

Bed level/SPM monitoring Pitch NCK theme day

Lodewijk de Vet

Thanks to input from NCK colleagues

Bed level monitoring: different scales → different insights

Point measurements (erosion pins/bars, SEDs, ...)

Transect measurements (dGPS)

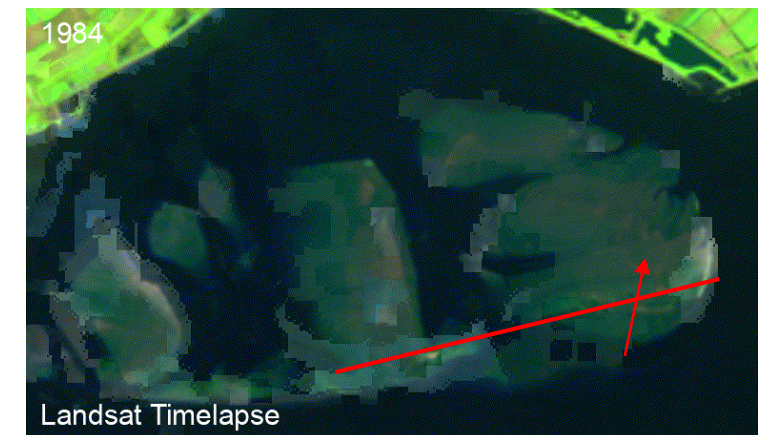
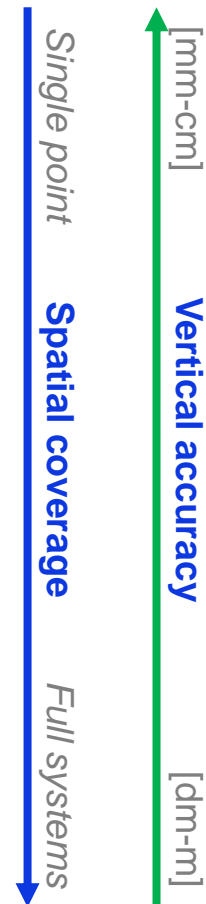
Point clouds (terrestrial laser scanner)

Radar derived bathymetries

Boat/jet ski (single beam / multibeam, e.g., Vaklodingen)

LiDAR and aerial pictures (drone/airplane/helicopter)

Satellite imagery (and DEMs)



SPM monitoring (*Suspended Particulate Matter*)

- Spatial coverage vs accuracy
- **Quantity** of matter (mass-/volume-concentrations)
↕
- **Quality** of matter (particle size, shape, density, fall velocity, organic matter, ...)
- Various techniques:
 - Gravimetric
 - Optical (OBS, LISST, Floc camera, remote-sensing)
 - Acoustical (ADCP, AZTM)
 - Electrical field (EMF, Zeta-potential)

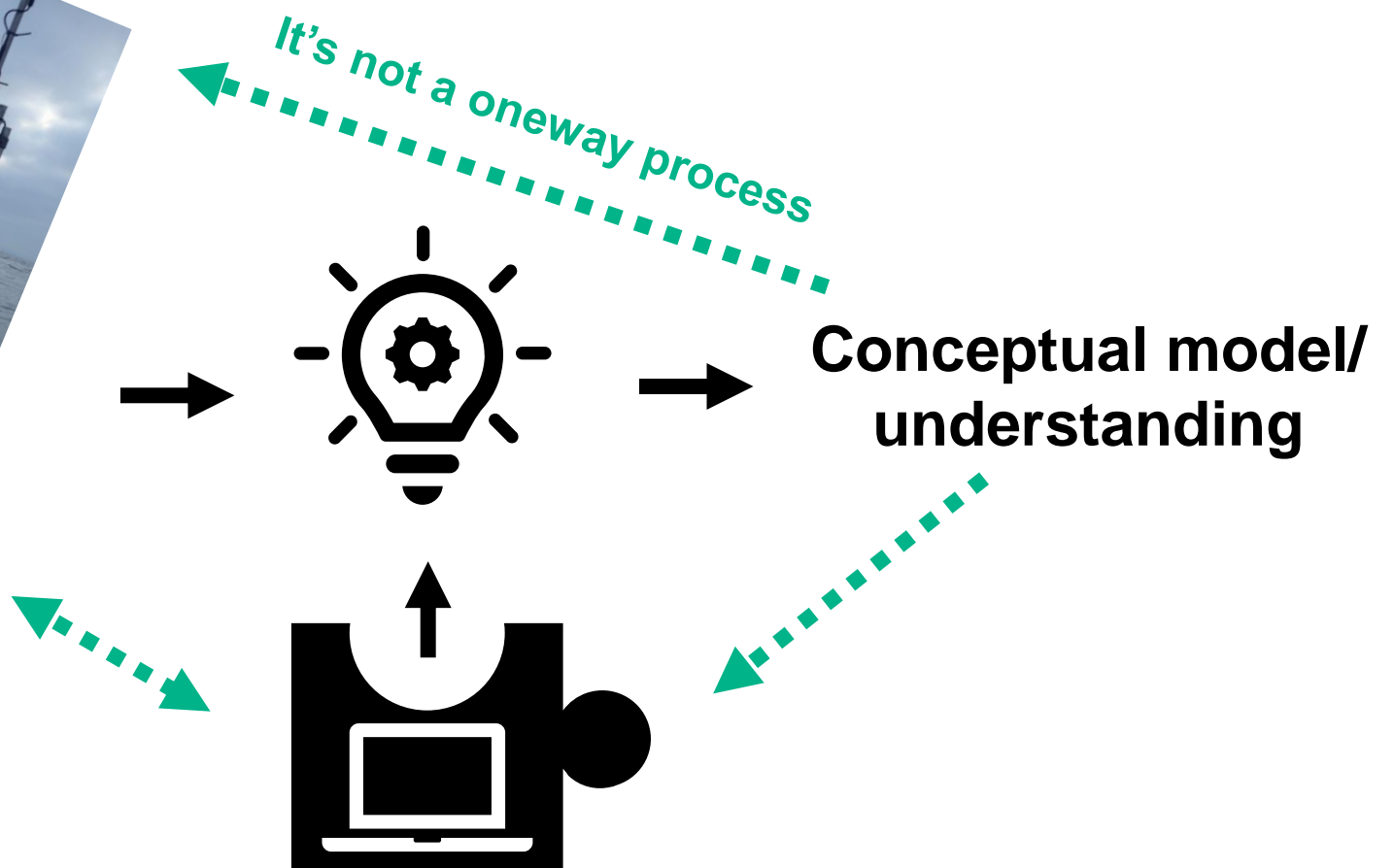


Specialistic knowledge required for successful measurements

The power is in integration!



Deltares



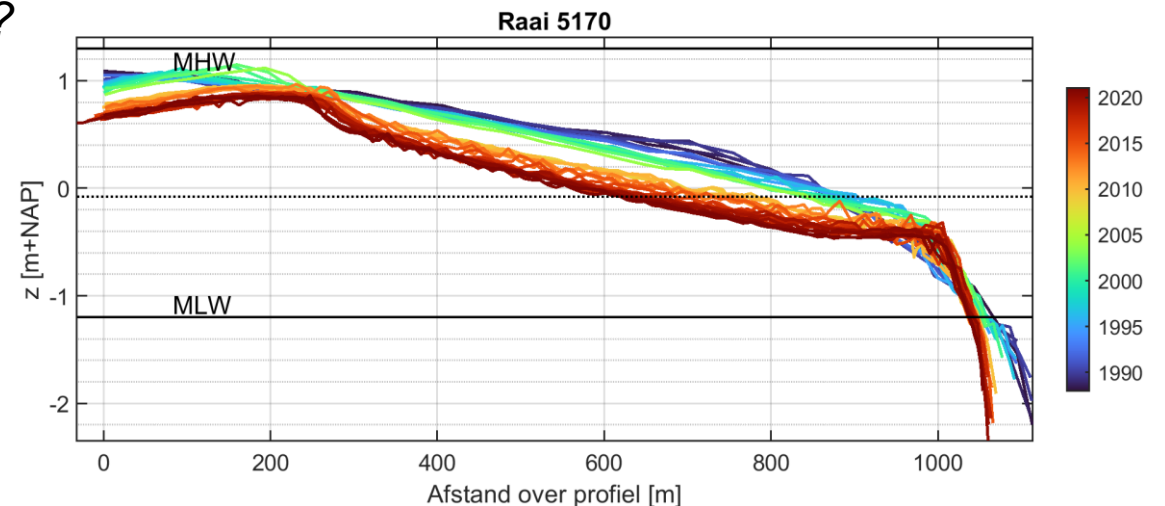
Integral questions require integral monitoring

Example: “What is the impact of storms on tidal flats?”

Transect measurements sufficient to estimate erosion volume

But:

- *Where's the sediment going?*
- *What's the erosion pace during the storm?*
- *How does the recovery timescale vary over space?*
- *Is it a typical storm impact?*
- *How is the ecology in the bed affected?*
- ... ?



Going forward with monitoring?

New techniques & integrate datasets

- New monitoring techniques always welcome (e.g., remote sensing)
- Consider all sources of information as pieces to your puzzle:
 - Conceptual model (starting point & target point)
 - Monitoring
 - Numerical models (e.g., complementing spatial and temporal scales)
- The more diverse your pieces, the bigger puzzle you can tackle
- To avoid wasting monitoring efforts → start with a conceptual understanding and research questions



Thanks for your attention!

How to find existing data?

- <https://waterinfo.rws.nl/>
- <https://waterinfo-extra.rws.nl/>
- *RWS Servicedesk Data*
- *OpenEarth.nl*
- ...

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