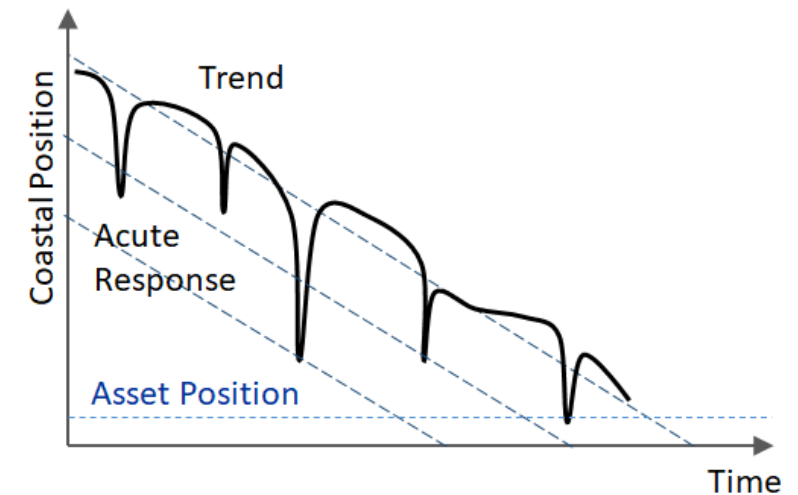
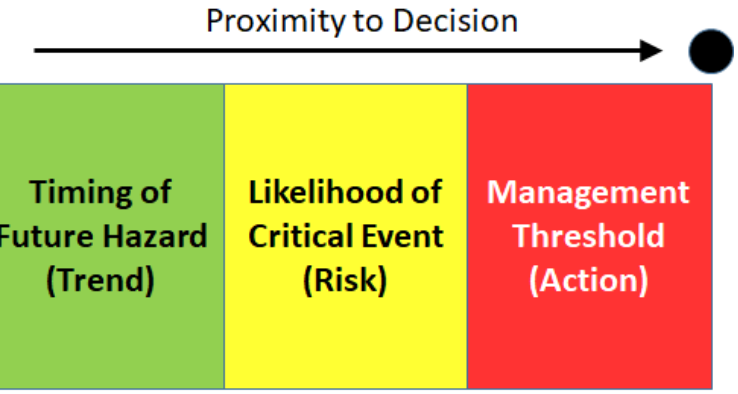


Coastal Monitoring & Decision Making

Monitoring has become an integral part of coastal engineering practice, supporting adaptive management and incorporated in modelling through data assimilation. However, the underlying reason for coastal monitoring (shorelines, profiles or coastal surfaces) ultimately relates to decision-making.

Information needs affect the type of coastal monitoring. Some attributes to consider:

- Spatial coherence of coastal dynamics and corresponding monitoring coverage (e.g. can we measure at one point?);
- Frequency and timing of monitoring should be sufficient to identify the risk and may need to distinguish contributing causes;
- When risk needs to be understood, coastal monitoring should be relatable to coastal drivers (e.g. waves & water levels);
- Proxies, (e.g. vegetation lines) may support trend detection, but typically bias quantitative analysis.



When coastal dynamics near a management threshold (e.g. a building at risk), coastal monitoring can be simplified. In this situation, practical monitoring and triggers can be related directly to the threshold (e.g. distance remaining to the building). This can provide reduced ambiguity and supports timely action.

Eroding? How long have we got?



Developing a functional monitoring framework requires identification of decisions that need to be made, processes likely to affect the decisions, and the nature of plausible management tools. For the latter:

- Land-use planning operates over decades, allowing relatively loose coastal monitoring;
- Coastal engineering requires higher certainty of dynamics and timing;
- Active coastal management (e.g. dune building or sand bypassing) has short time scales and can require precise information.

What are our chances in the next storm?



Proximity to a decision influences monitoring needs, shifting from trend detection, through risk characterisation, to determination of appropriate actions.