

ISA data: what is needed for the DeepData database

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P-SIDS Regional Training and Capacity Building workshop
“Marine Scientific Research”
Tarawa, Kiribati, 12-13 August 2019

Background: Legal context

- **UNCLOS**

- Part XII: Protection and preservation of the marine environment

- Article 192: “States have the obligation to protect and preserve the marine environment.”
- Article 194(5): measures required to protect and preserve rare or fragile ecosystems [and] depleted, threatened or endangered species and other forms of marine life
- Articles 204 and 206: require both environmental impact assessment and monitoring
- Article 209: marine environmental protection requirements specifically for the Area; includes flag states
- Article 215: enforcement of marine environmental protection rules in the Area (see also Article 153(5) Part XI)

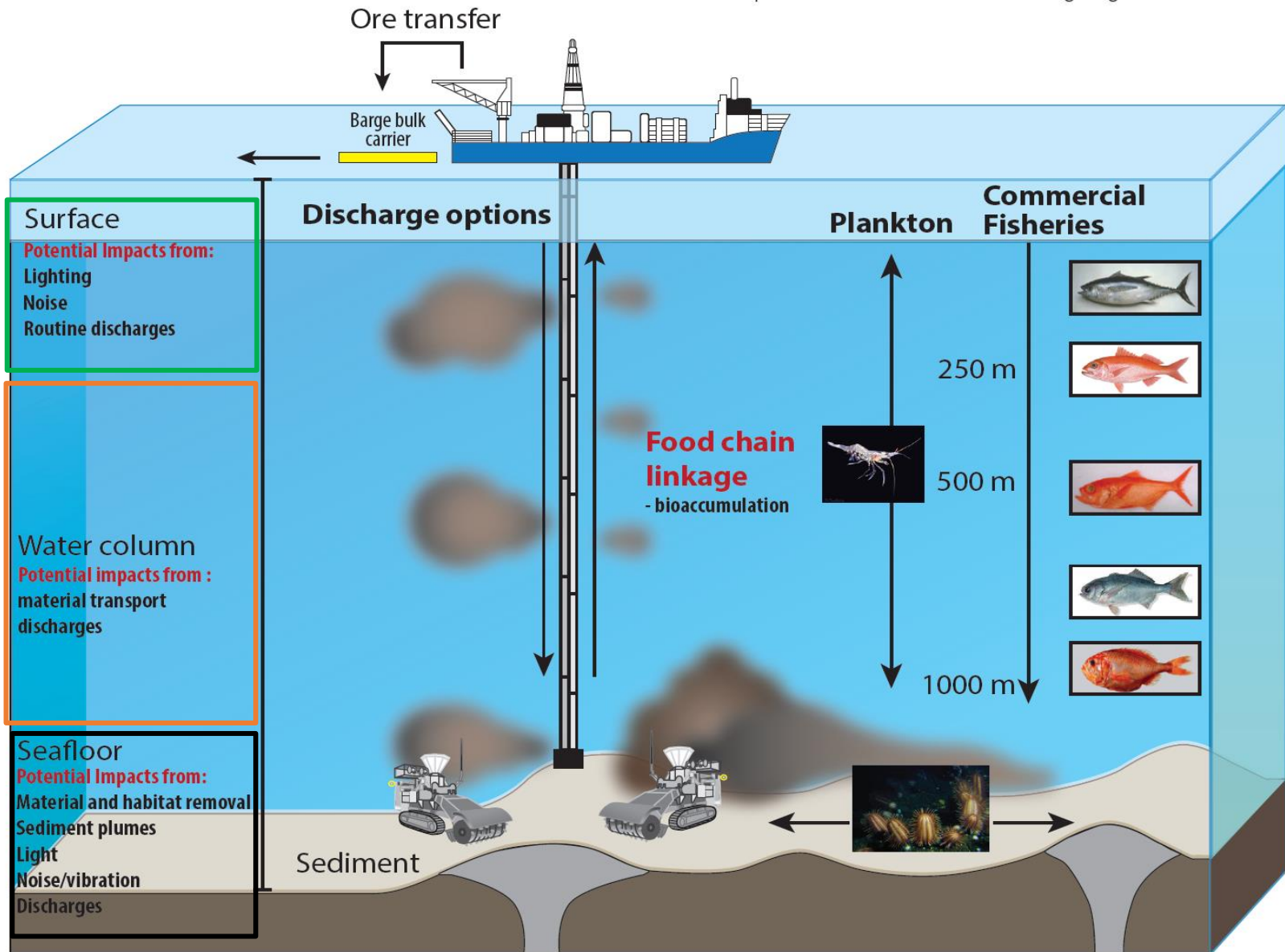
- Part XIII: Marine Scientific Research

- Articles 242 and 243: International cooperation in general and between the International Seabed Authority, state parties and contractors in particular on marine scientific research is encouraged, especially on the marine environment and related research (see also Article 143 on marine scientific research in the Area). This cooperation is essential for developing and implementing cumulative environmental impact management systems.

Background: Legal context

- **Contracts**
 - Exploration regulations
 - Developing Exploitation regulations
- Required to gather oceanographic and **environmental baseline data**, against which to assess the likely effects of its plan of work
- Required to **monitor and report** on such effects
- Inherent in this is the need for the ISA, Sponsoring States and Contractors to cooperate (as well as Part XIII – MSR).
- Requirement to collect and provide data to the ISA

Data: to assess Deep-sea mining impacts



Directed by ISA guidance on sampling and data collection

International Seabed Authority

ISBA/25/LTC/6



Legal and Technical Commission

Distr.: General
18 April 2019

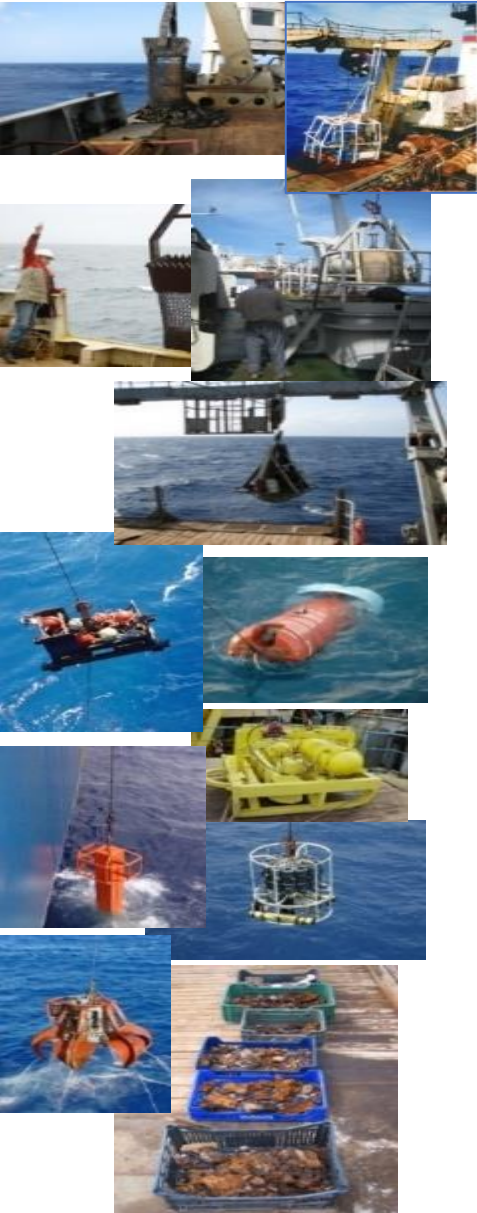
Original: English

Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area

Issued by the Legal and Technical Commission*

Note the update of this (2019). It used to be ISBA/19/LTC/8 (2013)
-filling some gaps from the earlier version (e.g., water column)
-updating some of the sampling methods/processing techniques

Detailed baseline studies are needed



Slide courtesy of Georgy Cherkachov and Pedro Madureira

Key research elements

**Physical
assessment**

**Oceanographic
assessment**

**Biological
assessment**

**Existing activities
assessment**

Air quality

Current regime

Pelagic biodiversity

Fishing

Bathymetry

Hydrodynamic
modelling

Benthic biodiversity

Tourism

Sediment
characteristics

Water quality

Ecosystem structure

Shipping

Sedimentation rates

Visual characteristics

Ecosystem function

Cultural

Reporting templates

url: <https://www.isa.org.jm/reporting-templates>



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REPORTING TEMPLATES

[Templates:](#) | [Geological Data](#) | [Environmental Data](#)

At the ISA's 21st Session in July 2015, the Legal and Technical Commission of the International Seabed Authority issued recommendations ([ISBA/21/LTC/15](#)) for the guidance of contractors on the content, format and structure of annual reports.

The recommendations should be applied by all contractors with effect from 1 January 2016.

In the recommendations, references to the “Regulations” are collective references to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area and the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area. The references to “clauses” are references to the standard clauses applicable to the particular contract in question.

The purpose of the recommendations is to provide guidance to contractors in relation to the content, format and structure of their annual reports. It includes general requirements for their annual reports and specific guidance for reporting on the exploration under contract for polymetallic nodules, polymetallic sulphides and cobalt-rich ferromanganese crusts.

Contractors

- [Polymetallic Nodules](#)
- [Polymetallic Sulphides](#)
- [Cobalt-Rich Ferromanganese](#)
- [Exploration Areas](#)
- [Environmental Impact Assessments](#)
- [Reserved Areas](#)
- [Environmental Management Plan \(EMP\)](#)
- [Reporting Templates](#)
- [Maps](#)

C4 Research Vessel

Environmental Work Reporting Template for Cobalt-Rich Ferromanganese Crust									
		Definition	Data Type	Purpose	Values				
Metadata	Cruise information	Cruise Name	text	General	Cruise, expedition name				
		Research Vessel	text	General	name				
		Leg Number	numeric	General	number of leg within the cruise				
		Geographical Area	text	General	Pacific Ocean, etc				
		Area sector	text	General	CCZ etc				
	Sampling protocol	Station name or code	text	General	Unique station Identifier				
		Date	numeric	General	yyyy-mm-dd				
		Habitat sampled	text	General	water column, sediment, rock, crust				
		Sampling start time	numeric	General	hh:mm:ss				
		Sampling start depth	numeric	Location	maximun bottom depth [m]				
		Sampling start latitude	numeric	Location	decimal deg (instrument at seafloor)				
		Sampling start longitude	numeric	Location	decimal deg (instrument at seafloor)				
		Sampling end time	numeric	General	hh:mm:ss				
		Sampling end depth	numeric	Location	maximun bottom depth [m]				
		Sampling end latitude	numeric	Location	decimal deg (instrument at seafloor)				
		Sampling end longitude	numeric	Location	decimal deg (instrument at seafloor)				
		Area or Volume sampled	numeric	General	m ² or l, respectively				
		Exploration Block ID	text	General	Exploration block identifier				
		Station name or number	text	General	Unique station Identifier				
		Crust Coverage	numeric	General	Crust coverage in % at sampling station				
		Remarks/Comments	text	General	Other relevant information				
		Sample ID	alphanumeric	General	Unique sample identifier				
		Sampling Gear (code)	text	Technical	box core, corer, other				
		Location of samples	text	General	storage location on land				

Pelagic and benthic biological samples																		
Identification: Species	Number of individuals	Species density (ind/m ²); (ind/m ³)	Relative abundance (%)	Relative dominance (%)	Identification: putative species code	Morphological Taxonomist	Morphological Taxonomist E-mail	Morphological Taxonomist Institution	Voucher specimen code	DNA: Phylum								
Water Column Geochemistry																		
Water Temperature (°C) Casts	Salinity (ppt) casts	pH casts	DO (ml/l) casts	Turbidity casts	Any other parameters measured...	NO ₂ -N (mg/l)	NO ₃ -N (mg/l)	PO ₄ -P (mg/l)	SiO ₂ (mg/l)	TOC (ug/l)	Chlorophyll (mg/l)	TIN (mg/l)	NH ₄ -N (mg/l)	TP (mg/l)	Ca	TN	POC	Sampling Gear
Benthic Geochemistry																		
Sediment Layer (cm)	Sampling Gear	Dissolved Metal Species at Bottom	Ca (mg/kg or mg/l)	Zn (mg/kg or mg/l)	Cu (mg/kg or mg/l)	Pb (mg/kg or mg/l)	Mn (mg/kg or mg/l)	Fe (mg/kg or mg/l)	Co (mg/kg or mg/l)	Cd (mg/kg or mg/l)	Hg (mg/kg or mg/l)							

Central Data Repository

<https://www.isa.org.jm/central-data-repository>



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CENTRAL DATA REPOSITORY

The new Central Data Repository (CDR) will hold centralized data of public and private information on marine mineral resources acquired from various institutions worldwide. The Authority uses this data to standardize and evaluate data for quantitative mineral assessments. The integrated database system will be developed for use as a management and research tool that will be made accessible to authorized representatives of member States, scientists and researchers to further assist the Authority in its mandated work.

The original CDR was established in 2000 to allow for the creation of uniform data formats and useful summaries made accessible to authorized users. As a preliminary phase, the Secretariat has assembled information concerning the form and availability of relevant data within 18 institutions worldwide. It commenced the project in 2001 with the collection of data and information related to polymetallic nodules and ferromanganese crusts. The data collection was enriched in late 2002 with the receipt of data pertaining to hydrothermal vent systems and polymetallic sulphides. The CDR will also host the following databases:

Minerals

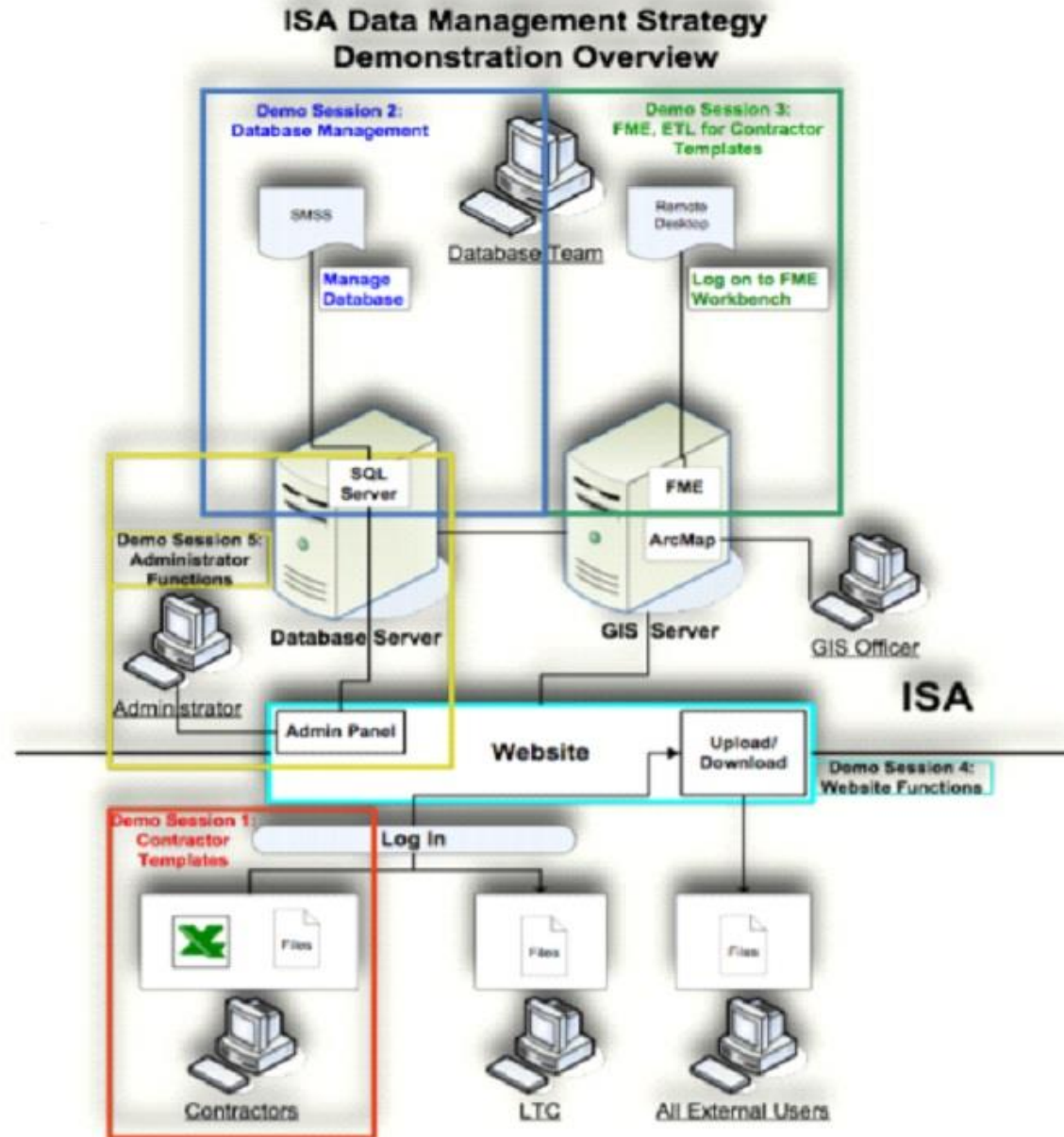
- ▼ Polymetallic Nodules
 - Regulations
 - Recommendations
 - Contractors
- ▼ Polymetallic Sulphides
 - Regulations
 - Recommendations
 - Contractors
- ▼ Ferromanganese Crusts
 - Regulations
 - Recommendations
 - Contractors
- Central Data Repository

DeepData

Launched JULY 2019

<https://data.isa.org.jm/isa/map/>

Over to Sheldon...



Multiple data sources

- ISA DeepData
 - Good for both geological and environmental data in licence areas, but not regional, and largely recent only (2016 onwards)
- Global databases
 - GEBCO bathymetry
 - World Ocean Atlas (global environmental data)
 - NOAA World Ocean Database (climate laboratory)
 - ARGO oceanographic database for current flows
 - Earthchem (Petrology db) ocean floor geology
 - OBIS (Ocean Biodiversity Information System) species distributions
- Regional datasets and institutional resources
 - SPC (PCCOS), SOPAC DSM data, SPREP
 - New Zealand and Australia (dbases held by institutes such as NIWA, CSIRO)
- **Need to utilise and integrate across all data sources**

