

JOINT EUROPEAN RESEARCH INFRASTRUCTURE NETWORK FOR COASTAL OBSERVATORIES

FIXED PLATFORM BEST PRACTICES POLISH CASE STUDY

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OVERVIEW



CRS at Lubiatowo – South Baltic coastal zone

Two kinds of IBW PAN Fixed Platforms

- Hard Fixed Platforms***
- Mobile Fixed Platforms***

Threats/Problems/Bad luck?

IBW PAN recommendation

MULTIBAR DISSIPATIVE COASTAL ZONE

- mild slope of 1.5% on average,
- 3 – 5 bars,
- medium grain diameter of about $d_{50} = 0.22\text{mm}$,
- emerged part of the beach is 20 – 50m wide,
- $H_{\text{max}} = 7,52\text{ m}$ (at 15 m depth),
 $V_{\text{max}} = 1,5\text{ m/s}$ (longshore current - at c.a. 1 m depth),
- area of our interest: from dune to c.a. 20 m depth.



IBW PAN Fixed Platforms destination:

- string wave gauges,
- electromagnetic current meters,
- ADCP,
- laser Doppler particle size analyser LISST-100,
- salinity, temperature , pressure sensors.



TWO TYPES OF FIXED PLATFORMS



Hard Platforms



Mobile Platforms



HARD FIXED PLATFORMS – HISTORY



A row of 8 steel towers was constructed in 1970

They stretched from the shoreline 600 m offshore to the depth of 6-8 m and covered the entire zone of coastal bars.

HARD FIXED PLATFORMS



System of towers was linked with the cables for power supply and data transmission.

The cables were suspended on a steel rope mounted at the towers tops.

The rope was stretched between an offshore structure and the tower at the shoreline.



The structure was built with the relatively poor quality steel.

After 40 years steel looks like „paper”.

The platforms were thoroughly renovated in 2004.

HARD FIXED PLATFORMS – THREATS



Platform has been designed as a flexible structure.

Most of the measuring towers were destroyed due to storm impacts and ice phenomena.





HARD FIXED PLATFORMS – FUTURE



New platform is being planned.

Platform will be sponsored by Ministry of Science and Higher Education.

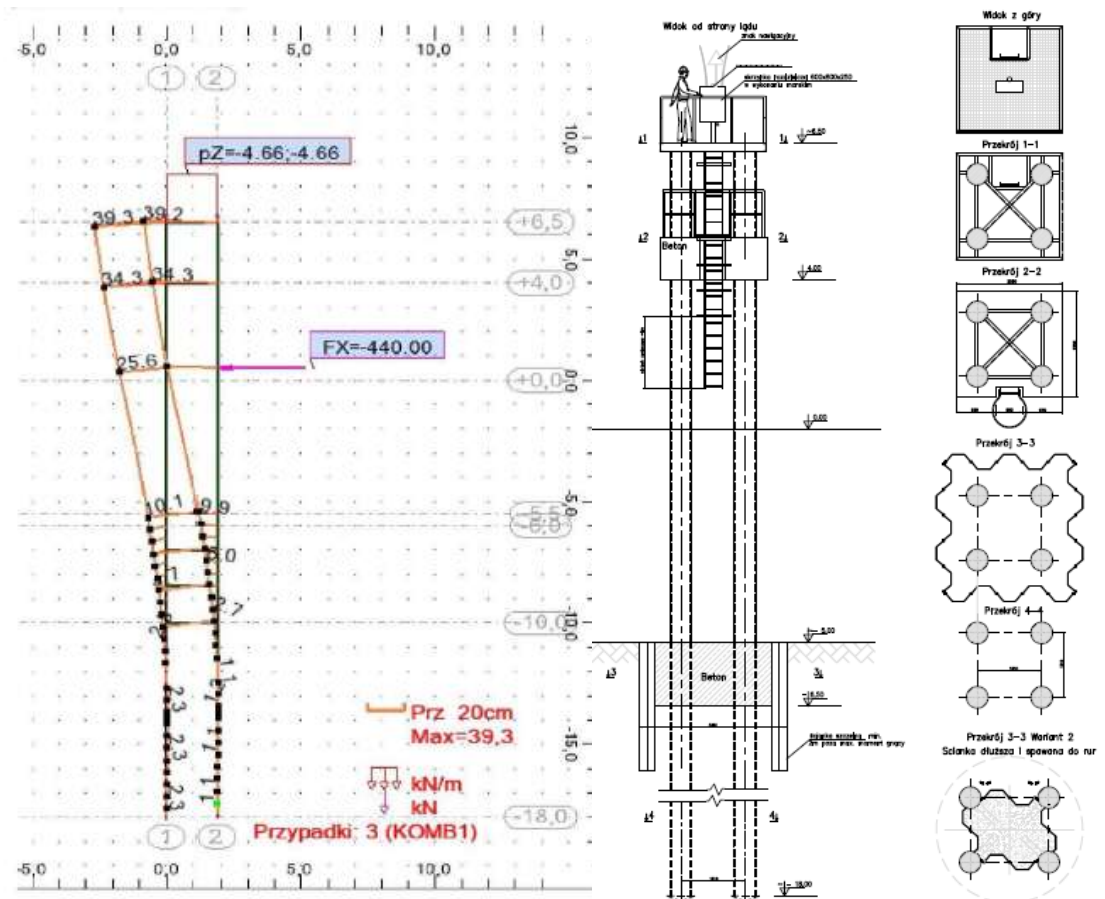
Platform has been designed as a solid structure.

Increased corrosion resistance steel will be used. All steel elements will

be additionally corrosion protected (anticorrosion coating).

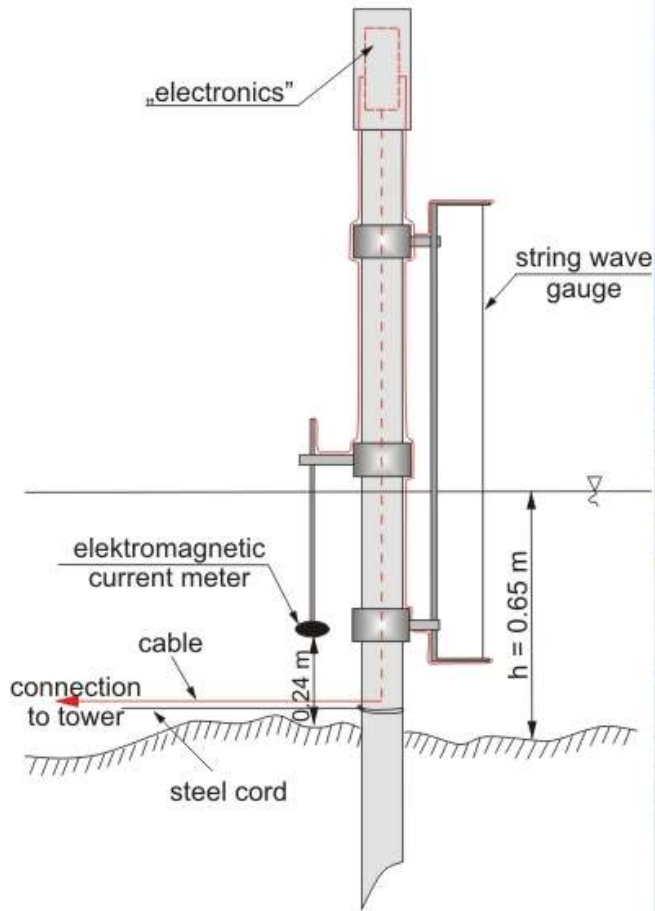
Cost: c.a. 350 000 Euros.

Autumn 2015 - fully operational





MOBILE FIXED PLATFORMS



MOBILE FIXED PLATFORMS



MOBILE FIXED PLATFORMS



MOBILE FIXED PLATFORMS





MOBILE FIXED PLATFORMS





MOBILE FIXED PLATFORMS



MOBILE FIXED PLATFORMS – CONNECTION



The mobile fixed platform was linked with the cable (for power supply and data transmission) or with GSM system.

MOBILE FIXED PLATFORMS –BIOFOULING



Visual inspection and cleaning are held once a week or once a month or after every extreme events.

Depending on:

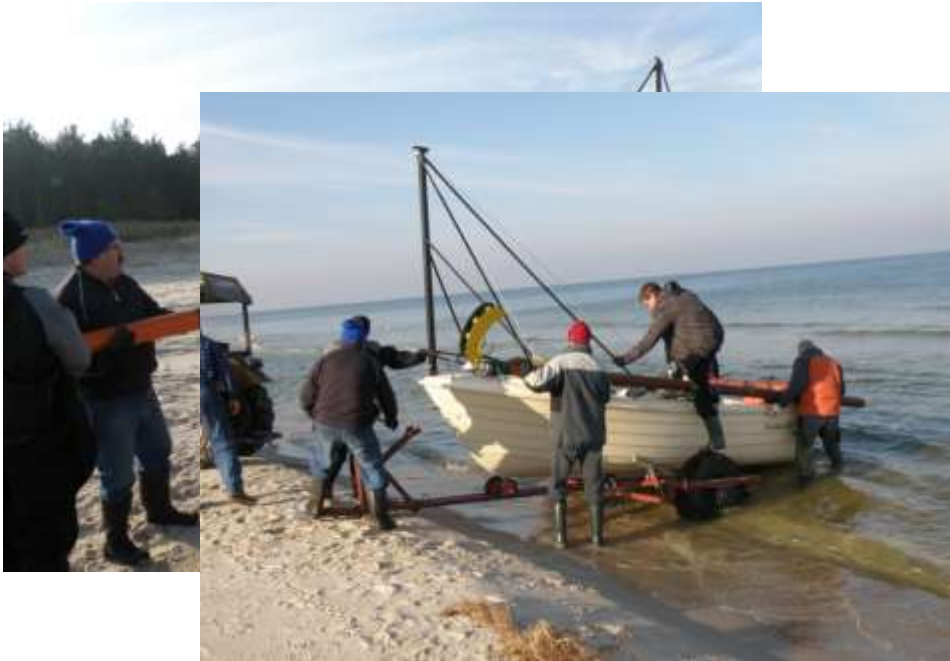
- communication system,
- seasons,
- importances of performed measurements.



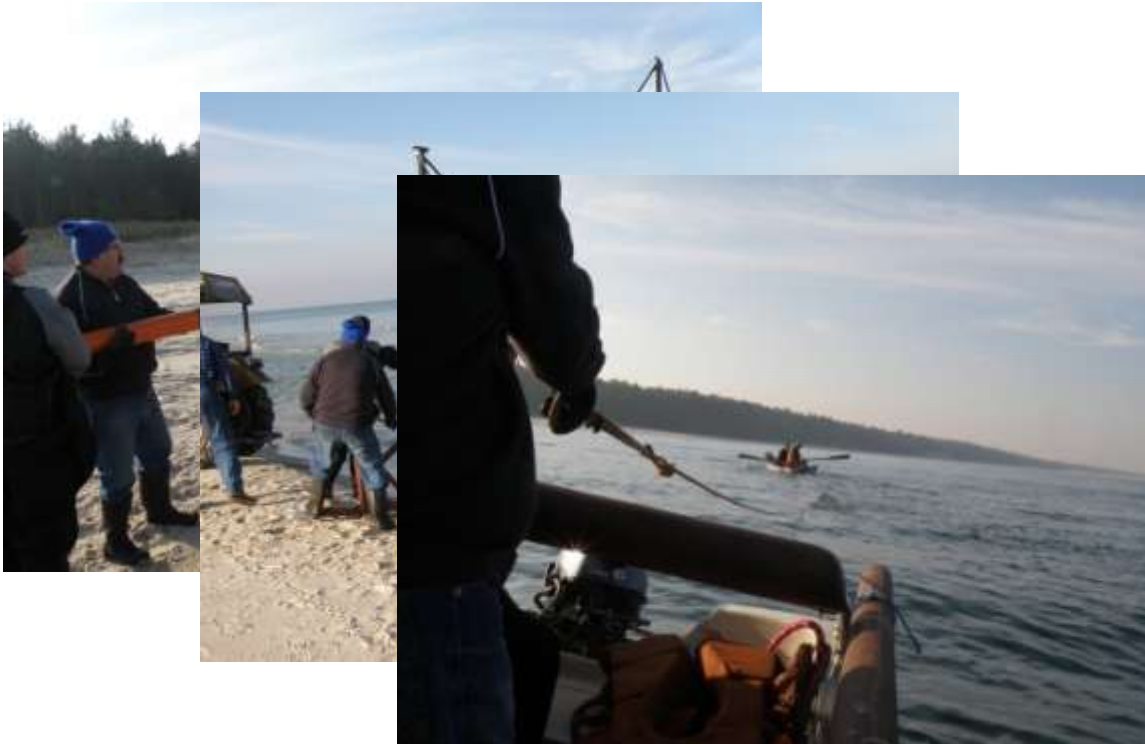
MOBILE FIXED PLATFORMS



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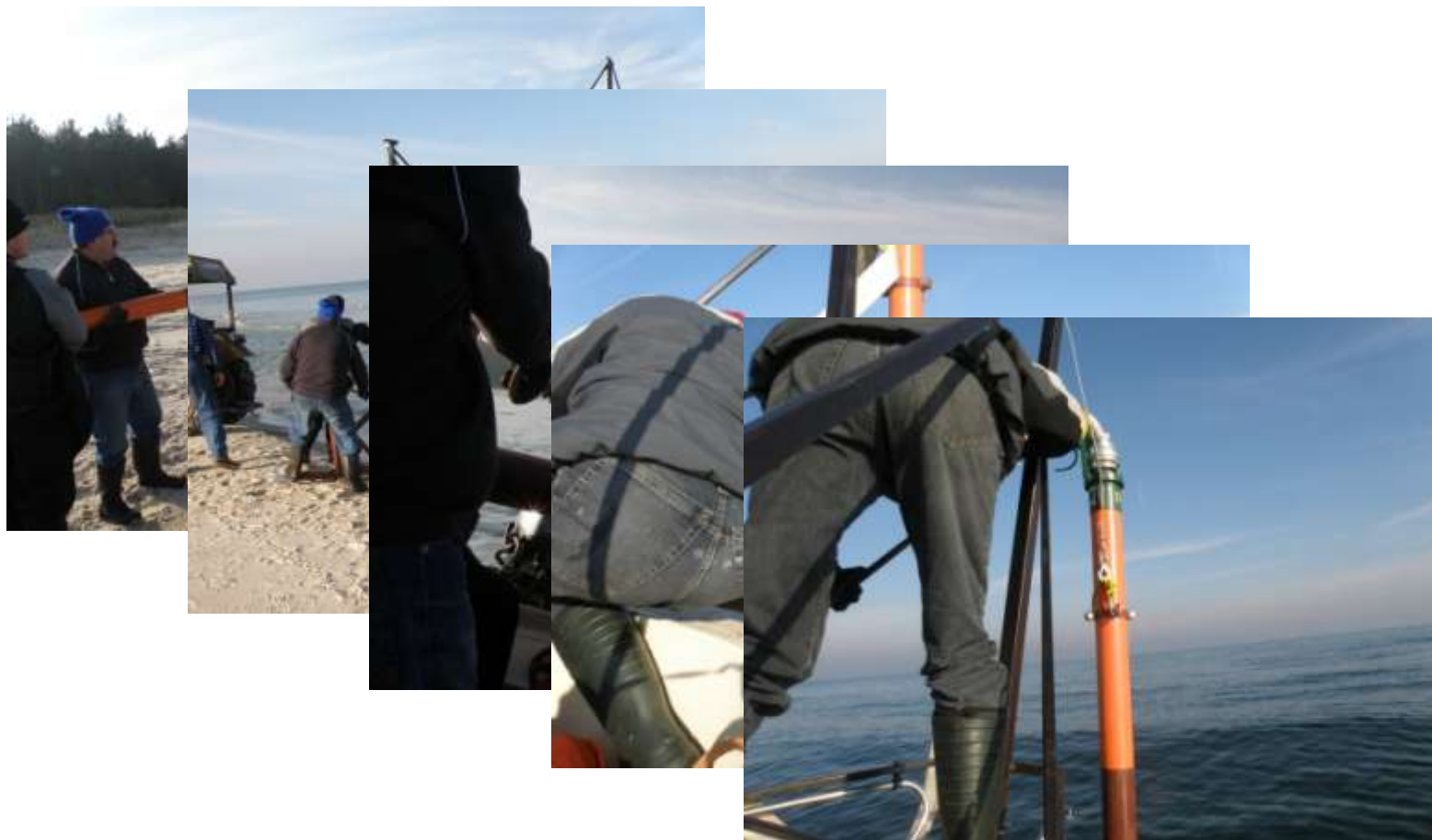


MOBILE FIXED PLATFORMS

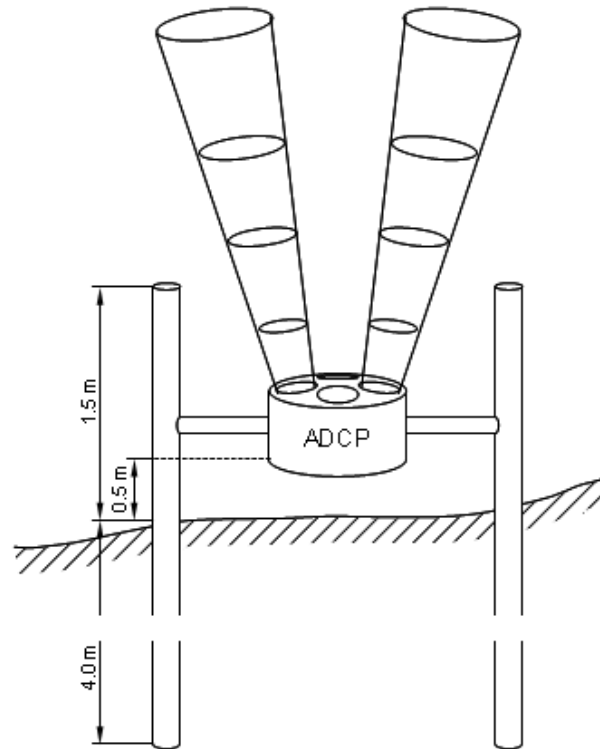




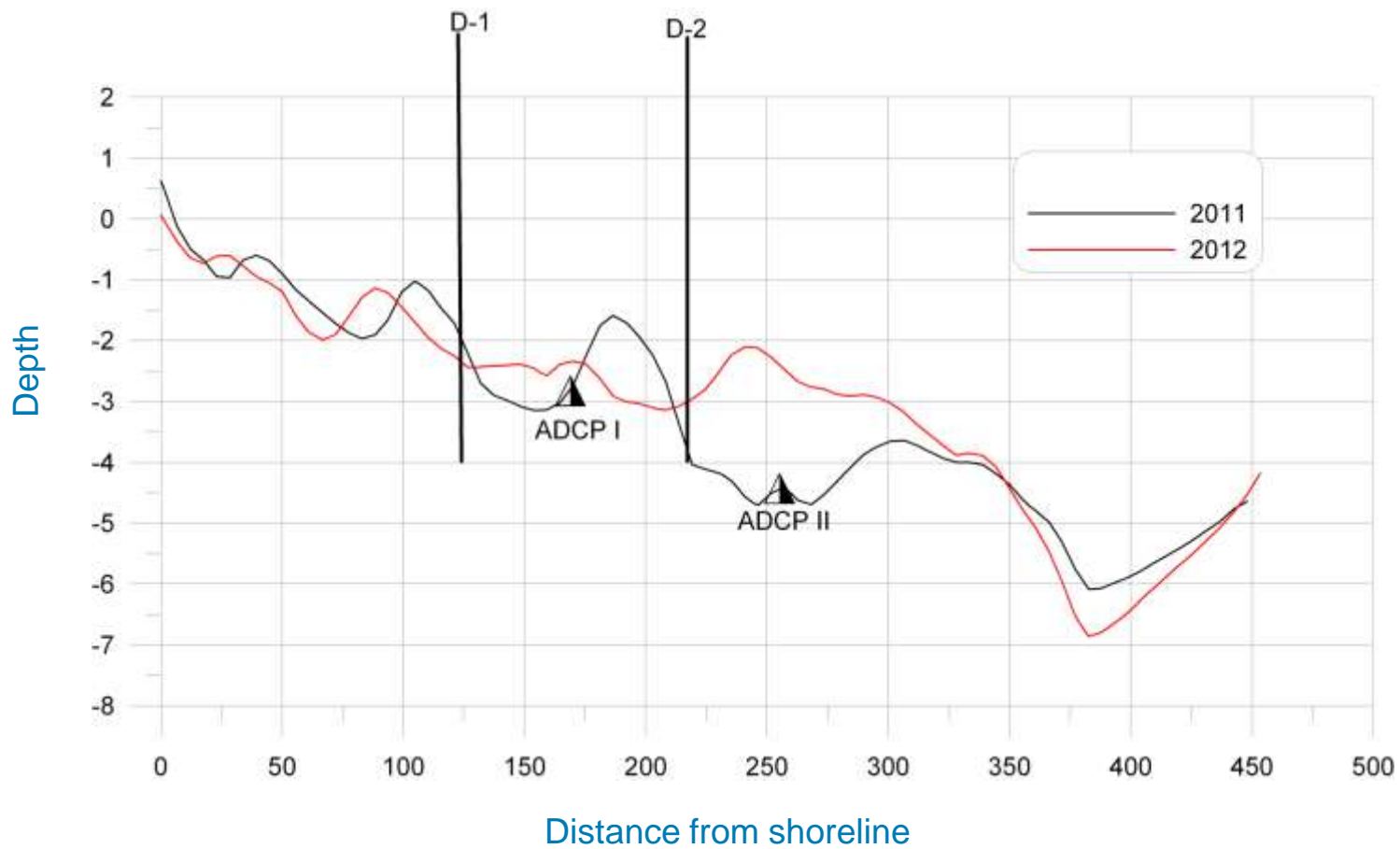
MOBILE FIXED PLATFORMS



MOBILE FIXED PLATFORMS



MOBILE FIXED PLATFORMS – TROUBLE



MOBILE FIXED PLATFORMS – TROUBLE



MOBILE FIXED PLATFORMS – TROUBLE



MOBILE FIXED PLATFORMS – BAD LUCK





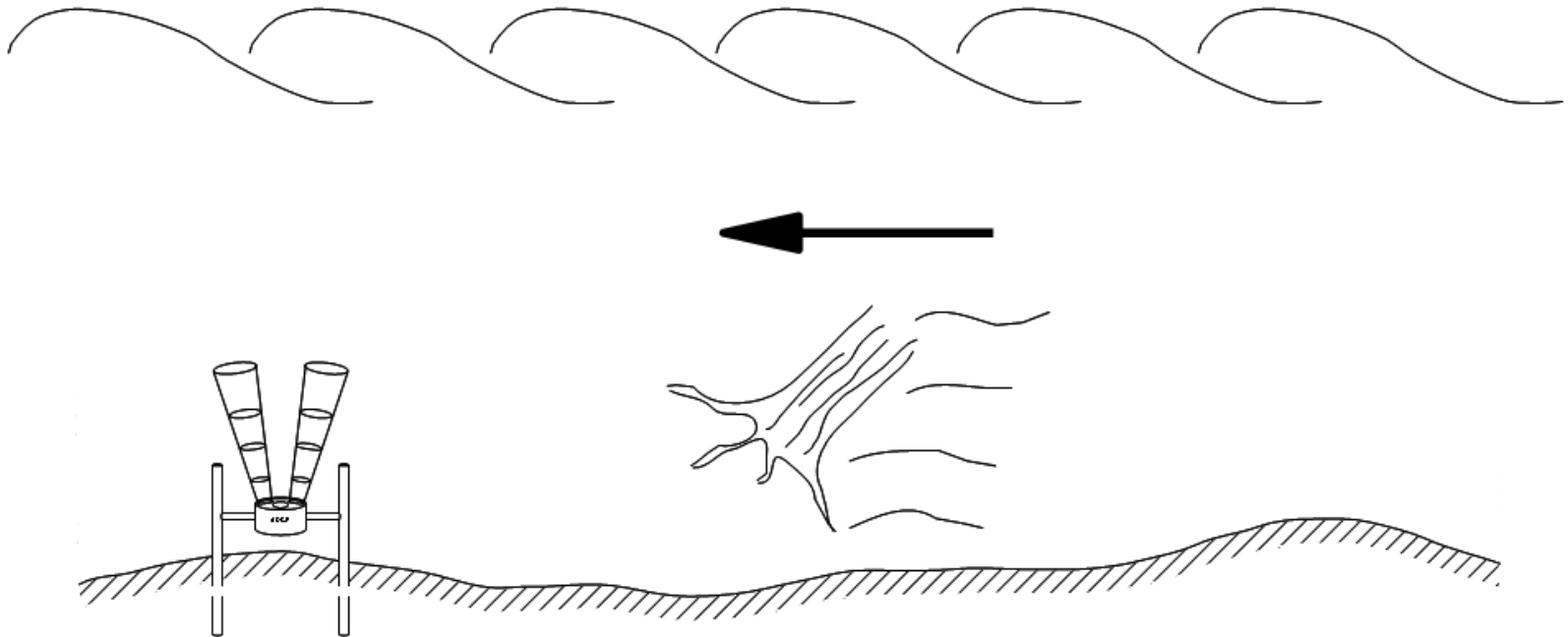
MOBILE FIXED PLATFORMS – BAD LUCK



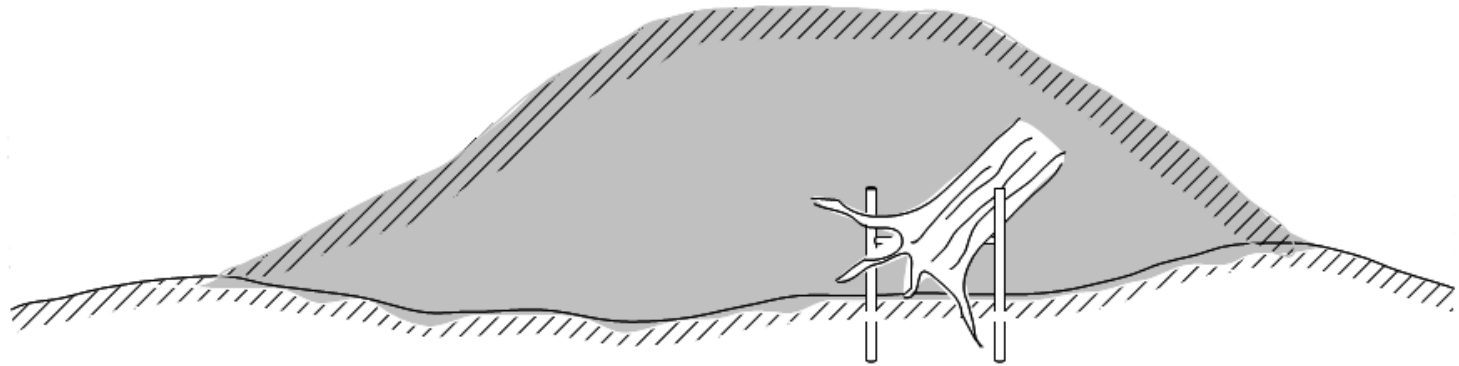
MOBILE FIXED PLATFORMS – BAD LUCK



What happened?



MOBILE FIXED PLATFORMS – BAD LUCK



IBW PAN RECOMMENDATION 1



Hard Fixed Platforms

1. Should be built on the dissipative Baltic coastal zone on depths from 5 up to 10 m (on large depths it's recommend to use buoy).
2. Platform should be designed as a solid structure.
3. The platform is being designed for 30 years of the use.
4. All steel elements will be additionally corrosion protected.
5. During winter, depending on wave conditions, "karcher" should be used to remove ice phenomena on the platform.

IBW PAN RECOMMENDATION 2



Mobile Fixed Platforms

1. Should be built for depth: from shoreline to the 5 metres deep.
2. The platform can be used in the period of ca. 12 months.
3. If the structure is sticking out beyond the water level it is recommended not to use it during winter.
4. On account of the biological conditions it is not recommended to carry out measurements in summer.
5. Visual inspection and cleaning are held after every extreme event.
6. It's relatively cheap method to measure parameters of hydro- and lithodynamic processes occurring in the shallow water coastal zone.
7. Sometimes, it's the luck of the draw - you have to spend more than you planned for!

THANK YOU

