History and heritage

- Contribution to interdisciplinary research: provide independant data on sea level rise and long term ecological development of the Wadden Sea area
- How did the human forcing of geological and ecological change develop in holocene times?
- The study of long term co-evolution of man and environment, societal development, development of relationships with outside world and formation of regional identities
- Interest in maritime history; local identities, cultural differences, and regional identities, which knowledge is needed for policy making; concepts are changing in time, co mparison withother EU areas, partners, consequences of identity;

Geosciences (1)

Geology

- detailed knowledge and trilateral integration of knowledge and data on geological build-up and structure and properties rocks, fluids, faults
- Understanding and predicting influence geological framework and ongoing geological processes on Holocene and future evolution Wadden area
- Effects of subsurface characteristics; short and long term developments; comparative studies; extreme events;

- **Strategic research topics**
- to extend our coastal monitoring efforts e.g. COSYNA
- To extend our knowledge on a tidal basin scale
- to extend our knowledge on sensitivities and adaptation capabilities of key species in the marine environment; and
- to develop fit-for-purpose models to manage our marine environment.

Geosciences (2)

Geomorphology

- Understanding the functioning of the Wadden Sea morpho-hydro-eco-system as a composite, including positive and negative feedback mechanisms, to develop prognostic models and to construct reliable future scenarios
- Identification of abiotic key-processes and key factors which dominate the hydro-morphological development,
- Monitoring marine organisms to species level, including their larval and postlarval stages (early warning system approach), e.g. effects on recruitment processes.
- Research on impact of climate change on cultural, social and economic values in the Wadden Sea Regions.

Economy and society

- Comparative analysis of social cohesion of communities in the context of declining population
- Comparative analysis of (non)-area related economic activities as potential drivers of vital regional economic development
- Development of a system of nature valuation methods for policy purposes
- Modules for models, Wadden Sea WIKI; general issue: water and energy, freshwater of islands; gap between different scientific disciplines, modelling ensembles, hindcasting!,

Economy and society (2)

- Risk assessment of flooding, adaptation to declining populations, conflict between nature and economy; work out a case!, valuation methods, not only policy also society involved in valuation , social impact assessment; directives for harmonization ; application of valuation methods; communication,
- Sustainable tourism , past, present, future; innovation ; knowledge dissemination

Ecology (1)

- Improve understanding of ecological functioning by studying how they are (not) disrupted by invaders
- Links between biogeochemical fluxes and ecosystem functioning
- Ecosystem modelling based on new insights and models, new monitoring data and new questions arising from climate change
- Pelagic system as a link between nutrients, benthos and higher trophic levels

Ecology (2)

- Sustainability and ecosystem vulnerability at large scale (harbours, fisheries)
- Large scale exchanges between rivers, North Sea and Wadden Sea
- Dynamic regimes of Wadden Sea ecosystem (non linearity, models, experiments, hydrography, sediment dynamics
- Comparisons with other coasts; human impact, species invaders: which scientific knowledge is needed, e.g. for carrying capacity; better use of existing information, synthesis needed;
- Challenges for models , scientific questions, hindcasting with ecological models,

CLIMATE

- A combined, multi-scale *in-situ and modeling* study on sand- and sediment dynamics, sea-level rise,and storm surges, to determine optimal strategies for artificial sand suppletion as a mean to cope with CC and SLR

- Development of a new generation, multi-model, high-resolution regional climate and SLR scenarios, synchronized across three countries involved,

- Comparative studies on a new types coastal adaptation strategies, including "*building with nature" and spatial planning* concepts

- A regional integrated *in situ and modeling* study on bio-geochemical and GHG balances of the Wadden Sea Region, and on (related) mitigation and sustainable energy strategies

Climate and general

- Societal sciences: incorporation with ecology; predictability, role of ecosystem models, meaning, simplification , intermediate complexity; models for scenarios, regional,
- Climate more than temperature; regional climate studies;
- Policy issues of climate;
- Trilateral organization, urgency,

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