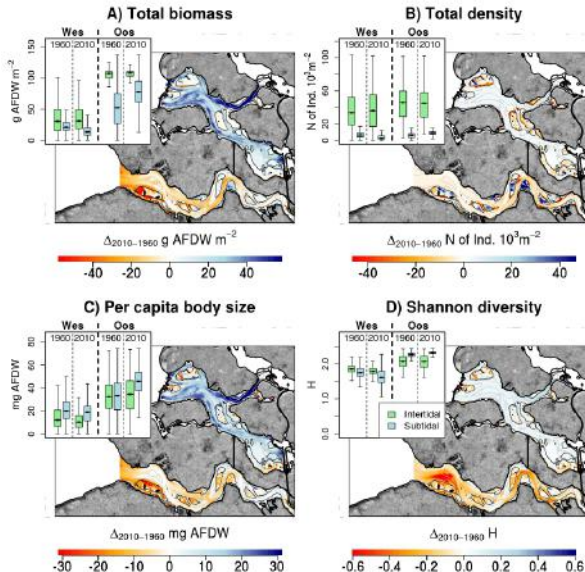
Benthic communities responses



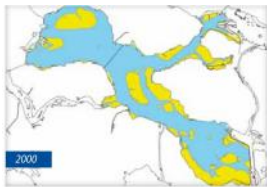
Management



Management \Rightarrow Benthic communities responses



The Oosterschelde future I



Jongelin, 2007

The Oosterschelde future II



Scoloplos armiger: deposit feeder, widespread, preferentially intertidal



Peringia ulvae: grazer, small, locally abundant, strictly intertidal



Cerastoderma edule: suspensive feeder, large, important for *avifauna*, strictly intertidal

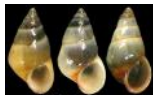
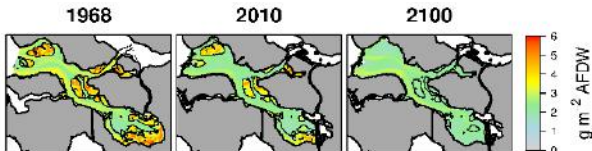


Lanice conchilega: selective deposit feeder, habitat former, preferentially subtidal

The Oosterschelde future II



S. armiger



Peringia ulvae: grazer, small, locally abundant, strictly intertidal



Cerastoderma edule: suspensive feeder, large, important for *avifauna*, strictly intertidal



Lanice conchilega: selective deposit feeder, habitat former, preferentially subtidal

The Oosterschelde future II



S. armiger



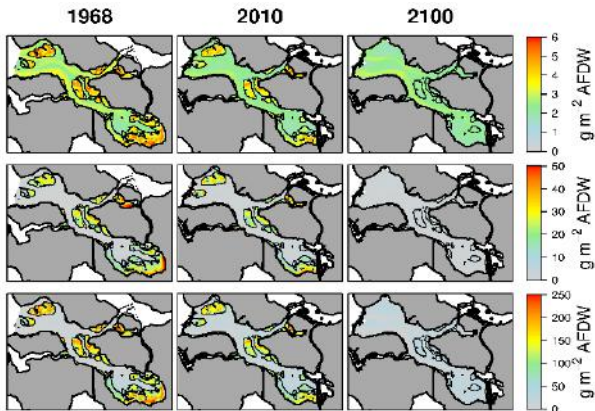
P. ulvae



C. edule



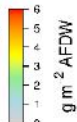
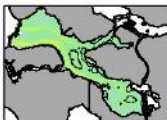
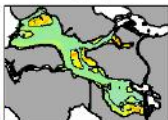
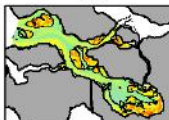
Lanice conchilega: selective deposit feeder, habitat former, preferentially subtidal



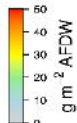
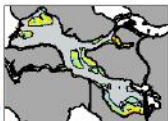
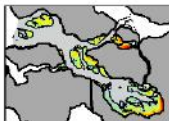
The Oosterschelde future II



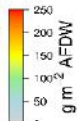
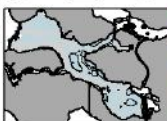
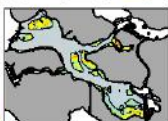
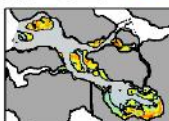
S. armiger



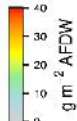
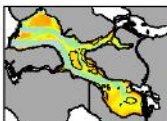
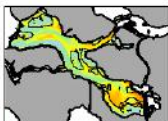
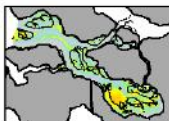
P. ulvae



C. edule



L. conchilega



Changes in abiotic variables

Morphology & Hydrodynamics

Numerical modeling



Biotic responses

Macrozoobentos

Species distribution modeling



Changes in ecosystem services

The Oosterschelde future III



HK



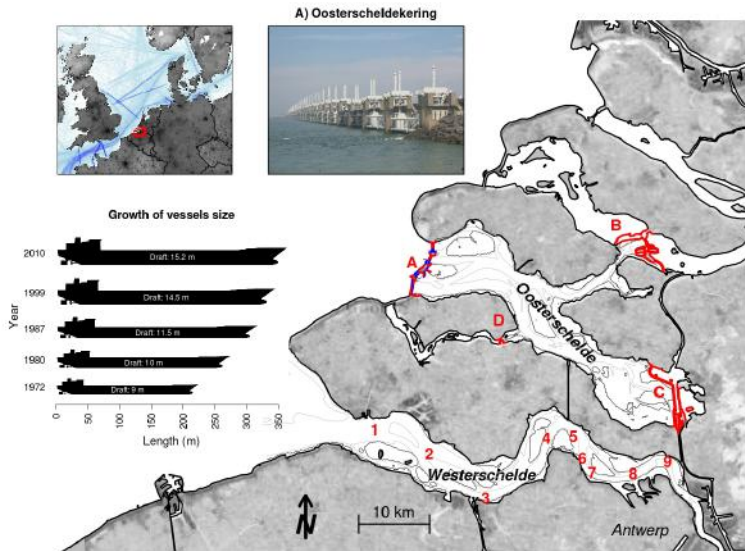
The Oosterschelde future III



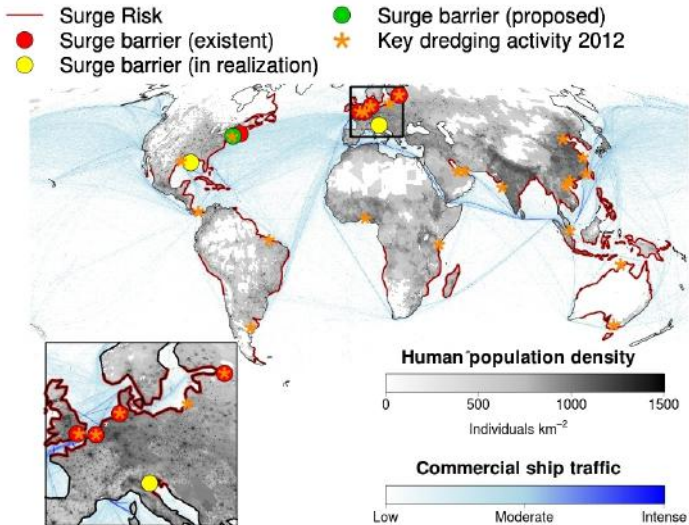
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Global relevance



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Thanks for your attention