

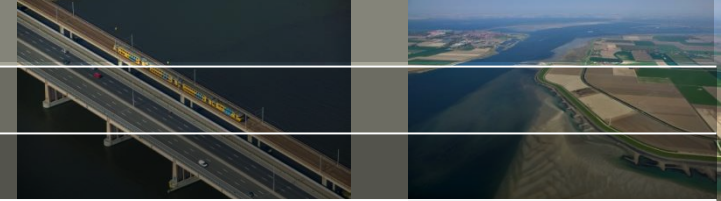


Pilot Westgat – model en data

Samenwerkdag 11 oktober 2019

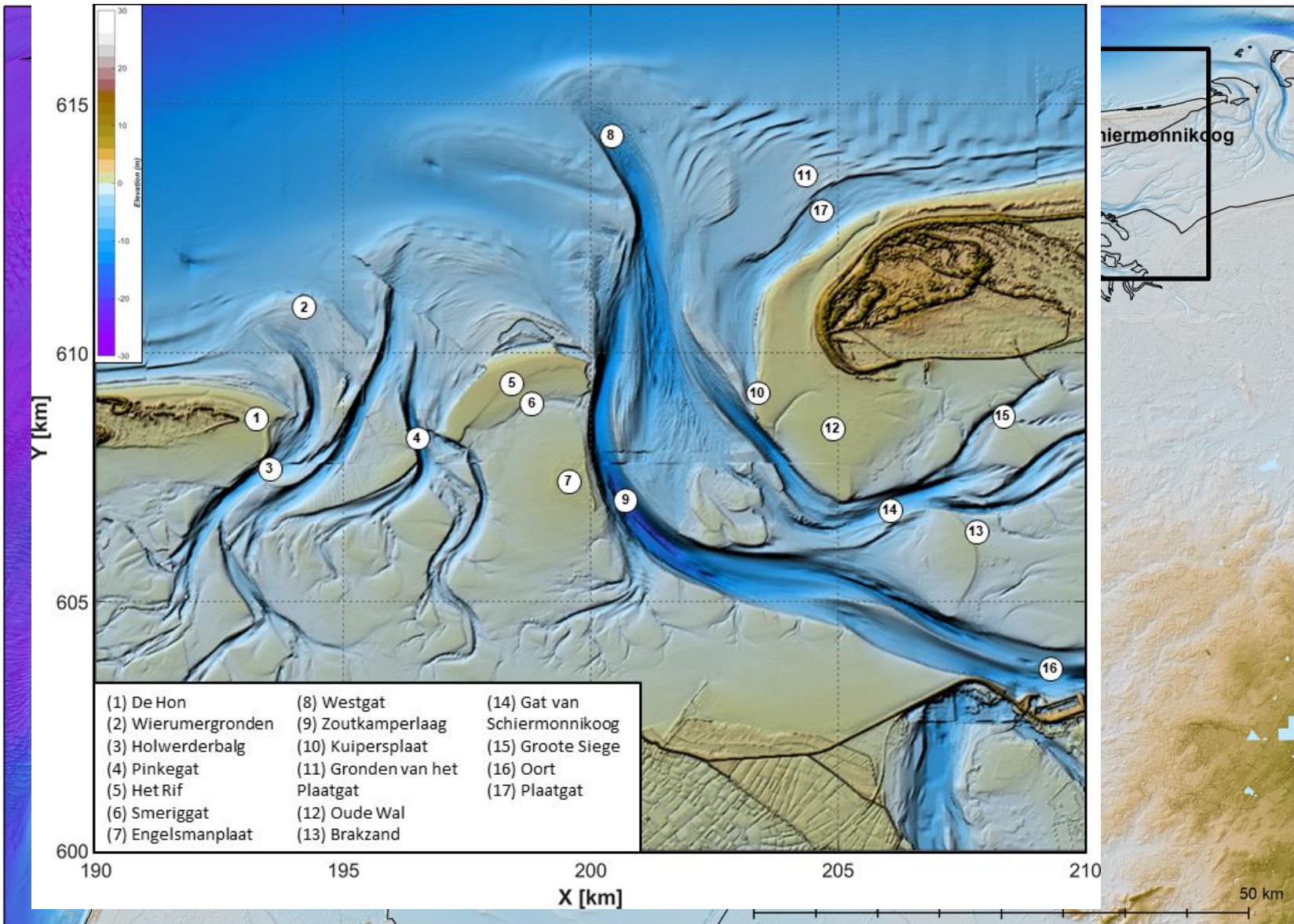
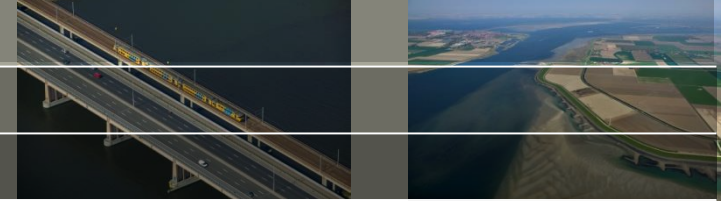
Tommer Vermaas, Edwin Elias

Inhoud

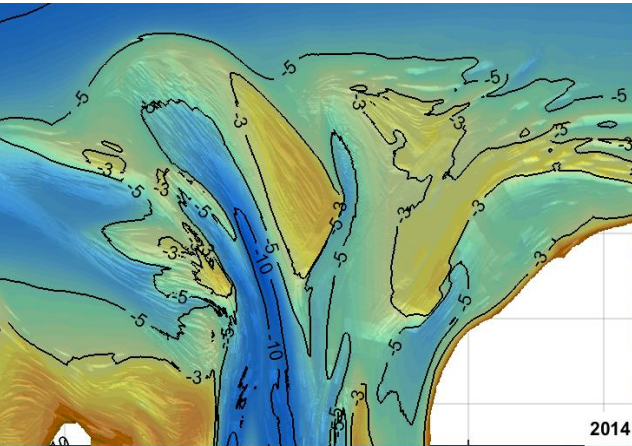
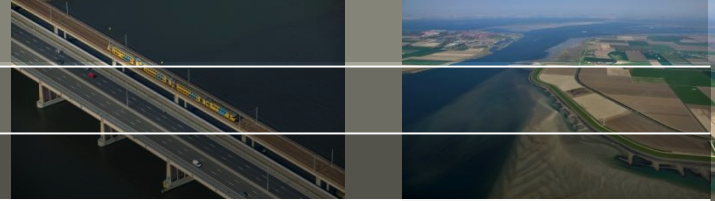


- Achtergrond
- Modelresultaten sommen 2018/2019 (hele zeegat)
- Eerste blik modelresultaten recente runs en metingen (focus op verdieping)

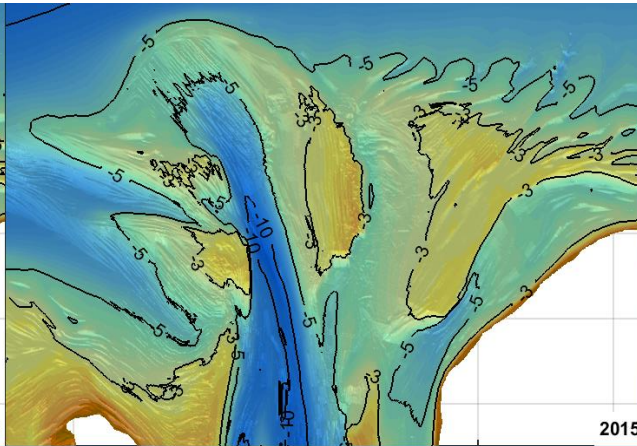
Studiegebied



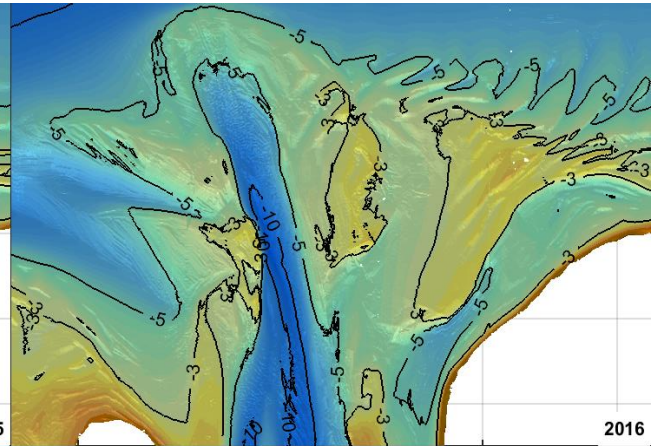
Recente ontwikkeling geulen



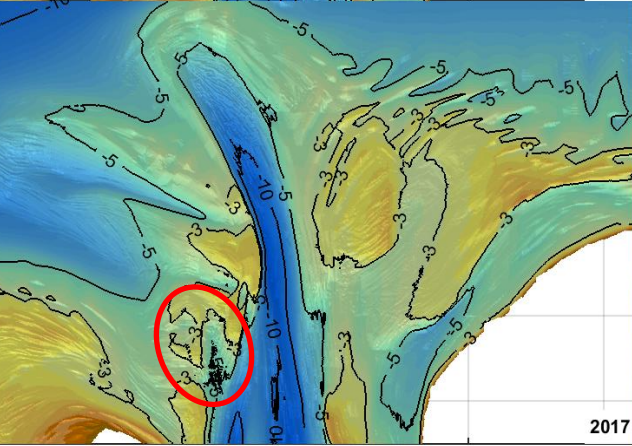
2014



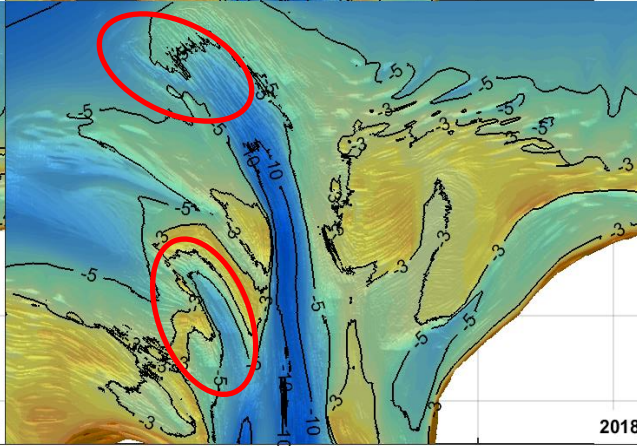
2015



2016

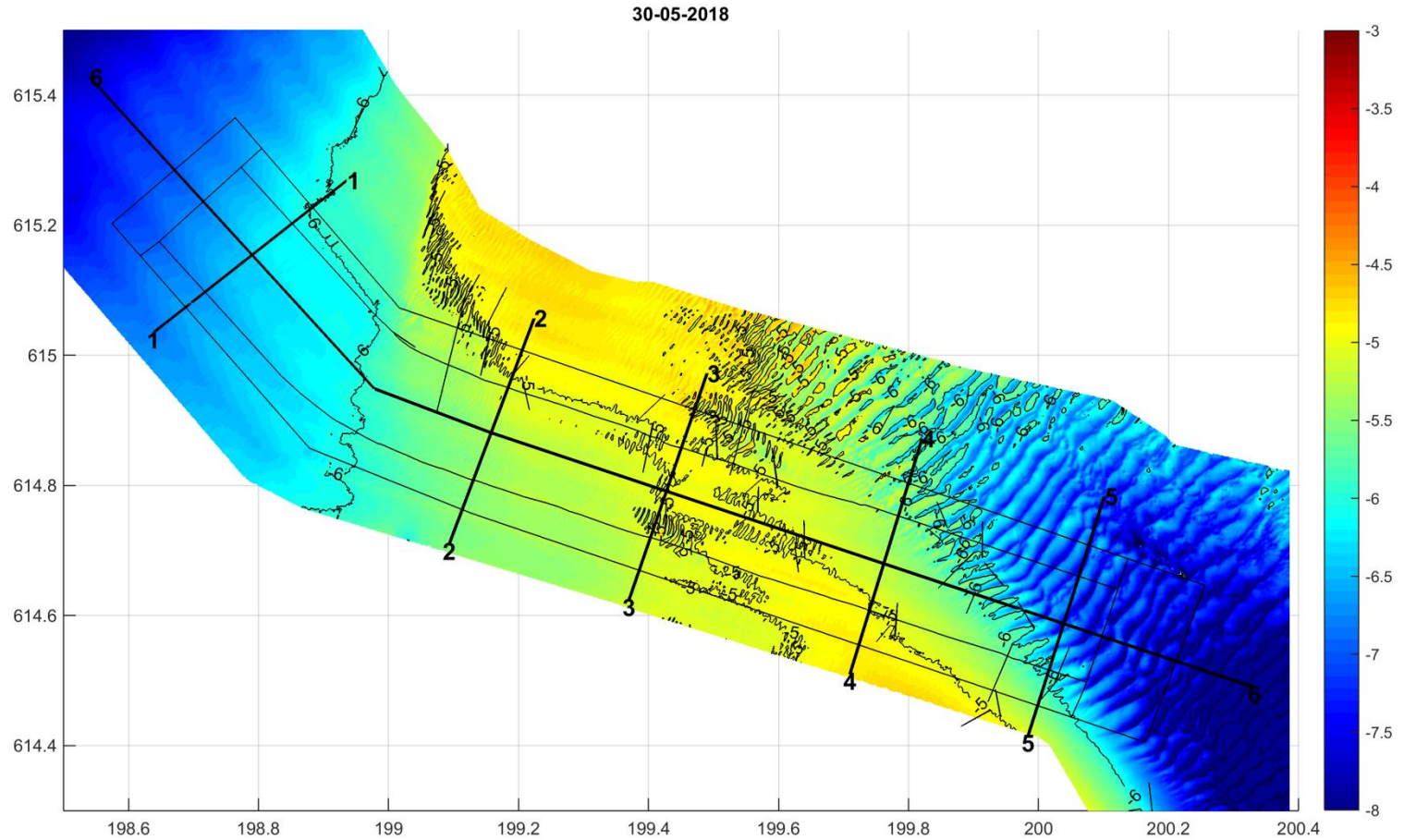
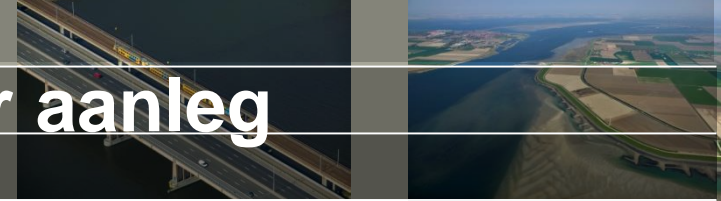


2017

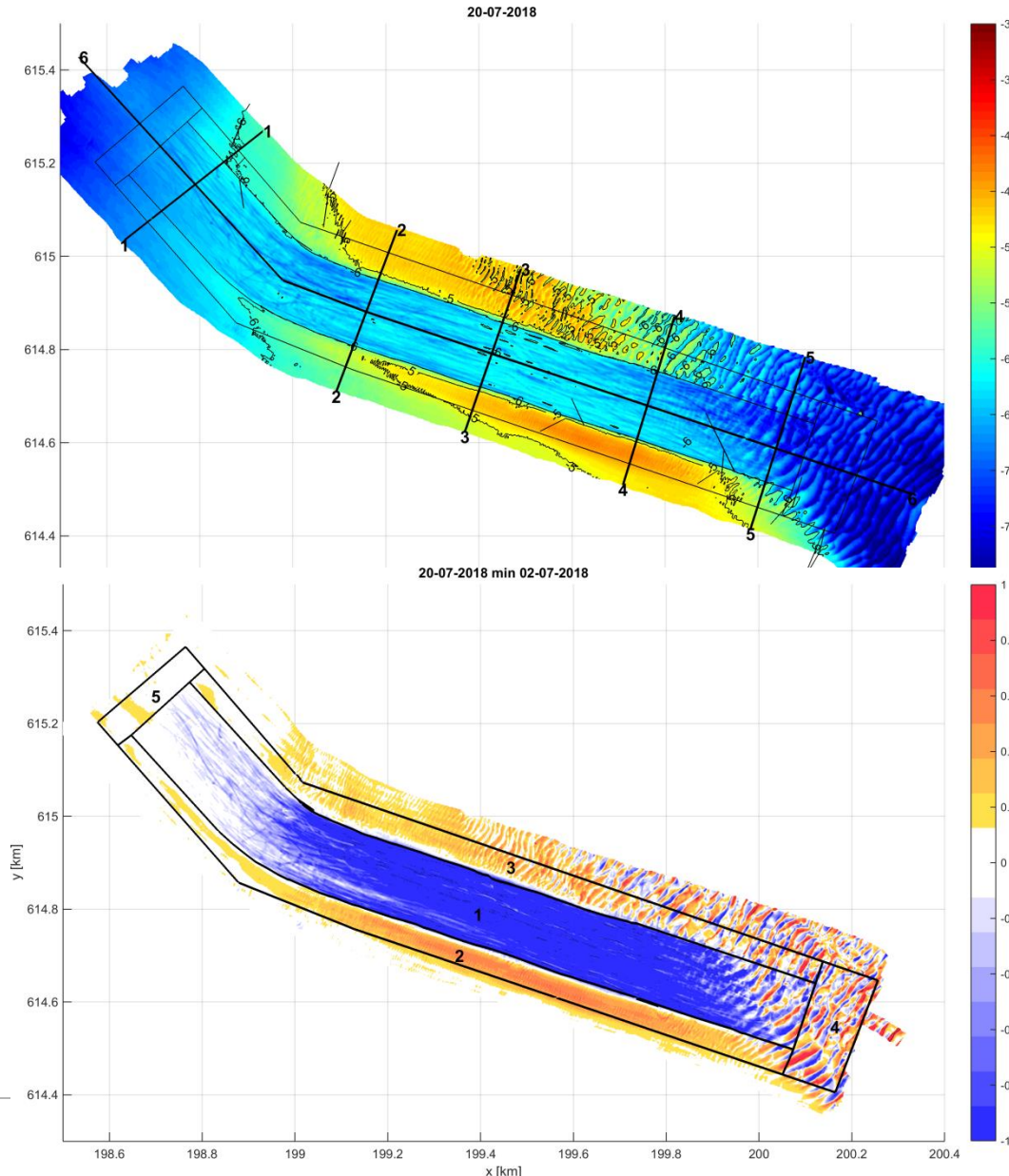
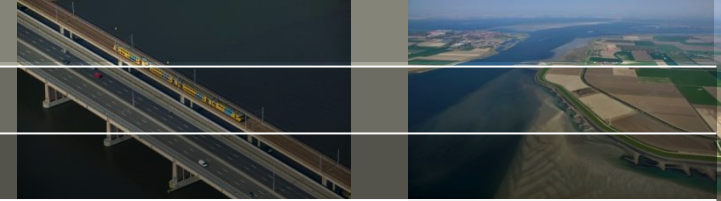


2018

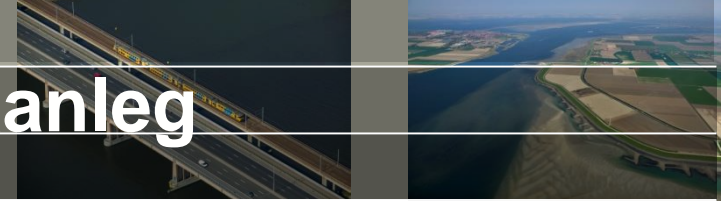
Pilot 2018 – ontwikkeling vóór aanleg



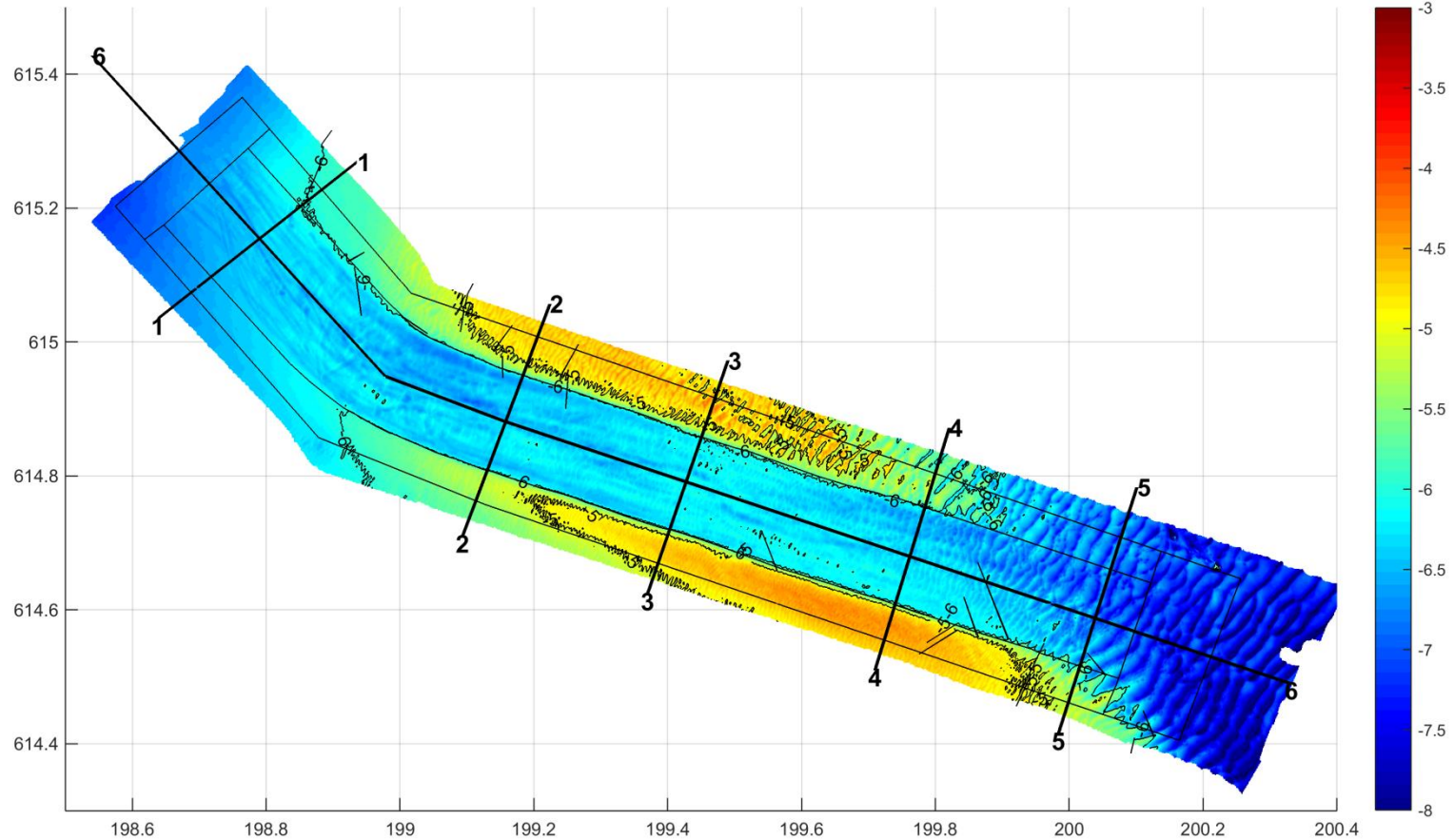
Pilot 2018 - aanleg



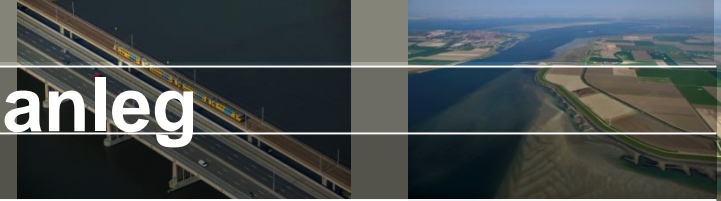
Pilot 2018 – ontwikkeling na aanleg



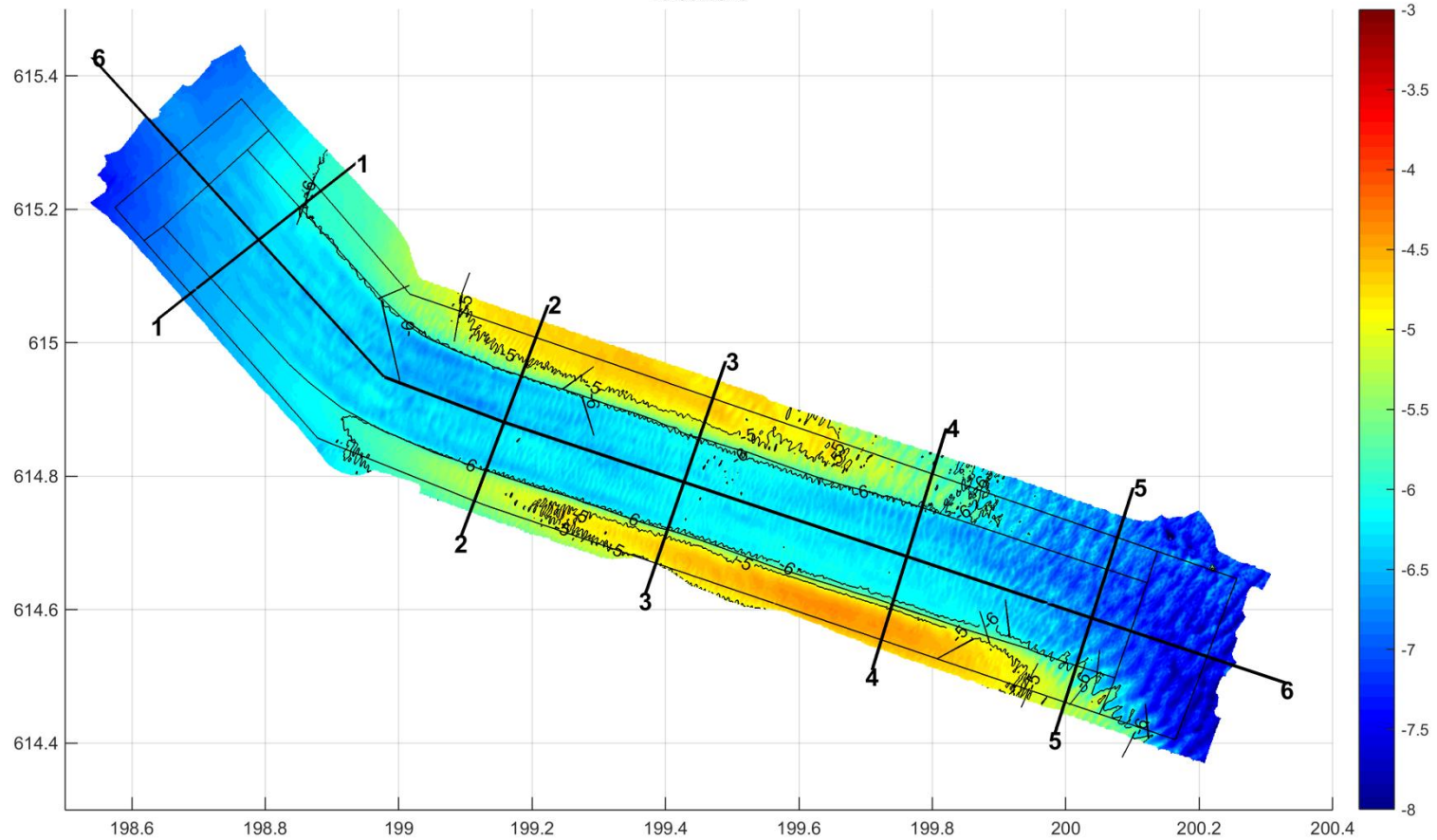
01-08-2018



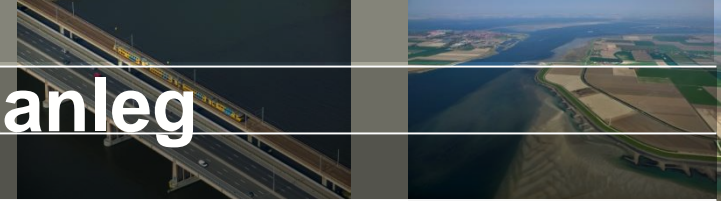
Pilot 2018 – ontwikkeling na aanleg



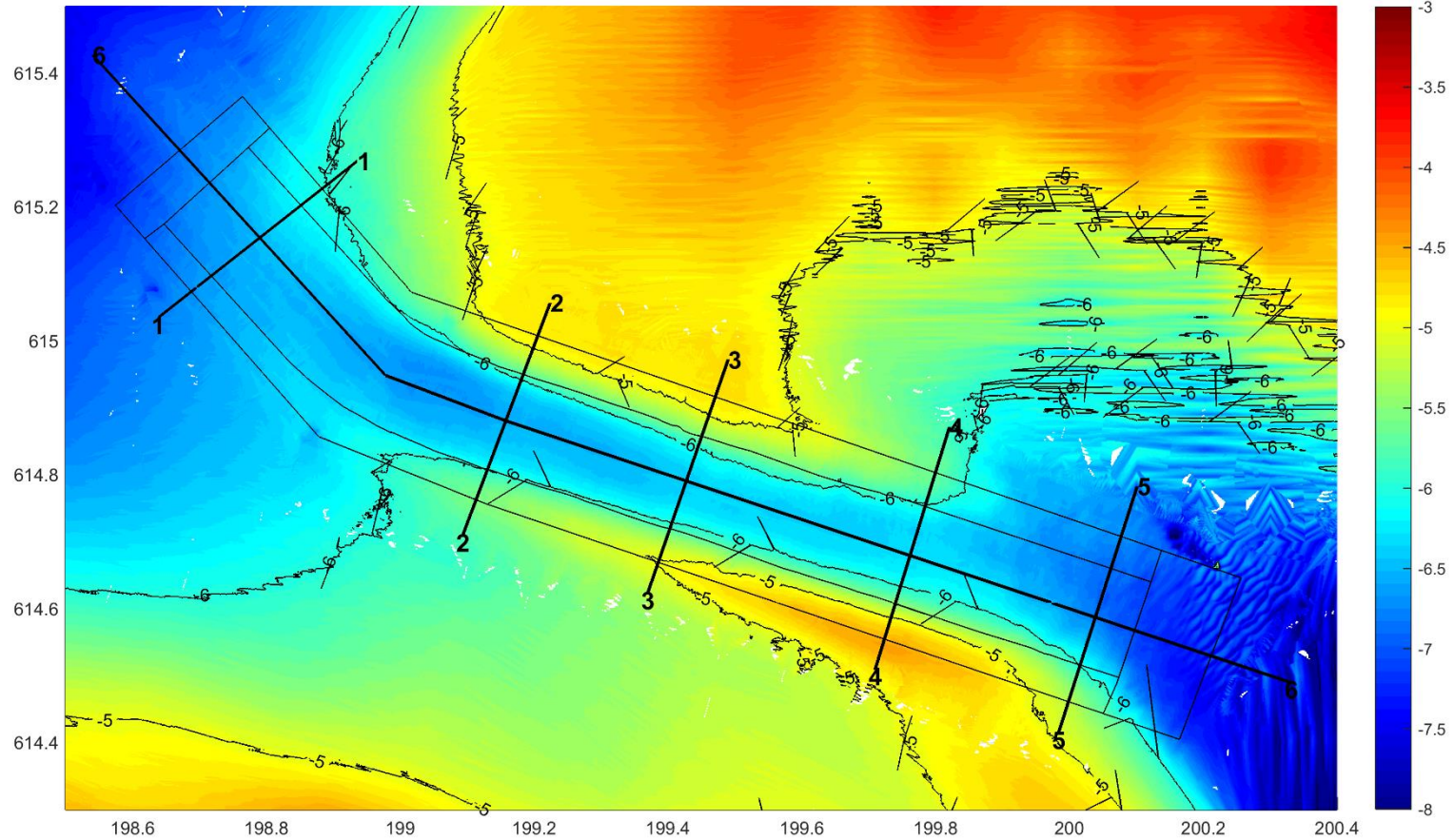
13-08-2018



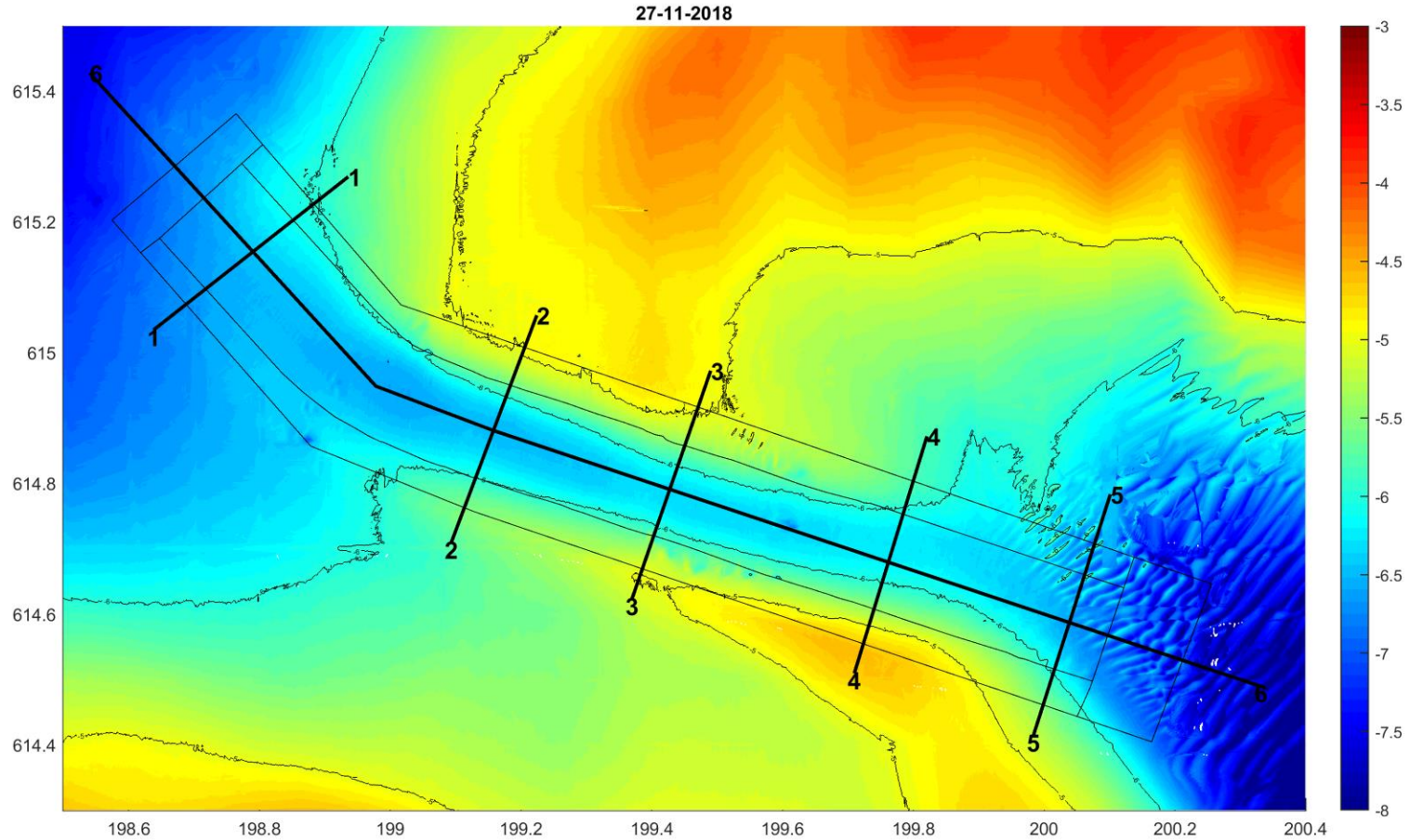
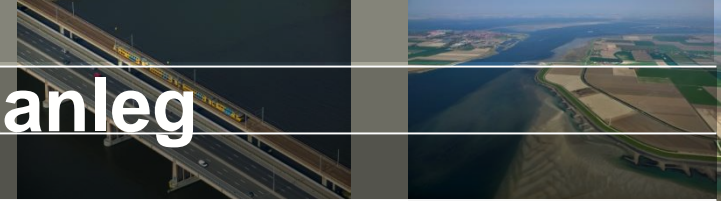
Pilot 2018 – ontwikkeling na aanleg



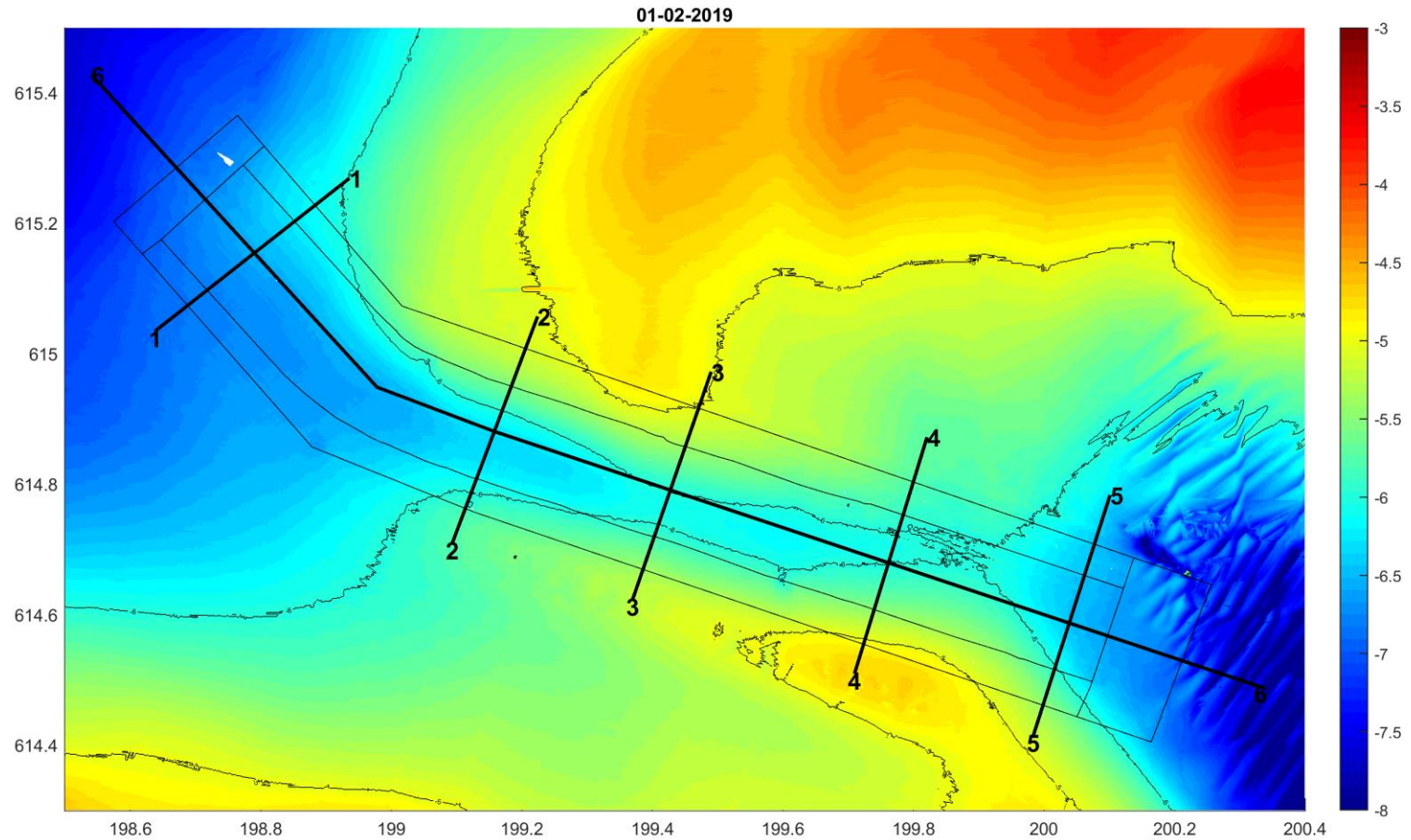
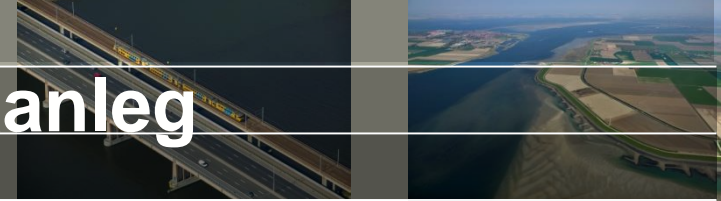
17-10-2018



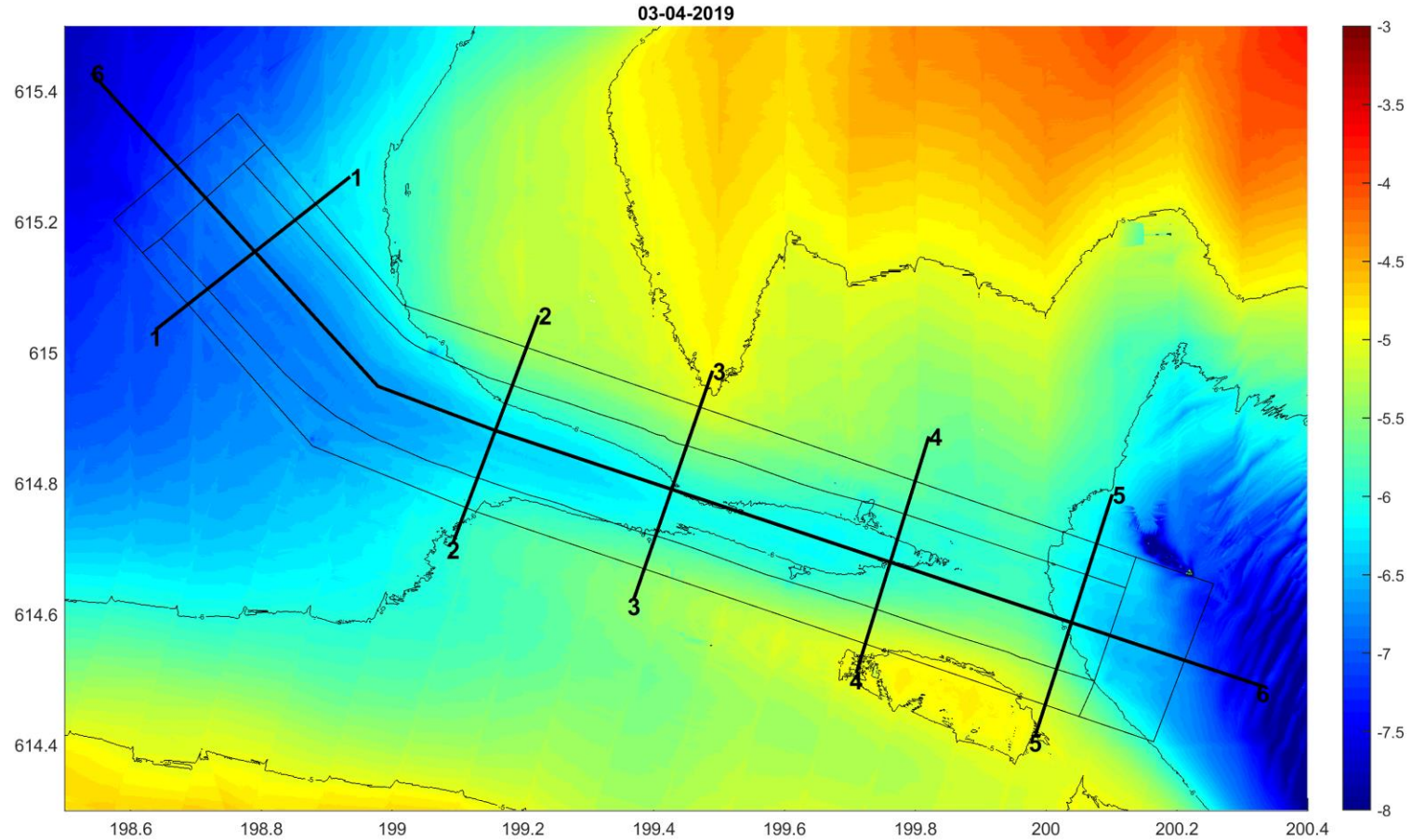
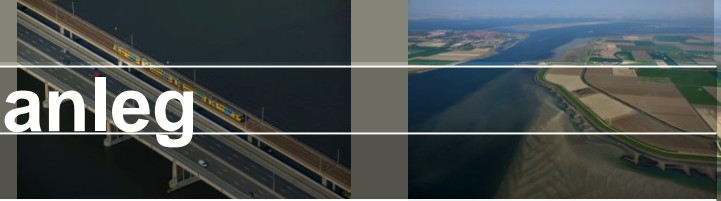
Pilot 2018 – ontwikkeling na aanleg



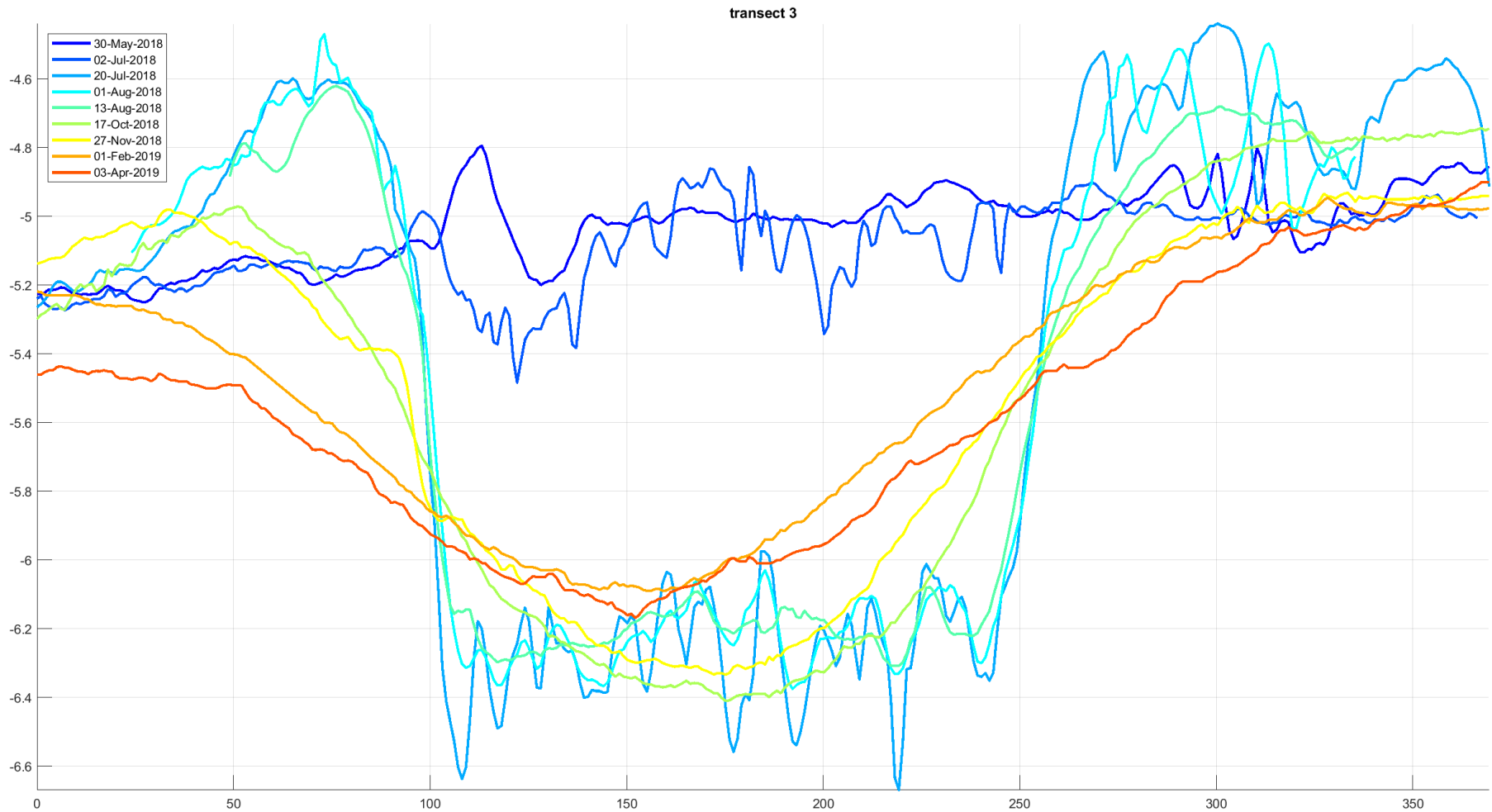
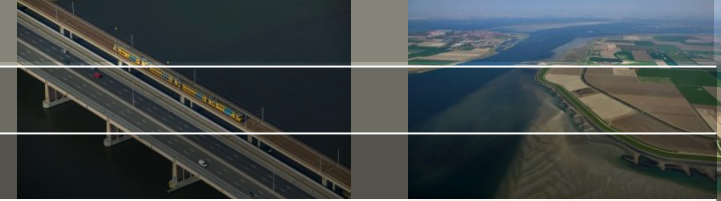
Pilot 2018 – ontwikkeling na aanleg



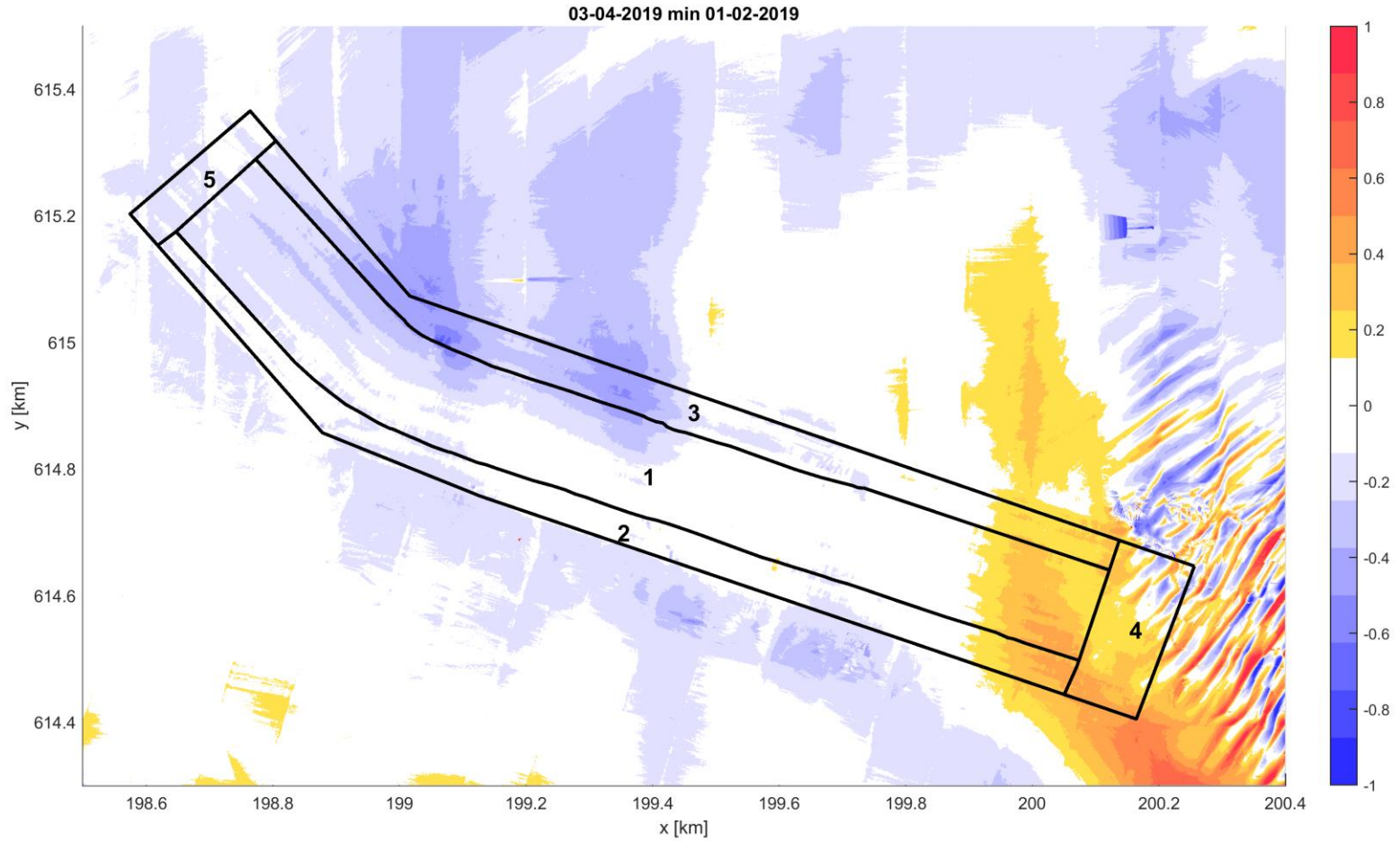
Pilot 2018 – ontwikkeling na aanleg



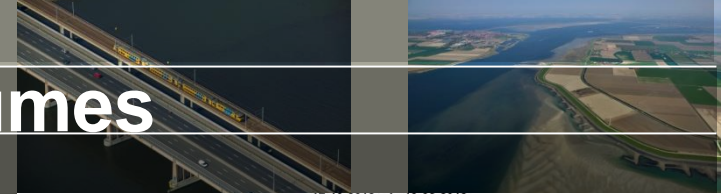
Ontwikkeling – profielen



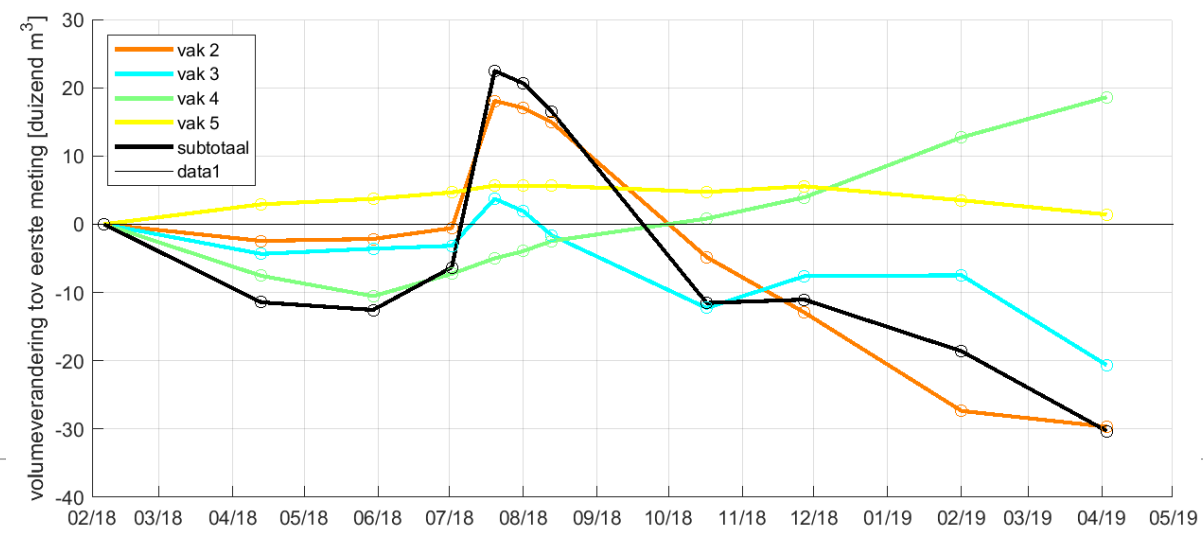
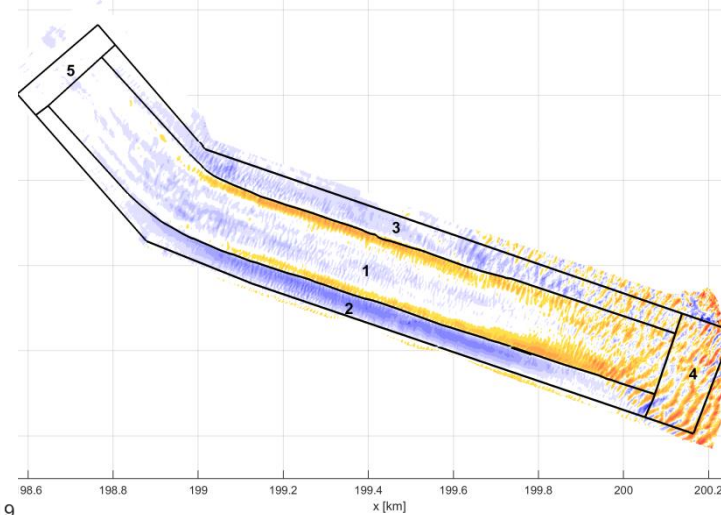
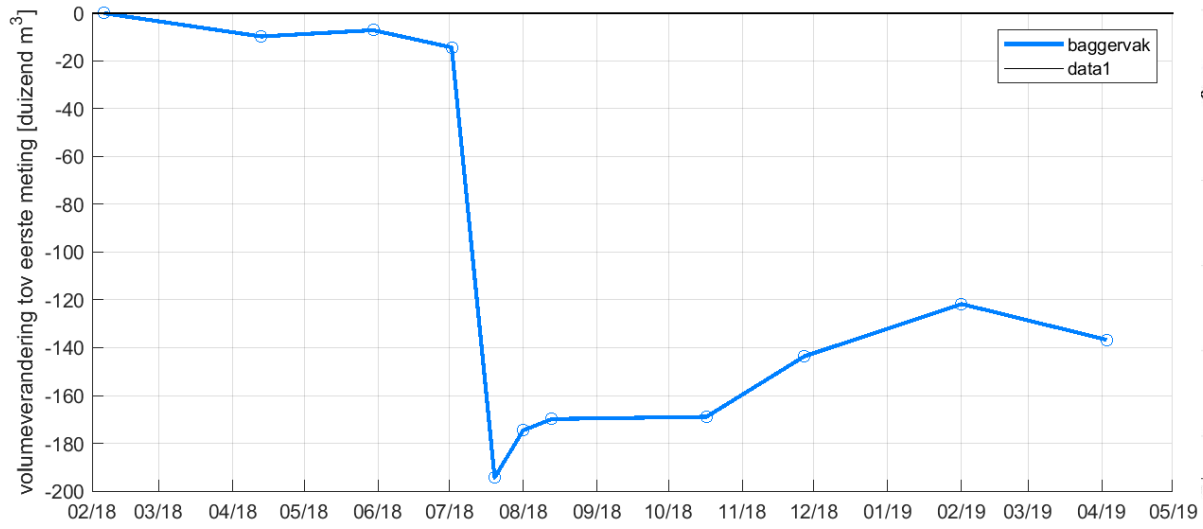
Pilot 2018 – ontwikkeling na aanleg



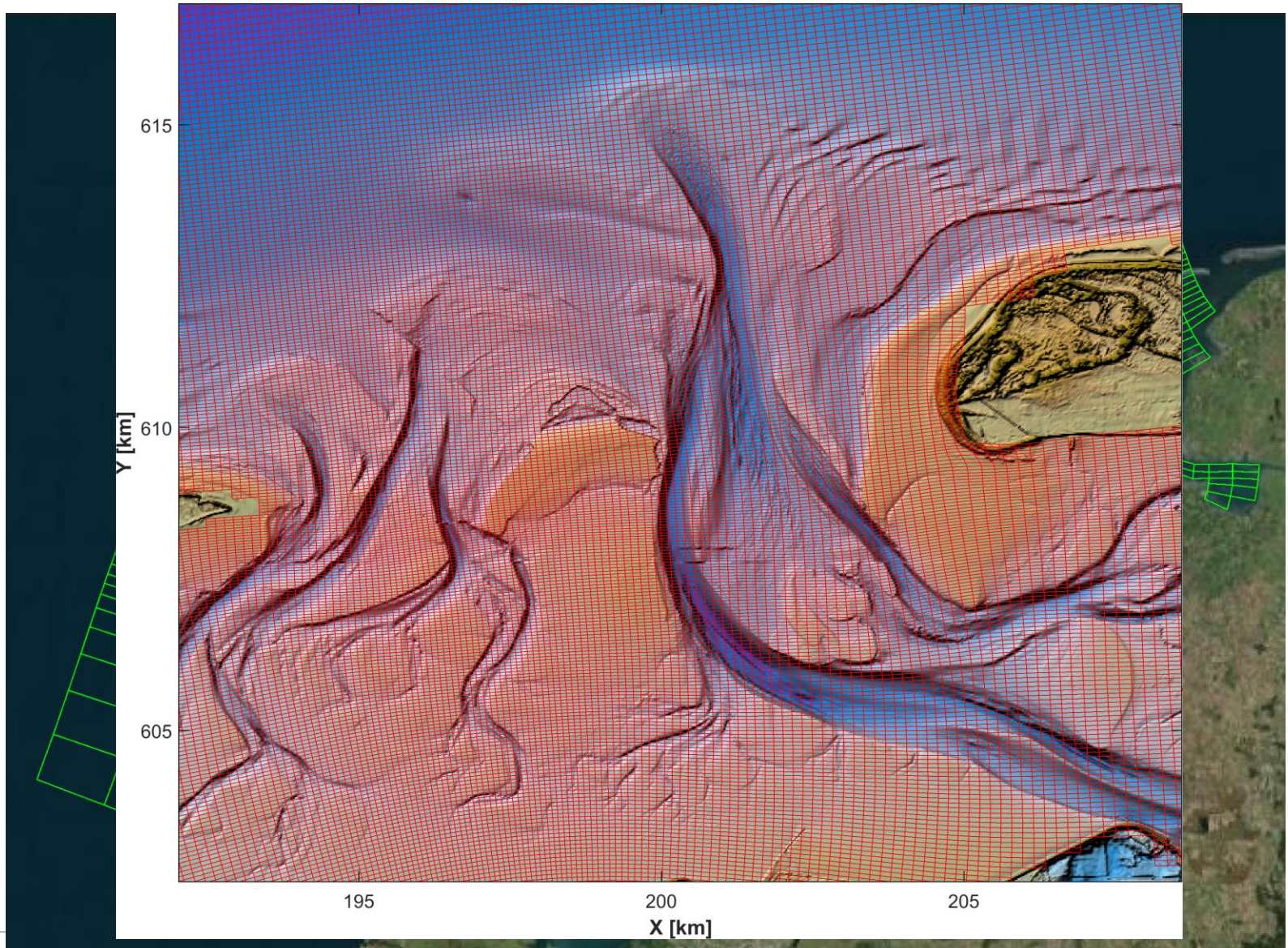
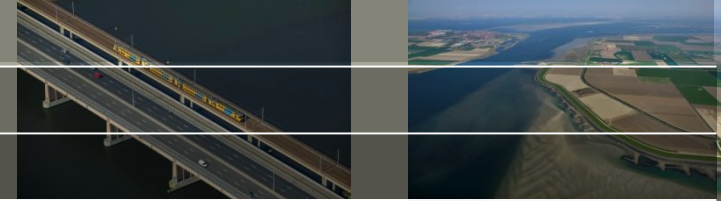
Pilot 2018 – ontwikkeling volumes



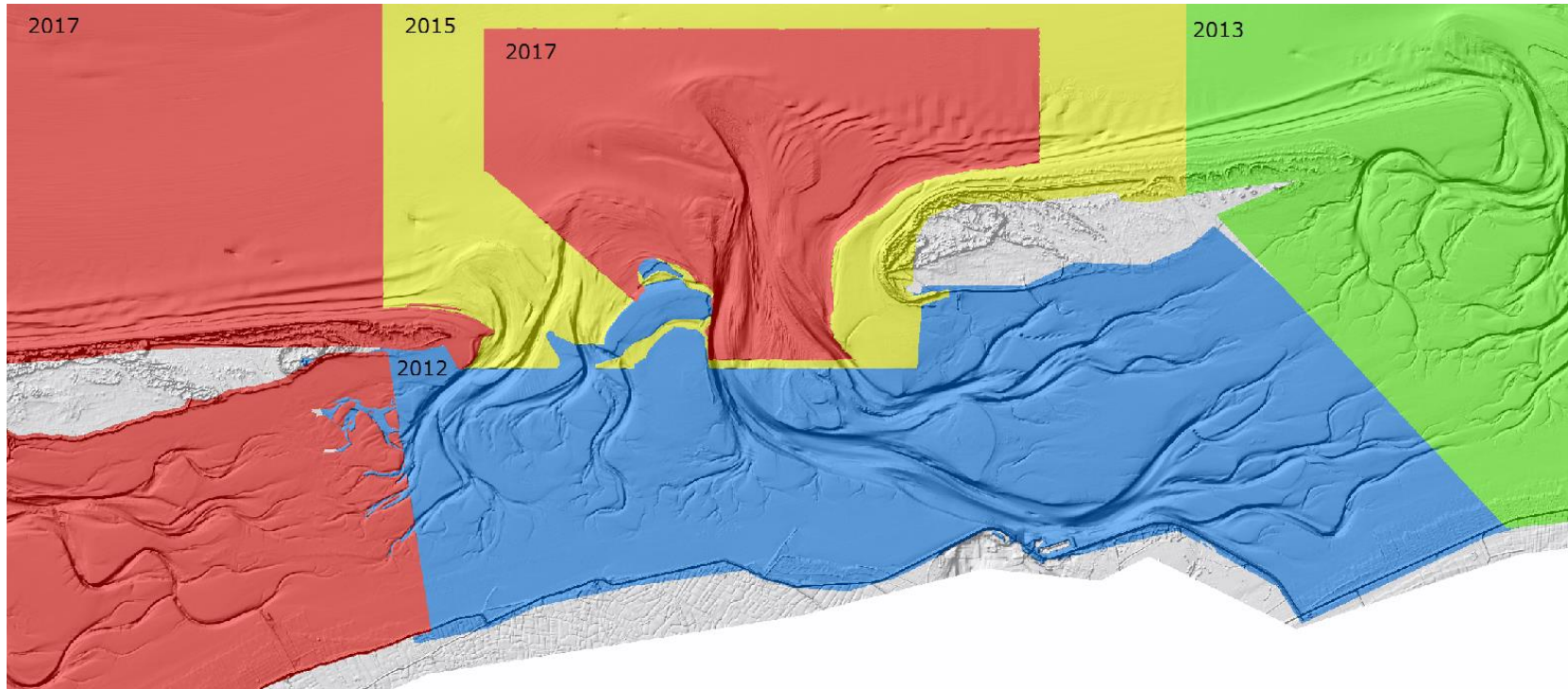
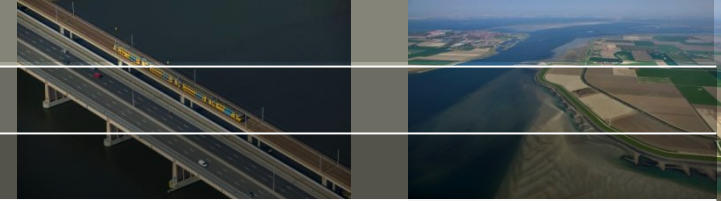
17-10-2018 min 13-08-2018



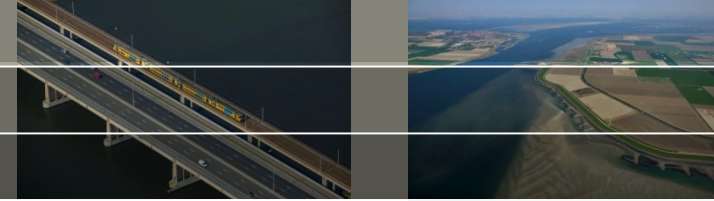
Modelstudie - opzet



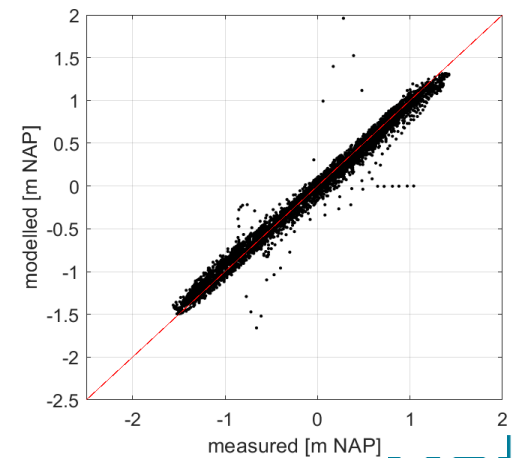
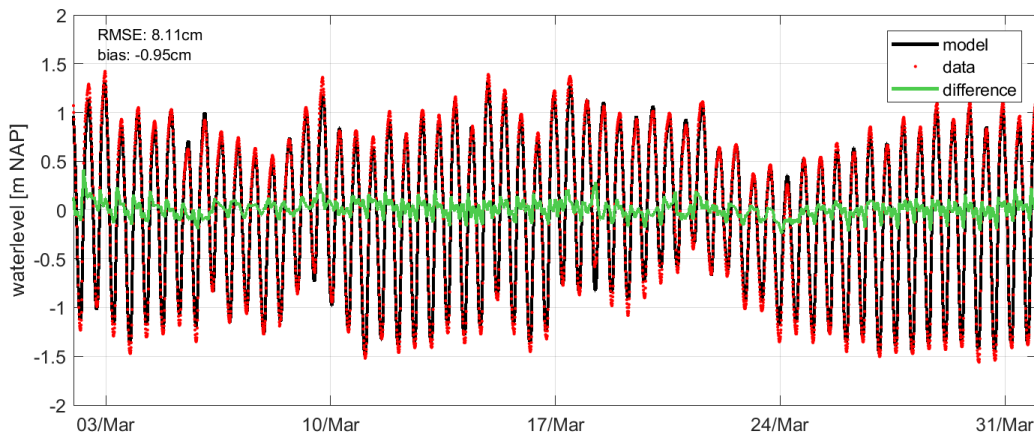
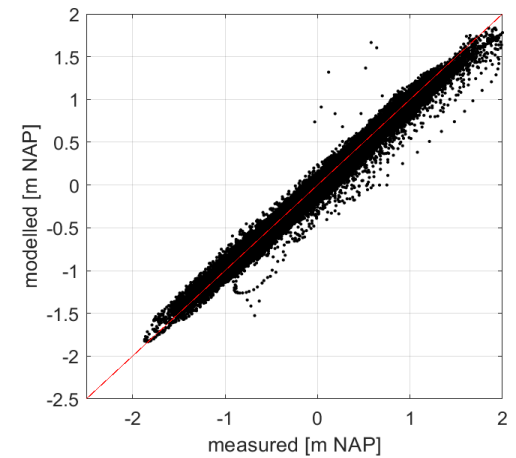
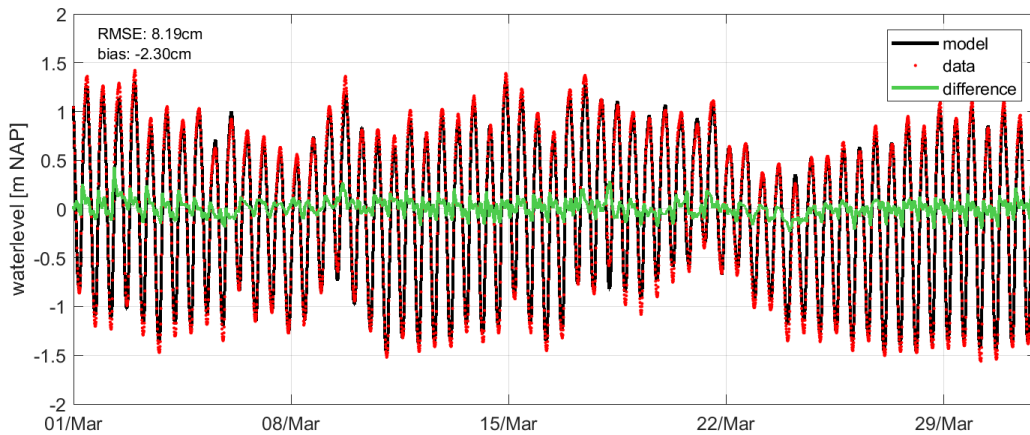
Modelstudie - opzet



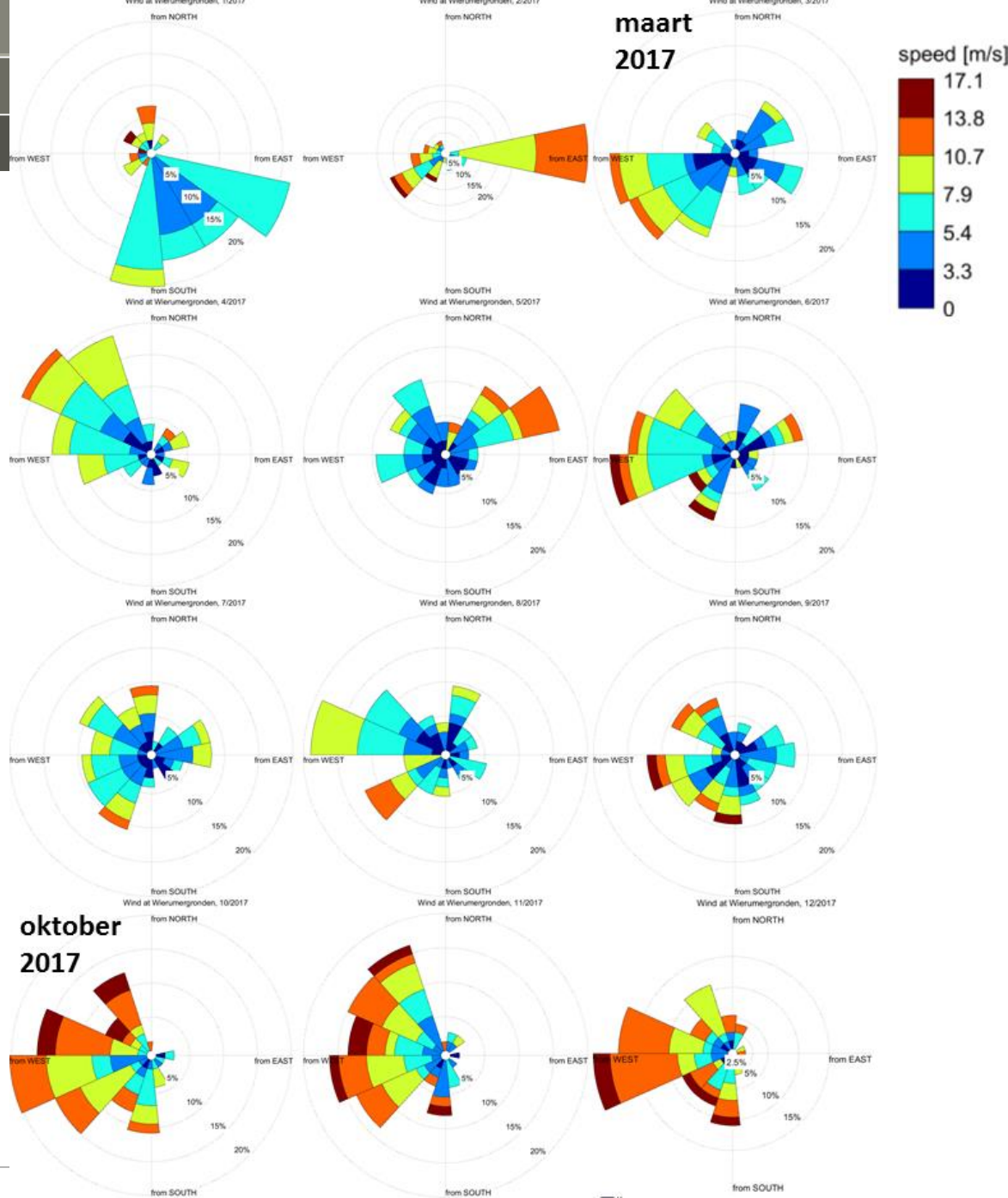
Modelstudie - opzet



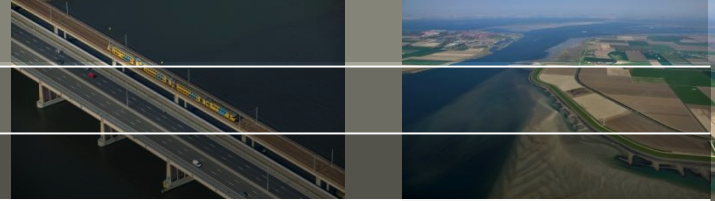
Wierumergronden – model vs meting Wadsea en DD:



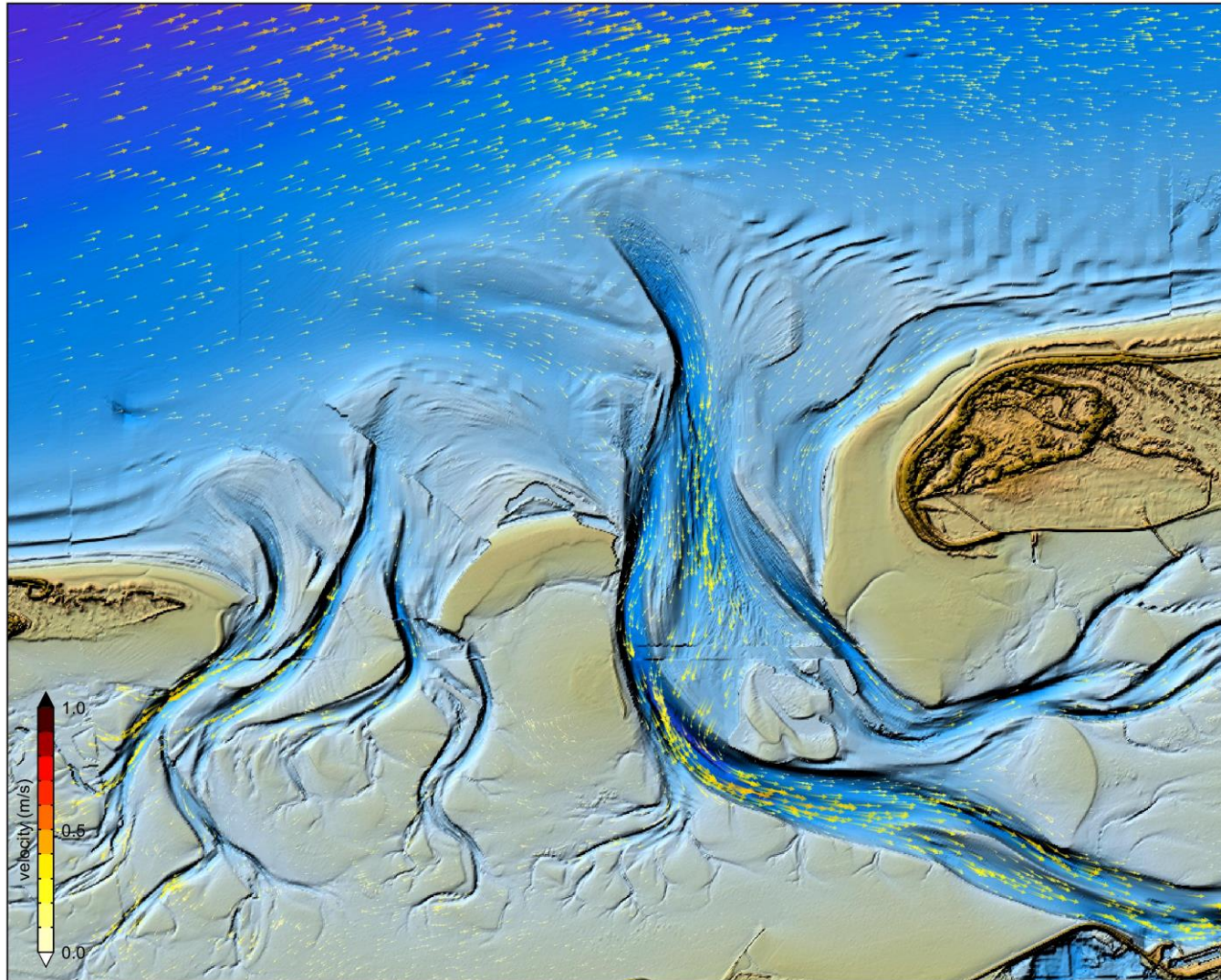
Opzet - wind



Stroming door zeegat

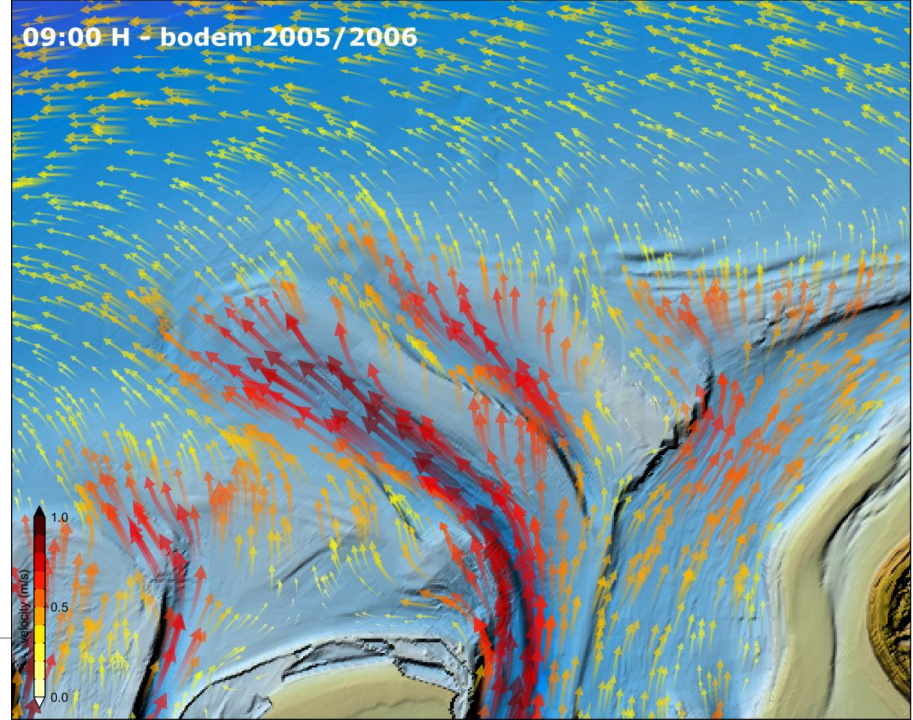
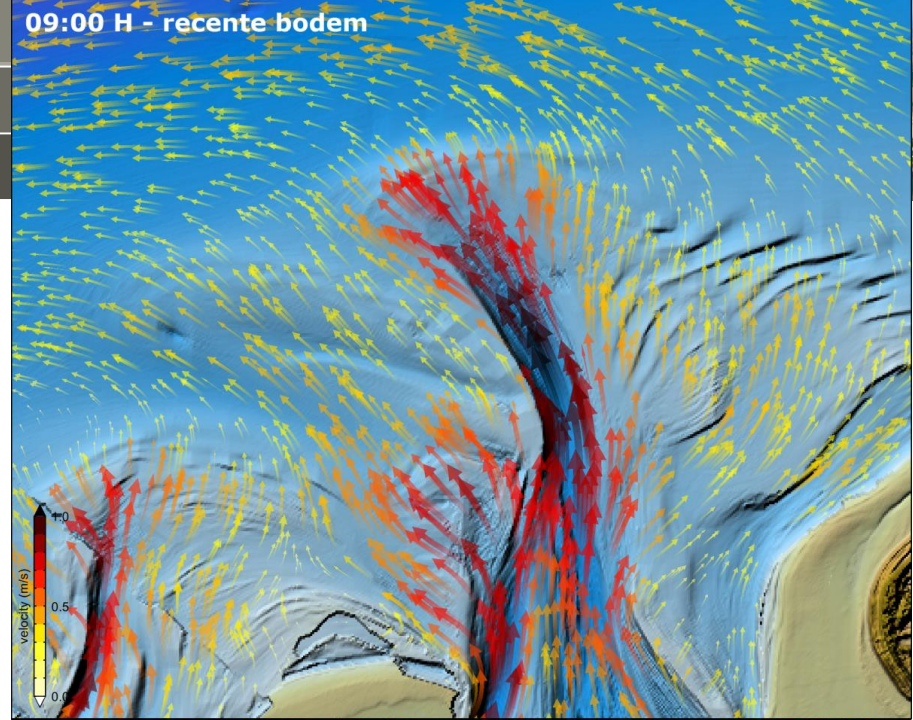


20170308 050000



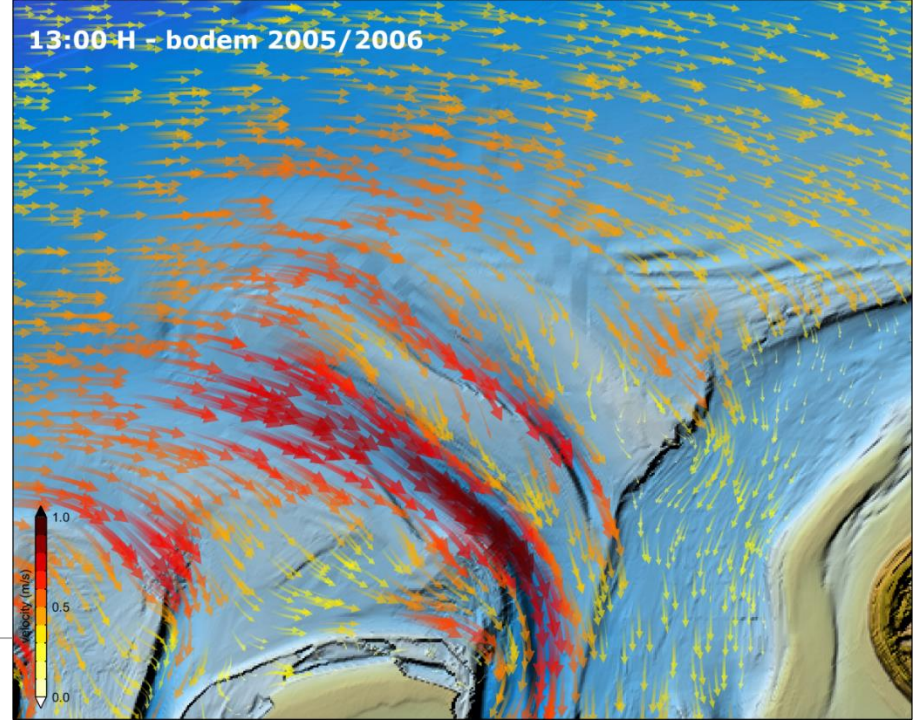
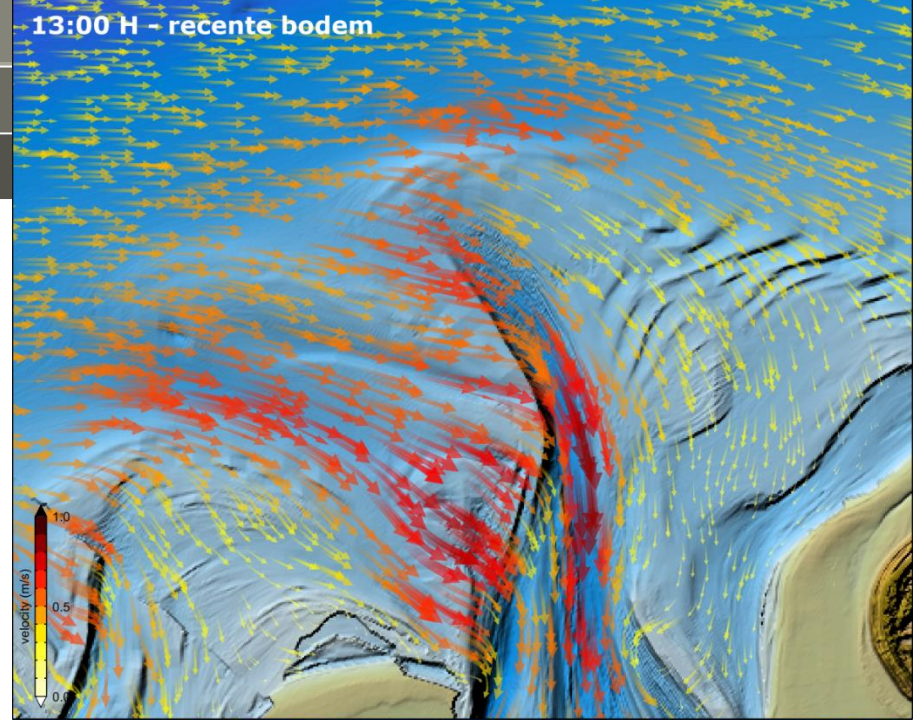
2005 vs 2017 - stroming

Max eb stroming

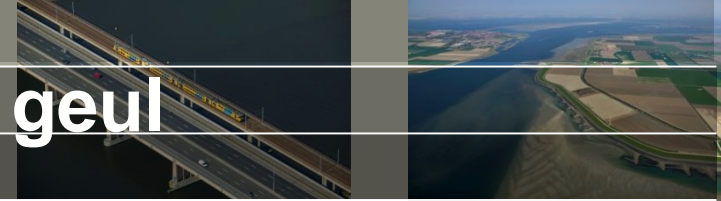


2005 vs 2017 - stroming

Max vloed stroming

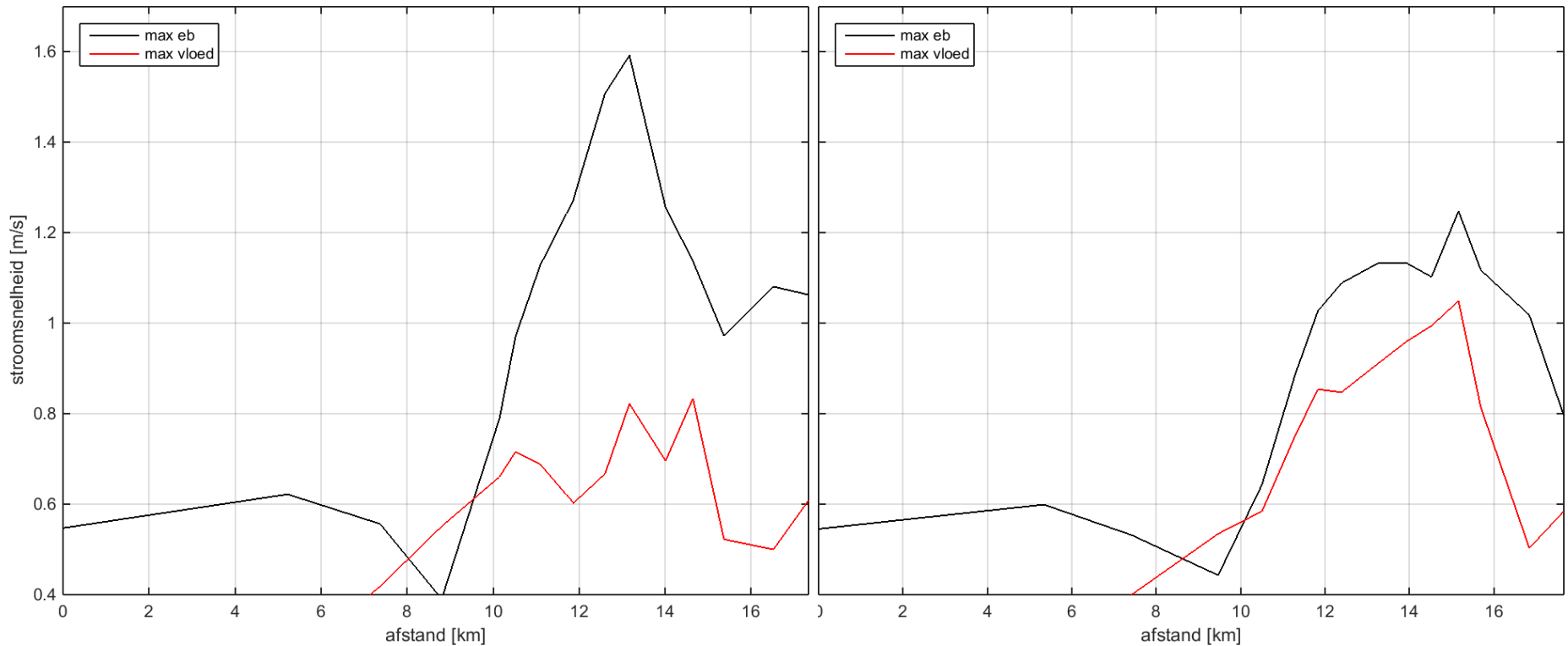


2005 vs 2017 snelheden in de geul

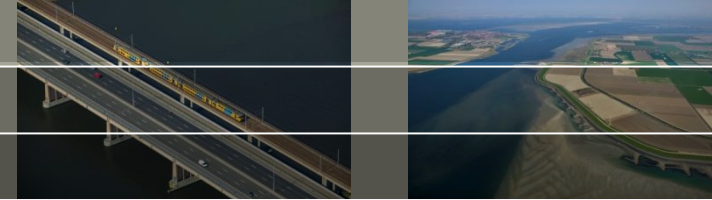


2017

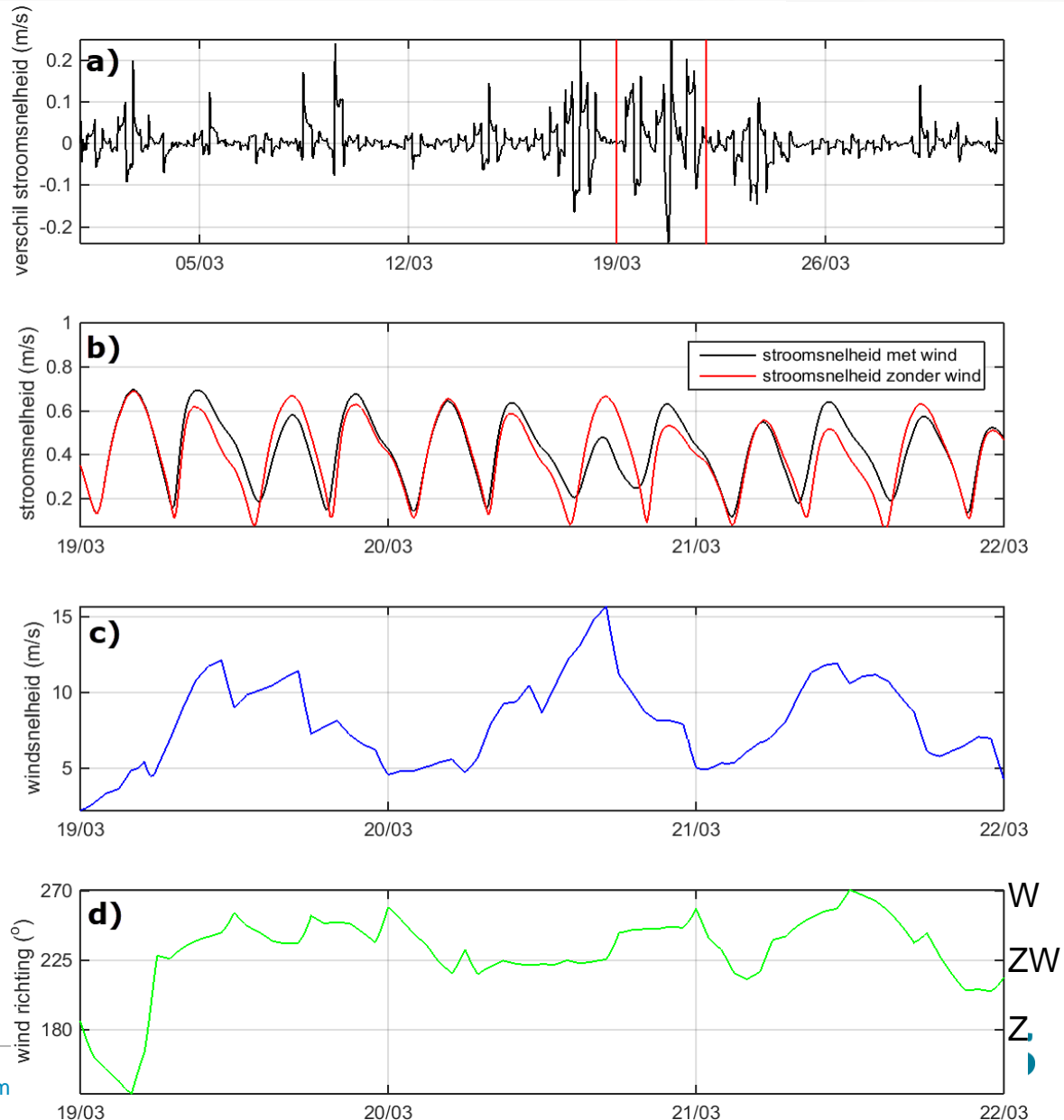
2005



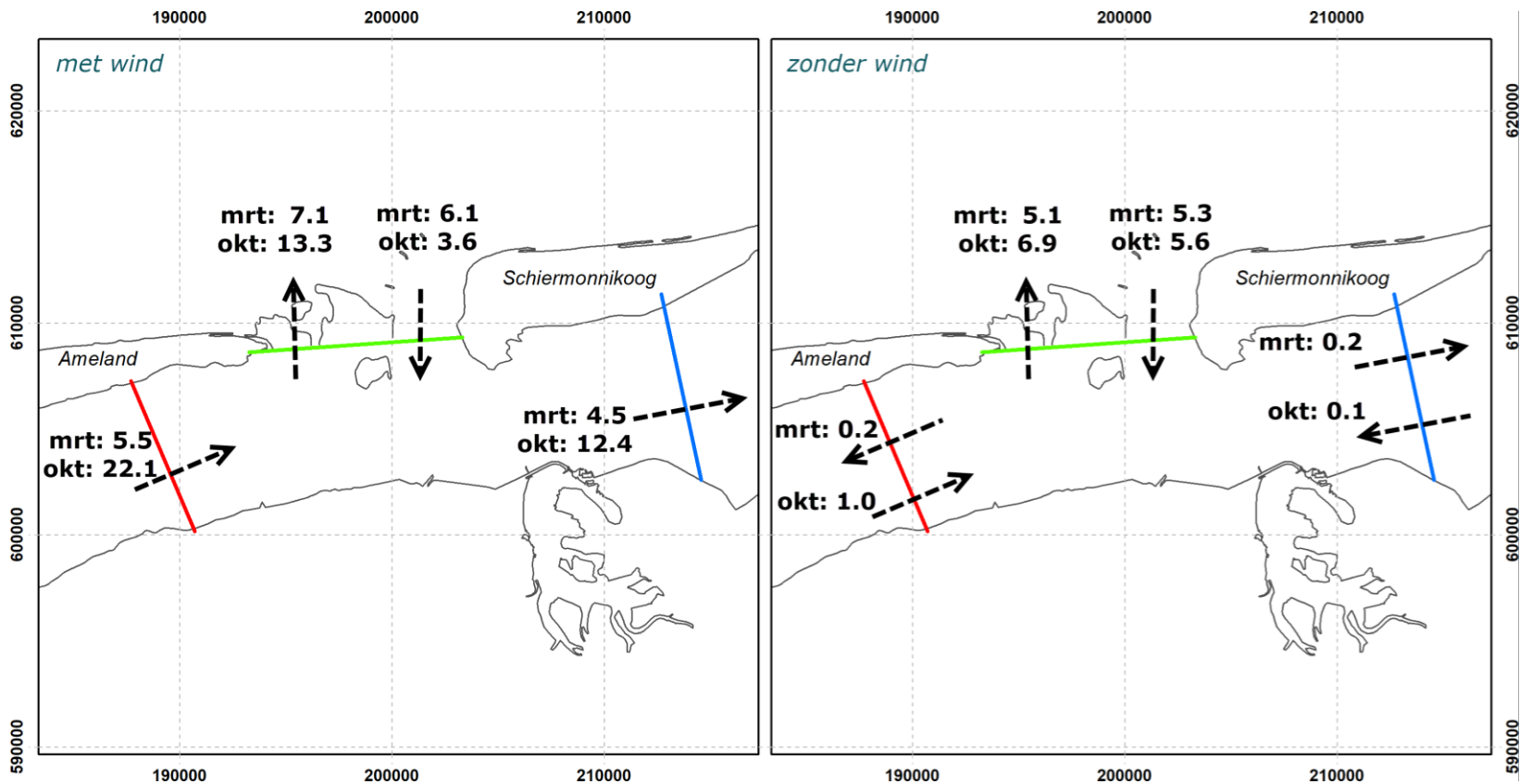
Stroomsnelheid – effect wind



Meetpunt op drempel

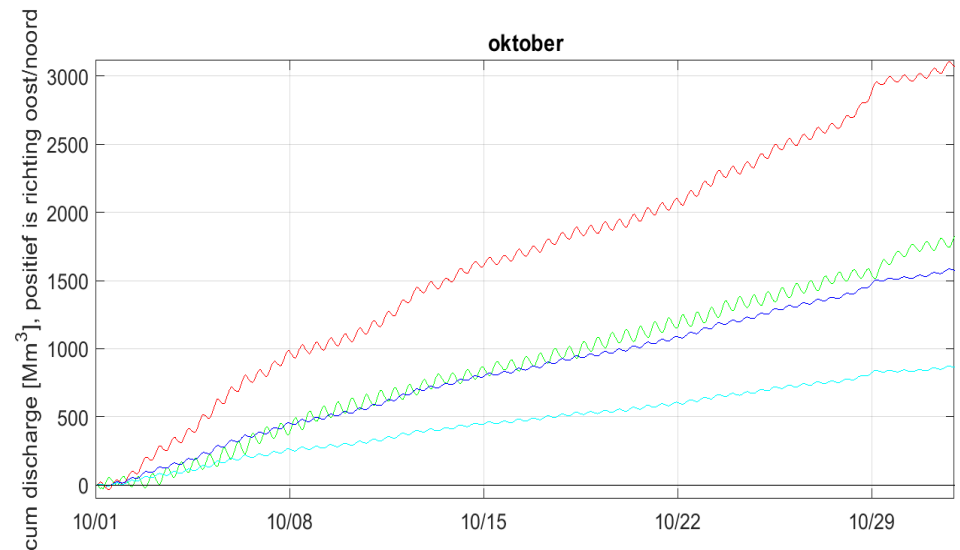
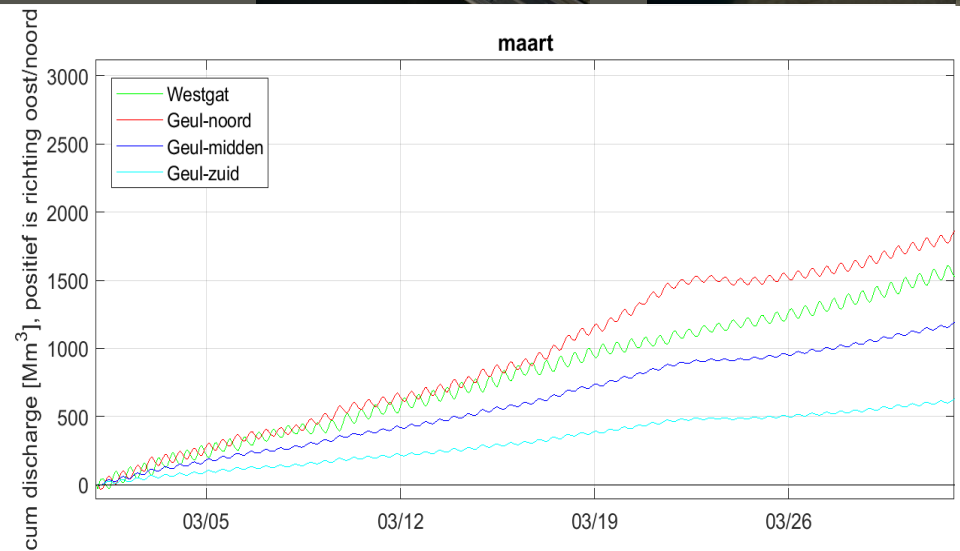
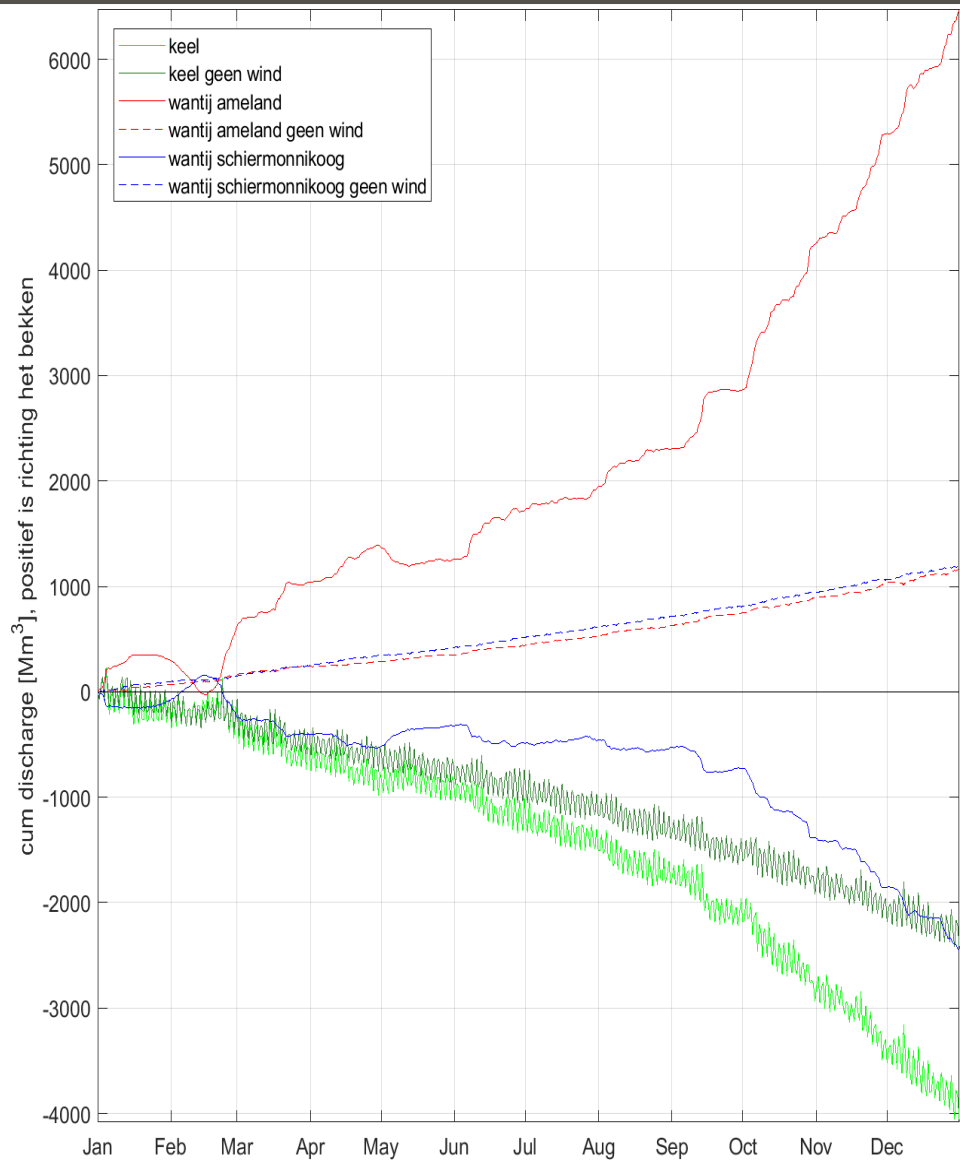
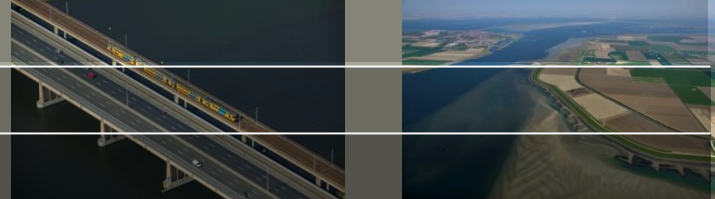


Debieten

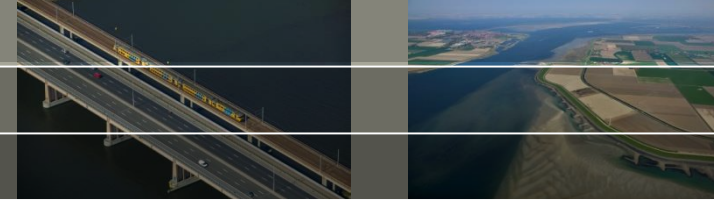


In miljoen m³ per getij

Debieten



Conclusies (modelstudie)



- Stromingspatroon nu in beeld: geul/plaat configuratie heeft sterke invloed op stroming en daarmee op ontwikkeling van drempels;
- Stroomsnelheden over drempel hoogste tijdens eb (c. 0.2-0.3 m/s) met c. 1 m/s tijdens springtij en c. 0.7 m/s tijdens doortij;
- Sterke wind (ruim boven 10 m/s) heeft tot c. 0.2 m/s effect op de stroomsnelheid over de drempel. Tot c. 5 m/s wind is er weinig effect op de stroomsnelheid;
- Debieten:
 - Netto import door Zoutkamperlaag, export door Pinkegat;
 - Debiet over wantijdes netto oostwaarts, sterk beïnvloed door wind;
 - Wind heeft ook effect op debieten door geulen;
 - Effect wind in lijn met andere studies, maar nog veel vragen;

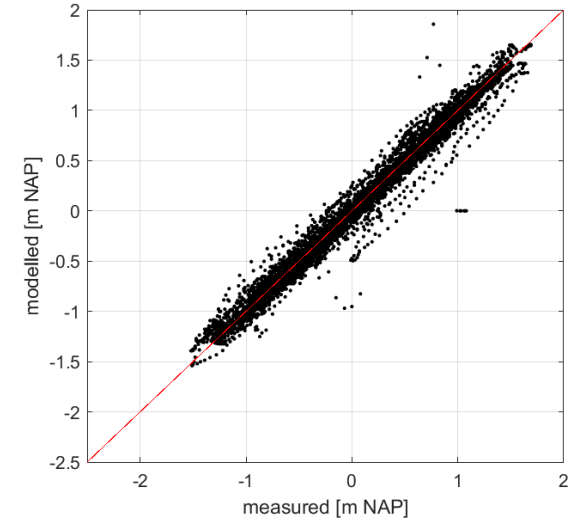
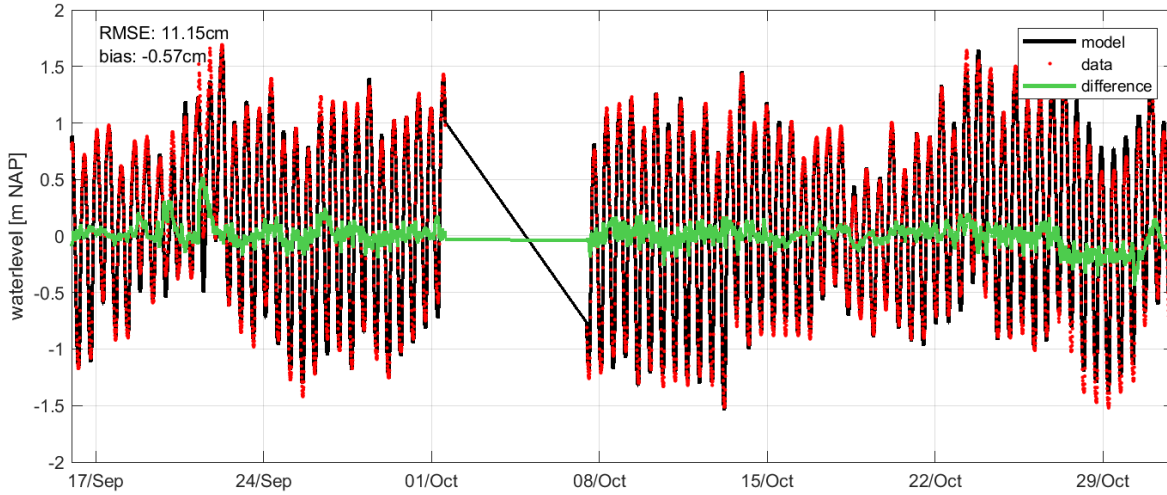
Recente modelresultaten – ‘concept’



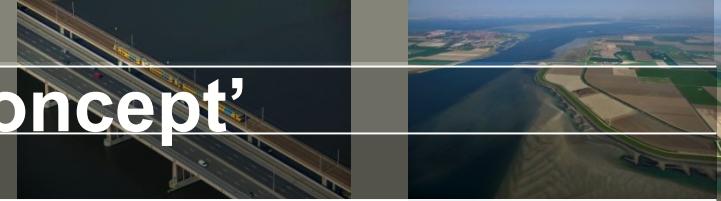
- Gericht op verdieping;
- Periode metingen (meetframe en 13-uurs) gemodelleerd, daarnaast schematisch afgeleide condities;
- Nieuwe bodem van het gehele zeevat van begin 2019, vergelijking met oude bodem (zonder verdieping);
- Golven worden nu meegenomen;

Recente modelresultaten – ‘concept’

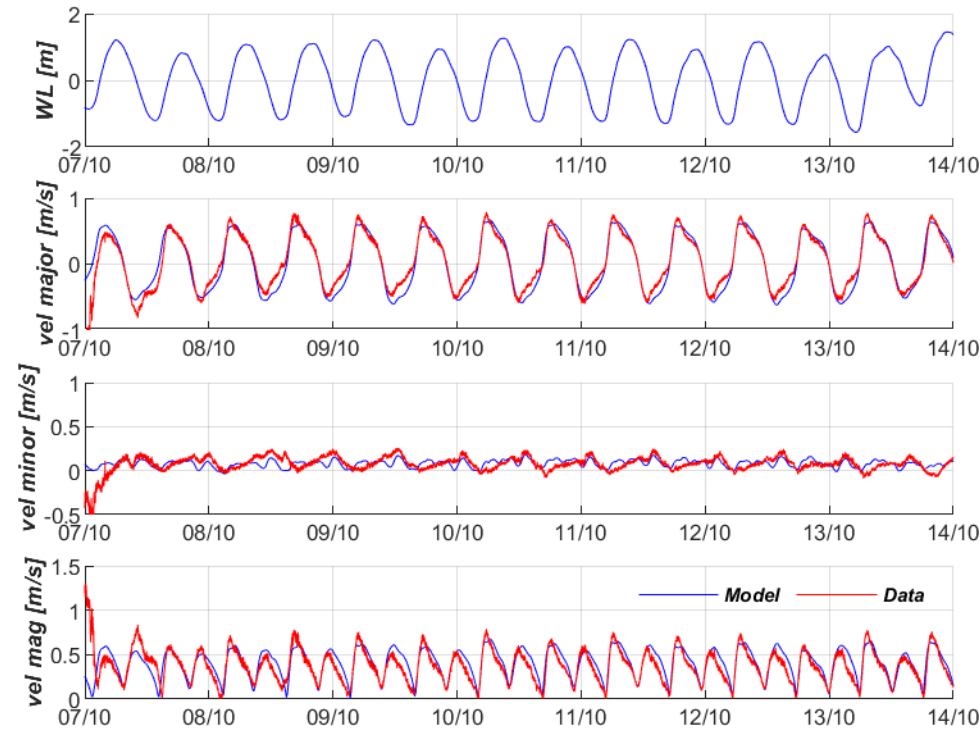
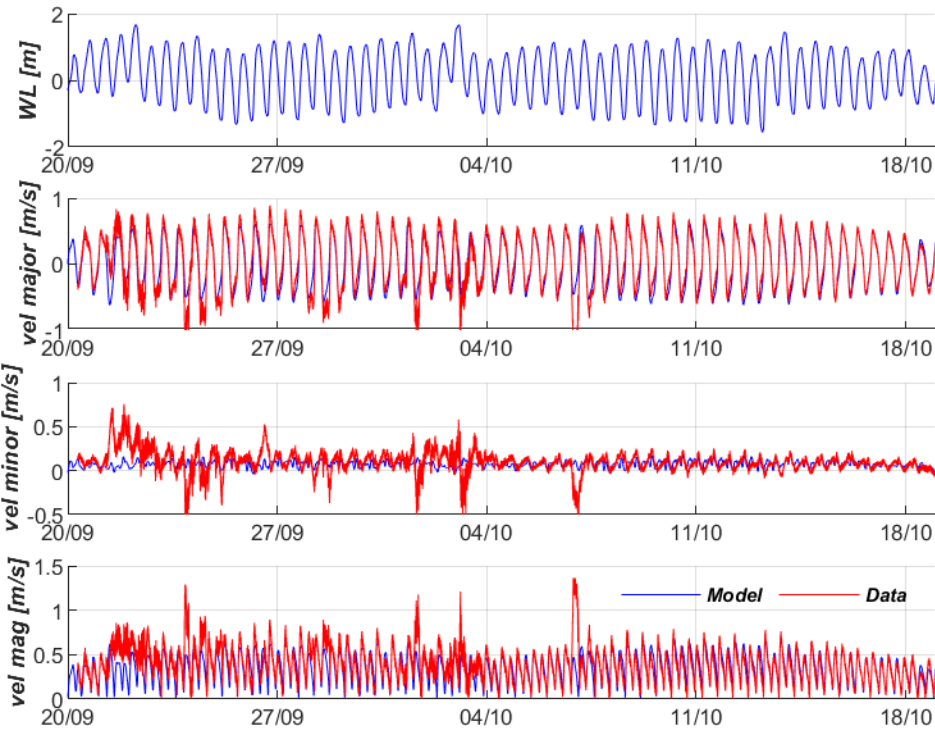
Waterstanden Wierumergronden



Recente modelresultaten – ‘concept’

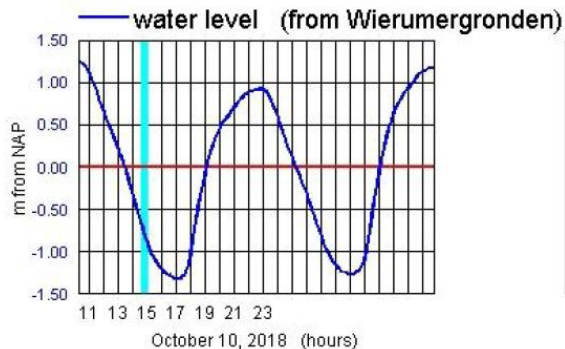
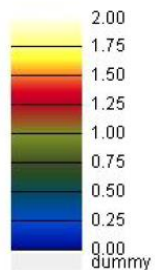
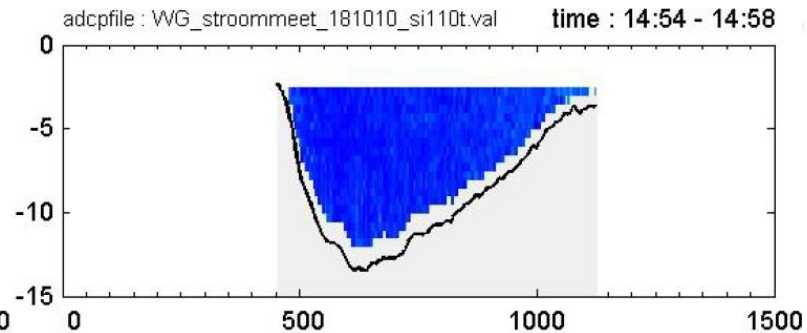
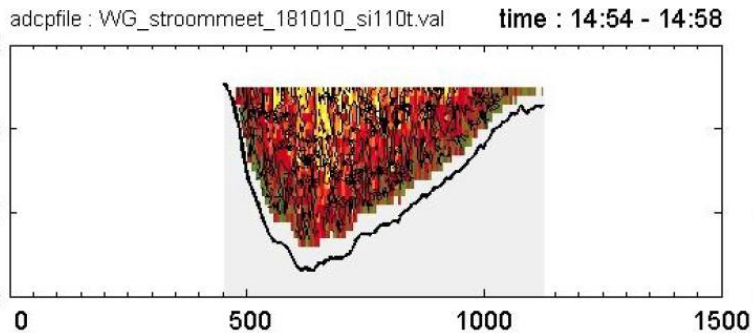
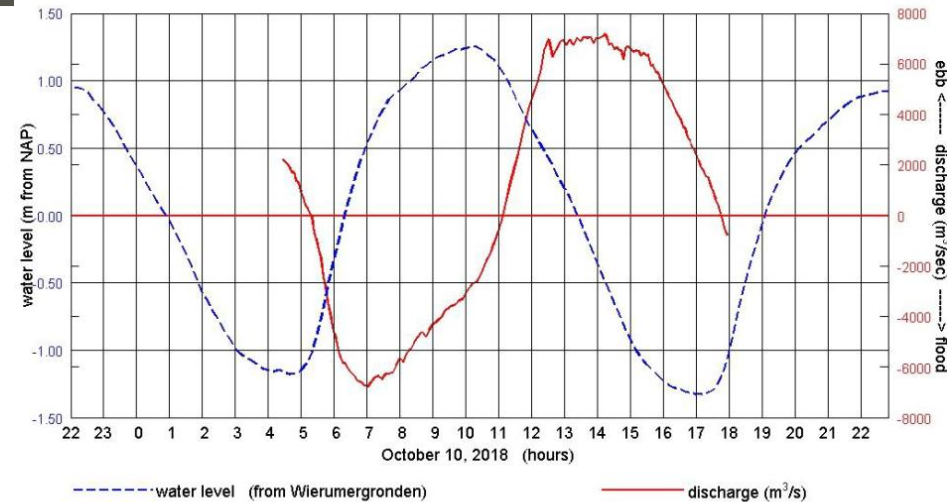


Stroomsnelheden meetframe - model

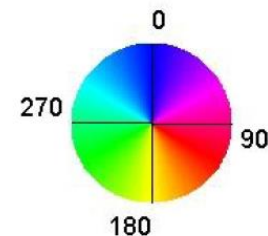
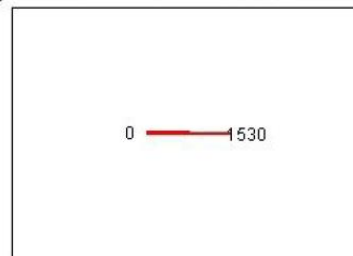


13-uurs meting

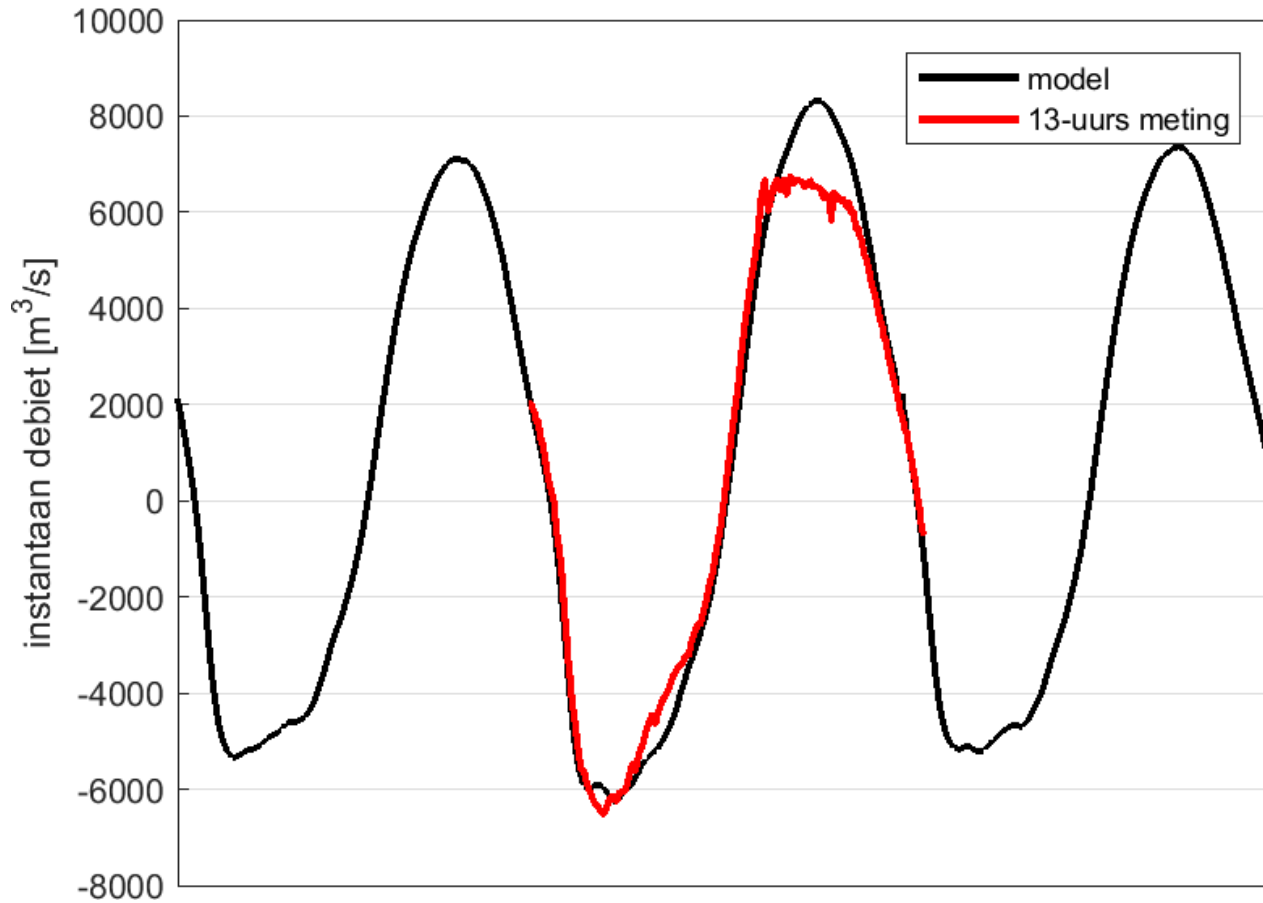
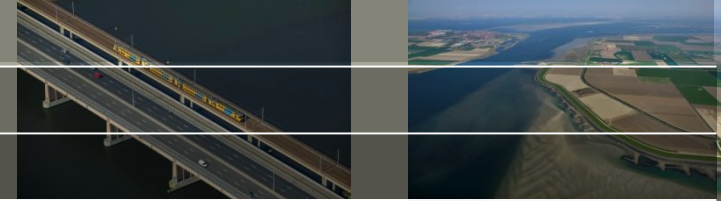
date	time	ebb volume (m ³)	flood volume (m ³)
20181010	04:27 - 05:18	3 786 792	
20181010	05:18 - 11:07		-89 422 865
20181010	11:07 - 17:45	118 139 080	
20181010	17:45 - 17:56		-290 703

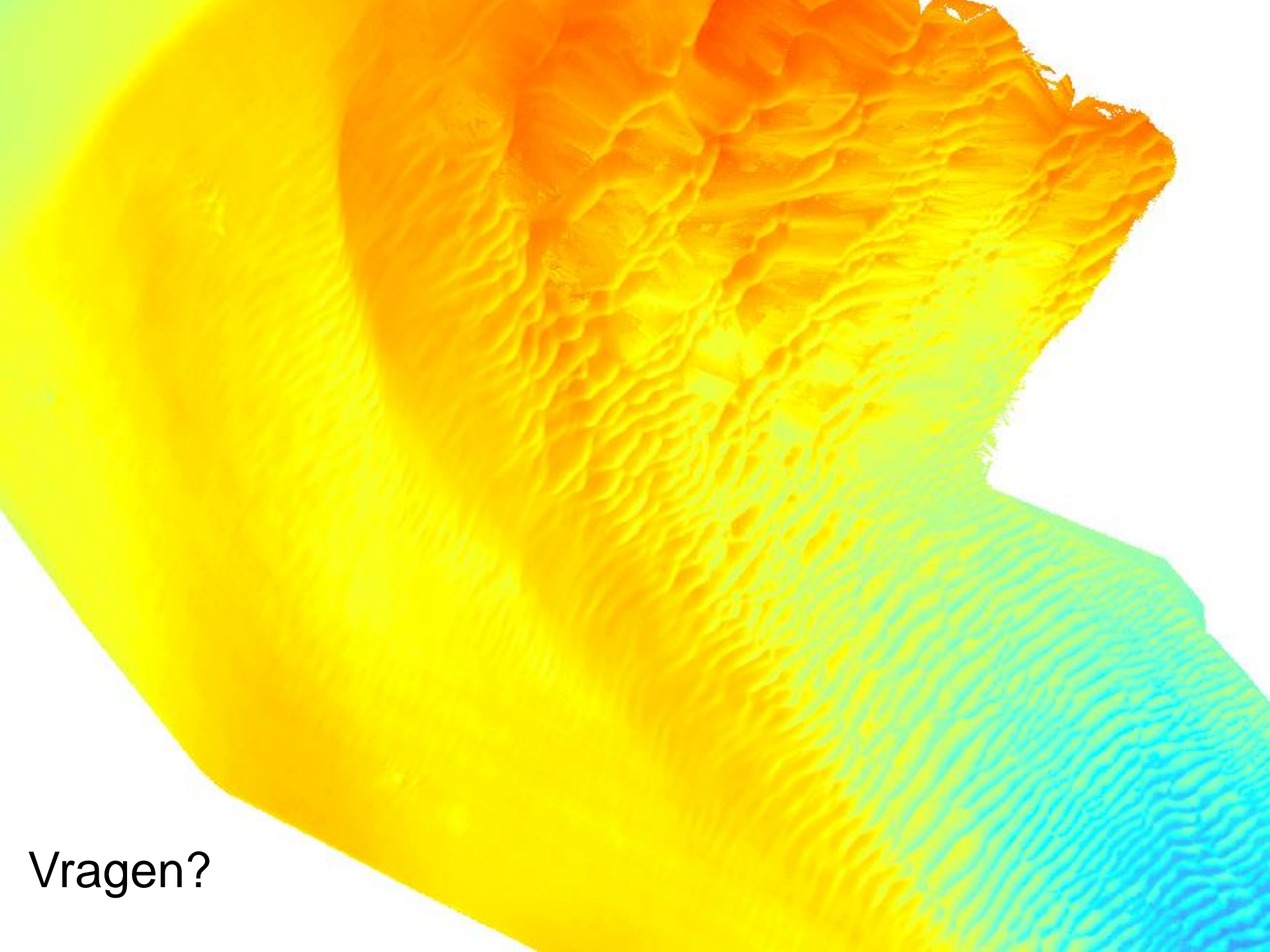


measurement area



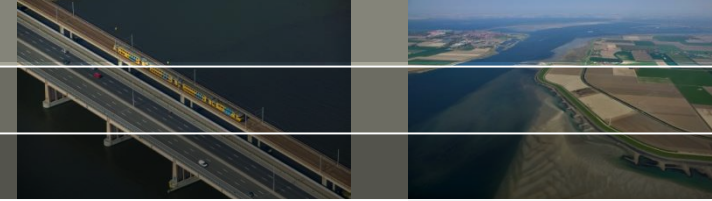
13-uurs meting





Vragen?

Verwachte baggerinspanning



Twee factoren die de baggerinspanning bepalen:

- Initiële baggerinspanning om de vaargeul aan te leggen; door oostwaarts draaien van de geul zal na te ver draaien opnieuw een initiële baggerinspanning op een nieuwe locatie nodig zijn
- Maandelijks veranderingen

