

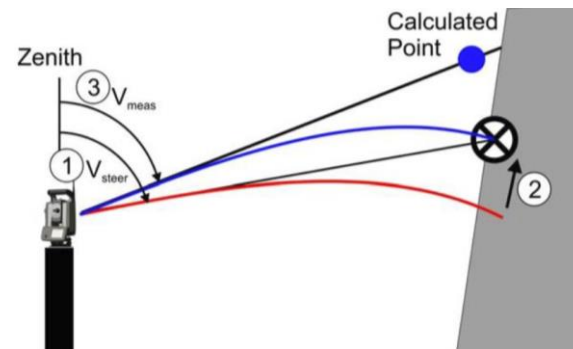
MONITORING KADE(S) JULIANAHAVEN YERSEKE



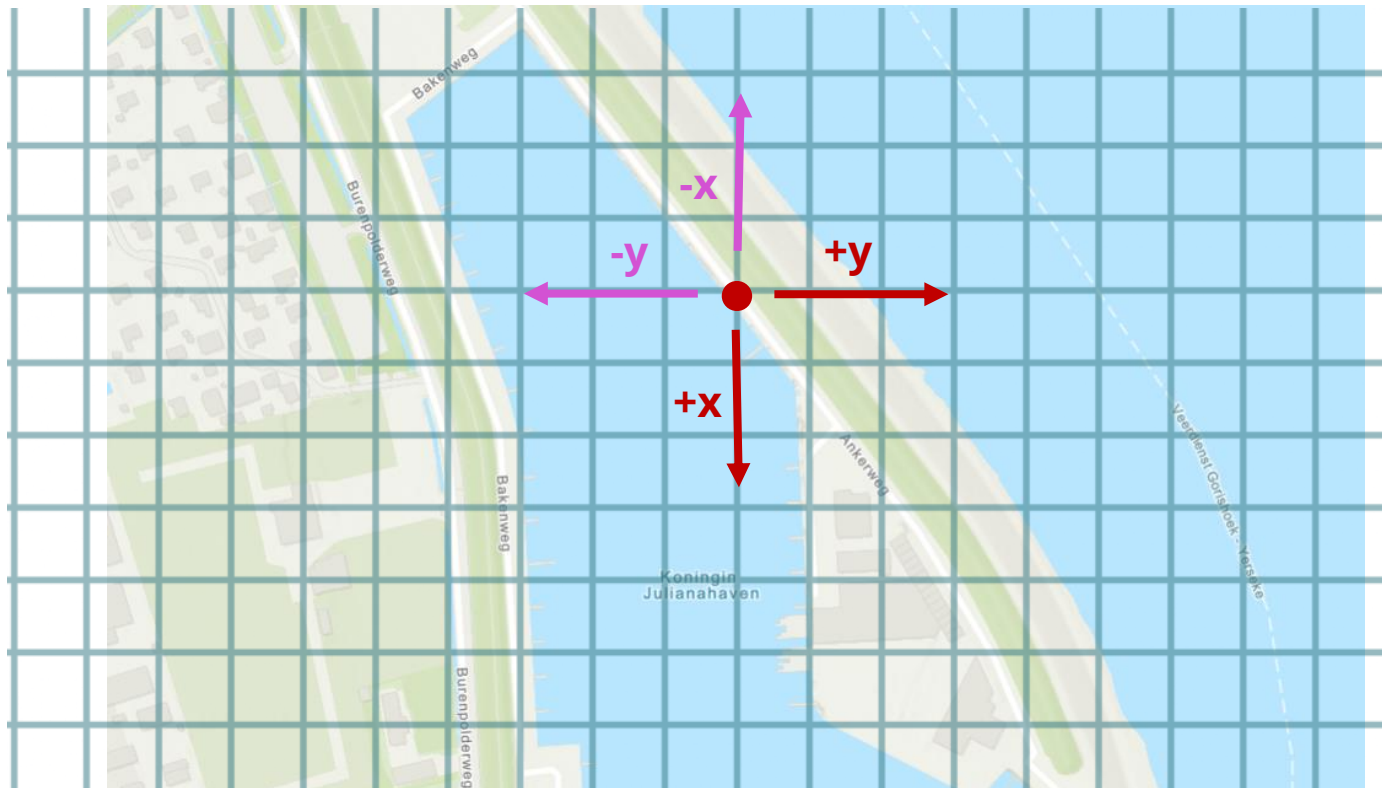
MONITORINGSSYSTEMEN



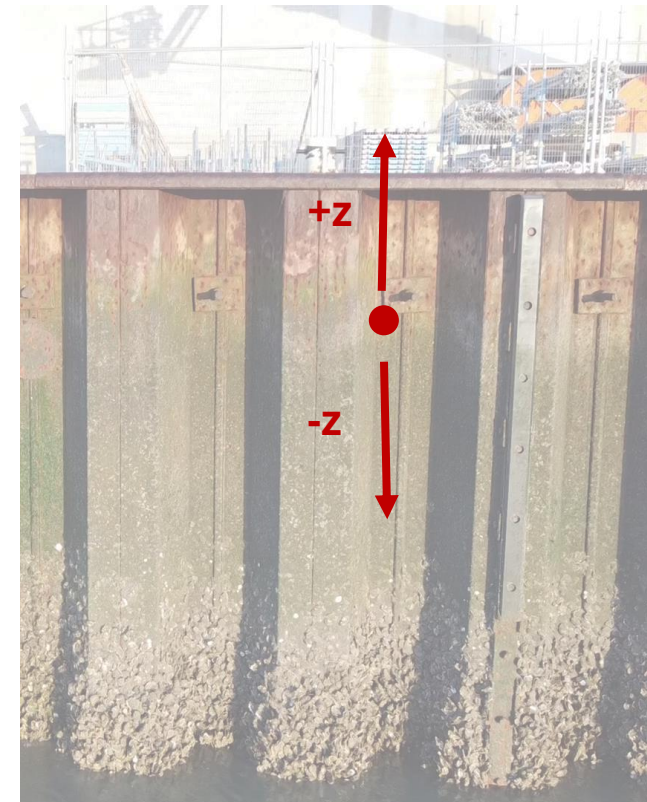
46-GPH1-MP mit
46-GPH1-WH



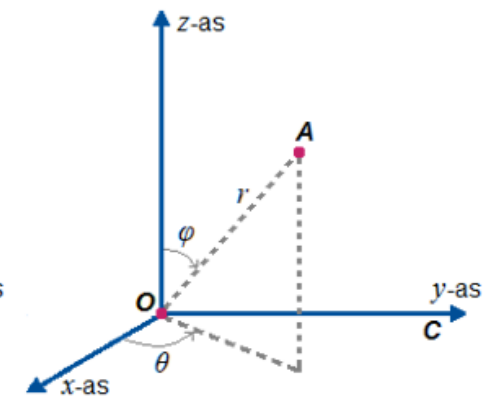
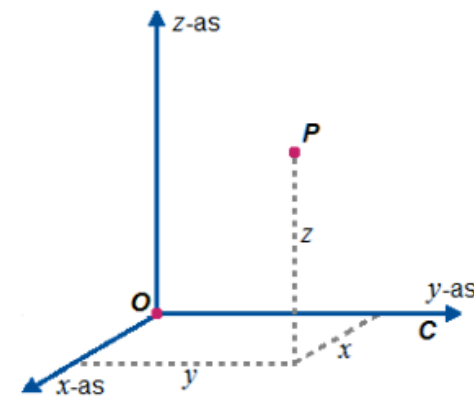
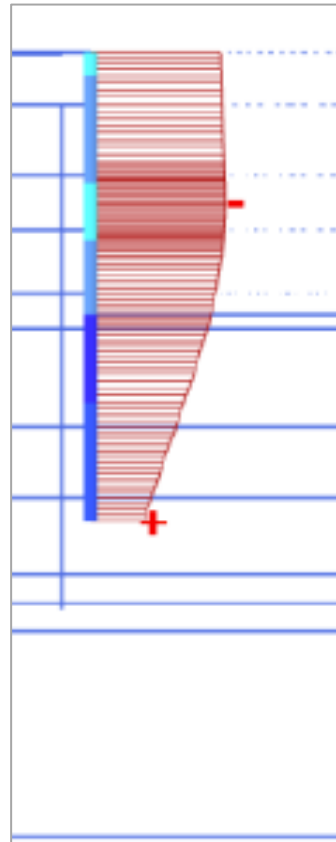
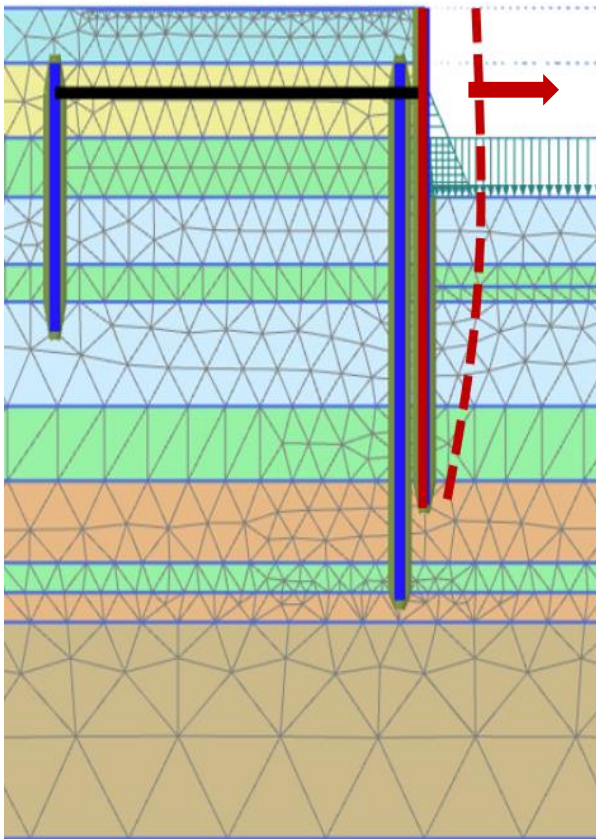
Metingen per meetpunt in RD-coördinaten



Metingen per meetpunt in de hoogte



Herwaardering en normering bepalend maximale grenswaarden deformatie



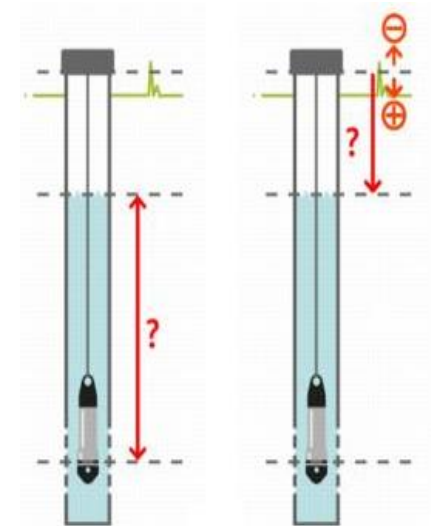
Verplaatsing

$$2D (\Delta XY) \sim \sqrt{(dX^2 + dY^2)}$$

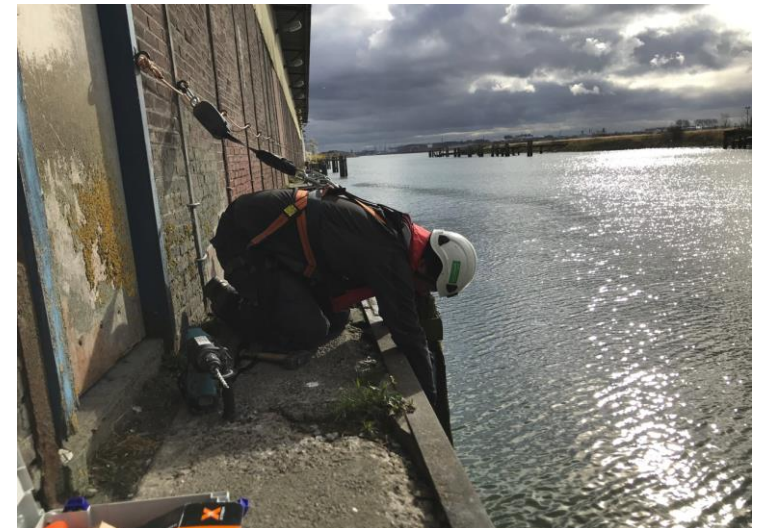
$$3D (\Delta XYZ) \sim \sqrt{(dX^2 + dY^2 + dZ^2)}$$

Optionele metingen en databronnen:

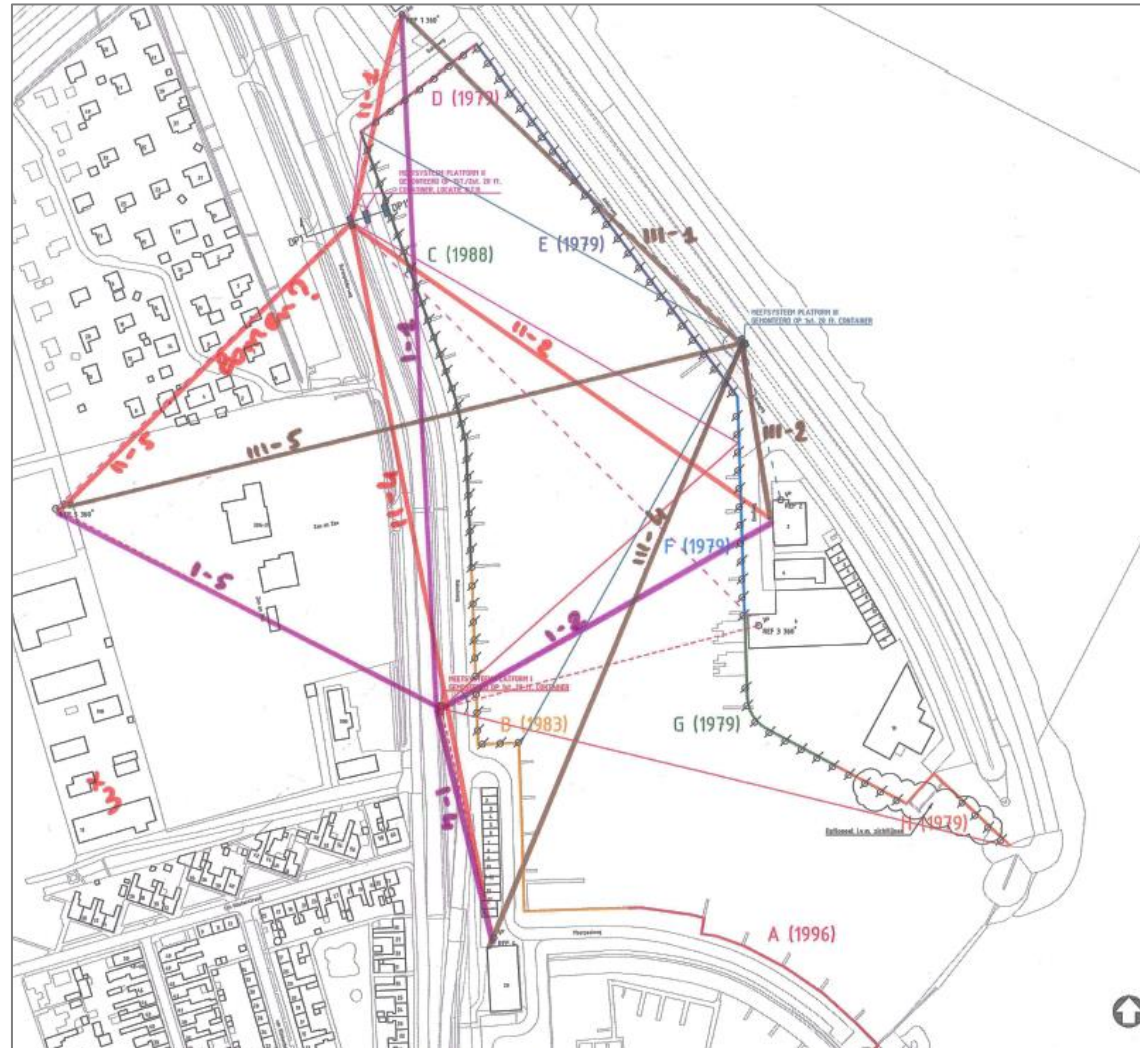
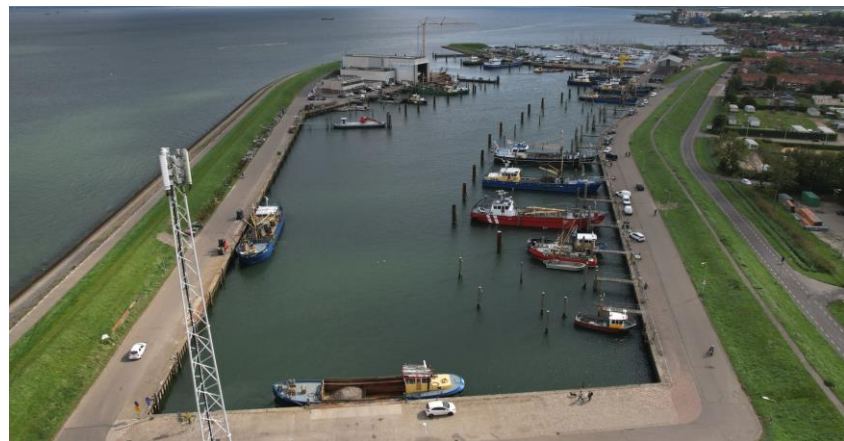
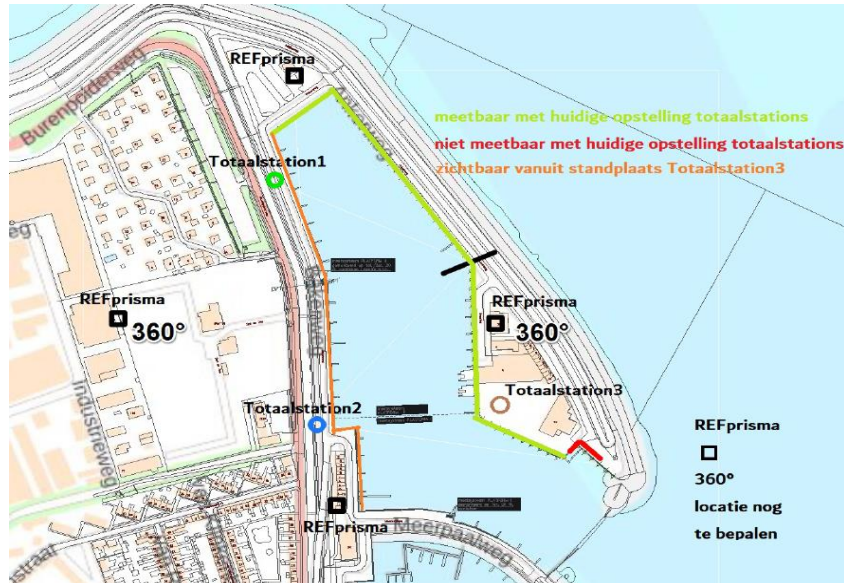
- **(Grond)watermonitoring / getij**
- **Weerstation** (luchtvochtigheid, ed.)
- **Neerslag en zonneduur**
- **Handmatige meetinstrumentaria**
- **Visueel** (cameratoezicht)
- **Informatie havenmeester**

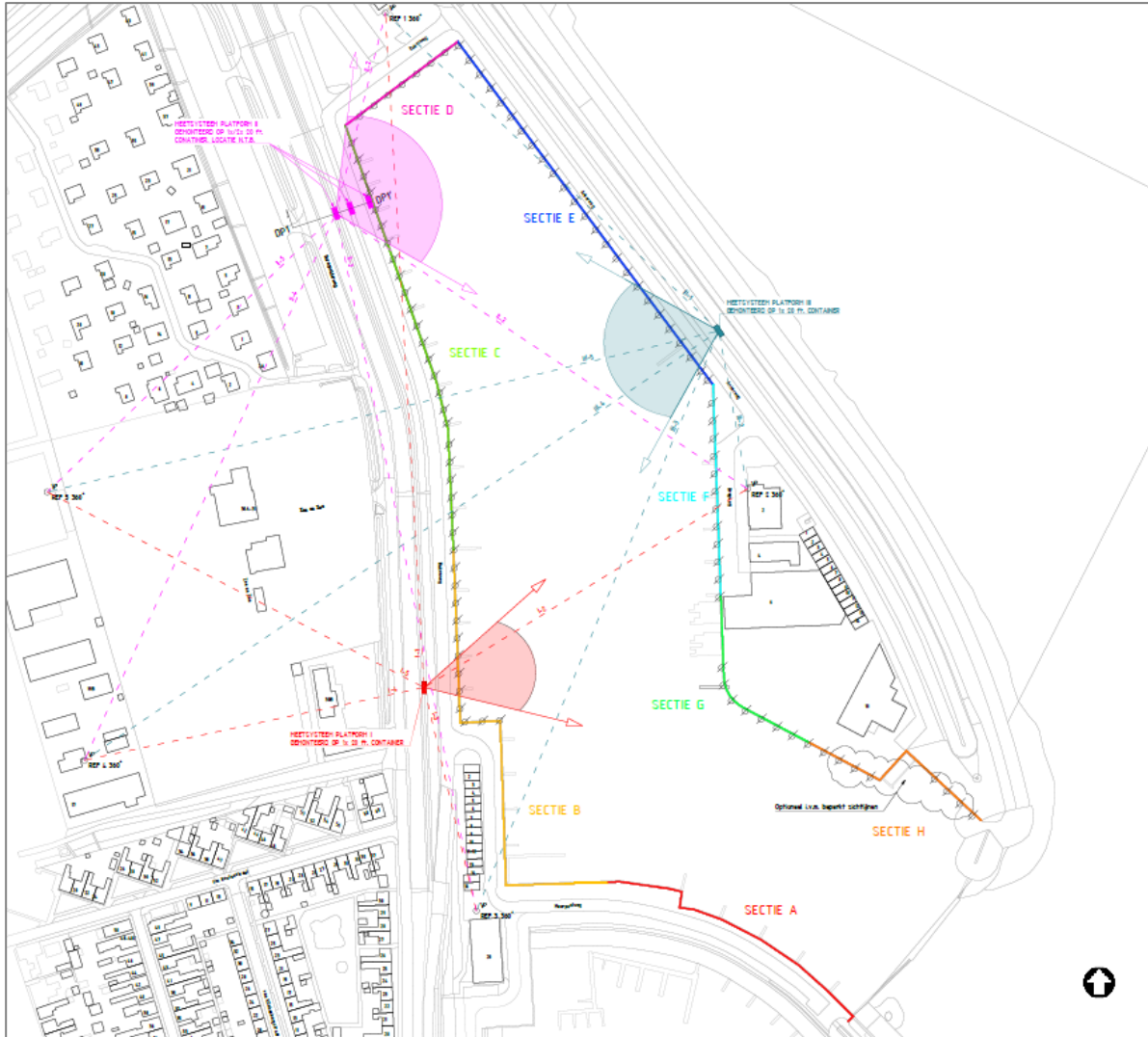


Meetsysteem installeren



LIGGINGSPLAN MONITORING



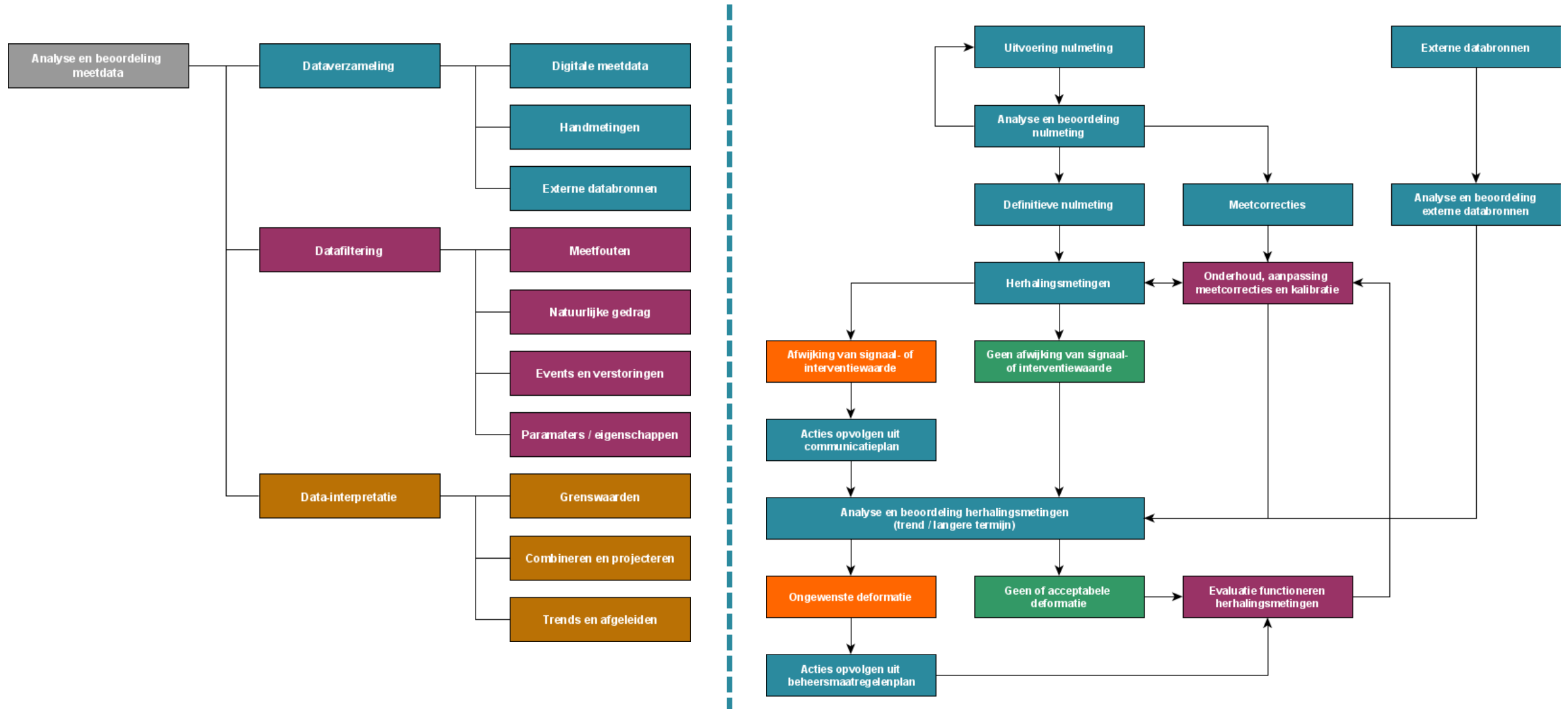


Monitoringssystemen met onder meer:

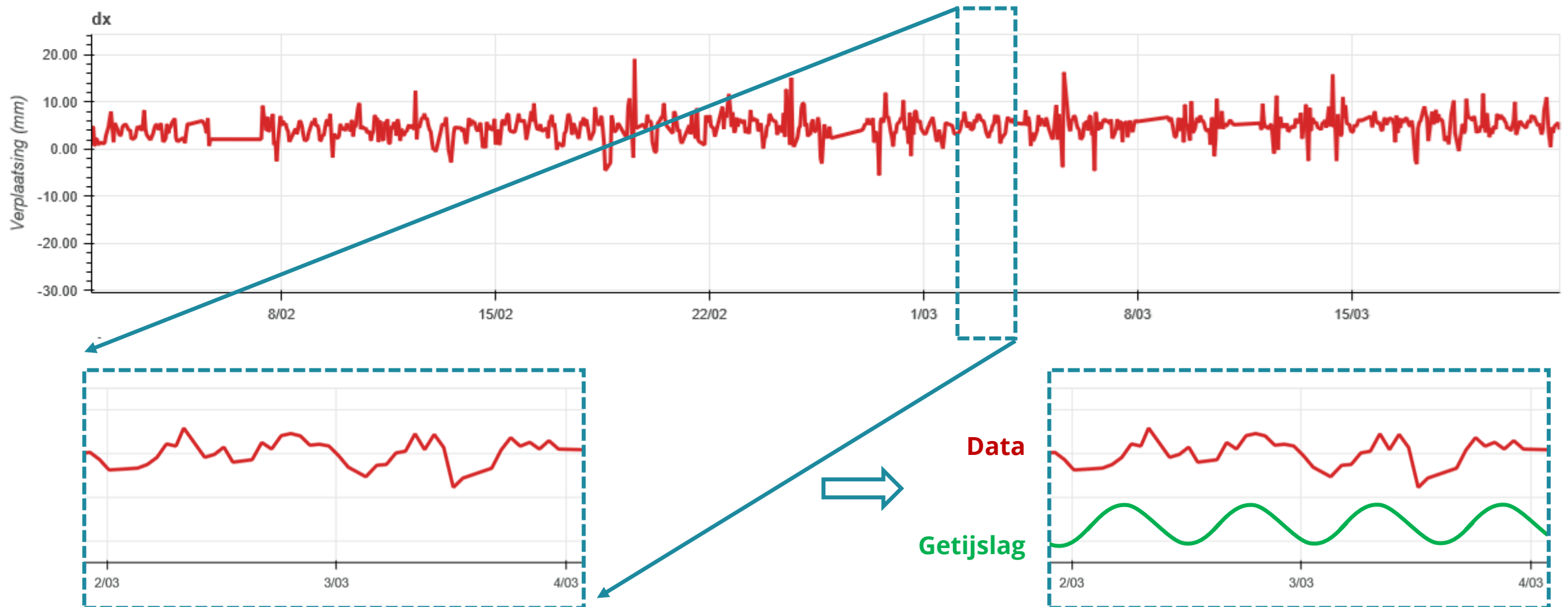
- 3 meetplatforms + robotic total stations
- 3 automatic levelers tbv wind/weer
- ca. 100 meetprisma's op damwanden
- ca. 8 referentieprisma's in omgeving
- incl. modem, GPS, weerstation, datalogger

VERWERKING, FILTERING EN ANALYSE VAN DE MEETDATA

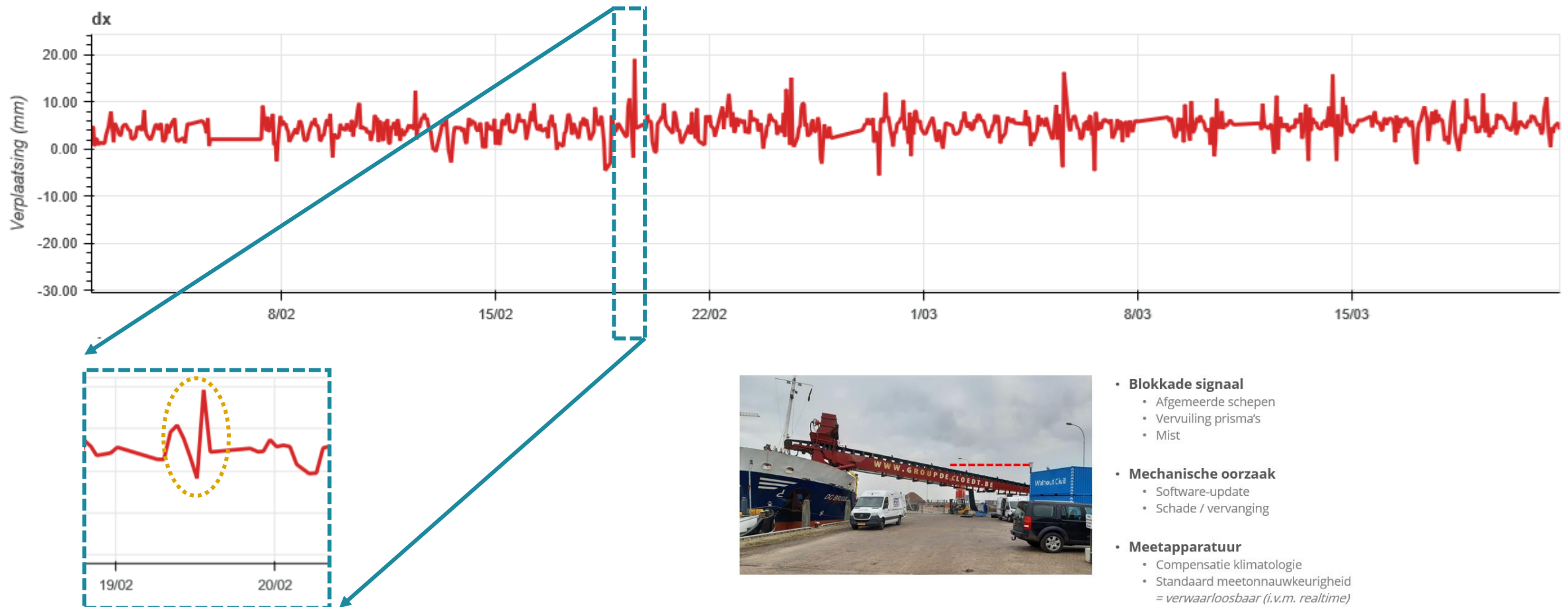
Procedure verwerking meetdata

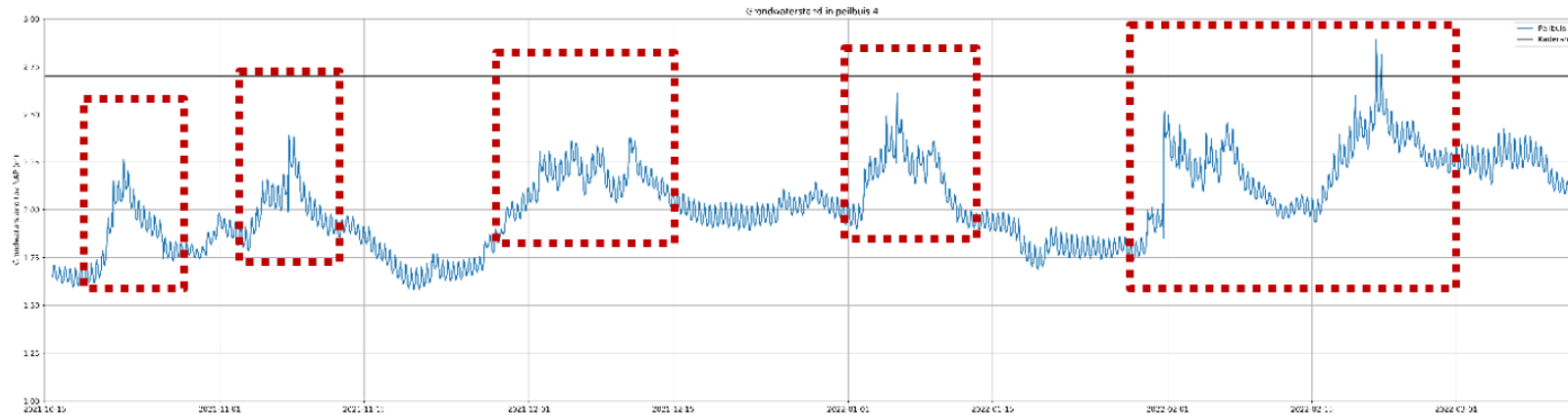


Filtering meetpunt "Z" (x-richting)

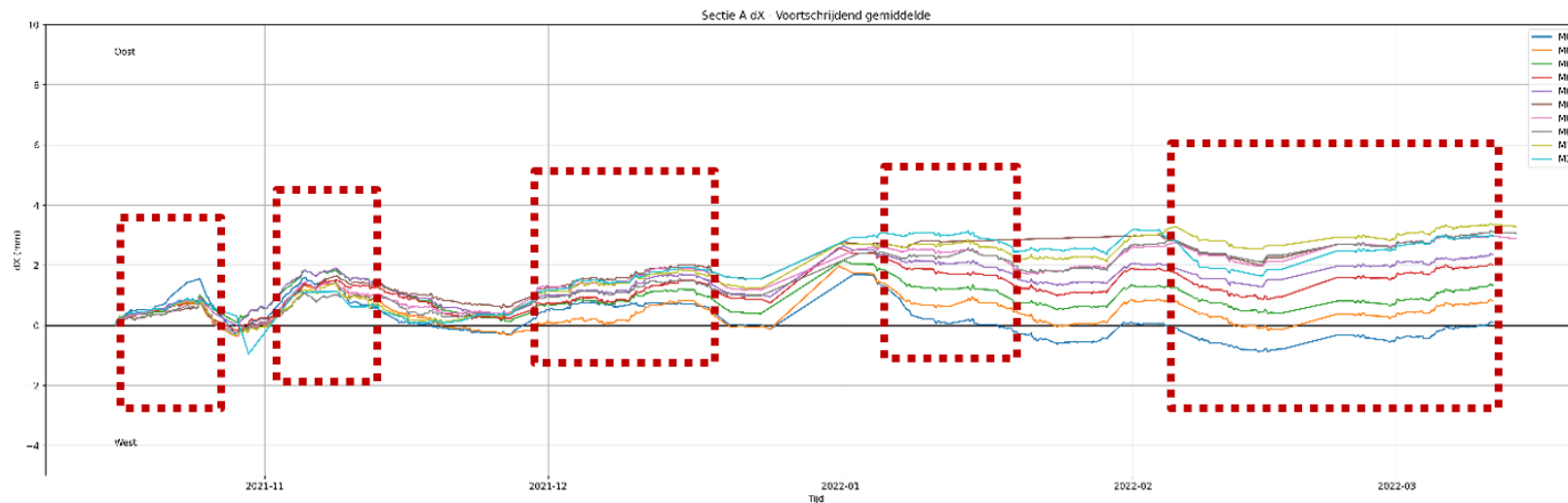


Filtering meetpunt "Z" (x-richting)





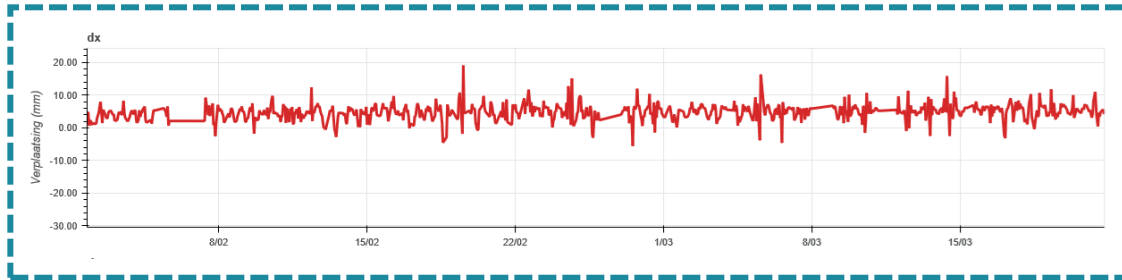
Getij/grondwater
achter de kade



versus

Meerdere meetpunten
in x-richting kadesectie

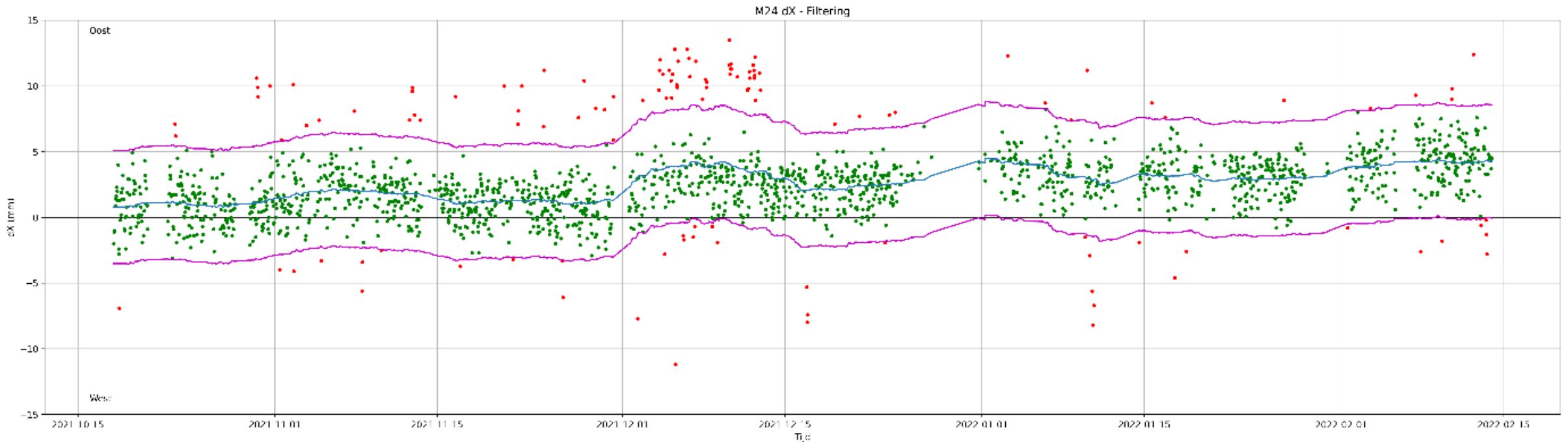
Verwerking meetdata: filtering en smoothing

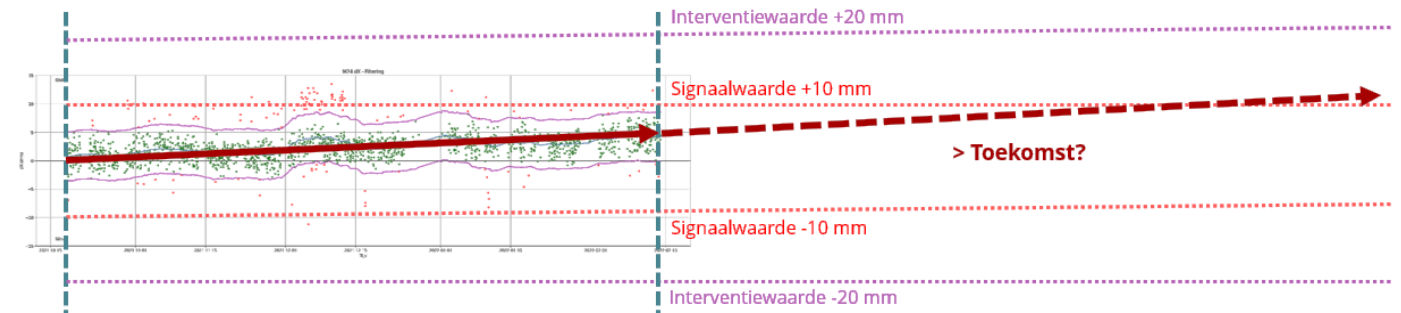
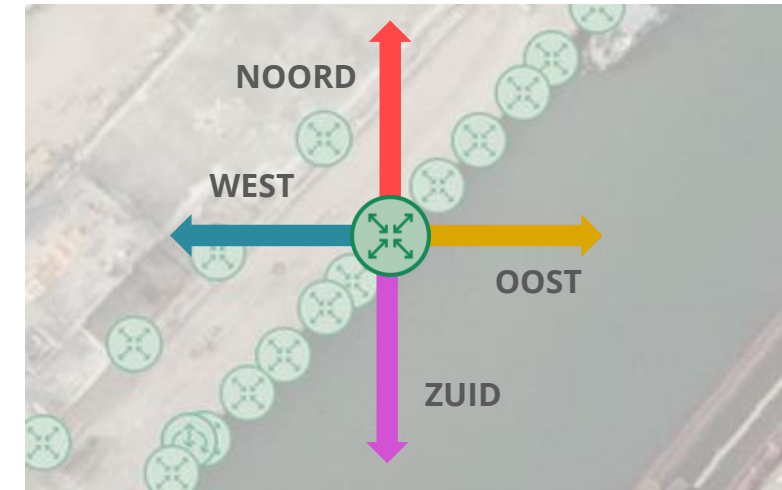
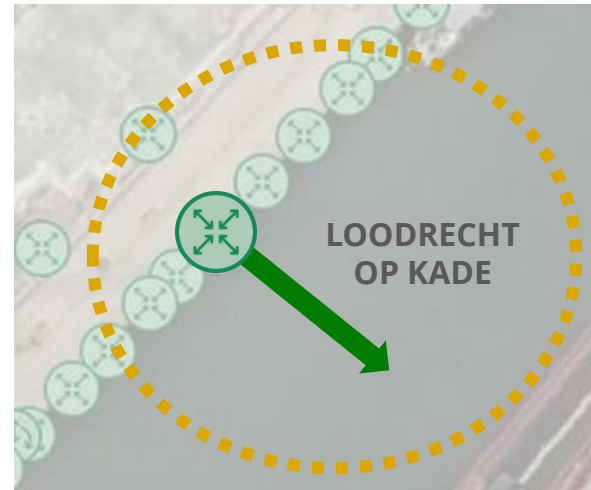
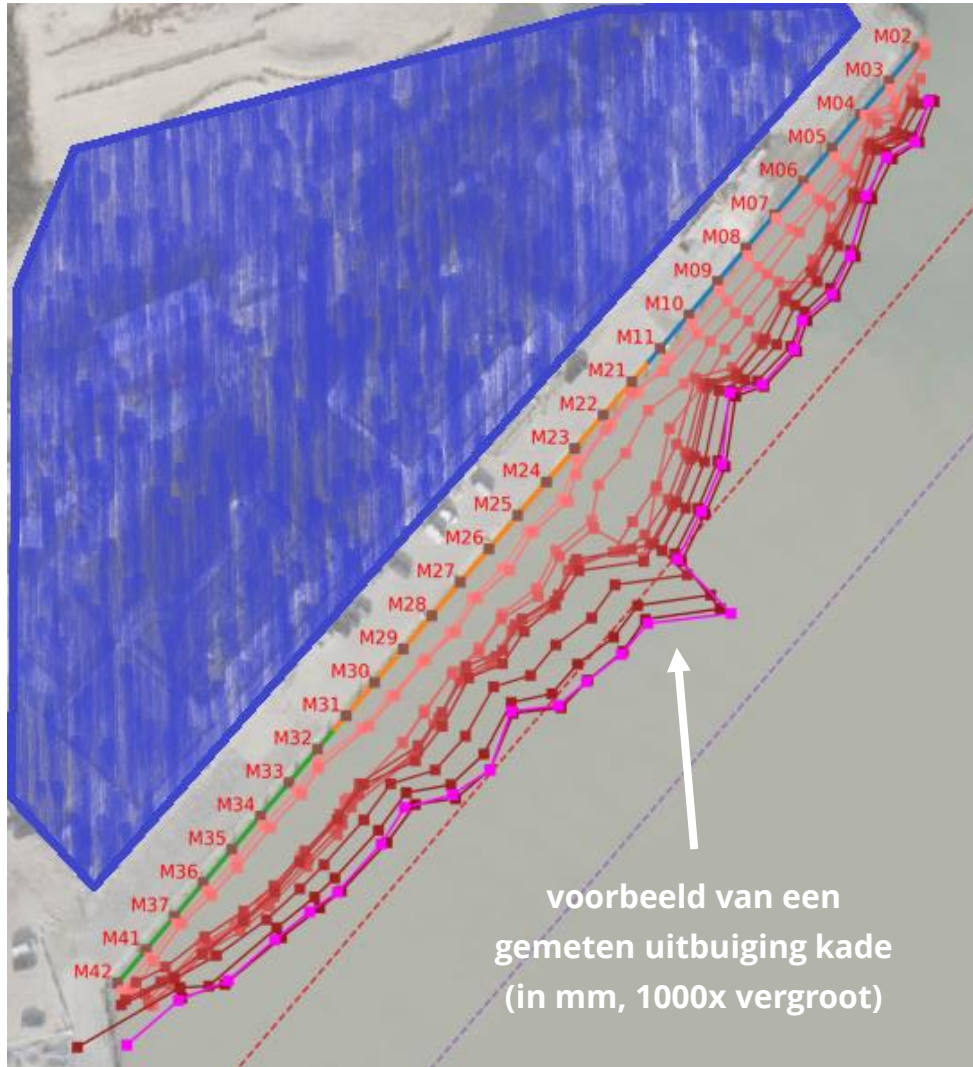


Meetpunt "Z"



- Meetfout / afwijkende waarde
- Meting binnen bandbreedte (getijslag)
- Voortschrijdend gemiddelde (!)
- Statistische band (95% interval)





Enkele voorbeelden van trends en voorspellingen
op basis van gemeten deformatiegedrag kades

**DANK VOOR UW AANDACHT
VRAGEN?**