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# **Integrated Environmental Mapping and Monitoring: A methodological approach for end-users**

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# Content



- Background
- Aim of thesis
- Methodological approach
- Results
- Concluding remarks and future perspective

# Background

- General lack of knowledge about the marine environment
- New advances in
  - Technology and technological applications
  - Analytical methodology



- New opportunities in knowledge gathering and interpretation

# Aim of thesis

- Describe a methodological approach for integrated environmental mapping and monitoring
  - Demonstrate advantages with mission adjusted to purpose and object of interest
  - Enhance knowledge through improved data interpretation and new analytical methods
- Demonstrate the importance of interdisciplinary collaboration and communication

## Methodological approach

\* Paper I and II

## Technology development

\* Paper III

## Lab. studies bridging gap of knowledge

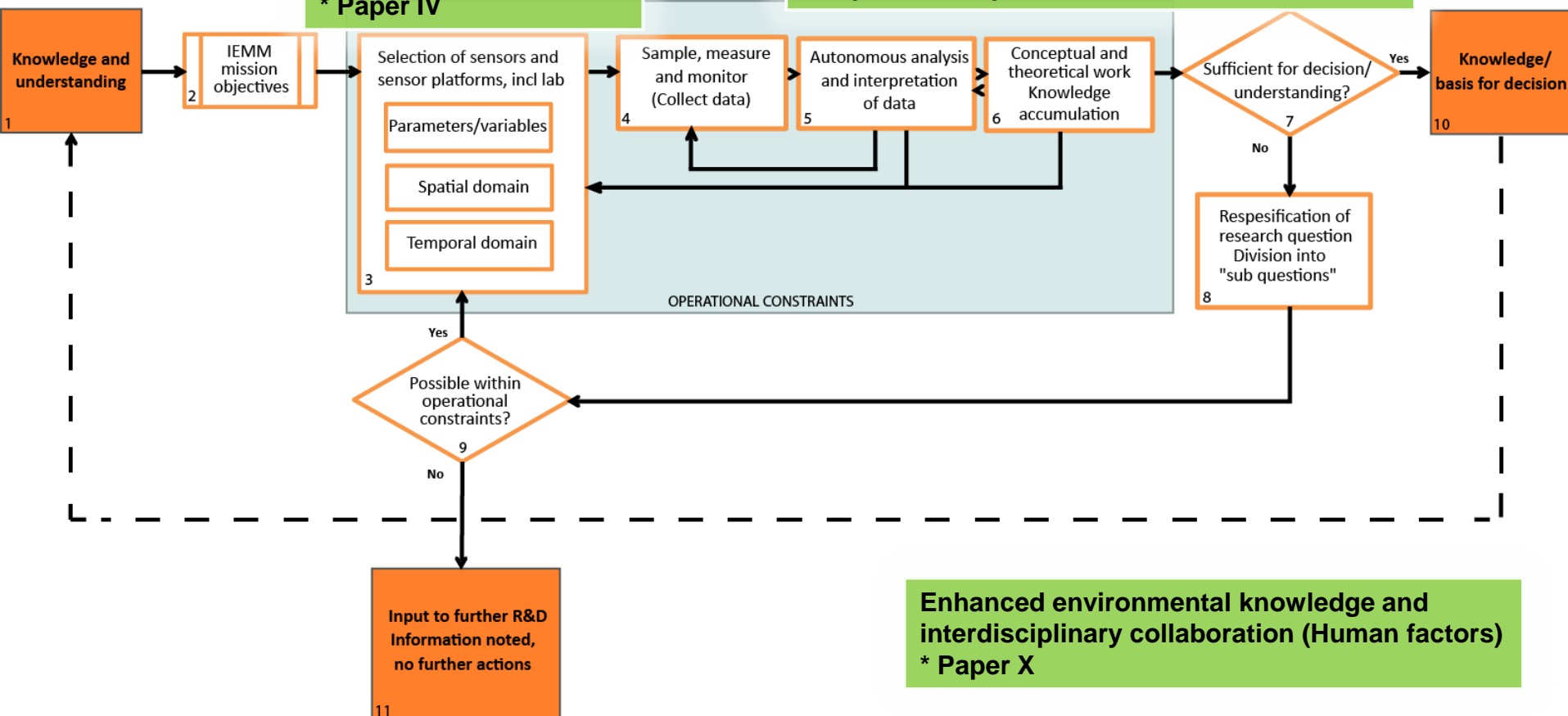
\* Paper IV

## Various methods for data interpretation

- \* Paper V, VIII and IX – Image analysis
- \* Paper VI – Multivariate data analysis
- \* Paper VII – Improved risk assessment



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Enhanced environmental knowledge and interdisciplinary collaboration (Human factors)  
\* Paper X

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# Results



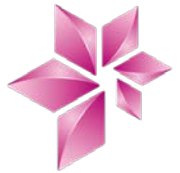
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- A generic methodological approach for a flexible environmental mapping and monitoring is proposed
- The importance of data with sufficient spatial and temporal resolution and coverages is stressed
- The need for interdisciplinary collaboration and communication is emphasised
- Why and how images are suitable communicative tools is scientifically documented

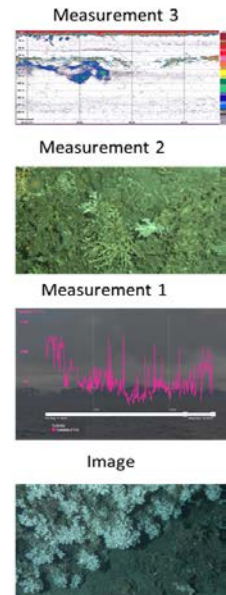
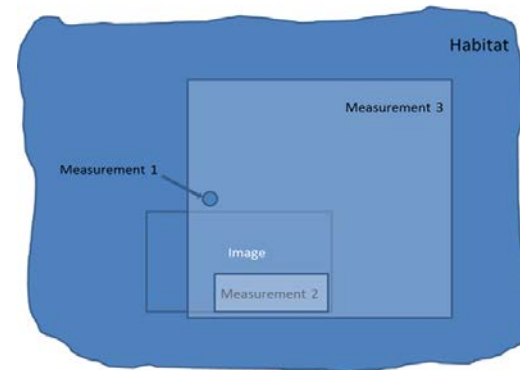
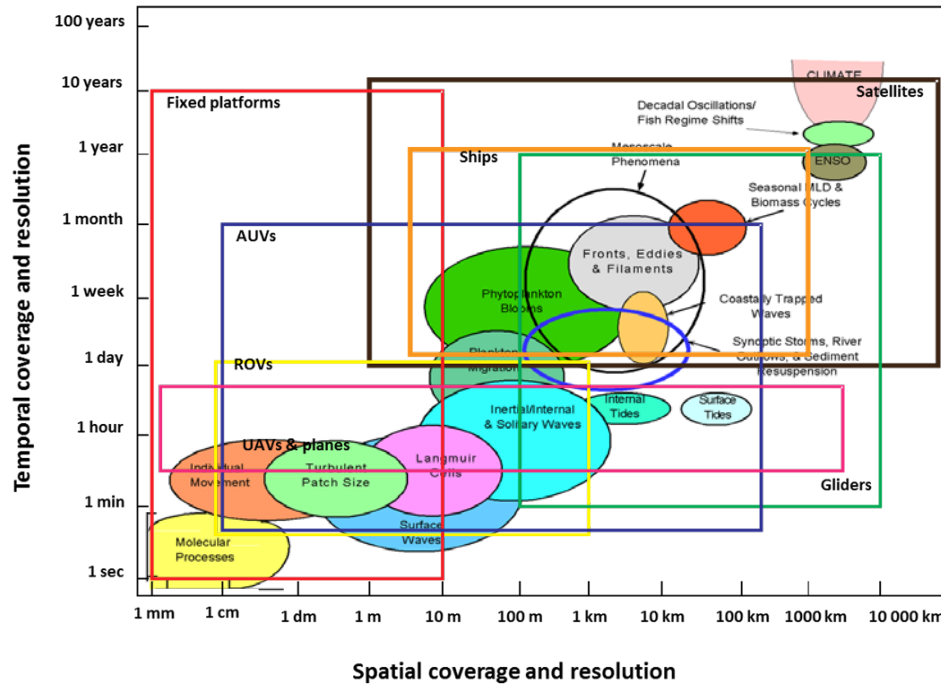
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# Spatial and temporal resolution and coverage



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# Results



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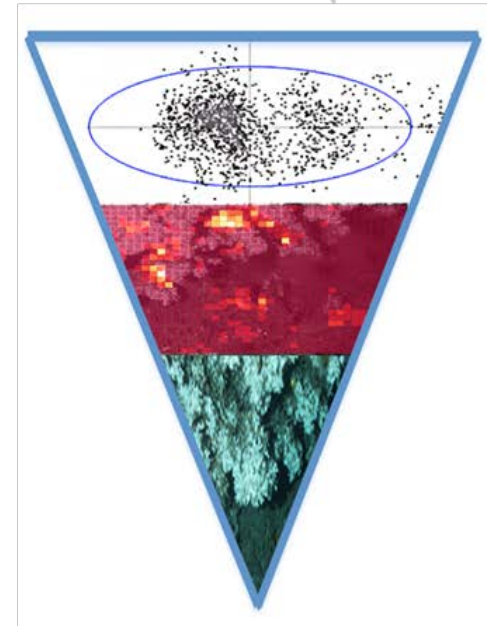
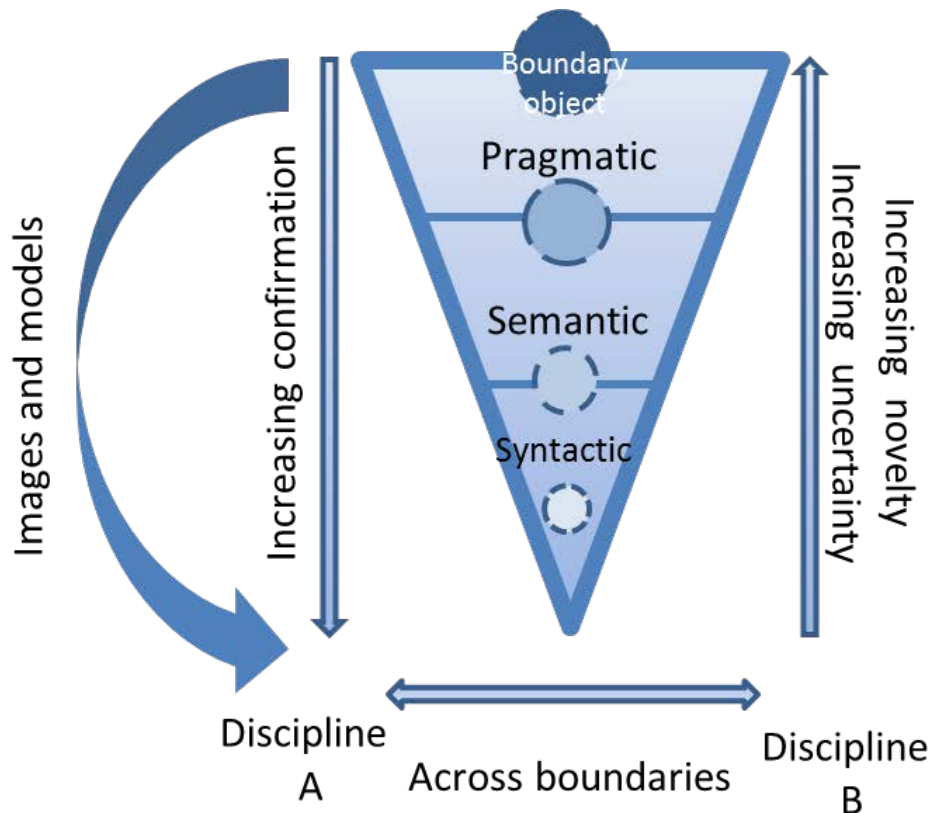
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# Interdisciplinary collaboration and communication



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# Results



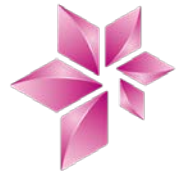
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# Images as communicative tools (Boundary objects)



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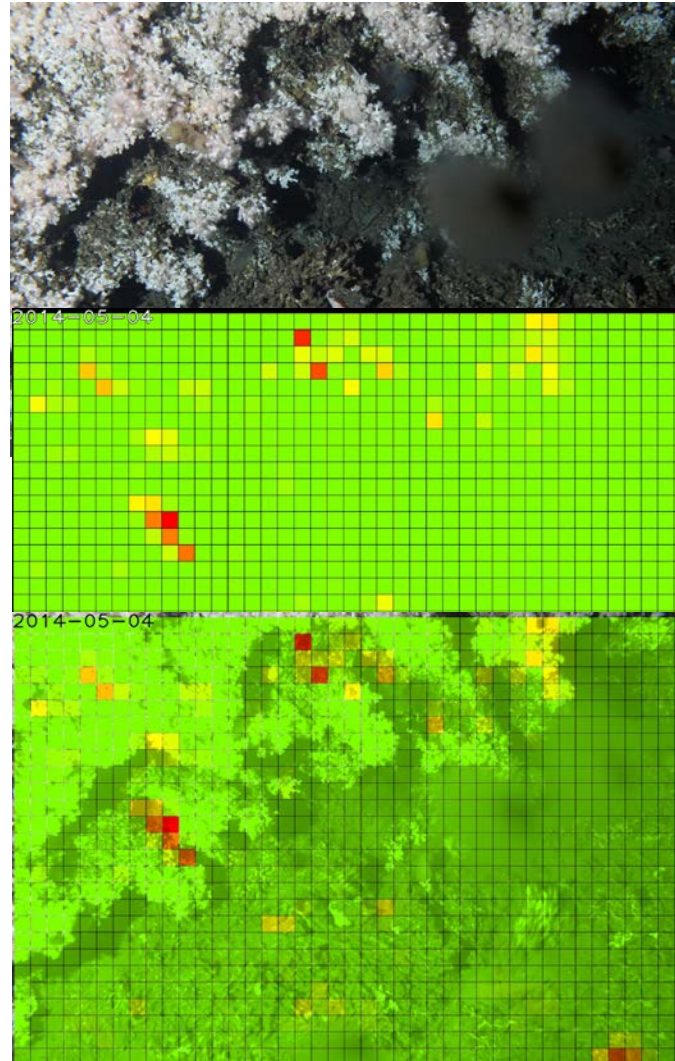
- Perceived as experienced by the human visual system
- Interdisciplinary collaboration enables extraction of species specific information from a confusing environment



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# Images as communicative tools (Boundary objects)

- Time-lapse video  
original 10photos/sec
- Time-lapse video  
heat-map shrimp
- Time-lapse video  
transparent heat-map  
shrimp



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# Concluding remarks and future perspectives



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- A flexible integrated environmental mapping and monitoring is a cost-efficient concept
  - Increased knowledge through more targeted data sampling and
  - less “noise” sampled
- New analytical methodology
  - More optimal use of the inherent information present in available data



# Concluding remarks and future perspectives

- Images in environmental monitoring
  - in general understood independent of scientific background and experiences
  - can be used to communicate other more abstract and complex data
- A regulatory acceptance of change is needed to succeed

