

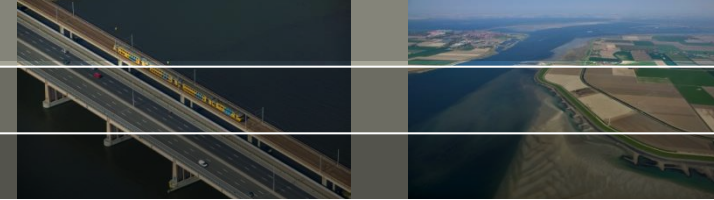


Ontwikkeling verdiepte doorgang Westgat, Friesche Zeegat

- werkdocument met updates na inwinning nieuwe data

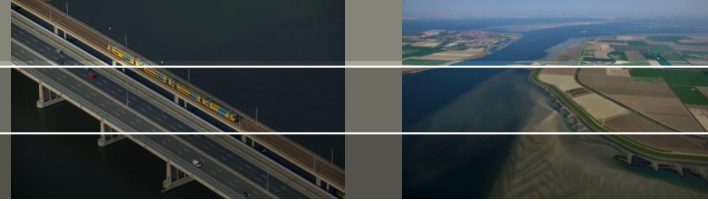
Tommer Vermaas

Versie: 21 november 2018



In juli 2018 is in het Friesche Zeegat de drempel van het Westgat verdiept ten behoeve van de doorvaart van de visserij. De ontwikkeling van deze verdieping wordt gemonitord door Rijkswaterstaat. Analyse van deze metingen en onderzoek met behulp van een hydrodynamisch model wordt door Deltares uitgevoerd in 2018 en 2019.

Deze presentatie is een werkdocument waar nieuw verkregen metingen in de loop van het onderzoek aan worden toegevoegd. De modelresultaten worden elders gerapporteerd.

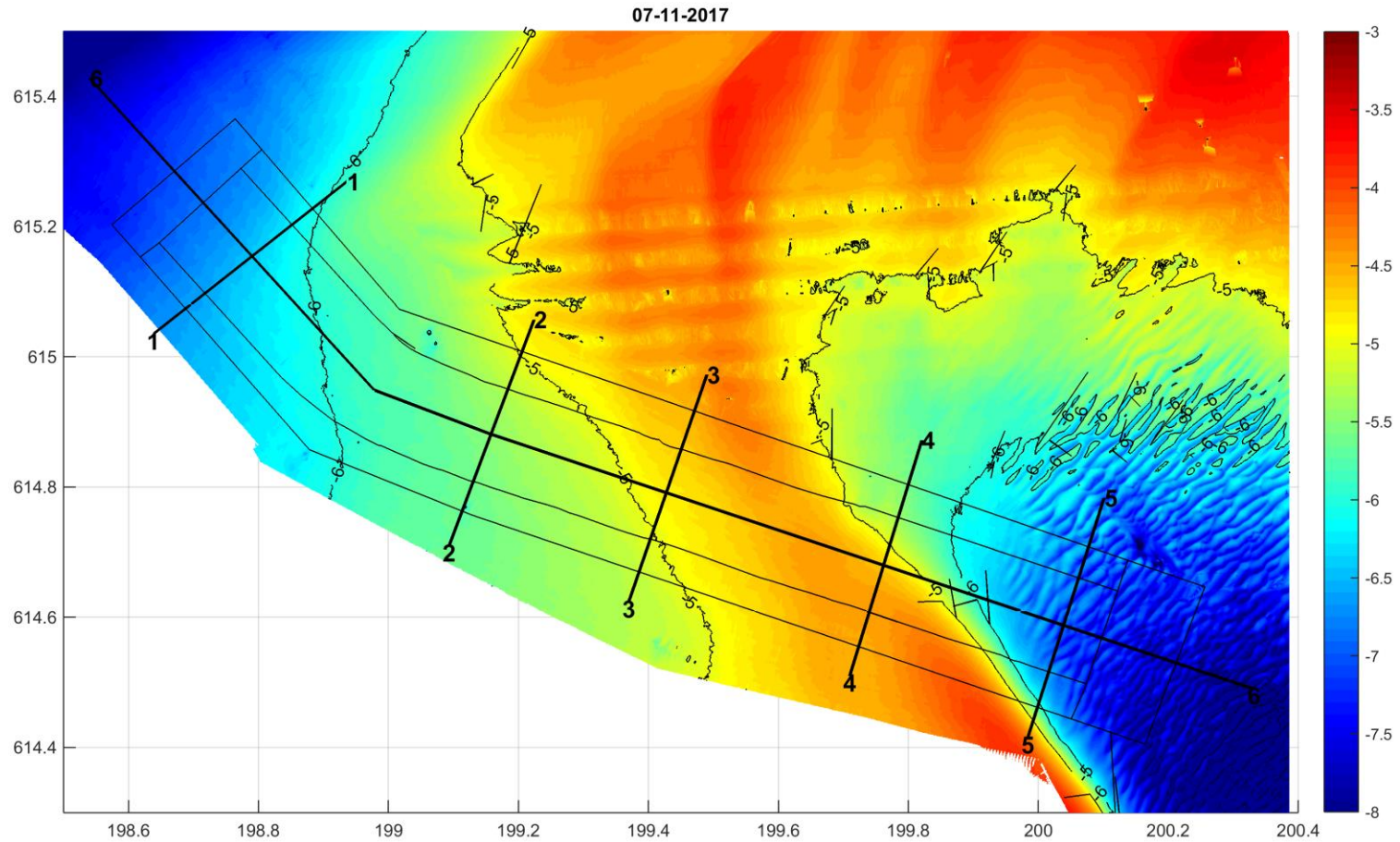
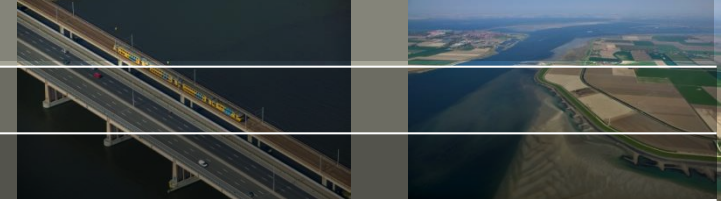


Deze presentatie is in de volgende onderdelen ingedeeld:

- Bathymetrische kaarten;
- Ontwikkeling te zien in profielen;
- Ontwikkeling diepte in de vaargeul en daarnaast;
- Morfologische veranderingen in verschilkaarten;
- Verandering van sedimentvolumes.

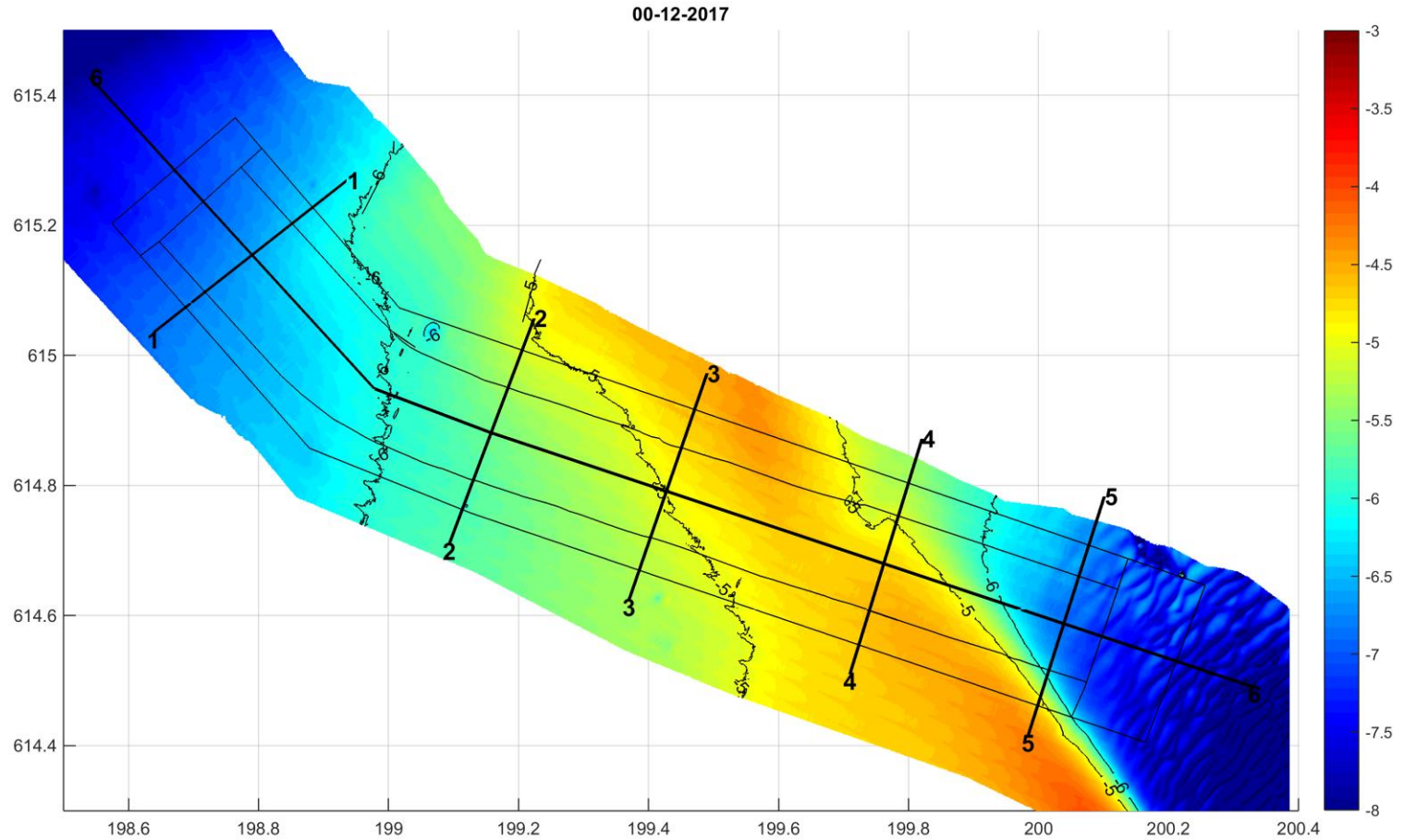
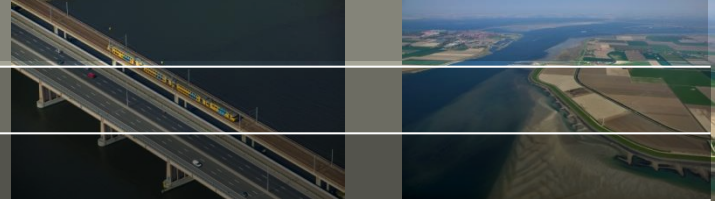
Op de slides is, indien nuttig/van toepassing, een korte toelichting gegeven

1. Bathymetrie

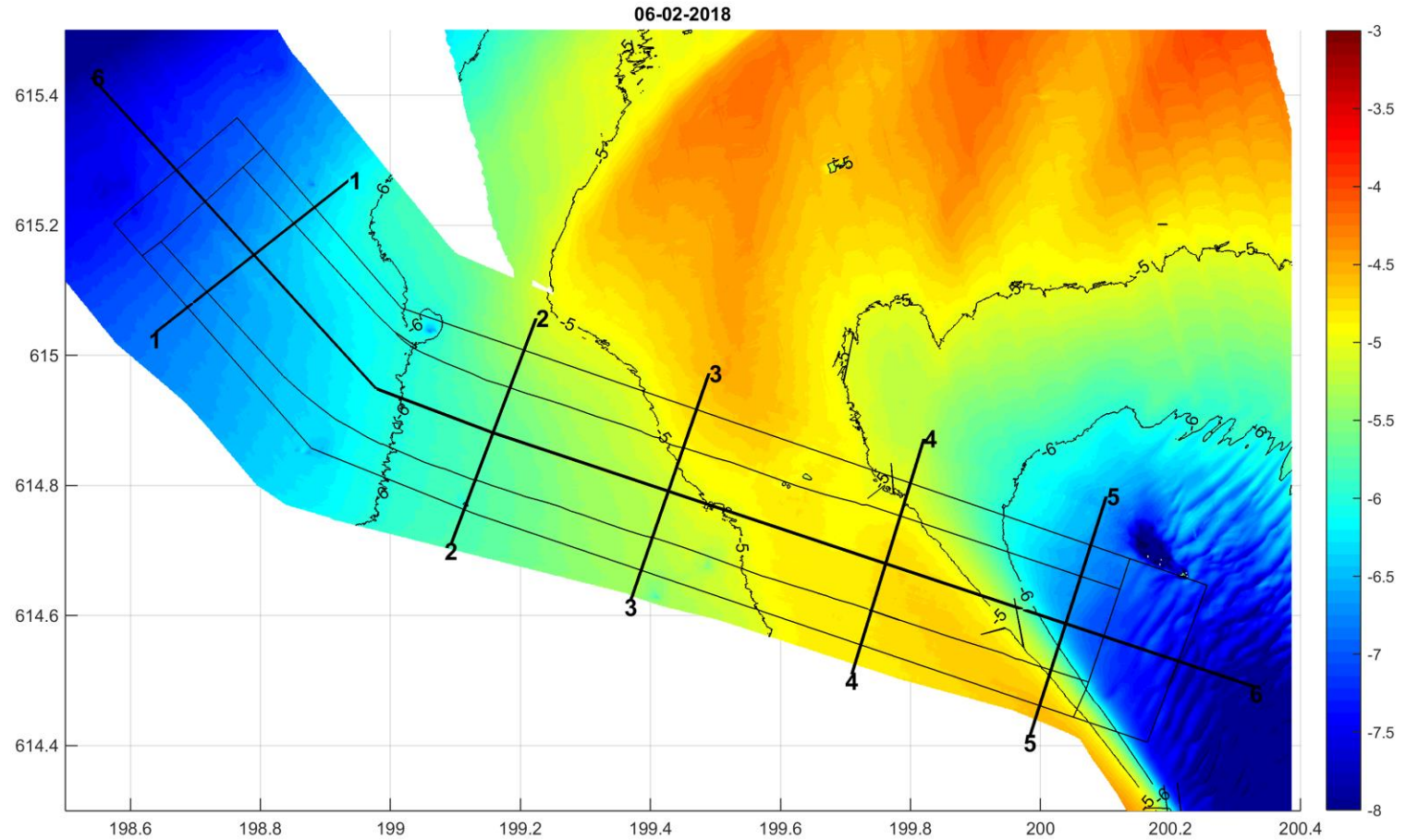
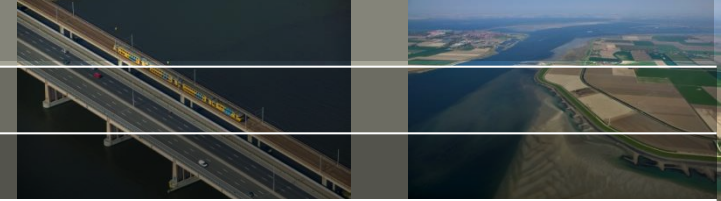


Volumevakken en transecten aangegeven

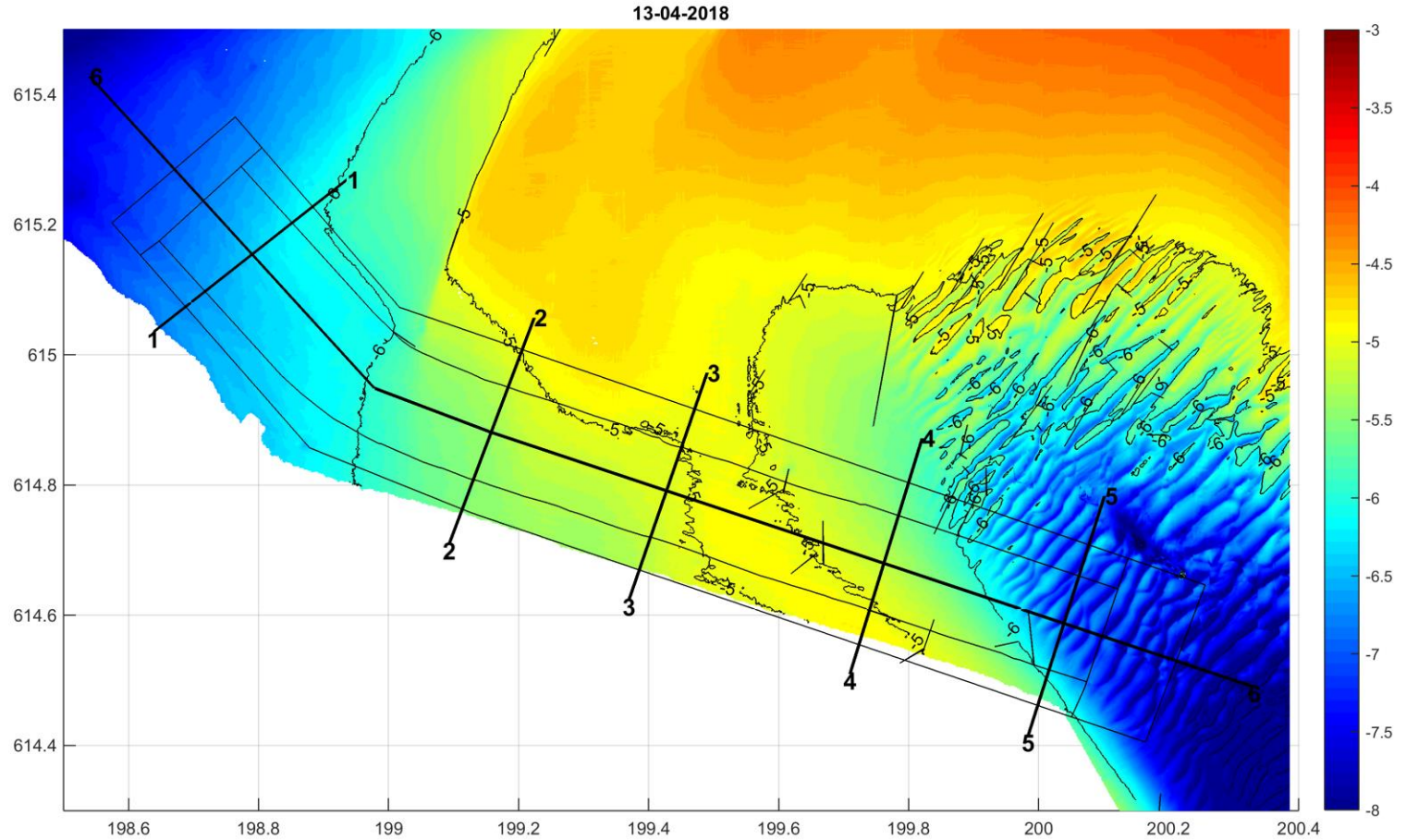
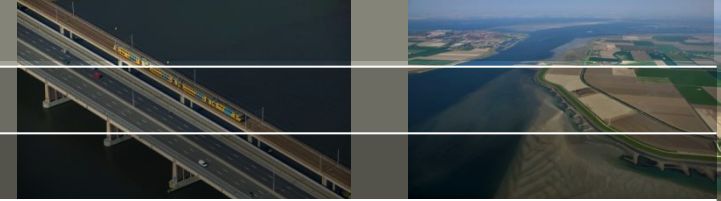
1. Bathymetrie



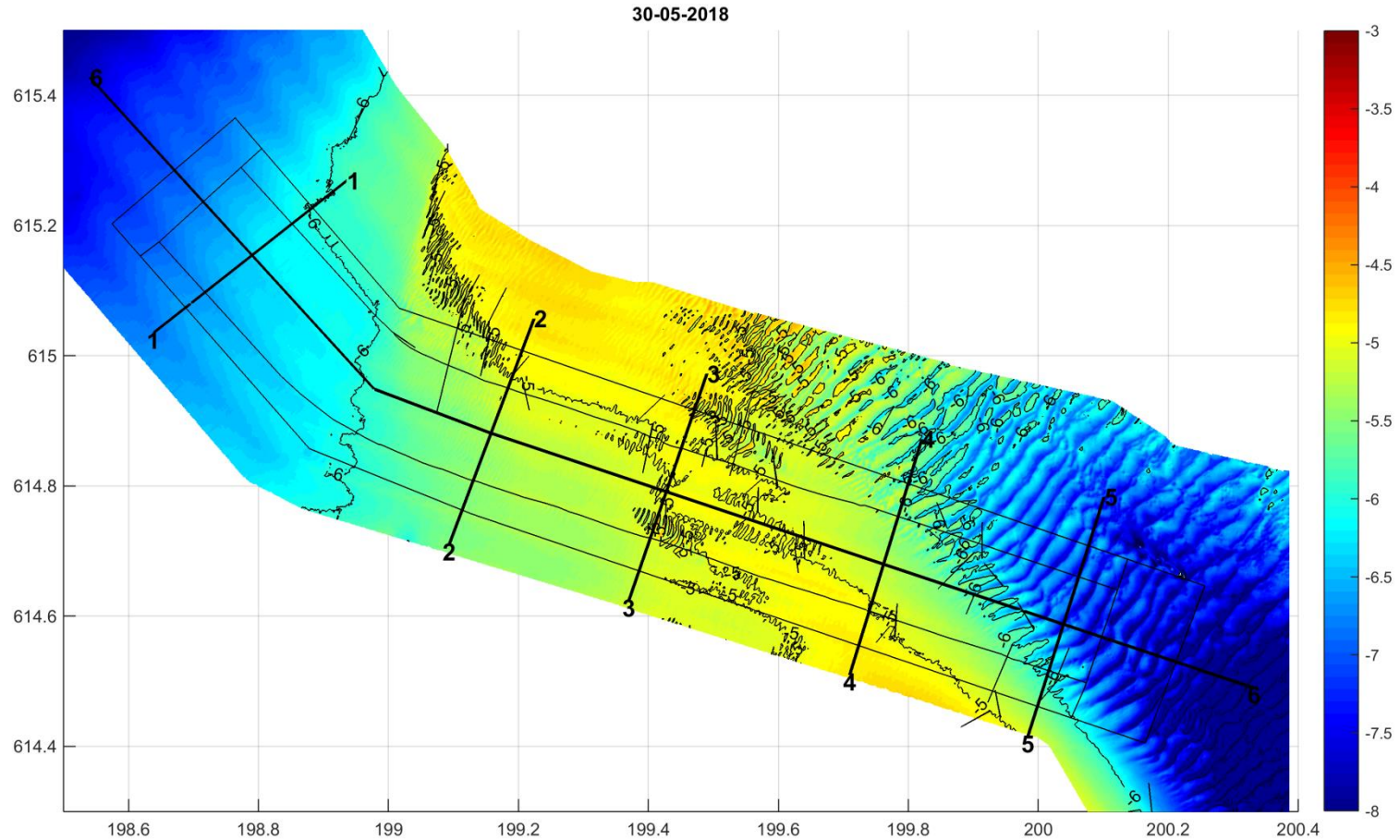
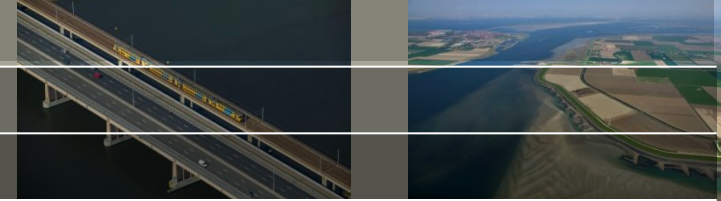
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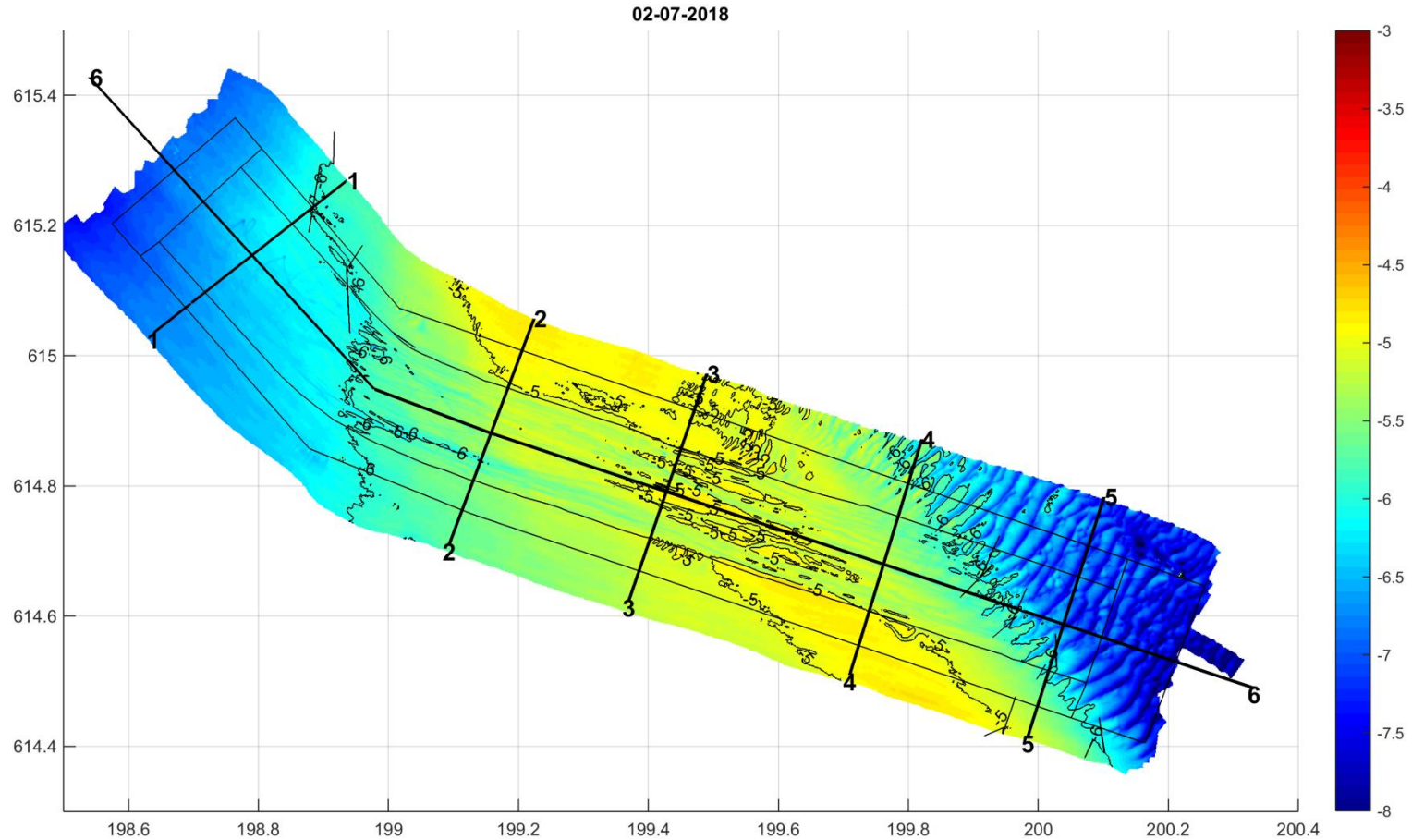
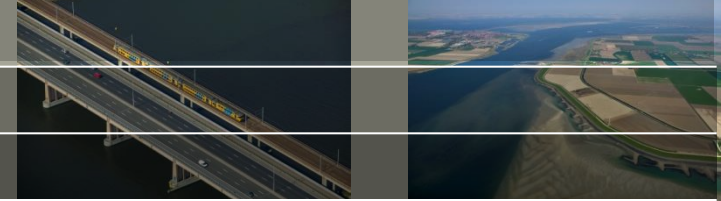


1. Bathymetrie



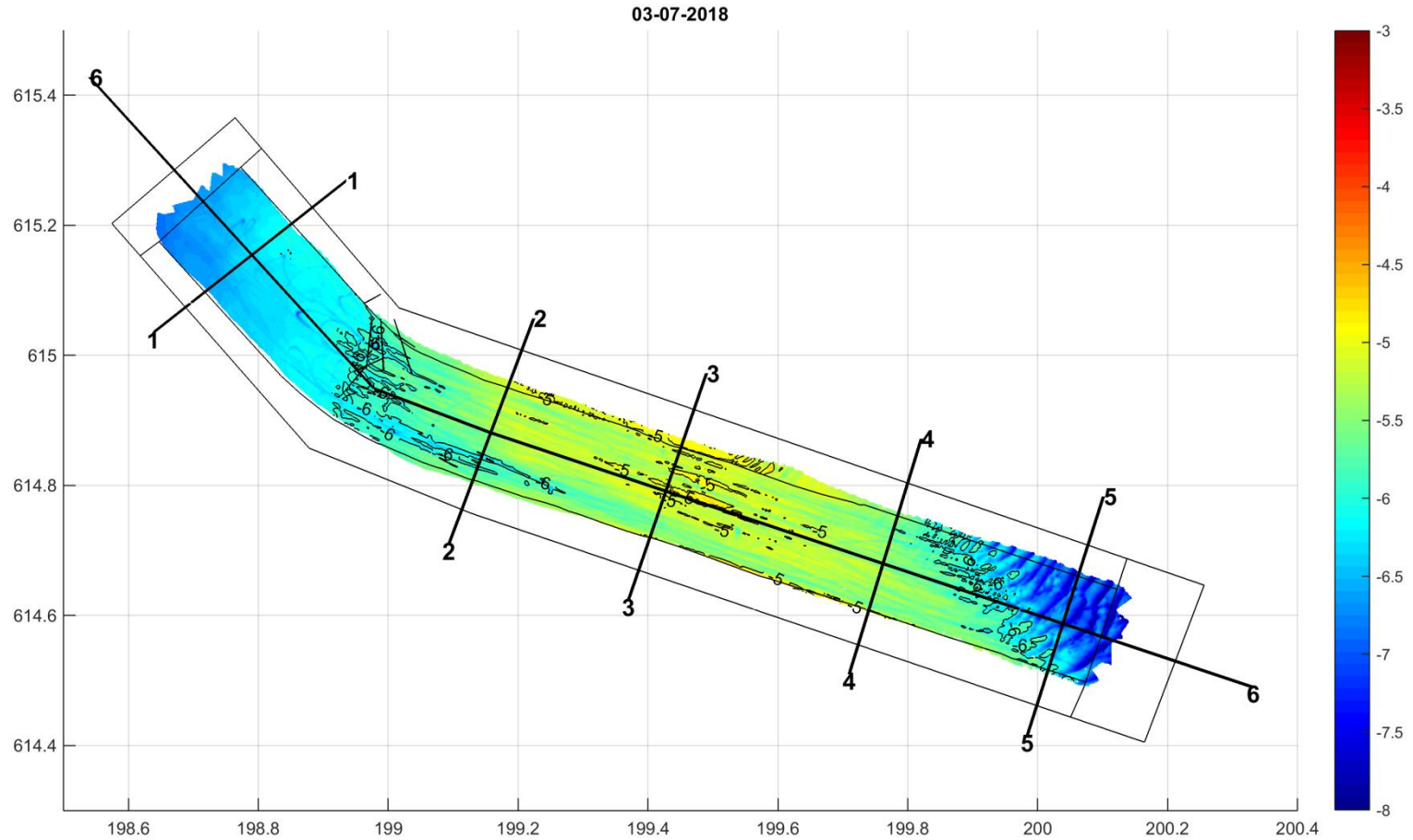
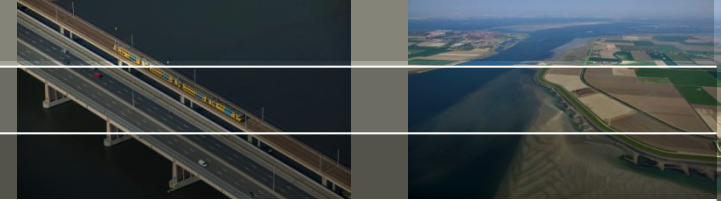
Laatste meting voor start verdieping (juli 2018)

1. Bathymetrie

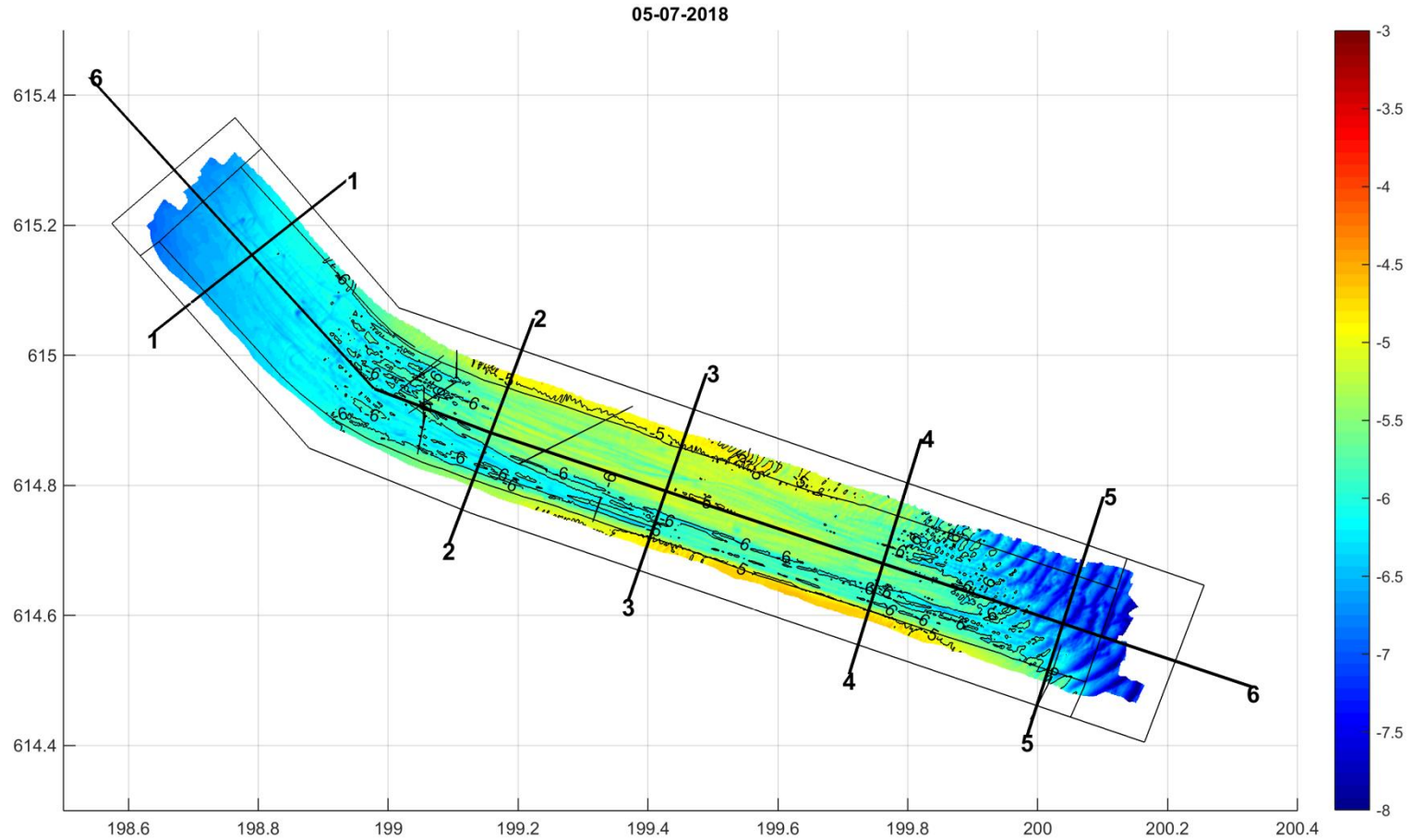
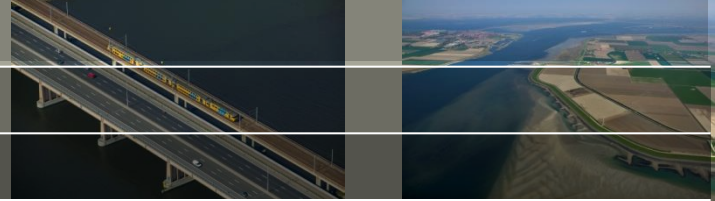


Eerste peiling van aannemer – kort na start verdieping

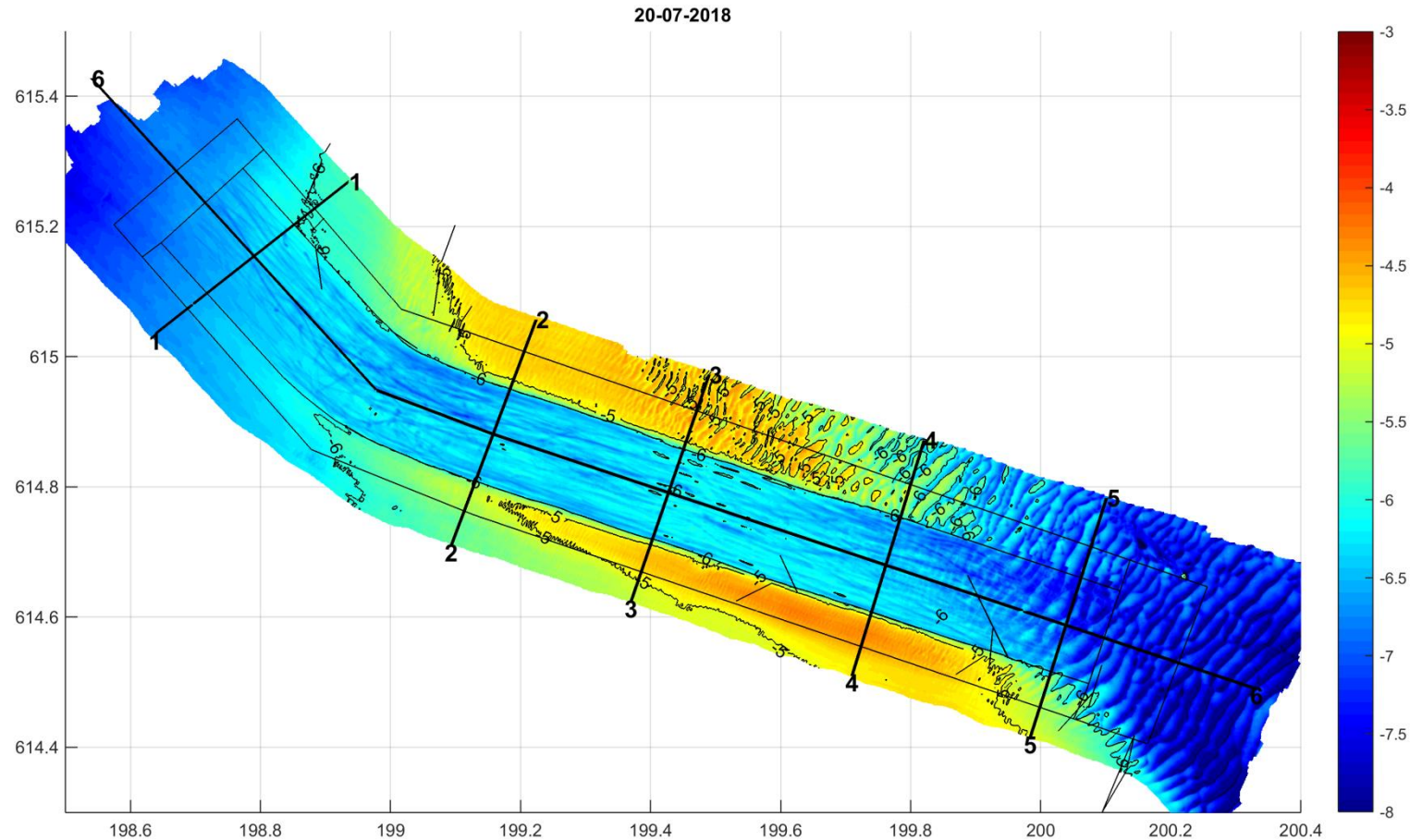
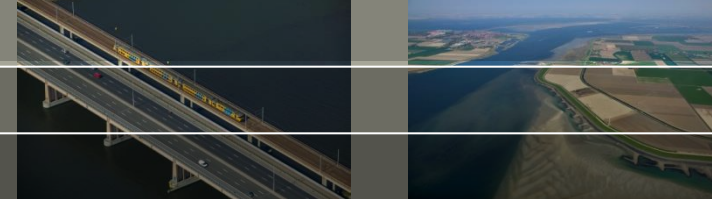
1. Bathymetrie



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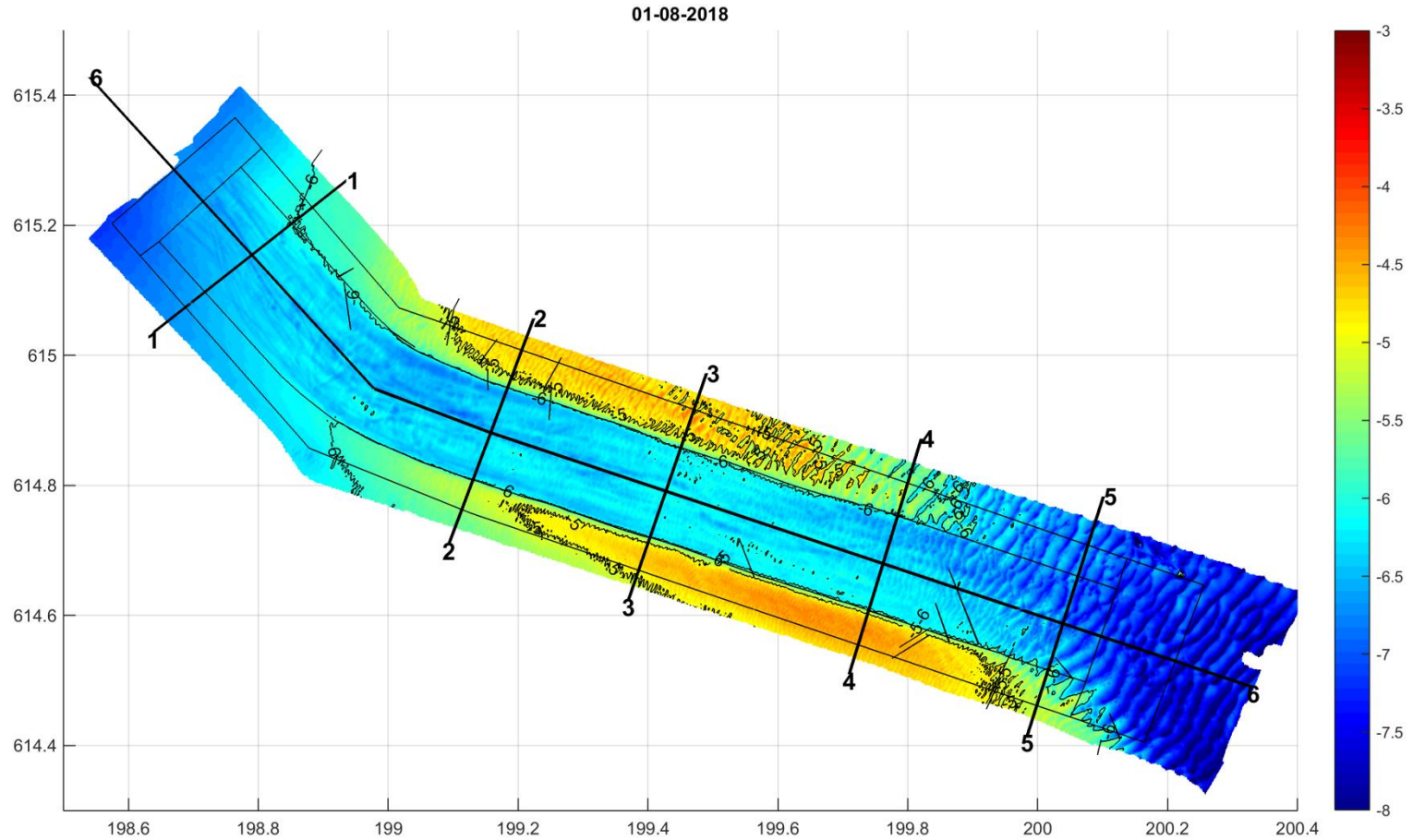
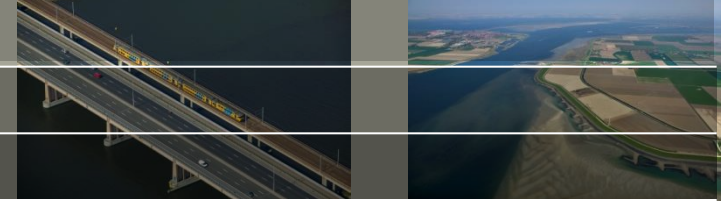


Uitpeiling aannemer

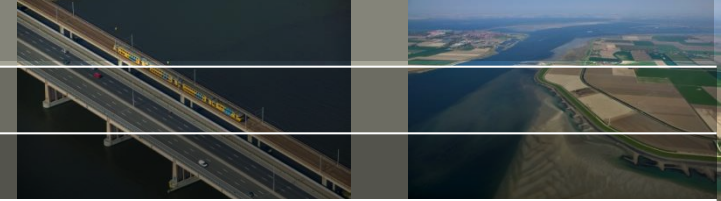
- Baggervak tot iets onder NAP -6 m verdiept
- Bodemvormen (megaribbels) al zichtbaar oost van transect 4

NB: bodem leek samengesteld uit 2 peilingen

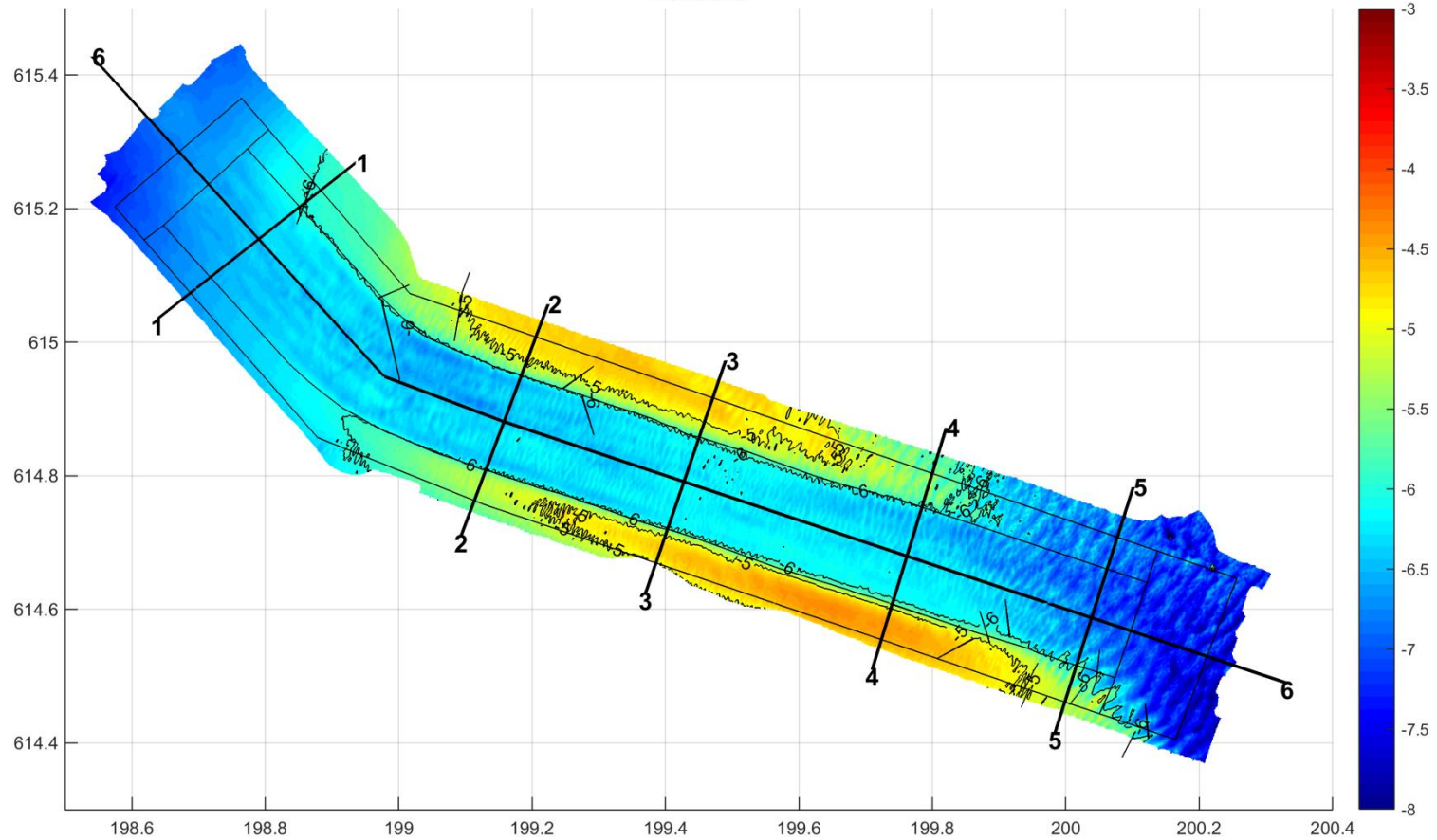
1. Bathymetrie



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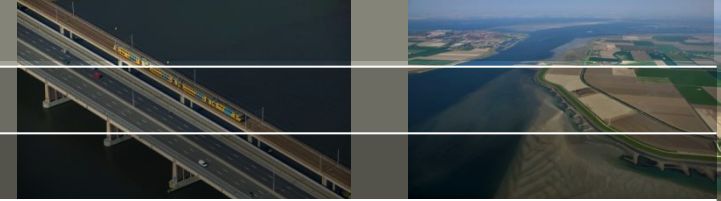


13-08-2018

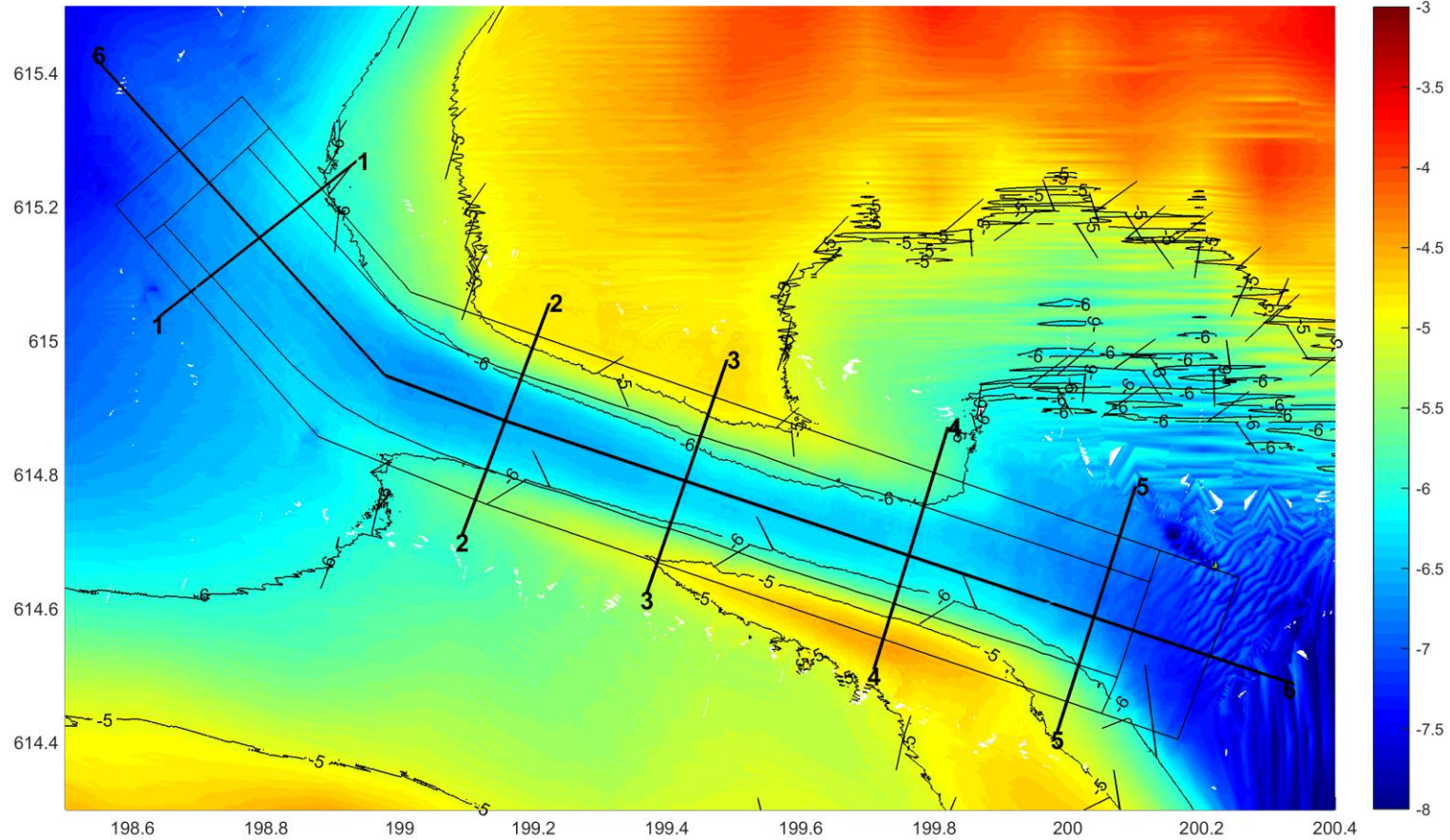


Kleine megaribbels in gehele baggervak te zien

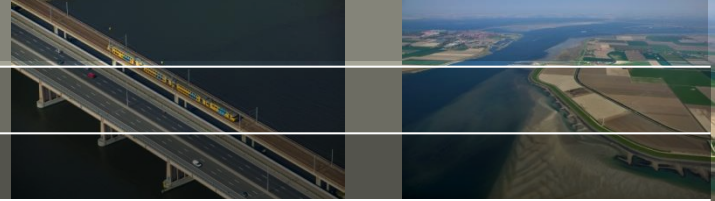
1. Bathymetrie



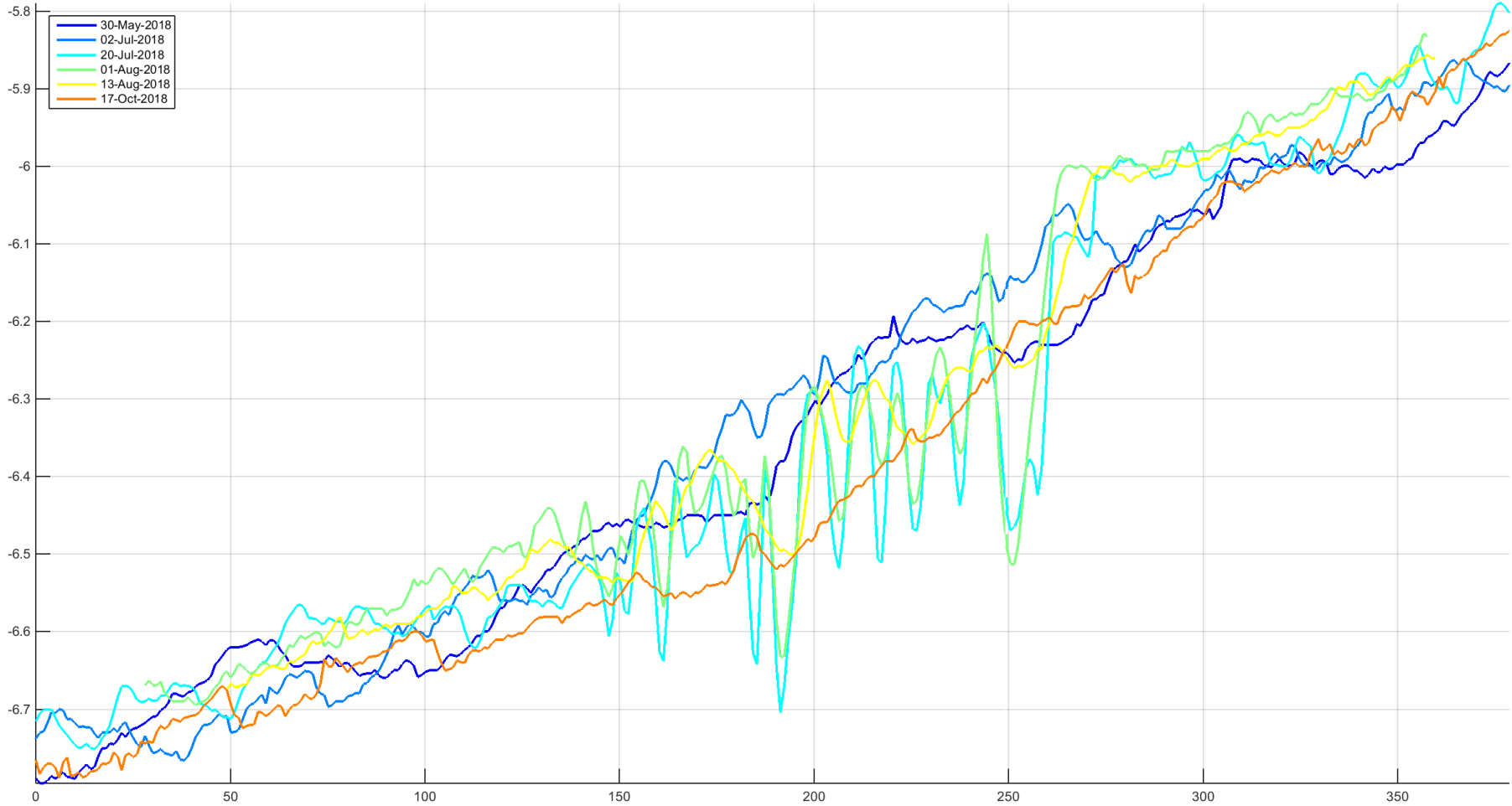
17-10-2018



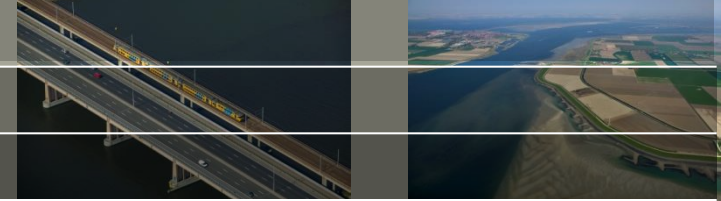
2. Bathymetrie – profielen



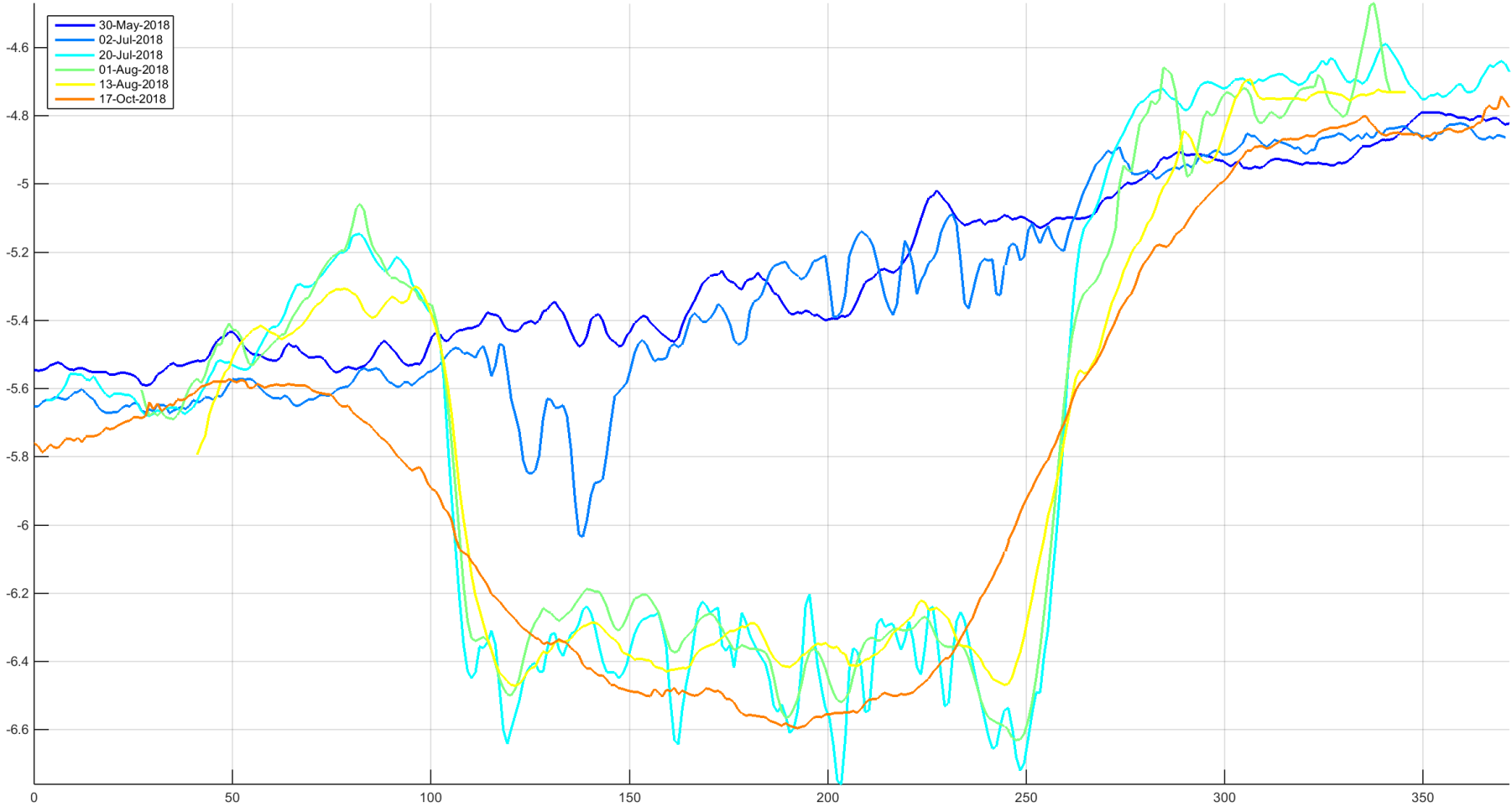
transect 1



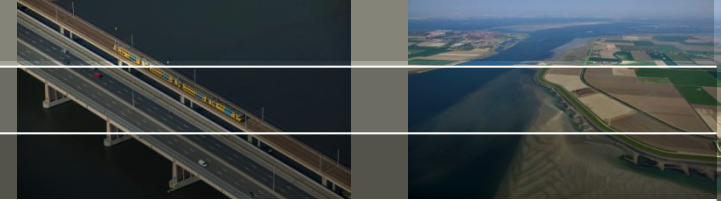
2. Bathymetrie - profielen



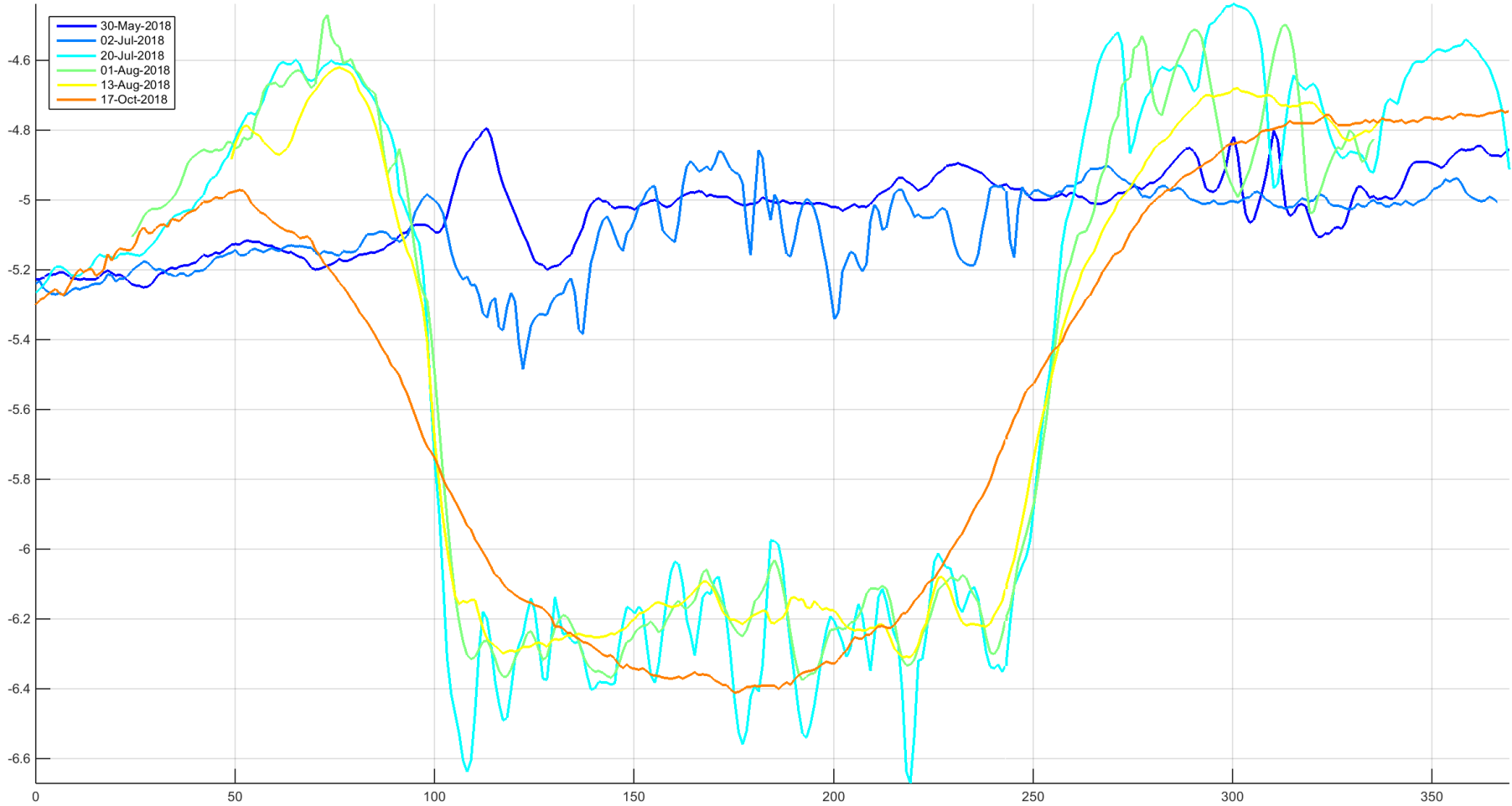
transect 2



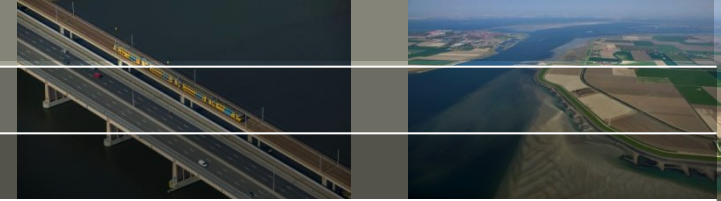
2. Bathymetrie - profielen



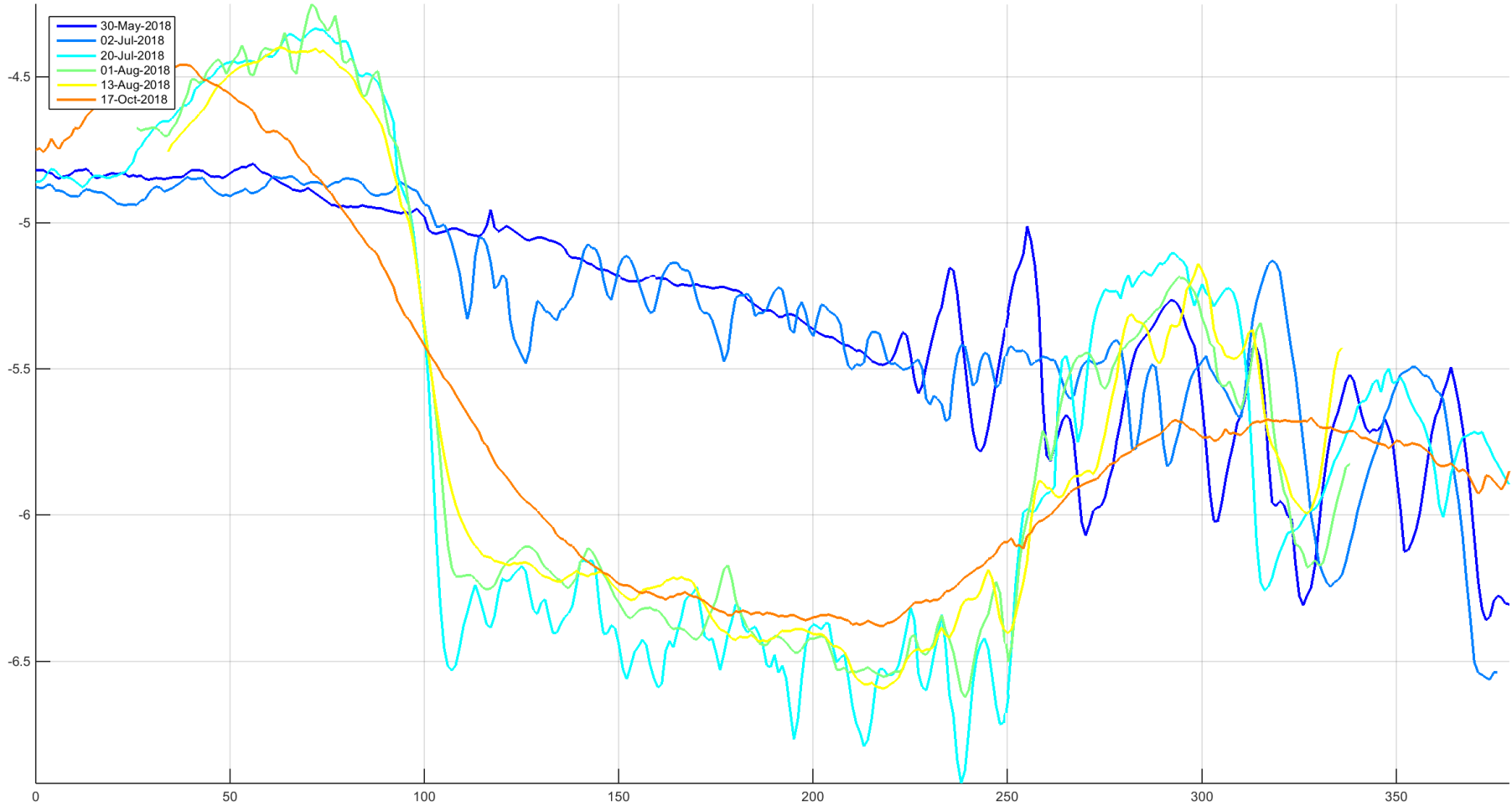
transect 3



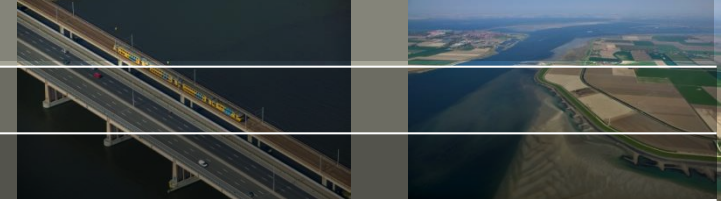
2. Bathymetrie - profielen



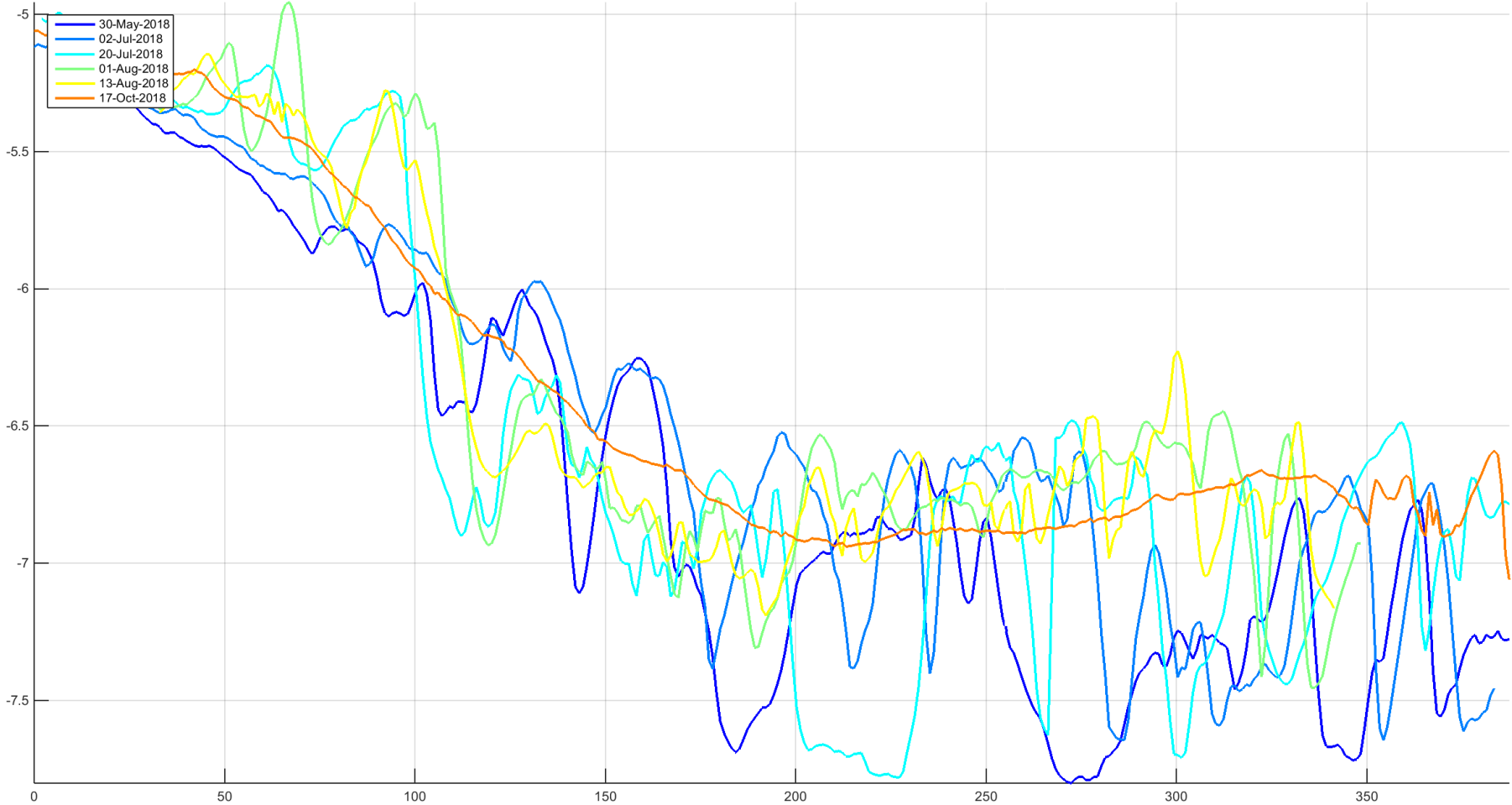
transect 4



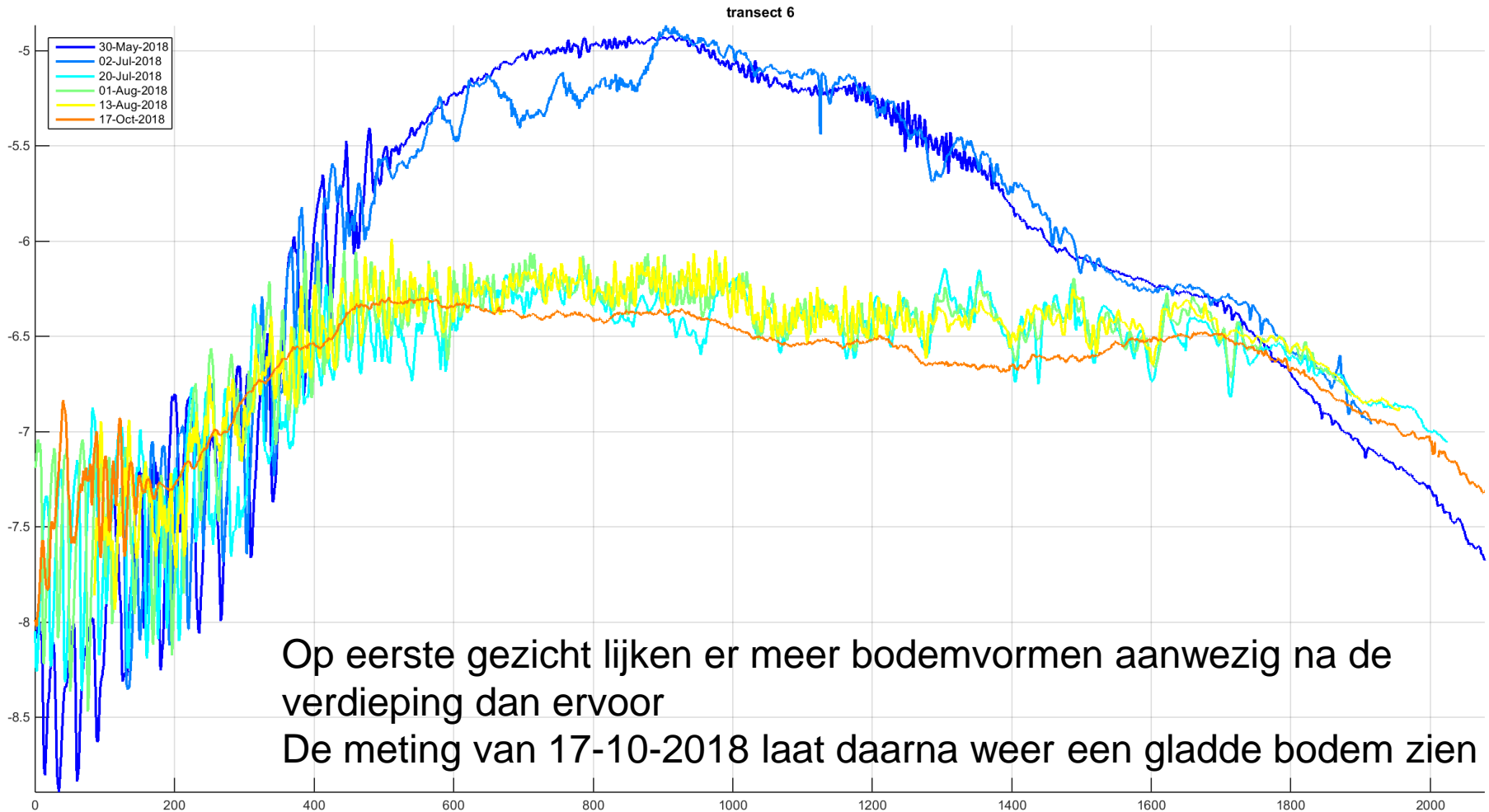
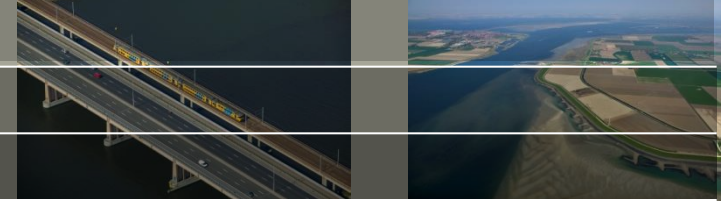
2. Bathymetrie - profielen



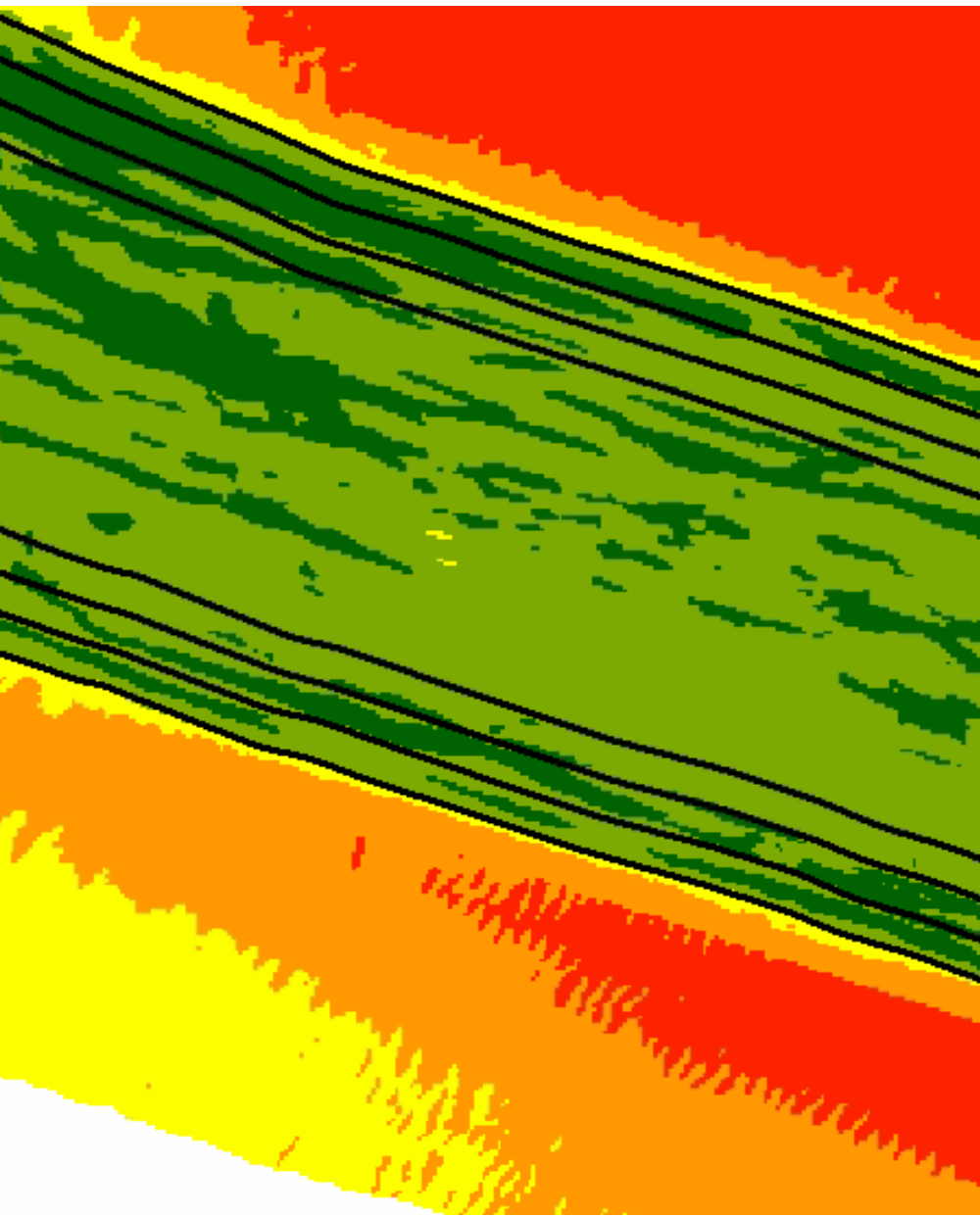
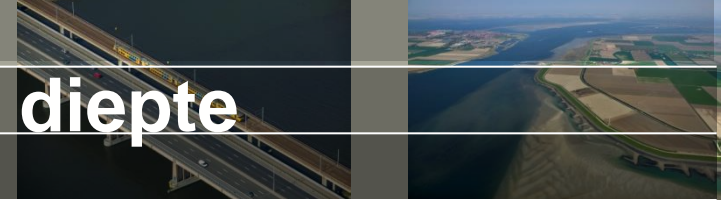
transect 5



2. Bathymetrie - profielen



3. Bathymetrie – ontwikkeling diepte



Indeling subgebieden

10 m - 10 m noord

10 m - 20 m noord

10 m - 30 m noord

90 m - midden

10 m - 30 m zuid

10 m - 20 m zuid

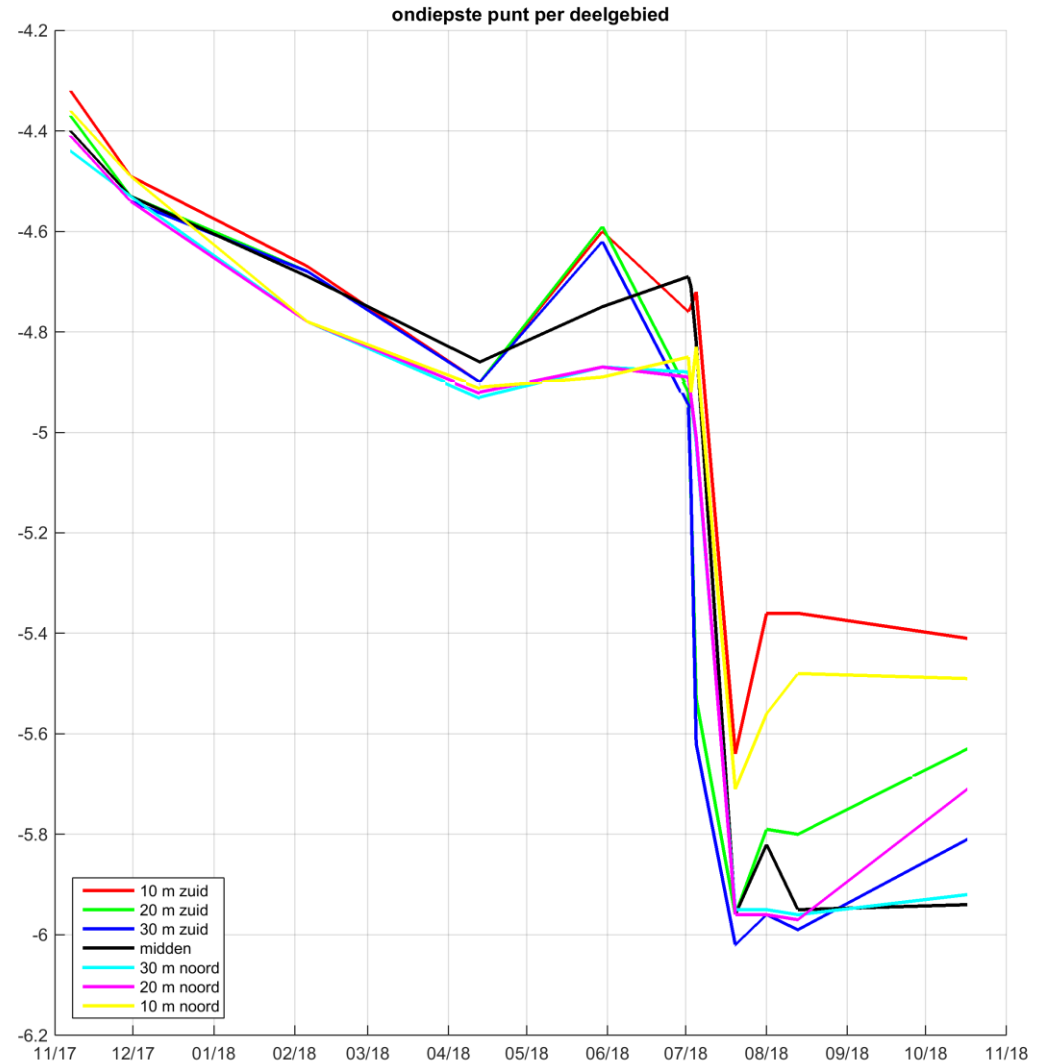
10 m - 10 m zuid

3. Bathymetrie – ontwikkeling diepte

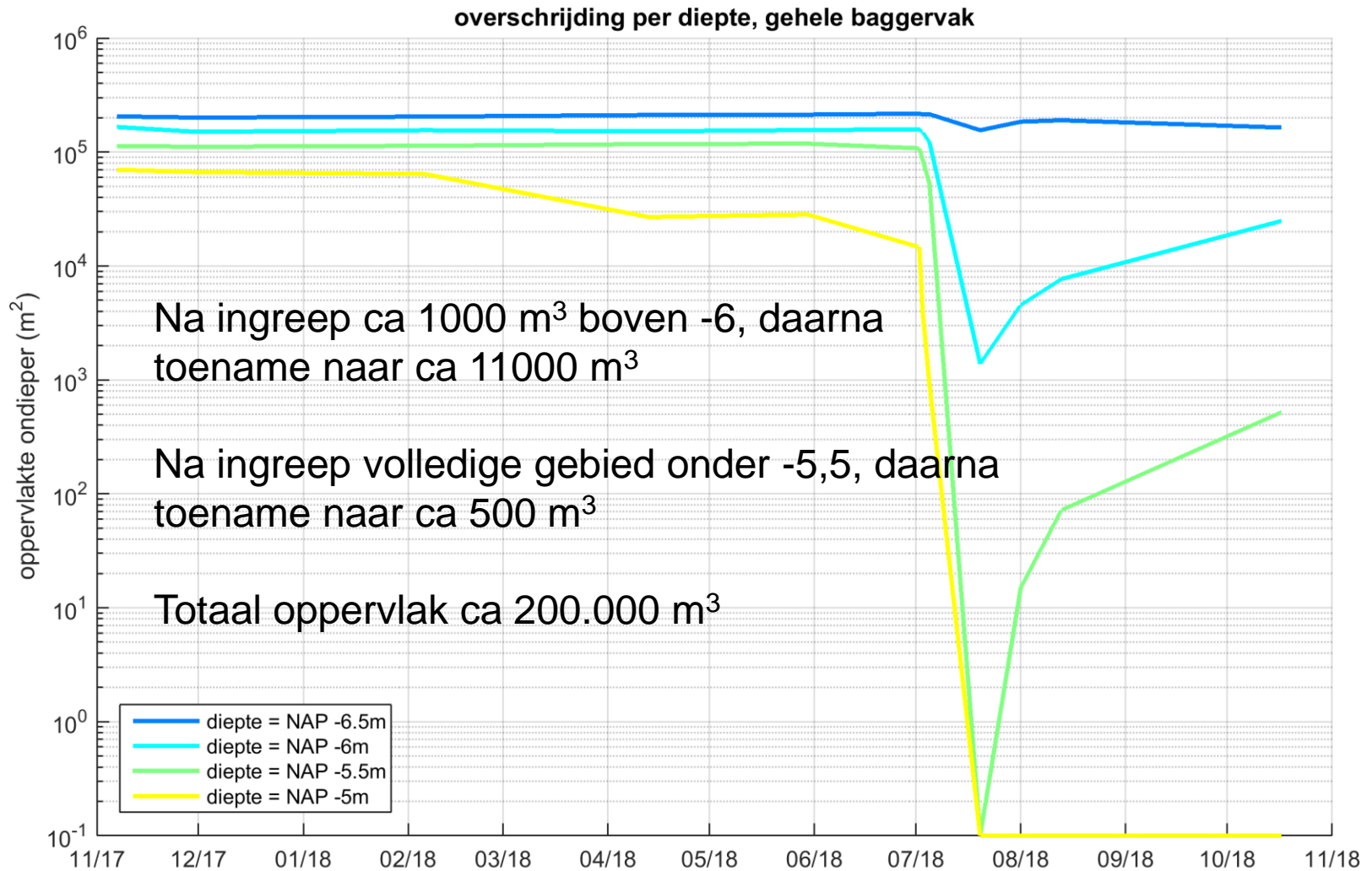
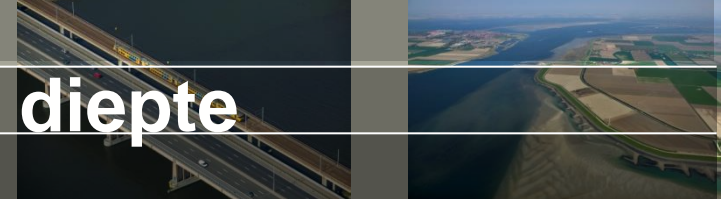
Randen laten na verdieping afname in diepte zien, waarbij de zuidkant de grootste afname heeft

Afname van de diepte is het sterkste direct na de verdieping, tussen de meting van augustus en oktober is een afname van de verondieping te zien

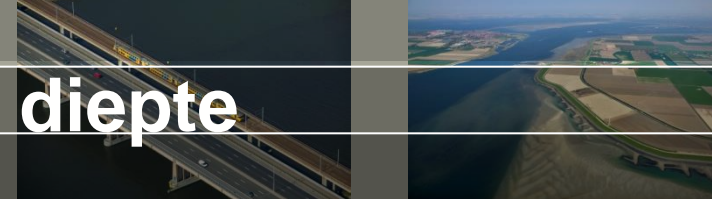
De ondiepste ligging kan 1 enkel punt zijn, daarom in volgende slides grafieken met hoeveel punten boven bepaalde dieptes liggen



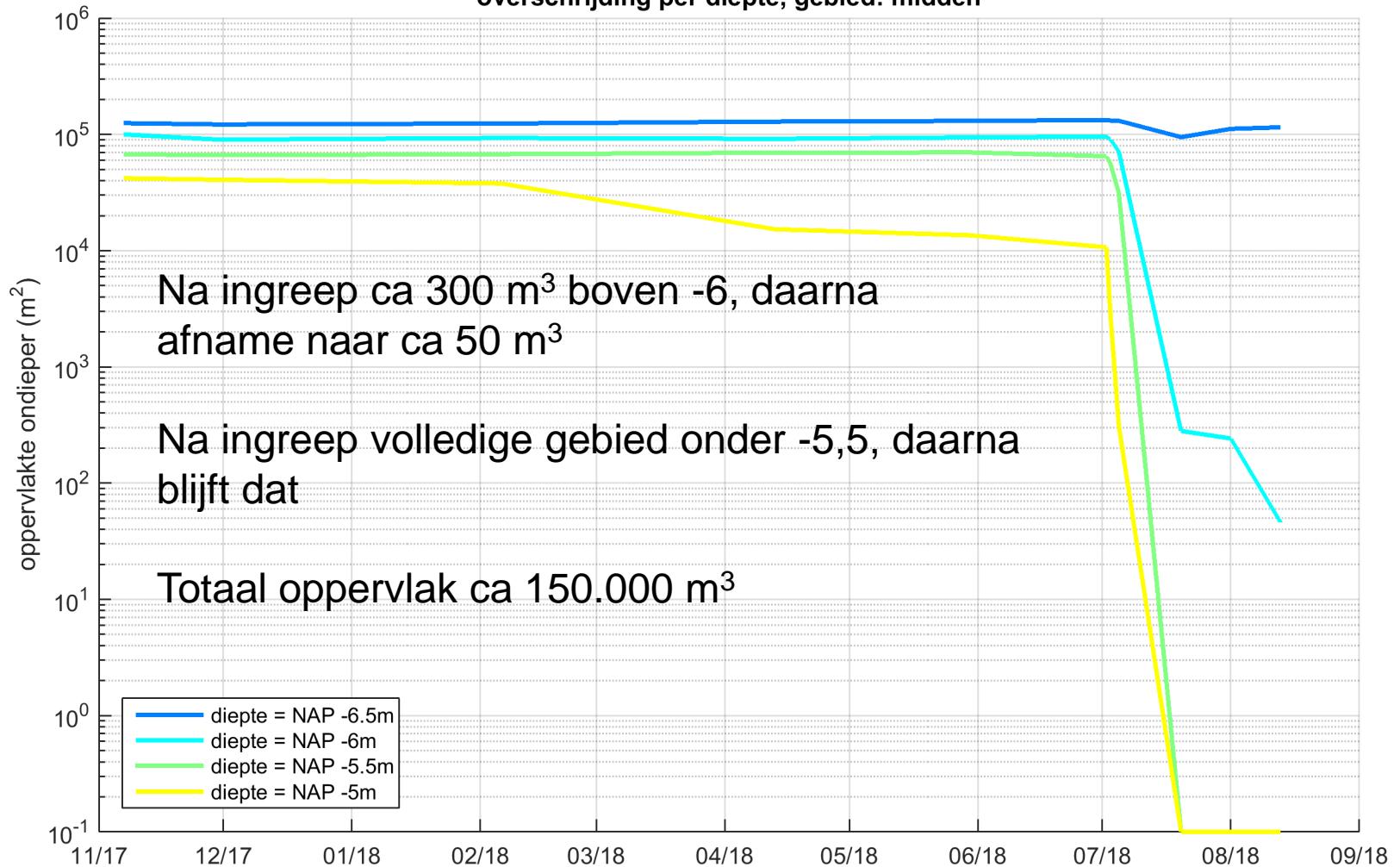
3. Bathymetrie – ontwikkeling diepte



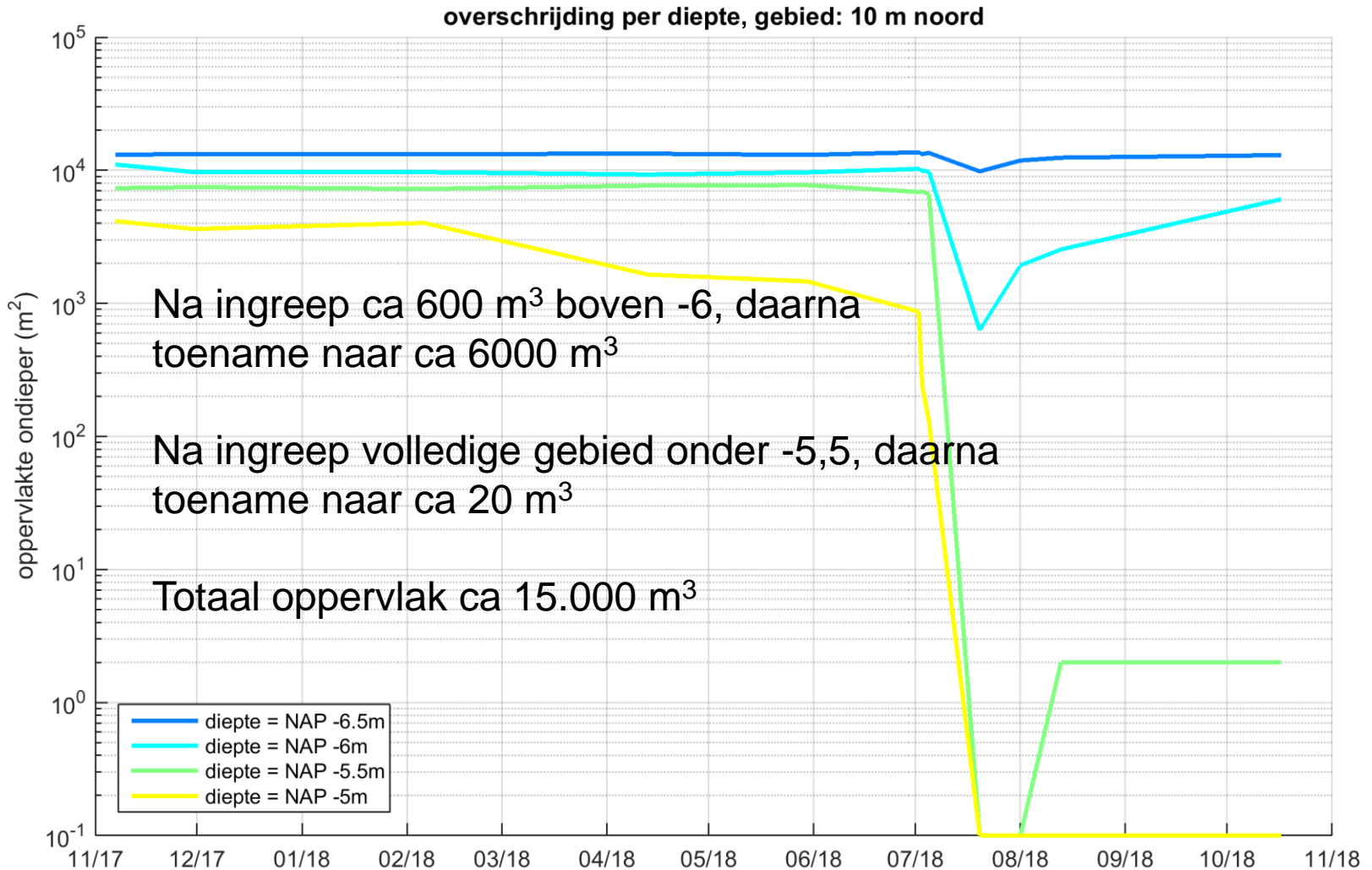
3. Bathymetrie – ontwikkeling diepte



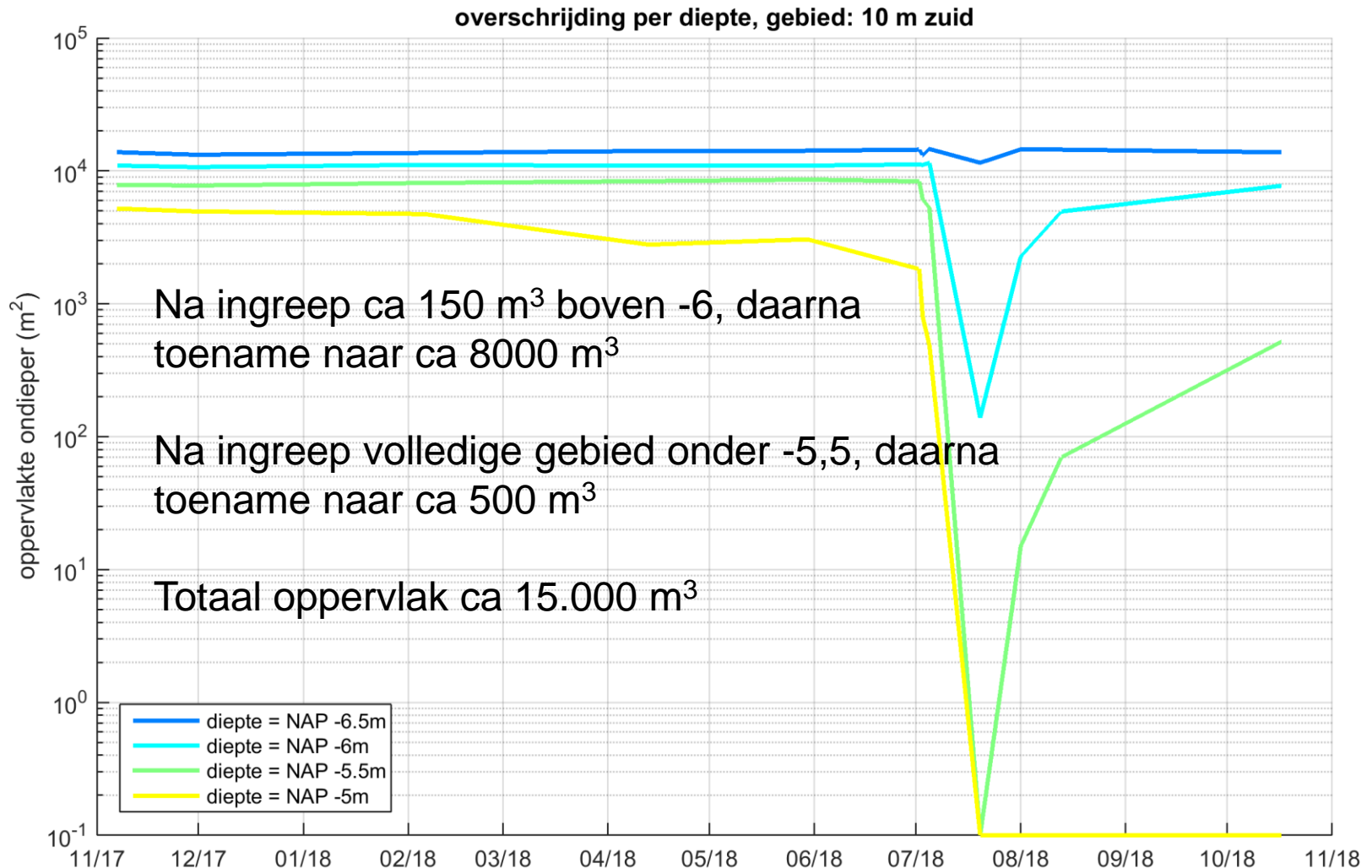
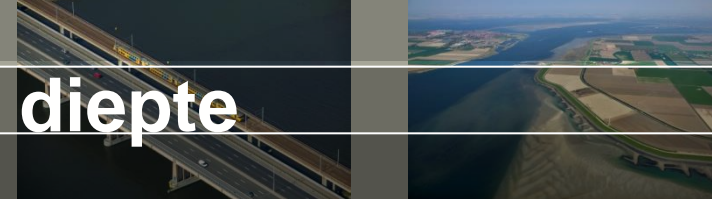
overschrijding per diepte, gebied: midden



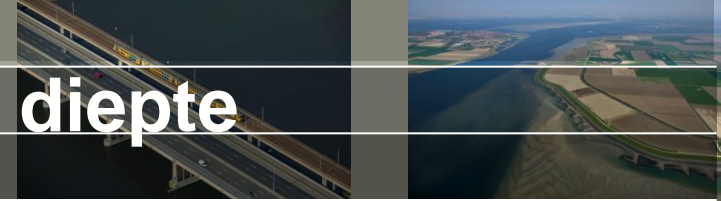
3. Bathymetrie – ontwikkeling diepte



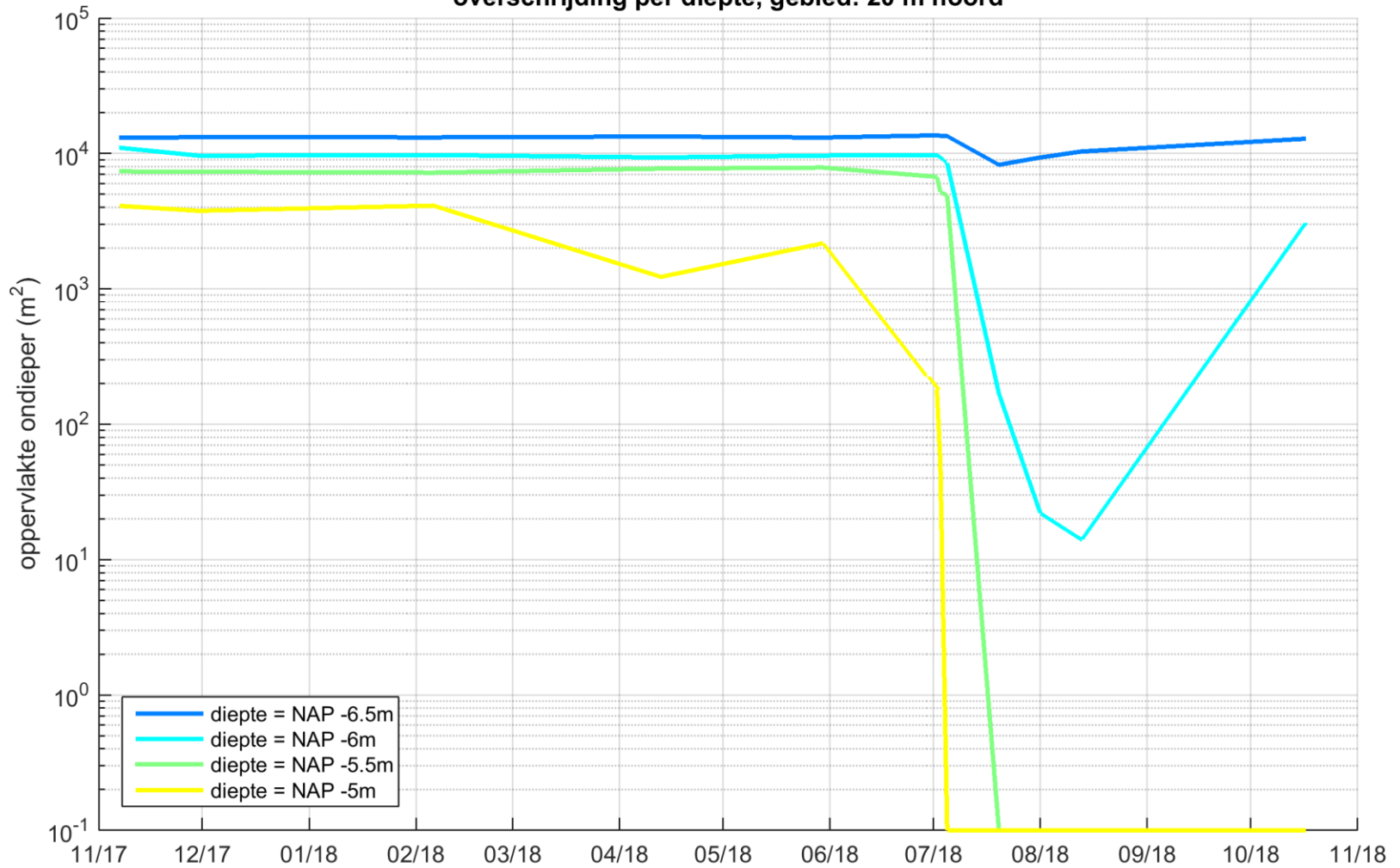
3. Bathymetrie – ontwikkeling diepte



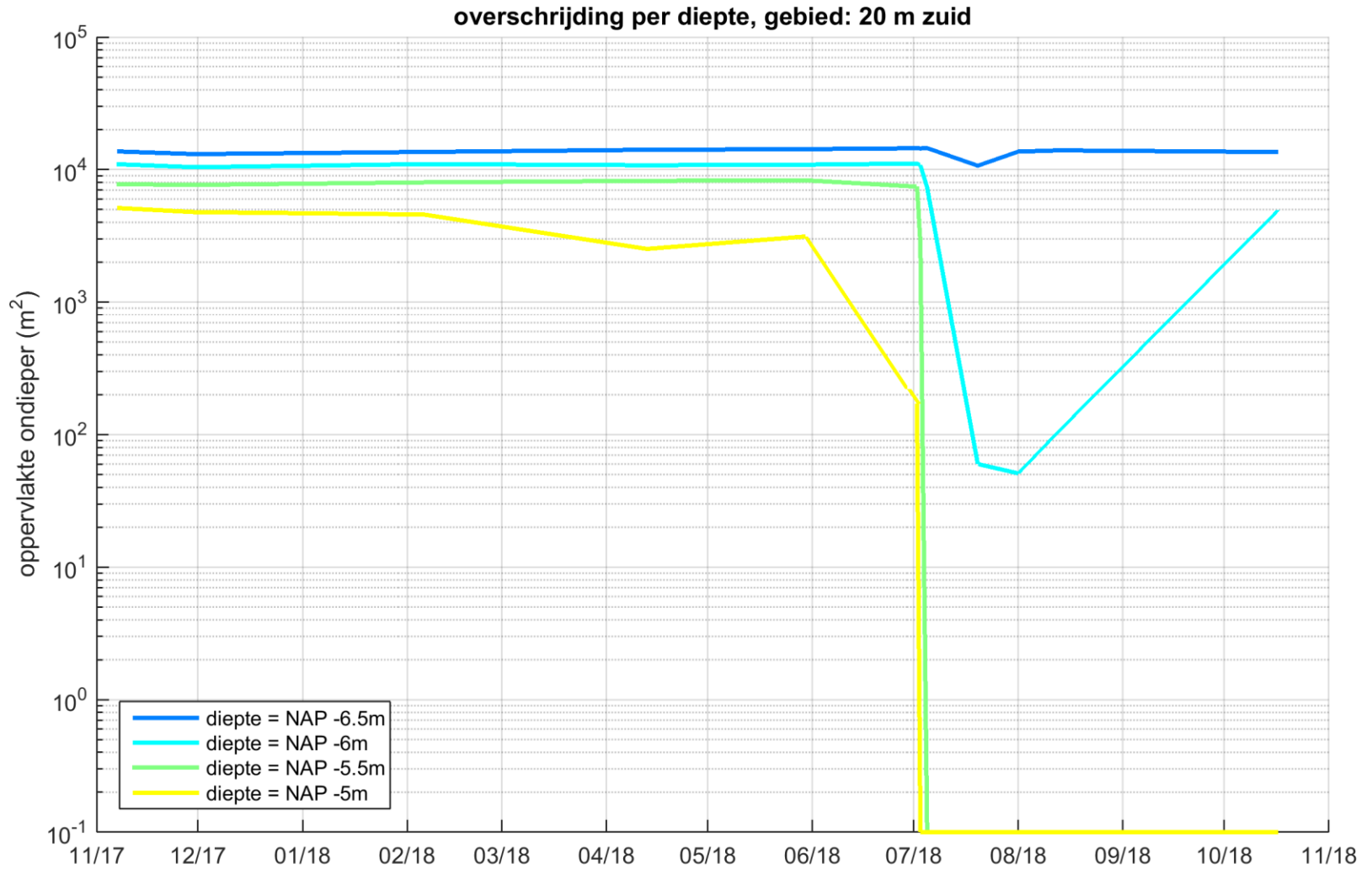
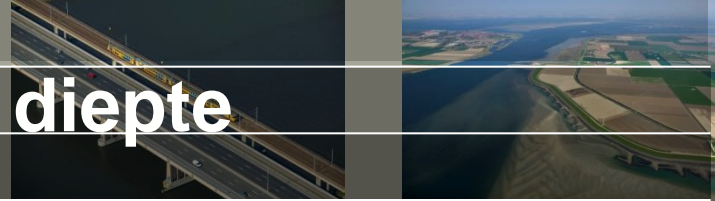
3. Bathymetrie – ontwikkeling diepte



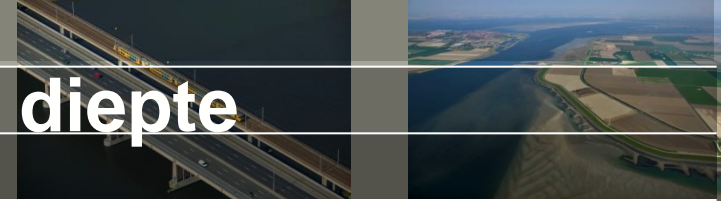
overschrijding per diepte, gebied: 20 m noord



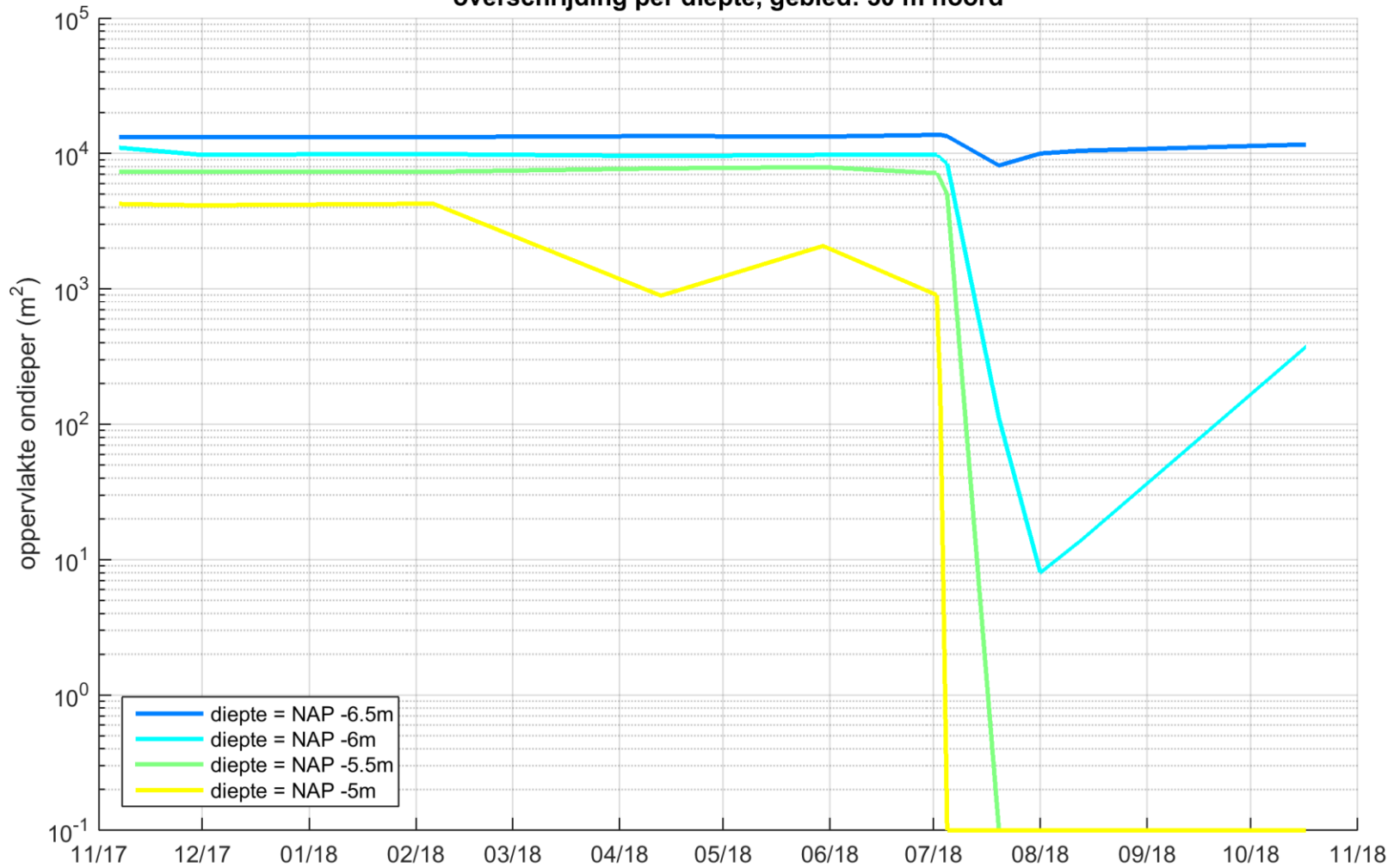
3. Bathymetrie – ontwikkeling diepte



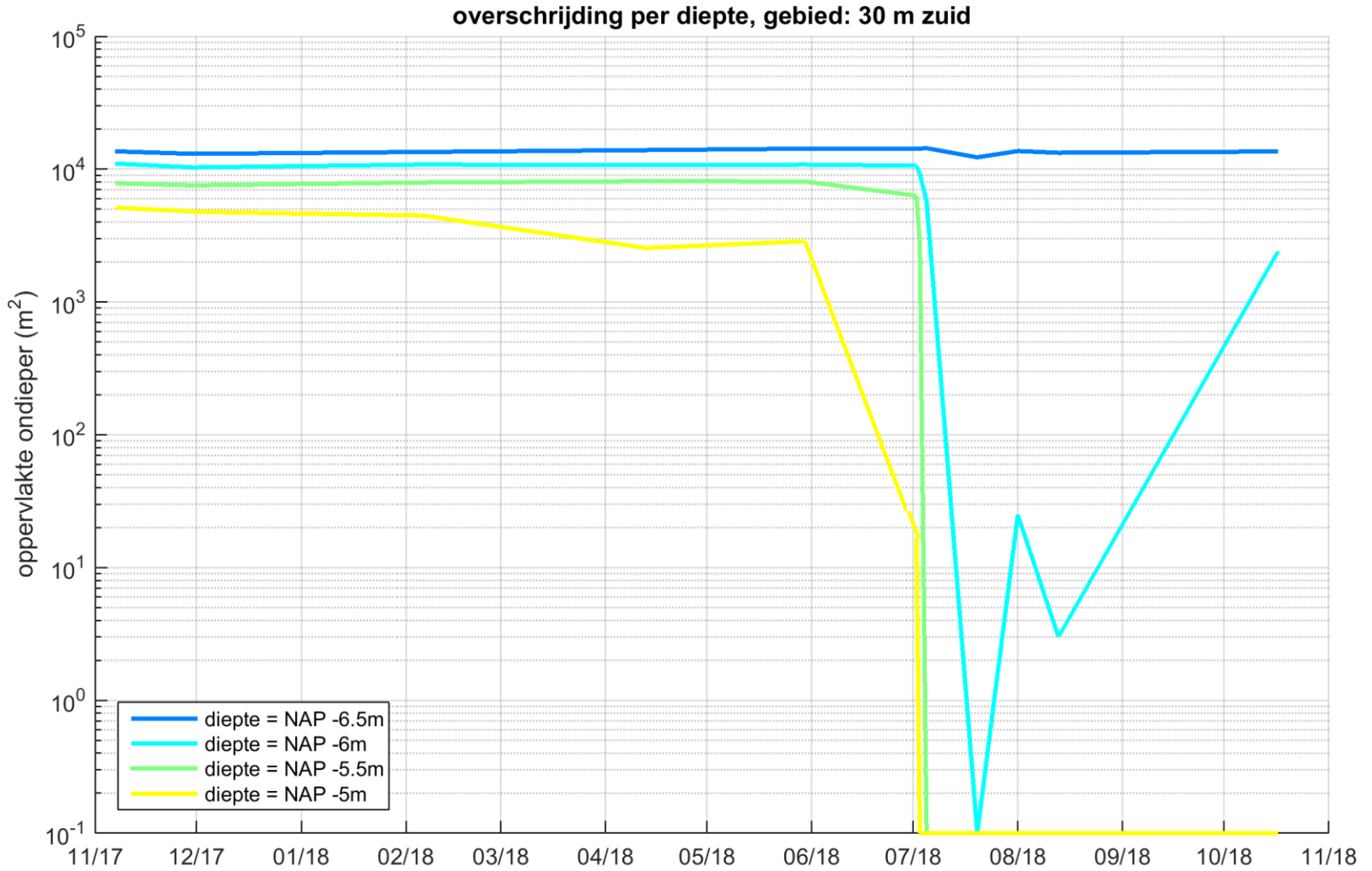
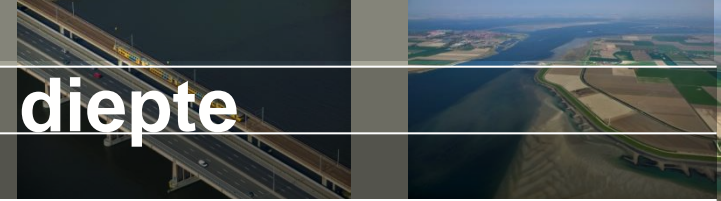
3. Bathymetrie – ontwikkeling diepte



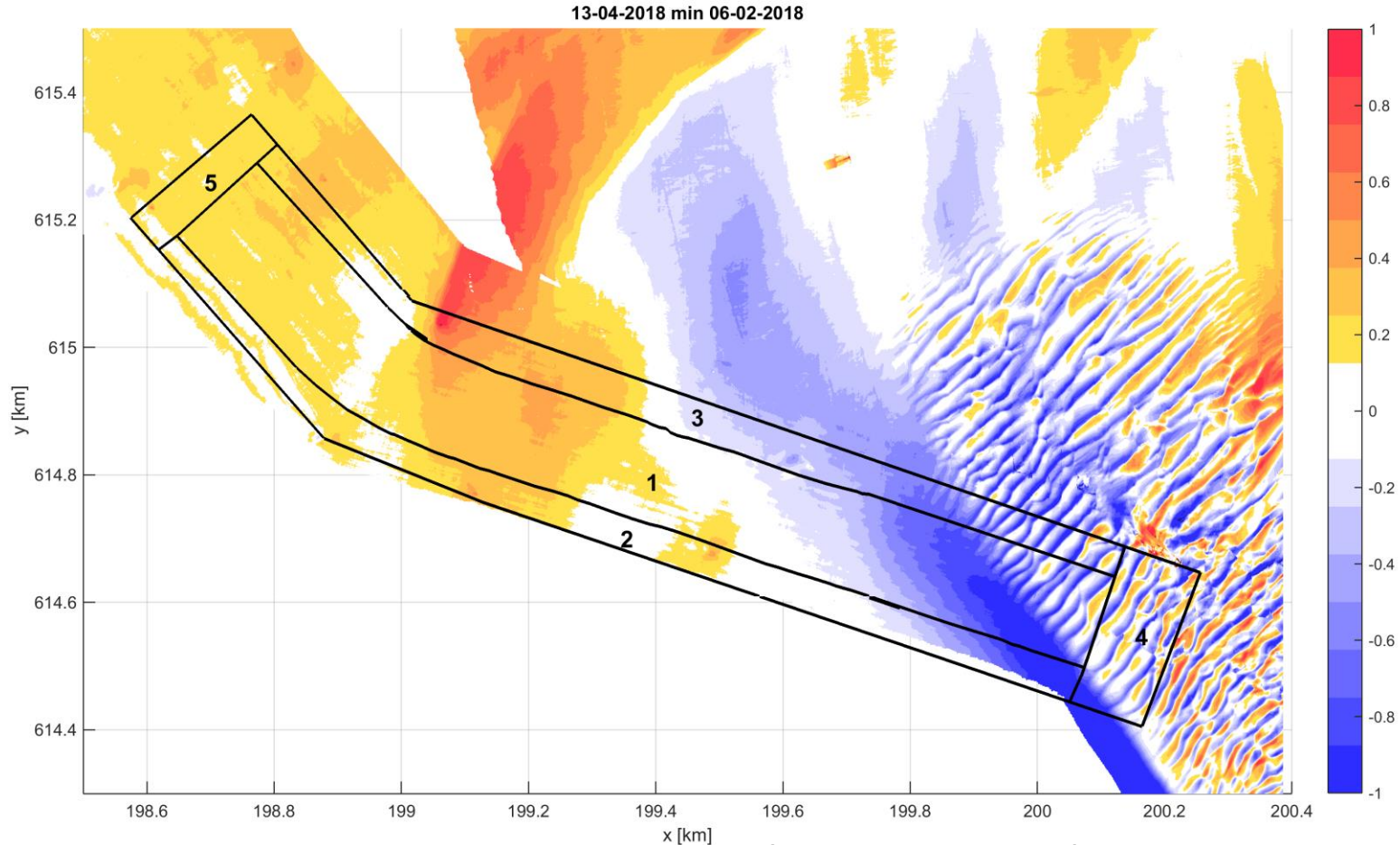
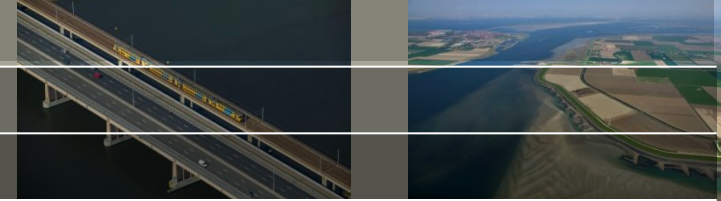
overschrijding per diepte, gebied: 30 m noord



3. Bathymetrie – ontwikkeling diepte



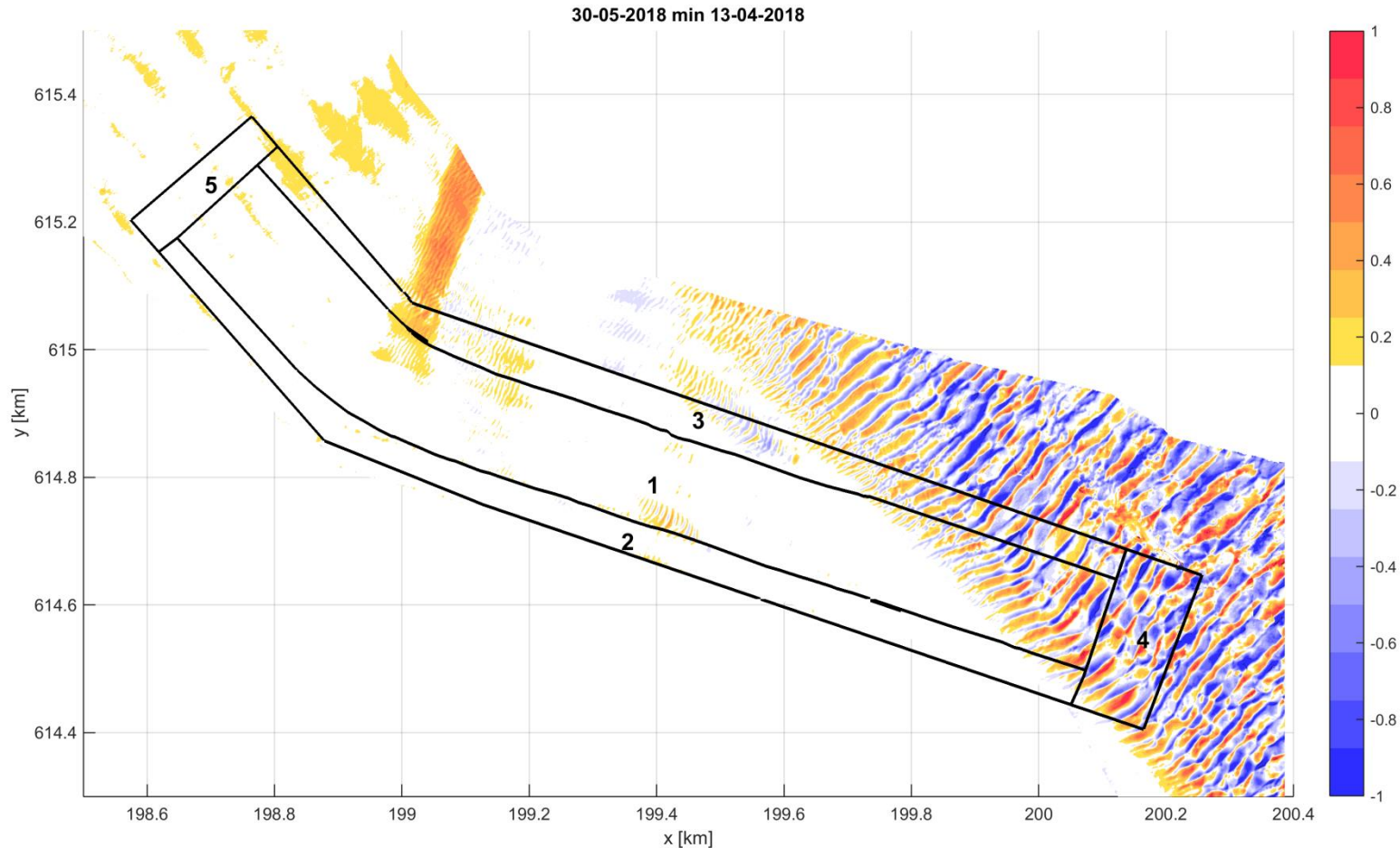
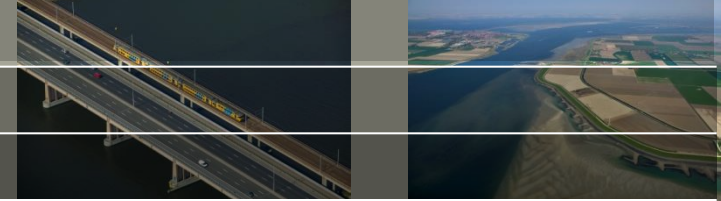
4. Verschilkaarten



Februari tot april enige sedimentatie (voor verdieping)

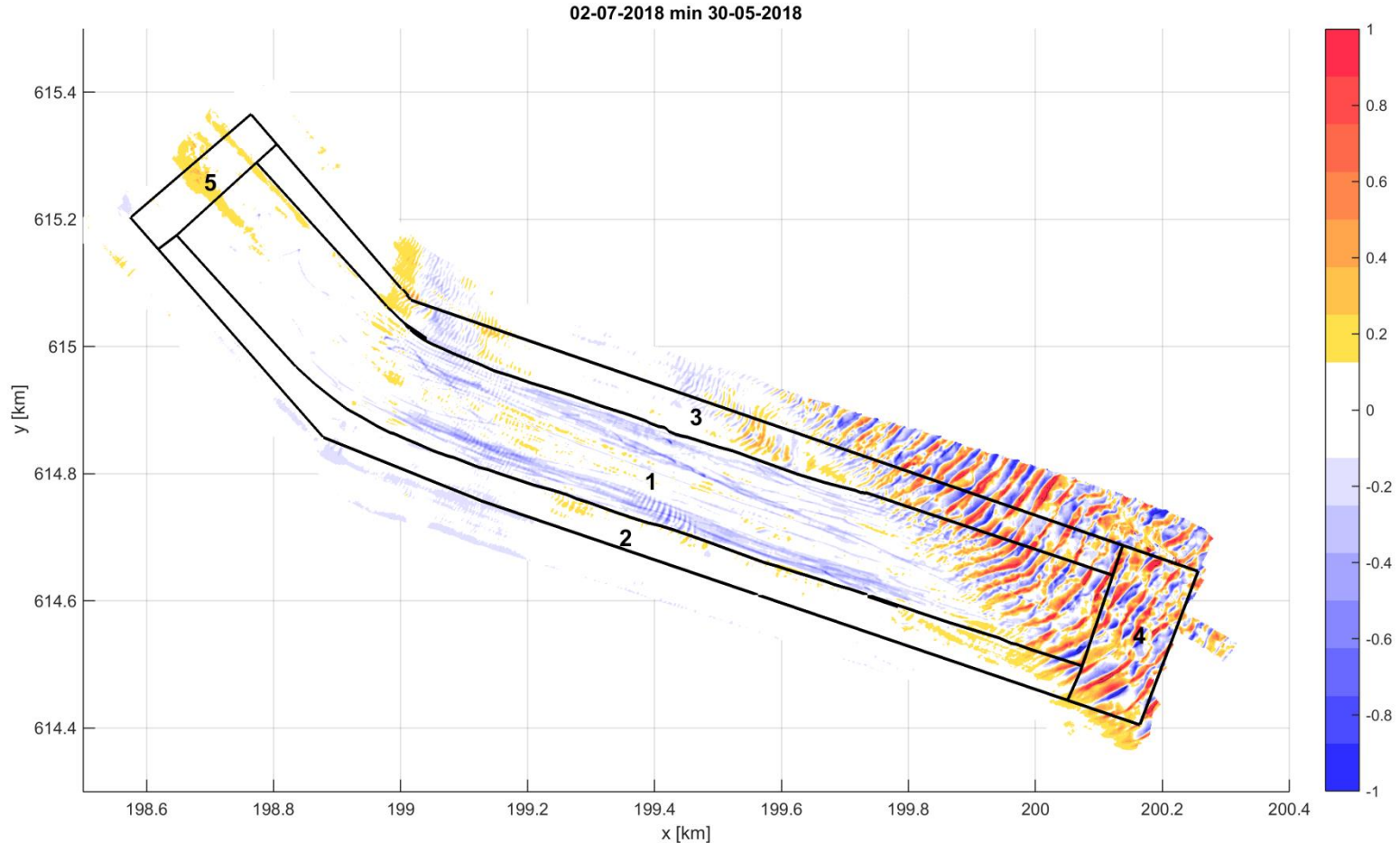
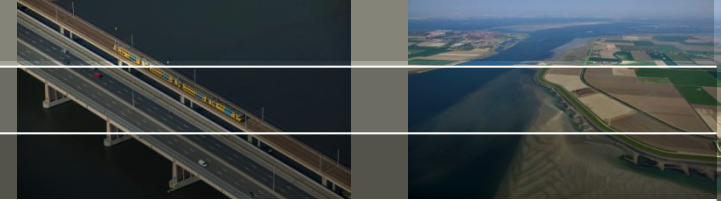
Vak 1 komt overeen met alle subgebieden van vorige sectie

4. Verschilkaarten



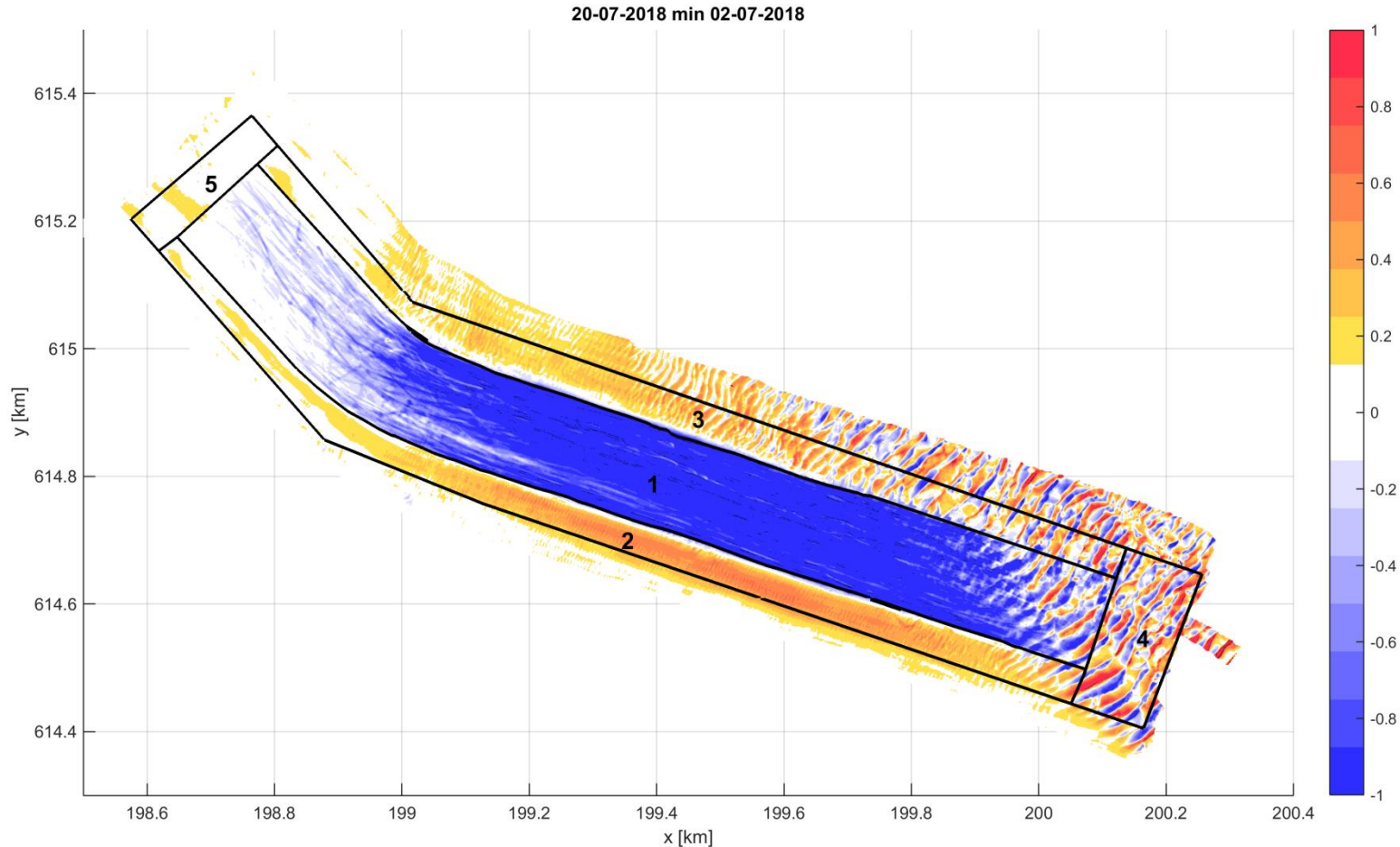
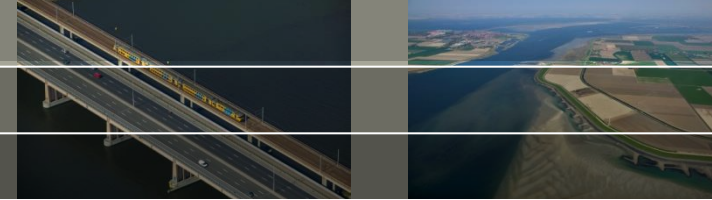
April tot mei weinig verandering in baggervak, in 'centrale' deel van de geul afwisseling erosie-sedimentatie door bodemvorm-migratie

4. Verschilkaarten



Eerste bagger-sporen in vak 1, verder weinig verandering muv bodemvormen

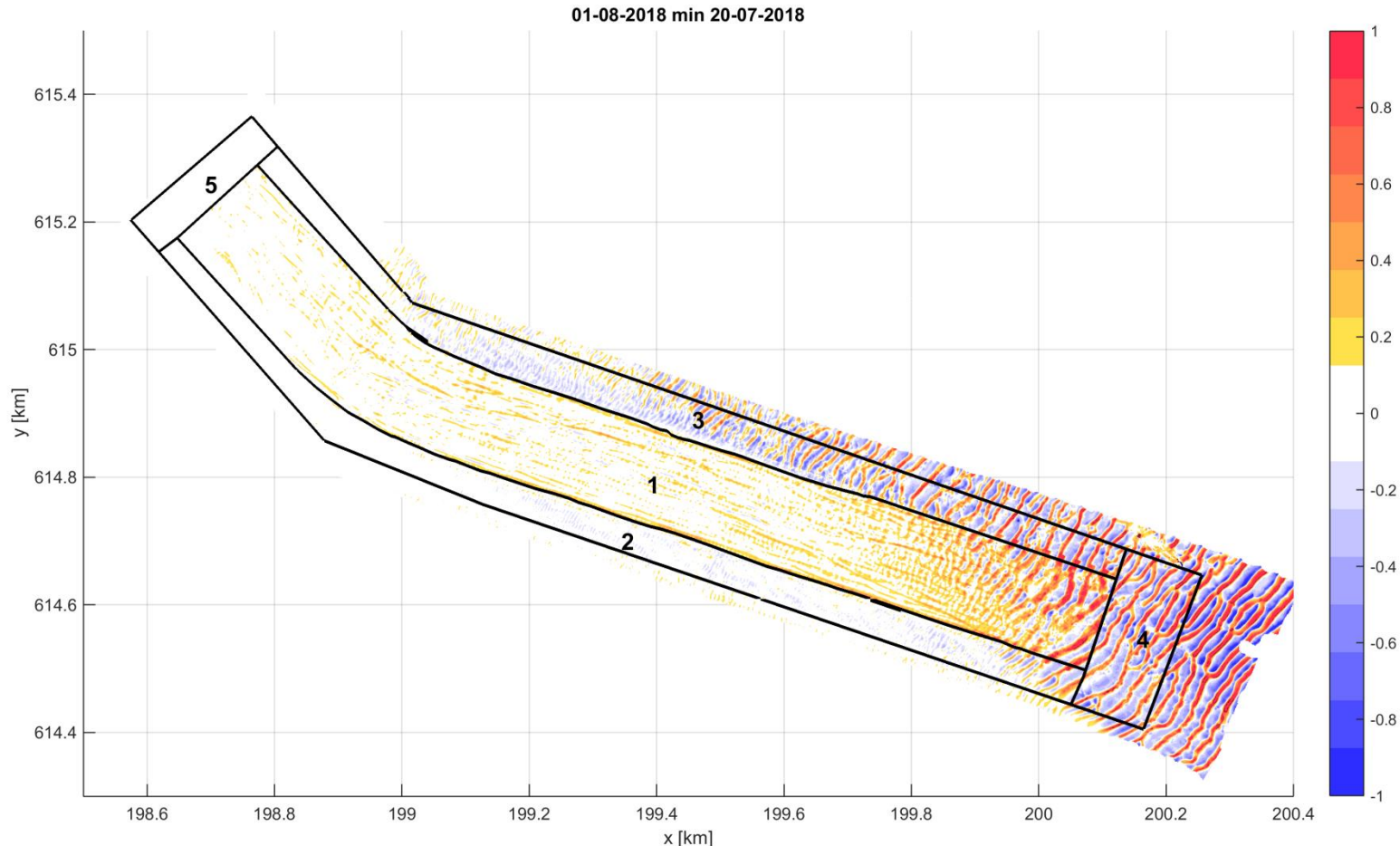
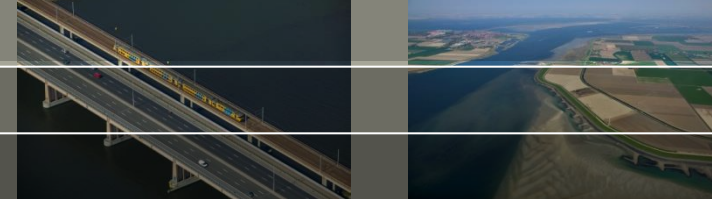
4. Verschilkaarten



Verdieping afgerond, sediment is deels naar vak 2 en 3
'gerainbowd'

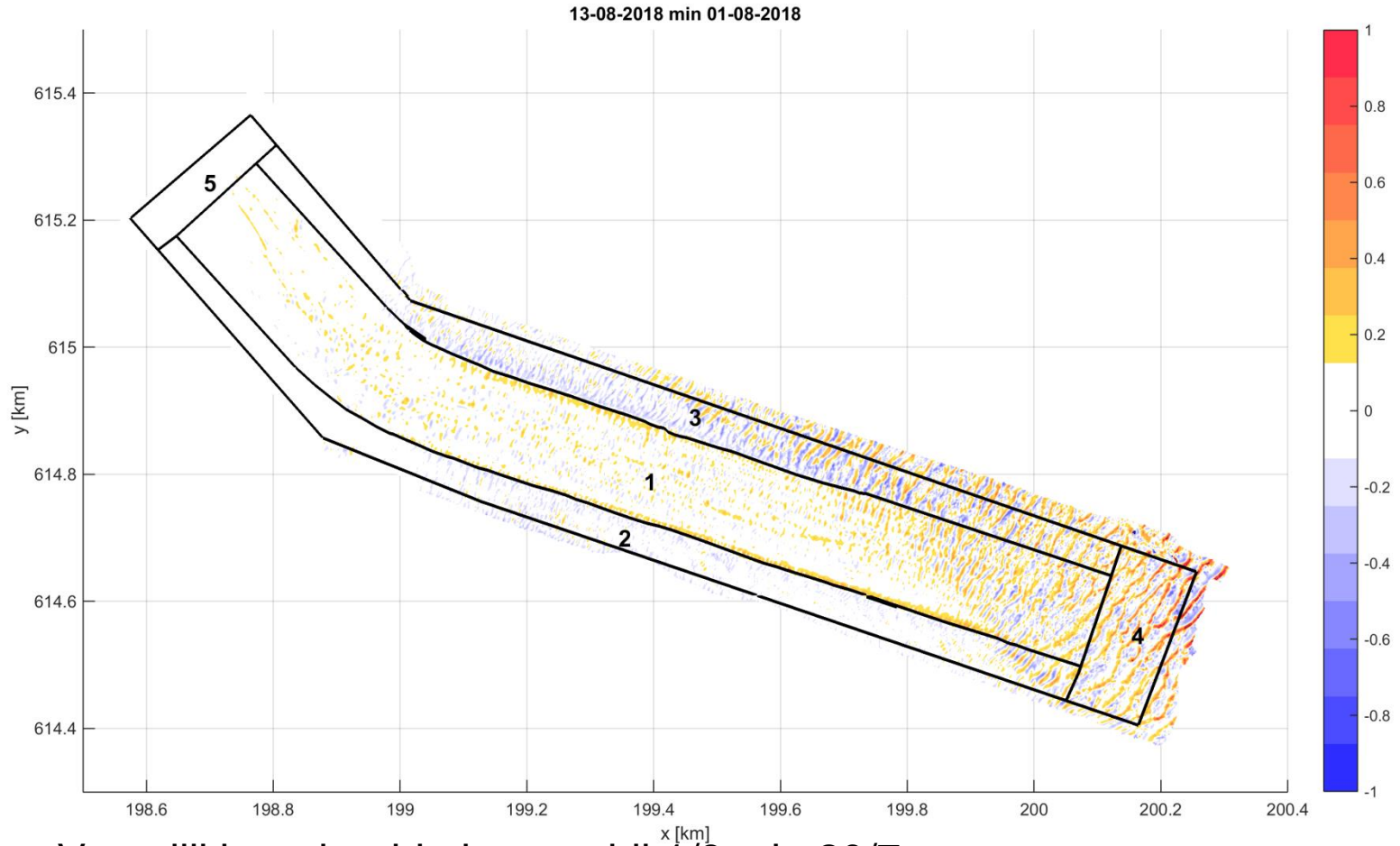
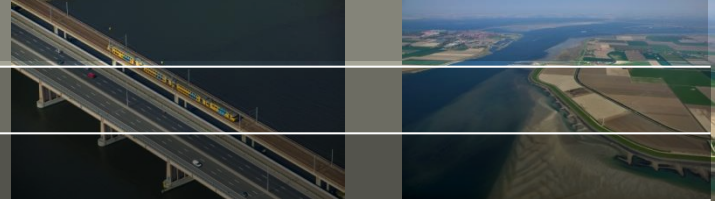
Vak 4 en 5 is geen sedimentatie te zien – aannemer heeft
waarschijnlijk verder weg geklapt

4. Verschilkaarten



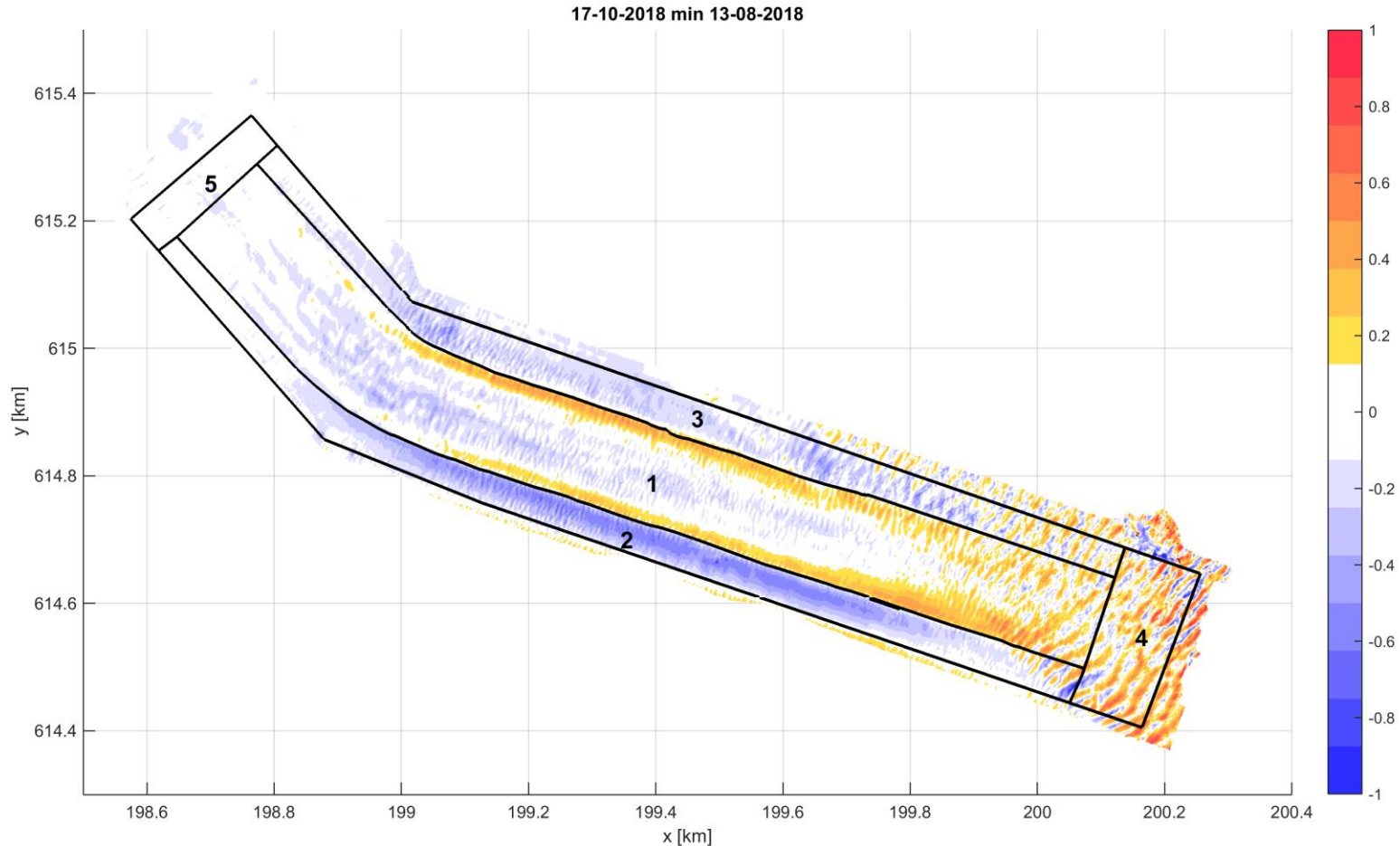
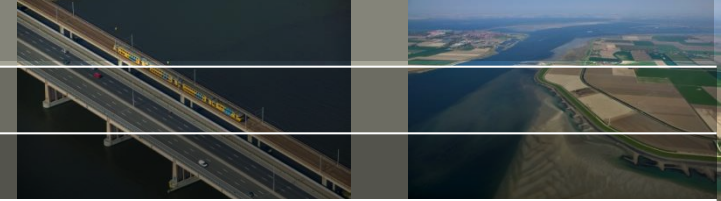
- Vak 1 laat direct aanzanding zien, maar nog gering. Ook vorming van bodemvorming aan oostkant is zichtbaar
- Vak 2 en 3 laten erosie zien
- Vak 4 wordt bepaald door bodemvormen, vak 5 stabiel

4. Verschilkaarten



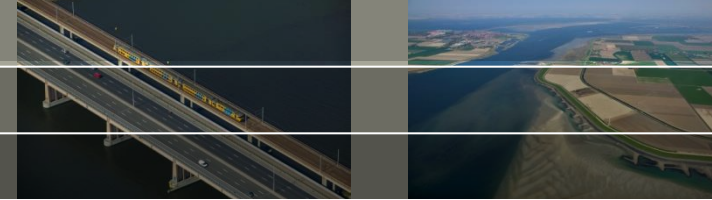
Vergelijkbaar beeld als verschil $1/8$ min $20/7$

4. Verschilkaarten



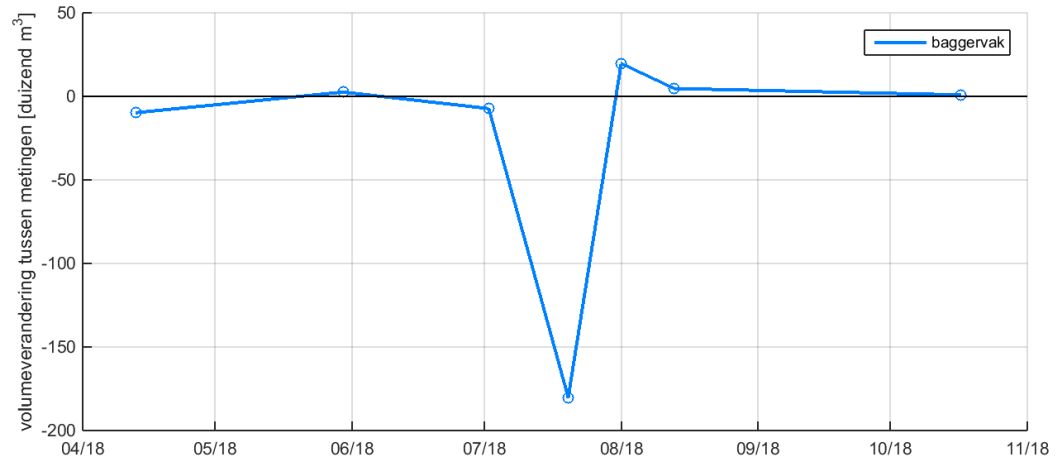
Verdieping van centrale deel van de vaargeul en van de 'bermen',
aanzanding van de randen van de vaargeul en de oostkant

4. Volumeverandering



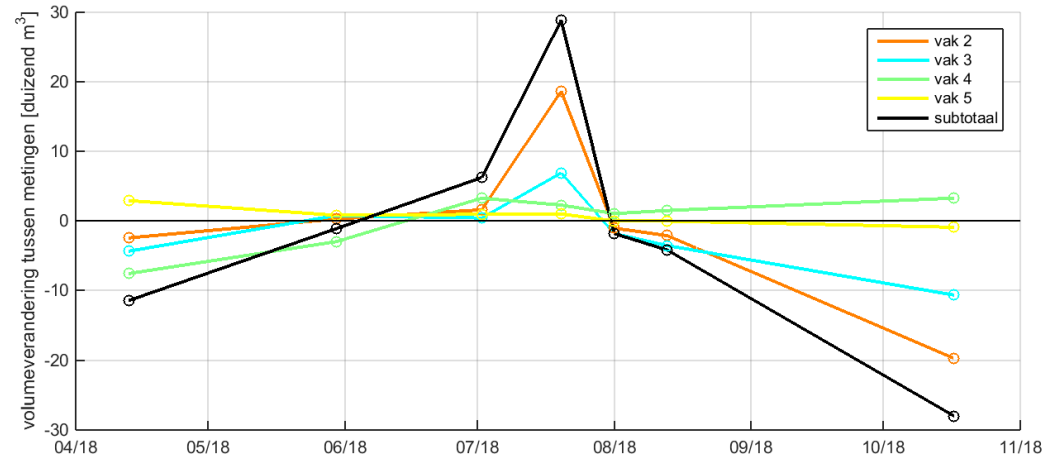
Baggervak:

- Voor verdieping vrij stabiel
- Verdieping in 2 metingen (2/7 en 20/7) in totaal bijna 190.000 m³
- Daarna ca. 25.000 m³ sedimentatie, ~1000 m³/dag
- Tussen aug en okt vrijwel stabiel



Overige vakken: :

- Voor verdieping wat erosie
- Tijdens verdieping ca. 35.000 m³ toegenomen, vooral in vak 2 en 3
- Daarna erosie in de vakken m.u.v. vak 4 waar lichte sedimentatie is



4. Volumeverandering - cumulatief

