STRATEGIC RESEARCH AREAS 2014–2023

NTNU – Norwegian University of Science and Technology

NTNU is Norway's largest university with 38,000 students and 6,400 full-time equivalents, forecast for 1.1.2016. NTNU has the main responsibility for higher education in technology in Norway. In addition to programmes in technology and the sciences, we offer a rich variety of disciplines in the social sciences, humanities, medicine, teacher education, architecture and fine arts. The whole university works together across all disciplines to create knowledge for a better world.

Through interdisciplinary cooperation, NTNU's strategic research areas address complex challenges of great importance for society.

NTNU Energy – developing knowledge about renewable and environmentally friendly energy for the world community
NTNU Health – innovative solutions to complex health challenges
NTNU Oceans – knowledge for a sustainable ocean
NTNU Sustainability – knowledge for change

NTNU OCEANS

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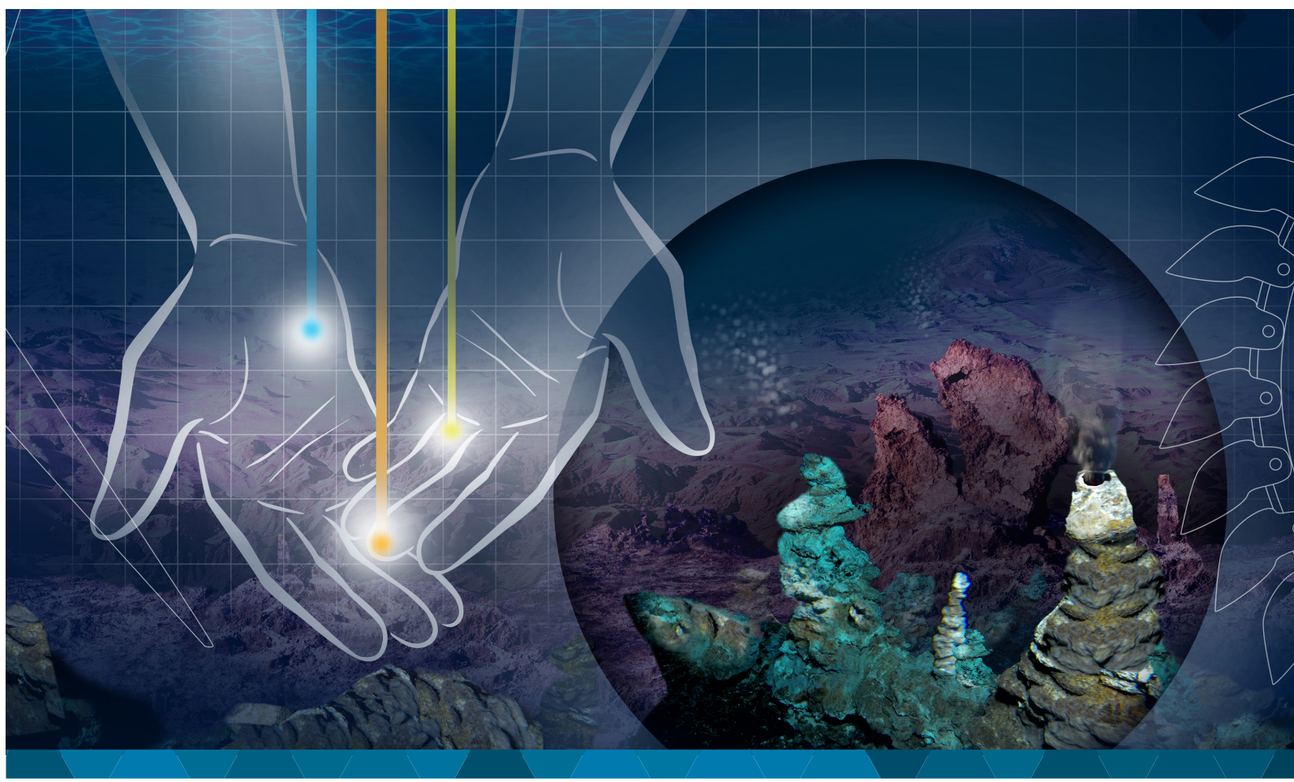
Strategic Research Area 2014–2023

NTNU OCEANS

Deep Sea Mining



Grafisk utforming og produksjon: NTNU Grafisk senter

NTNU
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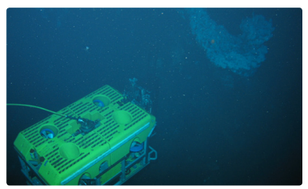
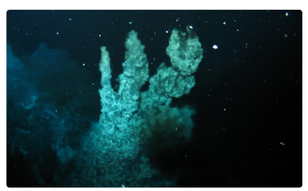
ENERGY HEALTH OCEANS SUSTAINABILITY

Pilot program on Deep Sea Mining





The NTNU pilot programmes are multidisciplinary and highly innovative research studies where researchers and PhD students from different fields of expertise collaborate to increase the knowledge base.

The vision of the Deep Sea Mining Pilot programme is developing new solutions for evaluation, exploration and extraction of deep-sea minerals under societal responsibility for the environment and the international heritage of mankind.

The mining value chain consists of a series of working processes including ore evaluation and assessment, exploration, ore development, ore production on the deep ocean floor, vertical transportation, dewatering, loading and transport, off-loading of ore at shore, minerals processing and refinement and finally sales and logistics. The society needs minerals and metals and so does the green shift in particular.

With the activities defined in this pilot programme and associated projects like the EU-funded projects Blue Mining and Blue Nodules and MarMine supported by the Norwegian Research Council, NTNU is attacking a great variety of challenges related to extracting minerals from the deep sea by including ethical and environmental aspects.

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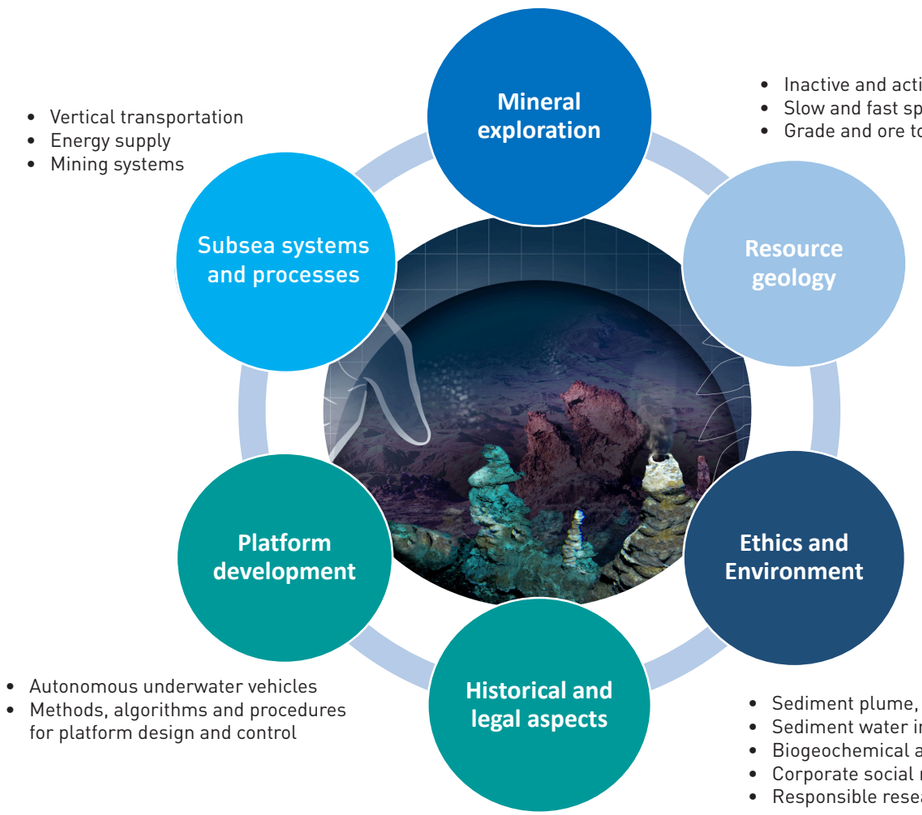
Photos: NTNU MarMine Eva Ramírez-Llodra/ NTNU MarMine Oriana Parisi

- Geophysics
- Image analysis, UHI
- Resource assessment
- Multivariate data analysis



- Inactive and active ridge segments
- Slow and fast spreading ridges
- Grade and ore tonnage distributions

- Vertical transportation
- Energy supply
- Mining systems

- Sediment plume, spreading
- Sediment water interactions
- Biogeochemical and ecological processes
- Corporate social responsibility
- Responsible research and research ethics

- Autonomous underwater vehicles
- Methods, algorithms and procedures for platform design and control

- International laws
- Common heritage
- Influence on society