

Report from the first MIDAS Science-Policy Panel meeting

Meeting held on 8 December 2015 at the Museum of Natural History, Brussels

The purpose of the MIDAS Science-Policy Panel is to establish an ongoing dialogue between the MIDAS community and stakeholders in order to link research and policy, and to provide policymakers and stakeholders with sound and relevant scientific knowledge in support of policy developments.

MIDAS will convene a Science-Policy Panel annually from 2014-2016. The attendees at each panel meeting include senior policymakers, stakeholders from industry and NGOs, representatives of international organisations, and leading scientists. The objective is to ensure that MIDAS results are brought promptly to the attention of policy makers in a forum where they can be discussed with all interested parties. Ultimately, the aim is to facilitate open discussions on the development of policy to accommodate deep-sea exploitation whilst maintaining good environmental status.

The second MIDAS Science-Policy Panel meeting was held at the Museum of Natural Sciences in Brussels on 8 December 2015. In total, 20 non-MIDAS attendees participated in the meeting (see list of participants in Annex II), along with 11 representatives from the project. The objective of this event was to present some of the emerging scientific results of the MIDAS project to date in order to stimulate open discussions on key issues. The meeting agenda is given in Annex I.

Following a welcome by Prof. Philip Weaver, a 'rolling presentation' of some of the key scientific results to date was presented by a team of MIDAS researchers, followed by a question and answer session:

Phil Weaver, MIDAS Coordinator
Determining the footprint of deep-sea mining

Telmo Morato, IMAR/University of Azores
Azores case study: Simulating the potential impact of sediment plumes on deep-sea biodiversity and human activities.

Marina Carreiro e Silva, IMAR/University of Azores
Azores case study: Mechanical and toxicological effects of sediment plumes on cold-water corals

Andrew Dale, Scottish Association of Marine Science
Simulating sediment plumes and particle fallout in the deep sea

Ann Vanreusel, University of Gent
Polymetallic nodule habitats are required to preserve abyssal biodiversity

Strategic Environmental Management Plans – Emerging Ideas
David Johnson, Seascope Consultants

Issues discussed in the subsequent Q&A session included the following:

- Representativity, spatial coverage and resolution of seafloor sampling in baseline environmental surveying and the need to ensure appropriate equipment and instrumentation is used in order to ensure the relevant information is being captured..
- The need for contractors to make their environmental data available, and the need for common protocols and standards to be used so that different datasets can be used together or used in comparative studies.
- The difficulties for non-biologists in understanding different classes of taxa and biodiversity and function as a measure of ecosystem 'health'.
- Ways in which MIDAS can feed results into the International Seabed Authority's ongoing activities.
- Discussions on the limitations and flexibility of sediment plume models in determining the impact of plumes on deep-sea ecosystems.
- How the SEMPIA process will move forward, how stakeholders can get involved and how the results will feed into the ISA.
- The configuration of APEIs, PRZs and IRZs in the Clarion Clipperton Zone, the scope for reviewing their distribution/location, and the need to undertake scientific research in the APEIs.
- The complexities and difficulties in comparing land-based mining footprints and with likely mining footprints (and wider areas of impact) in the deep sea. It was suggested that a publication stating what is known and what is not yet known about mining impacts in the deep sea would be very useful and informative.

The afternoon session included a series of contributions/presentations from NGOs, the ISA and industry representatives:

- **Kris van Nijen** gave an overview of DEME/GSR and the process of moving from inferred resource to indicated resource. He gave an overview of GSR's most recent cruise to the Belgian licence area in the CCZ, which involved deposit mapping, collection of data for engineering challenges (sediment compaction, load bearing capacity, behaviour of nodules when crushed at depth etc.), and environmental baseline mapping. The design of mining vehicle and nodule collector will be based on existing marine and mining technology. The nodule collector will separate nodules from seafloor sediment at the seafloor. Calculation of optimal nodule abundance to maximise efficiency of nodule harvester = 12kg/m^2 . If only one vehicle is used (multiple vehicles are tricky) it would need to be 16m wide and travel at 0.5m/s. Based on knowledge of terrain (slopes) and optimum nodule abundance, suitable areas for mining have been determined and then surveyed in more detailed (approx. one seventh of their claim area: $10,000\text{km}^2$). DEME's

objective is to enhance DSM by research design and output analysis, in order to enable operational EIA and facilitate environmentally responsible mining. Their proposed outputs are: i) joint MIDAS/DSMI workshop, ii) focus on nodules, and 3) develop DSMI/MIDAS environmental design parameters for strategic and local EIA.

- **Ralph Spickermann** gave a short statement in which he commented that MIDAS is providing industry with a lot of useful information, especially in terms of information that can feed into equipment design in order to minimise environmental impact. There is no desire from a commercial perspective to bring seafloor sediment up to the surface, so nodule mining equipment will be designed to minimise this as far as possible. Replacement of nodule substrate is currently not in the plan for UKSRL or GSR – this technique is not proven and it may take decades to prove whether it is an effective offset or not.
- **Robert van de Ketterij** gave a presentation focusing on the steps in the process from resource discovery to feasibility study and through to project closure – where should environmental considerations be factored in? Mapping of environmental assessment steps onto project development steps has given rise to an Integrated Development, Exploration, Environment Decision (DEED) framework.
- **Philomene Verlaan** noted that it was clear that definitive conclusions on ecosystem resilience and recovery will not be available any time soon. However, there are existing in situ activities that could be used as experiments – for example, the dredging and test mine areas that date back to the 1960s. A future initiative or project could focus on bringing together pioneer contractors as a condition of their exploration contract renewal to revisit their dredge/sample sites from decades ago to see if fauna have recolonised. France, Germany and Britain plus IOM could be mandated to do this by the EU – reanalysing these sites could generate a very useful dataset. Michael Lodge commented that a condition of ISA exploration contract renewal is submission of a complete inventory of all data collected to date. There is a problem with the quality of data collected many years ago, due to lack of standards, common protocols, etc. Archive data is difficult to access or even to discover. It is unclear whether any of this can be made into a condition of contract renewal.
- **Simon Walmsley** gave a short presentation entitled “*Seabed mining and a sustainable blue economy – never the twain shall meet?*” in which he explored where deep sea mining sits in the global blue economy. WWF would like to see openly and transparently considered alternatives to mining deep-sea minerals, taking into account ecological, social and economic perspectives - including conserving natural and mineral resources, increasing the recycling of minerals, and exploiting land based mineral resources with much greater efficiency and more stringent environmental regulation.
- **Ann Dom** gave a short overview of the NGO position paper on “Limits to Blue Growth”. She commented that DSM seems not to fit the EC’s view of a circular economy. There is a need to assist the EC and EP to develop an informed position on DSM, and there is a need for a wider public debate about DSM. The NGOs would like to see more on the

application of the precautionary principle, and also more information on how the EC funding is distributed in relation to DSM and related issues.

- **Matt Gianni** summarised the NGO position on DSM. The question is really do we need to go to the deep sea for resource extraction? If so, then exploitation must be based on a precautionary approach, with needs clear and robust guidance. SEA/EMPs should be developed and put into place prior to any commercial activity, and they should be independently reviewed on a periodic basis. Transparent review and enforcement procedures must be put in place, as well as transparent monitoring regimes and open access to environmental data. Additional elements of the regulatory regime should include a 'polluter pays" principle, a liability fund and a sustainability fund. Baseline information is critical to understanding the potential impact of deep-sea mining, but it is critical to determine what quality and quantity of information is required to get a sound baseline - how can the risk of significant environmental change be determined or quantified, over what time period and spatial scale should it be measured, and how do we manage what we don't yet know? The NGO sector has also raised questions about whether restoration or remediation is really possible, and if not, how much irremedial damage is acceptable.
- **Michael Lodge** gave an overview of the latest developments at the ISA.
 - The development of exploitation regulations (mining code) is ongoing: Good feedback was gleaned from the ISA's stakeholder consultation in 2014 and 2015 (>60 stakeholder responses across the board). As a result, the LTC issued a draft outline of regulatory framework for mining. That went to the ISA Council, who effectively endorsed an action plan recommended by the LTC that will fast-track the develop of the mining code over the next 12-18 months. In the action plan is a list of priority deliverables that recognise a series of issues that require more information and development over the next couple of years.
 - There are 6-7 priority deliverables, most importantly a zero draft of the mining code to be presented to Council in 2016. This will take the draft outline document from the LTC and convert it into a draft legislative document that contains the bare bones of the mining code. It will then be iterated by various bodies within ISA and also released for wider consultation. The zero draft includes mostly legal language around mining code (process of application for licenses, terms of contract, legal issues re jurisdiction over mining operations; rights and obligations, dispute settlement etc).
 - The second priority deliverable is the financial model - this came out of the 2015 meeting and a workshop in Singapore. What will be the financial terms of any mining contract? This is important from contractors' perspective as it will allow progression through their project plans and allow progression with investment plans (de-risking). Important also for ISA to get a clear picture to know how ISA will pay for its activities going forward, and what benefits might potentially flow to ISA member states.
 - The remaining priority deliverables come under a heading of environmental management – this will be difficult to develop and will take some time. There is a need for SEA and SEMP. Need to develop the process for EIA by contractors,

and a process for evaluation and review of EIAs to allow projects to proceed. The Government of Australia will support development of the code by hosting a workshop on EIA in May 2016.

- The workplan is ambitious, with not much time to achieve it before the Council meeting in July 2016. A fully costed data management strategy is required to better manage data flowing from contractors. There will be further opportunity for future stakeholder contribution.

The meeting wrapped up with a round-table of final remarks. Points raised included:

- Continued interaction and better communication between industry, scientists, legal people and NGOs are important for the industry to evolve and ensure its activities are as environmentally responsible as possible.
- There has clearly been a lot of progress on DSM science (via MIDAS) and interaction via NGOs but there is still a long way to go in understanding ecosystem impacts and in developing the politics. There is a real need for a "MIDAS2" project to take this work forward otherwise there is a serious risk that momentum will be lost. There was much frustration expressed at the EC's inability to provide this continuity.
- It was agreed that NGOs and Industry should jointly write a letter to the EC regarding future funding for this field of research. **Action: Phil Weaver to take this initiative forward with the support of the industry groups present at the meeting.**
- Continuity of funding in this field also has implications for the employment of young scientists working in deep-sea research.
- MIDAS will hold a joint workshop with DEMA/IH to further develop plume modelling and technology development, and MIDAS will hold side event at ISA in July 2016. MIDAS will hold a 2-day open meeting in autumn 2016 to mark the end of the project. A research highlights document will be published at the end of project, containing the project's main conclusions and recommendations.
- The ISA has a role in facilitating communication between scientists and industry, and it would clearly be beneficial if more contractors would work together to help answer some of the major questions.

Annex I

MIDAS Science-Policy Panel Meeting 2015: meeting programme

VIP Room, Museum of Natural Sciences, 29 Vautierstraat, Brussels

8 December 2015

Maximising the potential for ecosystem recovery after deep-sea mining

09.00	Arrival and coffee
09.30 - 11.00	<p>Overview of the MIDAS project - rolling presentation:</p> <p>Introduction - <i>Phil Weaver, MIDAS Coordinator, Seascope Consultants</i></p> <p>Determining the footprint of deep-sea mining <i>Phil Weaver, Seascope Consultants</i></p> <p>Azores case study: Simulating the potential impact of sediment plumes on deep-sea biodiversity and human activities. <i>Telmo Morato, Instituto do Mar/University of the Azores</i></p> <p>Azores case study: Mechanical and toxicological effects of sediment plumes on cold-water corals <i>Marina Carreiro e Silva, Instituto do Mar/University of the Azores</i></p> <p>Simulating sediment plumes and particle fallout in the deep sea <i>Andrew Dale, Scottish Association of Marine Science</i></p> <p>Polymetallic nodule habitats are required to preserve abyssal biodiversity <i>Ann Vanreusel, University of Gent</i></p> <p>Strategic Environmental Management Plans – Emerging Ideas <i>David Johnson, Seascope Consultants</i></p>
11.00 - 11.30	Coffee break
11.30 - 12.30	Question and answer session
12.30 - 13.30	Lunch
13.30 - 15.00	<p>Perspectives from other participants:</p> <p>Industry</p> <p>International Seabed Authority</p> <p>NGOs</p>
15.00 - 15.30	Coffee break
15.30 - 16.30	Debate on key issues
16.30 - 17.00	Wrap up and meeting close

MIDAS Science-Policy Panel meeting 2015**List of participants**

Stijn Billiet	European Commission, DG Maritime Affairs & Fisheries
Ana Teresa Caetano	European Commission, DG Research & Innovation
Marina Carreiro e Silva	IMAR/University of the Azores
Andrew Dale	Scottish Association of Marine Science
Ann Dom	Seas At Risk
Matthew Gianni	Gianni Consultancy / Deep Sea Conservation Coalition
Vikki Gunn	MIDAS Project Manager / Seascope Consultants Ltd
Randi Hagemann	Statoil ASA
Sybille van den Hove	MEDIAN SCP
David Johnson	Seascope Consultants Ltd
Maria Manuela Juliano	IMAR/University of the Azores
Anna Karasszon	European Commission, DG Environment
Robert van de Ketterij	MTI Holland
Michael Lodge	International Seabed Authority
Marijana Mance	European Commission, DG Environment
Alec Martin	Environmental Resources Management Ltd
Telmo Morato	IMAR/University of the Azores
John Mouat	OSPAR
Kris van Nijen	Global Sea Mineral Resources
David Santillo	Greenpeace
Ricardo Santos	Member of European Parliament
Ralph Spickermann	UK Seabed Resources Ltd
Philip Stamp	Defra, UK Government
Ann Vanreusel	University of Gent
Philomene Verlaan	University of Hawaii / International Marine Minerals Society
Eva Vázquez Gómez	European Commission, DG Maritime Affairs & Fisheries
Helena Viegas	DG GROW
Tom de Wachter	DEME
Simon Walmsley	WWF International
Phil Weaver	MIDAS Coordinator / Seascope Consultants Ltd