TEST MINING WORKSHOP

15-16 December 2024
Bremen
ISA Intersessional Workgroup
Global Sea Mineral Resources

“Germany´s understanding is that TM before the submission of an application could not be a full-scale system test (identical with commercial production) – for various reasons.”

[Report on the outcomes of the deliberations of the IWG TM, 4 July 2024]

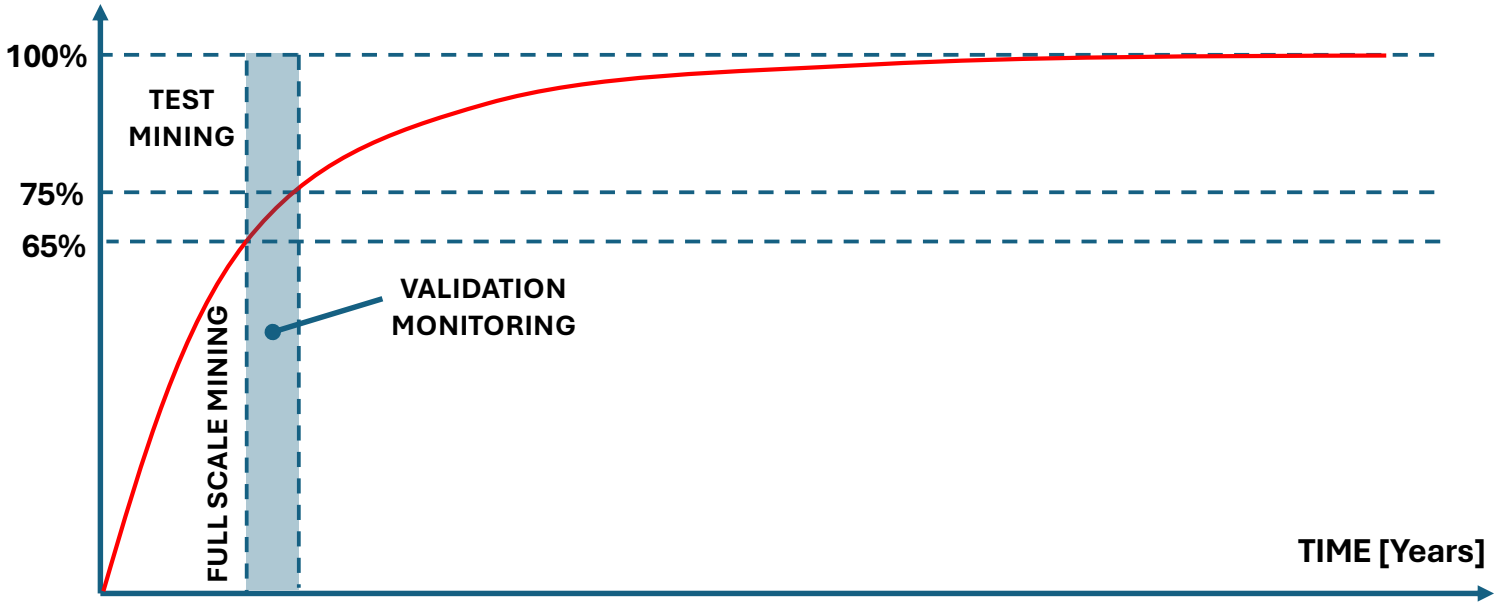
PURPOSE
TEST MINING

To increase the level of certainty with which one can assess effects

Marine Environment
Technology & operations
Monitoring & safety

PURPOSE

To increase the level of certainty with which one can assess effects



PURPOSE

To increase the level of certainty with which one can assess effects

TEST MINING

Level of certainty (*)

30 to 65%

Cost

USD 100-200 million

VALIDATION MONITORING REQUIRES FULL SCALE MINING

Level of certainty (*)

65 to 75%

Cost

USD 500 million

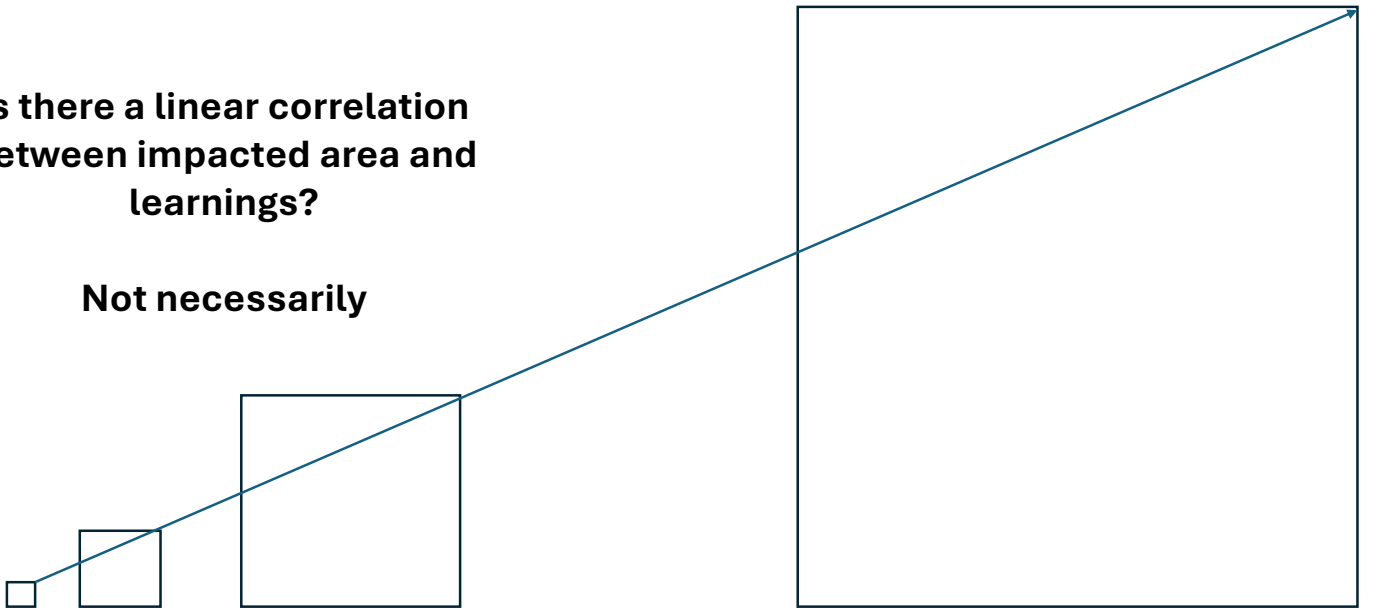
(*) Ball park numbers

PURPOSE

To increase the level of certainty with which one can assess effects

Is there a linear correlation between impacted area and learnings?

Not necessarily



PURPOSE

Limitations

Variables

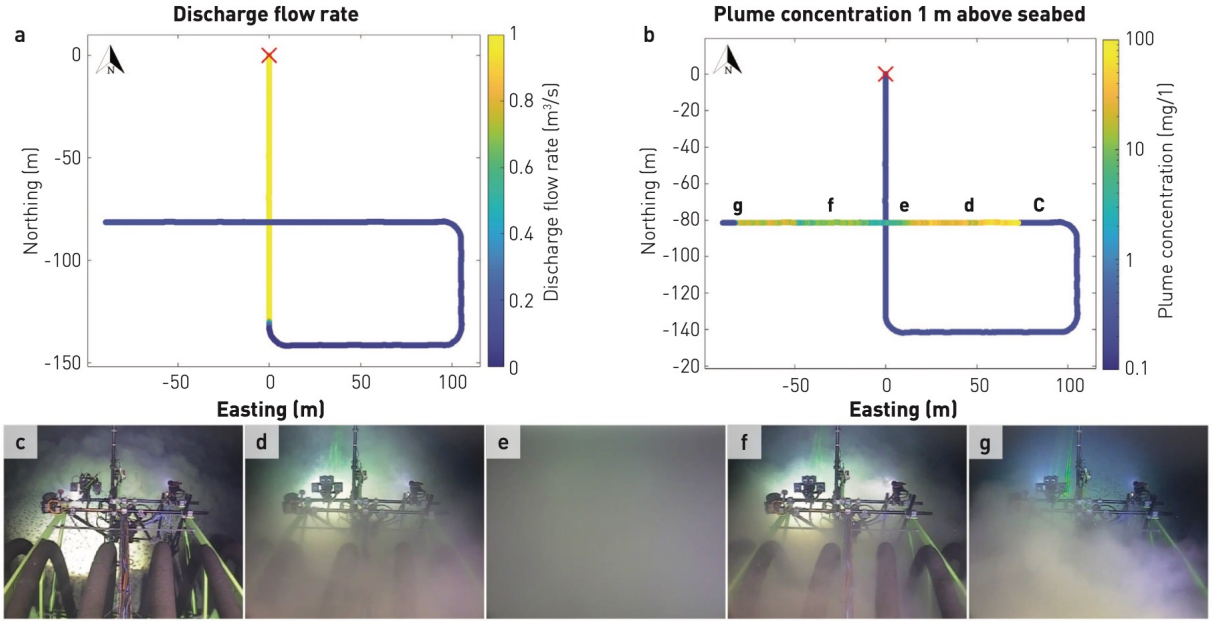
Topography
Orientation & path
Currents
Abundance
Seasonal variability
Technology choices
Operational choices
The list goes on…

We will never test <u>all</u> scenarios, under <u>all</u> circumstances

1. **Identify the different processes**
2. **Combine via computer models that represent the state of the art**
3. **Validate models via Test Mining where required**

EXAMPLE

Selfie test Patania II



OBJECTIVES

a) To **assess** the **impacts and effects of exploitation on the Marine Environment** in a contract area based on substantially similar techniques to what will be used for exploitation.
b) To **assess** the **performance, efficiency and economic viability of exploitation** in a contract area based on substantially similar techniques to what will be used for exploitation.
c) To **assess** and prove **the efficacity of safety systems and monitoring systems** ahead of exploitation.
d) To **learn** from the test and to use these learnings to **inform** and **optimize** the used techniques regarding the effects on the Marine Environment ahead of exploitation.

<u>Followed by:</u>

a) In the absence of prior application, and/or if objectives a) through c) above have not been met, a technique cannot be considered an available technique. Until a technique is an available technique, it cannot be regarded as '**Best Available Techniques**'.
b) Inform the **Environmental Impact Statement and Plan of Work** for an application for exploitation *[based on which the effective protection of the Marine Environment of such an operation will be evaluated]*

	To assess the effect on the Marine Environment	To assess the performance of commercial mining	To assess safety & monitoring systems	To optimise the used techniques
Equipment Components	• Fit for purpose • Should include all subsystems which can cause an Environmental Effect, and which cannot be considered tested or proven in a relevant environment, or by known and validated models. • Should combine the subsystems in an integrated manner if the interaction of the subsystems potentially changes the system behaviour in a way which cannot be adequately predicted by known and validated modelling.			
Equipment Scale	• Fit for purpose • Must be appropriate, meaning effect/performance can be used to predict the effect/performance of exploitation through modelling, using best available science and techniques • While the scale of the equipment might be different, the techniques and technology used must be substantially similar to the techniques proposed for exploitation			
Temporal & Spatial Scale	• Must serve its purpose • Must be appropriate, meaning effect/performance can be used to predict the effect/performance of exploitation through modelling, using Best Available Scientific Information and practices • Temporal and spatial scale should be limited as far as reasonable to avoid unnecessary effects on the environment			

Determine Available Techniques

Assessment of 'Best Available Techniques"

Inform EIS and Plan of Work

QUESTIONS