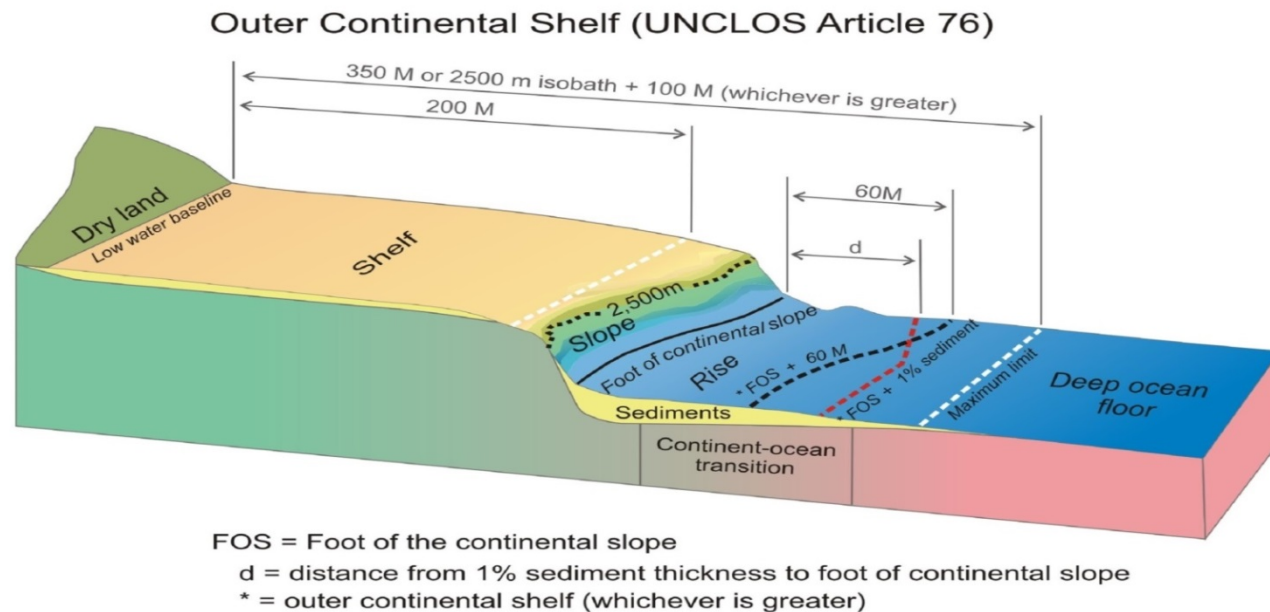


Development of deep sea mineral resources **in the Area**:
the need for adopting international reporting template for
standardization of the exploration and resource data.



Pratima Jauhari

International Seabed Authority (ISA)
Kingston, Jamaica

“AREA”

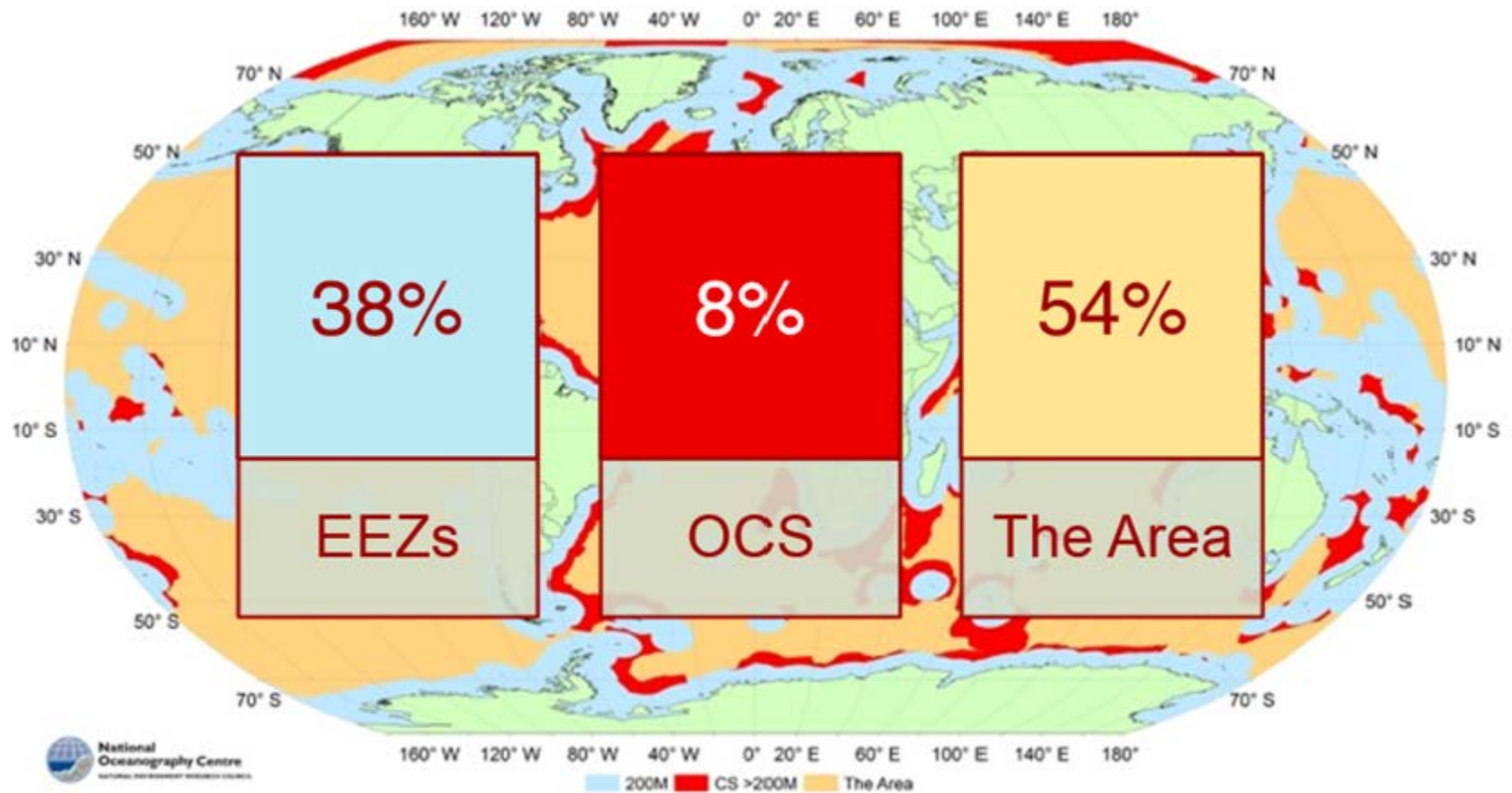
Part XI and Annexes III and IV of the 1982 United Nations Convention on the Law of the Sea [**UNCLOS**] and the 1994 Agreement relating to the Implementation of **Part XI**

For the purpose of this Convention:

- 1. “Area” means the seabed and ocean floor and subsoil thereof, beyond the limits of the national jurisdiction**
- 2. “Authority” means International Seabed Authority**

In accordance with UNCLOS [**“the Convention”**], the seabed and ocean floor and the subsoil thereof beyond the limits of national jurisdiction, **as well as its resources, are the common Heritage of mankind**, the exploration and exploitation of which shall be carried out for the Benefit of mankind as a whole, on whose behalf the International Seabed Authority acts.

Legal Status of the Area



Who can access the Area?

Access for qualified applicants only, i.e. Contract with ISA

- **State party to the 1982 Convention**
- **State enterprise sponsored by a State party or**
- **Natural or juridical person possessing the nationality of a State Party & sponsored by a State Party or**
- **The Enterprise**

UNCLOS & PMN

- **It has been PMN/manganese nodules, that resulted in the establishment of the ISA. An entire section of Part XI of the Convention is dedicated to PMN, which gave scientists & engineers at that time to become part of the deliberations leading to the adoption of the Convention of the Law of the Sea.**

It has been long road since.



Structure and functions of the International Seabed Authority

Established under the United Nations Convention on the Law of the Sea 1982 and the 1994 Agreement for the Implementation of Part XI of the Convention

Principal organs

Article 158(3) – “Each principal organ of the Authority and the Enterprise shall be responsible for exercising those powers and functions which are conferred on it.”

Assembly

168 States and the European Union
Article 160 – Supreme organ of the Authority with the power to establish general policies on any question or matter within the competence of the Authority

Finance Committee

1994 Agreement (Section 9) – Composed of 15 members, which must include 5 largest contributors for as long as Authority relies on assessed contributions.

Council

Secretariat

The Enterprise

■ Group A (4)

Major consumers:
Currently China, Italy, Japan, Russian Federation

■ Group B (4)

Major investors:
Currently France, Germany, India, ROK

■ Group E (18)

Equitable geographic representation:
Currently Argentina, Cameroon, Czech Republic, Ghana, Guyana, Indonesia, Kenya, Mozambique, Mexico, Namibia, Netherlands, Nigeria, Norway, Poland, Senegal, Singapore, Spain, Tonga, Trinidad & Tobago.

■ Group C (4)

Major exporters:
Currently Australia, Canada, Chile, South Africa

■ Group D (6)

Developing States and special interests:
Currently Bangladesh, Brazil, Fiji, Jamaica, Lesotho, Uganda

■ Secretary-General

40 Professional and technical staff

Article 170 - The Enterprise shall be the organ of the Authority which shall carry out activities in the Area directly.
1994 Agreement (Section 2) - The Secretariat shall perform the functions of the Enterprise until it begins to operate independently of the Secretariat. Interim Director-General to be appointed from within the staff of the Authority

■ Legal and Technical Commission

Articles 163 and 165 – Composed of 15 members, currently enlarged to 25.

■ Economic Planning Commission

Articles 163 and 164, 1994 Agreement (Section 1)
Not currently operational. Functions carried out by Legal and Technical Commission

Contracts: current status

- To date **26 Contracts for exploration have been signed. Two are pending signature** – China Minmetals Corporation (Nodules, approved 20 July 2015 & Republic of Korea (Co-rich crusts, approved July 2016)
- Of the contracts signed **16** are for **PMN**, **6** for **PMS** & **4** for **Co-rich crusts**
- China and Russian Federation have **signed for all three minerals**
- Korea, France, Germany have signed contracts for **PMN & PMS**
- Japan **signed for PMN and Co-rich Crusts**

LIST OF CONTRACTORS

Contracts for exploration for polymetallic Nodules

| Contractor | Date of entry into force of contract | Sponsoring State | General location of the exploration area under contract | Date of expiry of contract | Contractor | Date of entry into force of contract | Sponsoring State | General location of the exploration area under contract | Date of expiry of contract |
|---|--------------------------------------|---|---|--------------------------------|--|--|--|---|----------------------------|
| Yuzhmorgeologiya | 29 March 2001 29 March 2016* | Russian Federation | Clarion-Clipperton Fracture Zone | 28 March 2016 28 March 2021 | G-TEC Sea Mineral Resources NV (see Global Sea Mineral Resources NV (GSR)) | 14 January 2013 | Belgium | Clarion-Clipperton Fracture Zone | 13 January 2028 |
| Interoceanmetal Joint Organization | 29 March 2001 29 March 2016* | Bulgaria, Cuba, Czech Republic, Poland, Russian Federation and Slovakia | Clarion-Clipperton Fracture Zone | 28 March 2016 28 March 2021 | | UK Seabed Resources Ltd. | 8 February 2013 | United Kingdom of Great Britain and Northern Ireland | 7 February 2028 |
| Government of the Republic of Korea | 27 April 2001 27 April 2016* | | Clarion-Clipperton Fracture Zone | 26 April 2016 26 April 2021 | Marawa Research and Exploration Ltd. | 19 January 2015 | Kiribati | Clarion-Clipperton Fracture Zone (reserved area) | 18 January 2030 |
| China Ocean Mineral Resources Research and Development Association (COMRA) | 22 May 2001 22 May 2016* | China | Clarion-Clipperton Fracture Zone | 21 May 2016 21 May 2021 | Ocean Mineral Singapore Pte. Ltd. | Kingston 15 January 2015; Singapore 22 January 2015 | Singapore | Clarion-Clipperton Fracture Zone (reserved area) | 21 January 2030 |
| Deep Ocean Resources Development Co. Ltd. | 20 June 2001 20 June 2016* | Japan | Clarion-Clipperton Fracture Zone | 19 June 2016 19 June 2021 | UK Seabed Resources Ltd. 2 | 29 March 2016 | United Kingdom of Great Britain and Northern Ireland | Clarion-Clipperton Fracture Zone | 28 March 2031 |
| Institut français de recherche pour l'exploitation de la mer | 20 June 2001 20 June 2016* | France | Clarion-Clipperton Fracture Zone | 19 June 2016 19 June 2021 | Cook Islands Investment Corporation | 15 July 2016 | Cook Islands | Clarion-Clipperton Fracture Zone | 14 July 2031 |
| Government of India | 25 March 2002 | | Indian Ocean | 24 March 2017 | China Minmetals Corporation | <i>To be signed</i> | the People's Republic of China | Clarion-Clipperton Fracture Zone (reserved area) | |
| Federal Institute for Geosciences and Natural Resources of Germany | 19 July 2006 | Germany | Clarion-Clipperton Fracture Zone | 18 July 2021 | | | | | |
| Nauru Ocean Resources Inc. | 22 July 2011 | Nauru | Clarion-Clipperton Fracture Zone (reserved area) | 21 July 2026 | | | | | |
| Tonga Offshore Mining Limited | 11 January 2012 | Tonga | Clarion-Clipperton Fracture Zone (reserved area) | 10 January 2027 | | | | | |

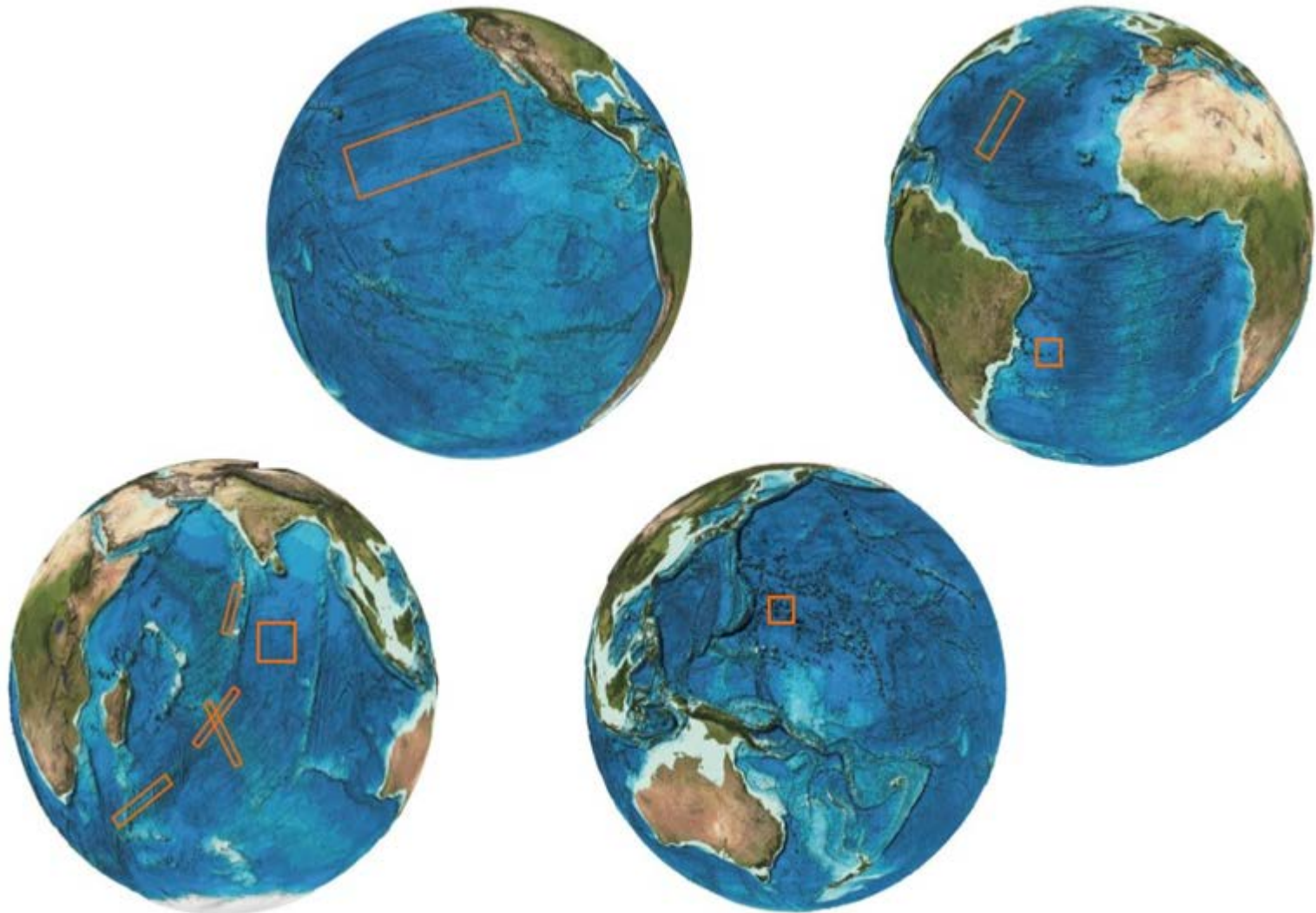
Contracts for exploration for polymetallic sulphides

| Contractor | Date of entry into force of contract | Sponsoring State | General location of the exploration area under contract | Date of expiry of contract |
|---|---|-------------------------|--|-----------------------------------|
| China Ocean Mineral Resources Research and Development Association (COMRA) | 18 November 2011 | China | South-west Indian Ridge | 17 November 2026 |
| Government of the Russian Federation | 29 October 2012 | Russian Federation | Mid-Atlantic Ridge | 28 October 2027 |
| Government of the Republic of Korea | 24 June 2014 | Korea | Central Indian Ocean | 23 June 2029 |
| Institut français de recherche pour l'exploitation de la mer | 18 November 2014 | France | Mid-Atlantic Ridge | 17 November 2029 |
| Federal Institute for Geosciences and Natural Resources of the Federal Republic of Germany (BGR) | 6 May 2015 | Germany | Central Indian Ridge and Southeast Indian Ridge | 5 May 2030 |
| Government of India | 26 September 2016 | | Indian Ocean Ridge | 25 September 2031 |

Contracts for exploration for cobalt-rich ferromanganese crusts

| Contractor | Date of entry into force of contract | Sponsoring State | General location of the exploration area under contract | Date of expiry of contract |
|---|---|-------------------------|--|-----------------------------------|
| Japan Oil, Gas and Metals National Corporation (JOGMEC) | 27 January 2014 | Japan | Western Pacific Ocean | 26 January 2029 |
| China Ocean Mineral Resources Research and Development Association (COMRA) | 29 April 2014 | China | Western Pacific Ocean | 28 April 2029 |
| Ministry of Natural Resources and Environment of the Russian Federation | 10 March 2015 | Russian Federation | Magellan Mountains in the Pacific Ocean | 9 March 2030 |
| Companhia de Pesquisa de Recursos Minerais S.A. | 9 November 2015 | Brazil | Rio Grande Rise in the South Atlantic Ocean | 8 November 2030 |
| Government of the Republic of Korea | <i>To be signed</i> | | East of the Northern Mariana Islands in the Pacific Ocean | |

Contract Areas issued by the ISA

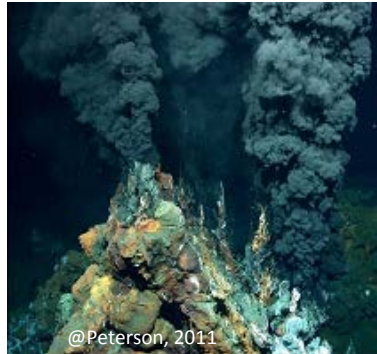


CRIRSCO & the Authority

ISA has 168 countries as Member States

CRIRSCO's application for 'Observer' status, was approved by the ISA GA in July 2014

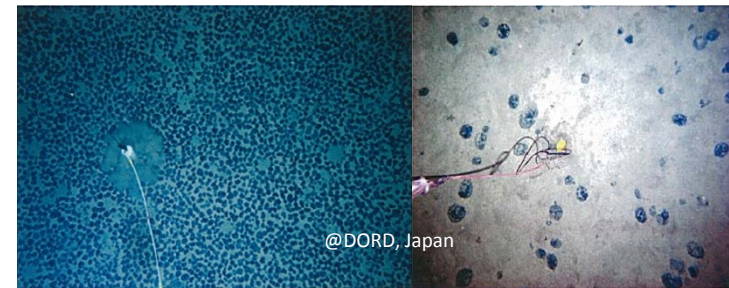
Mid-ocean Ridges Back Arc Basin



Sea mounts



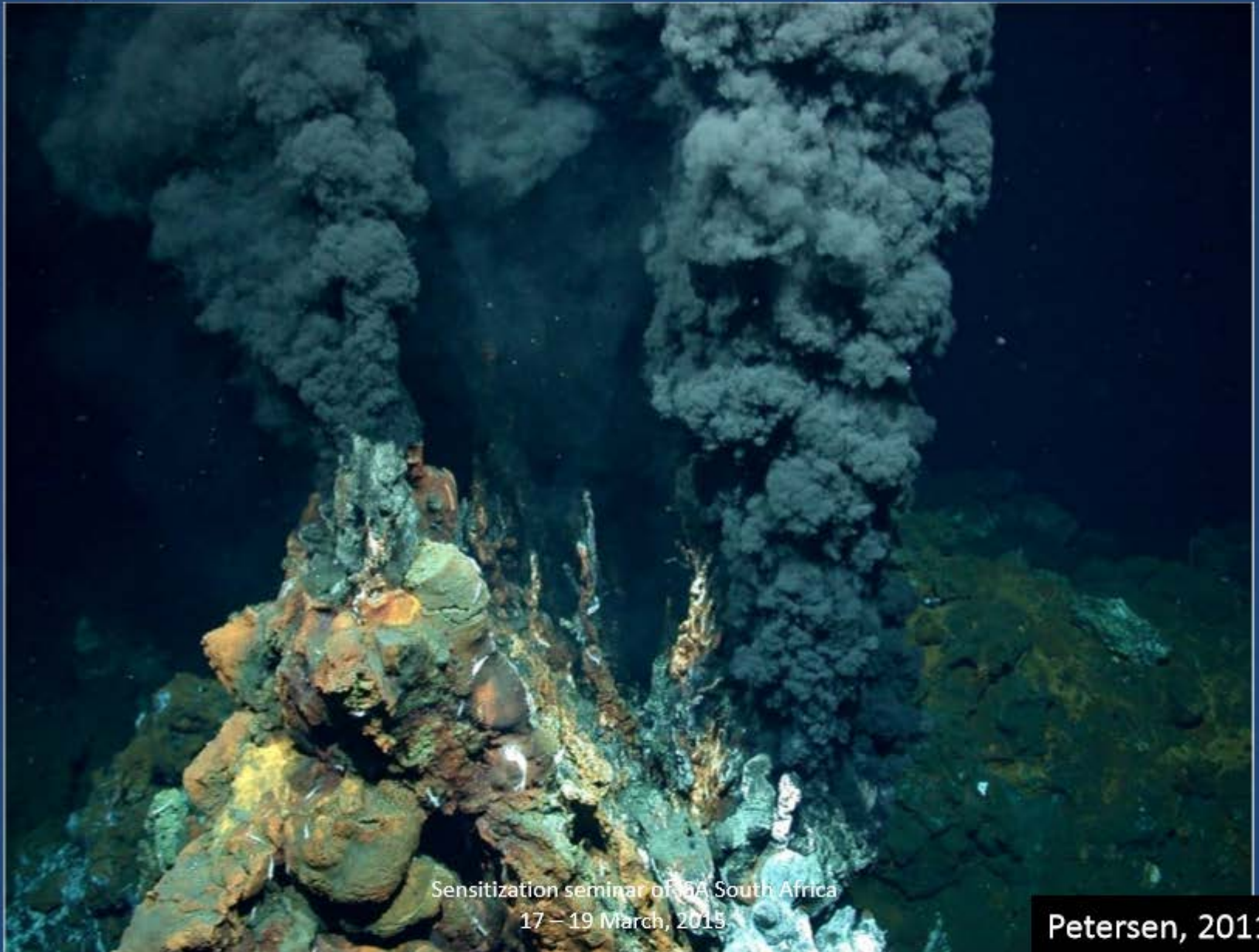
Abyssal Plains



| Depth (m) | 1,500-5,000 | 4,00 - 4,000 | 4 – 6,000 |
|----------------|--------------------|-------------------------------|-----------------------------|
| Major Minerals | Copper, Zinc, Lead | Manganese, Iron | Manganese, Iron |
| Minor Minerals | Gold, Silver, REE | Cobalt, Nickel, Platinum, REE | Copper, Nickel, Cobalt, REE |

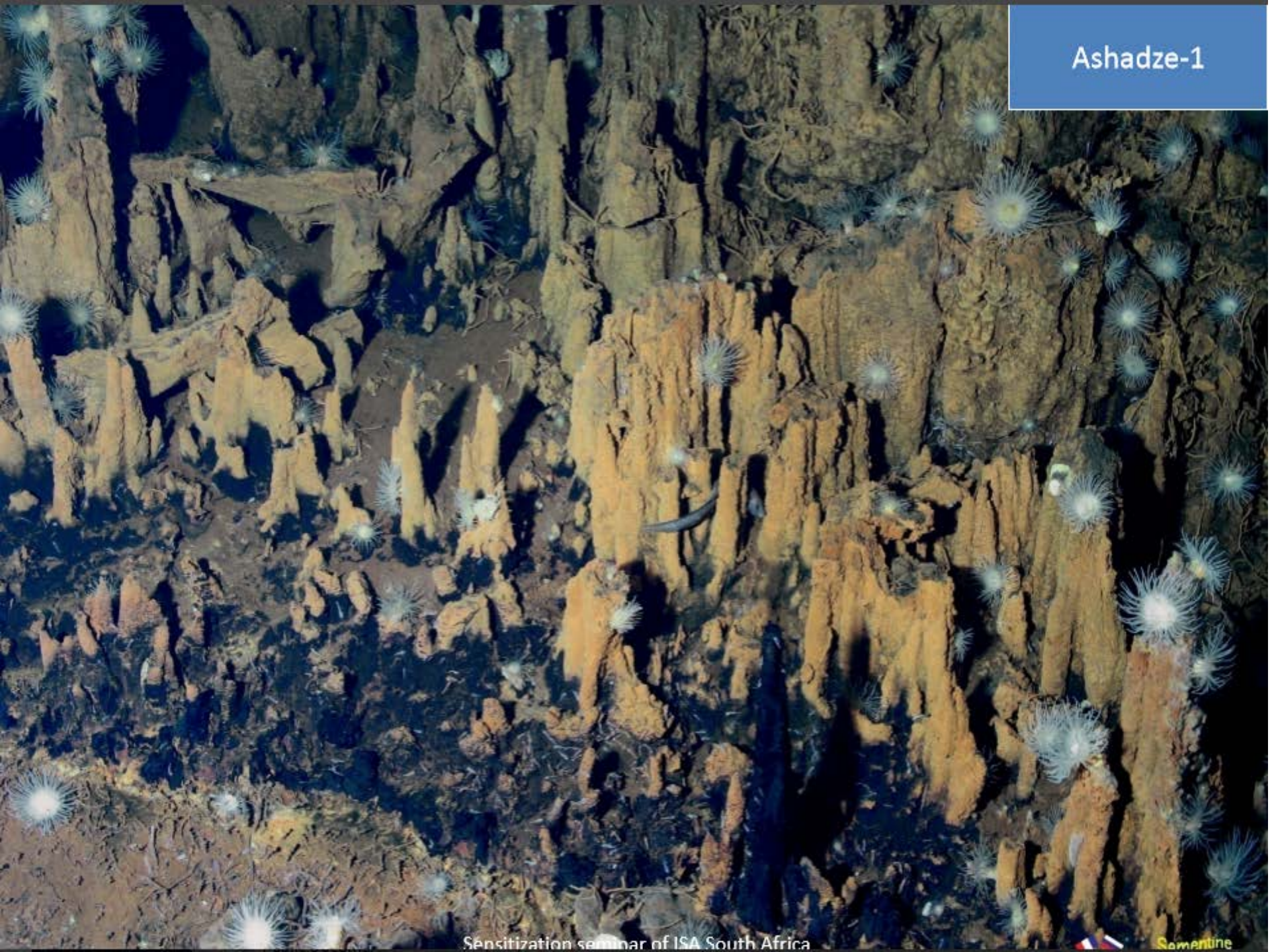
«Black smokers»

Hot(>350°C) metal-rich fluid discharging at the seabottom

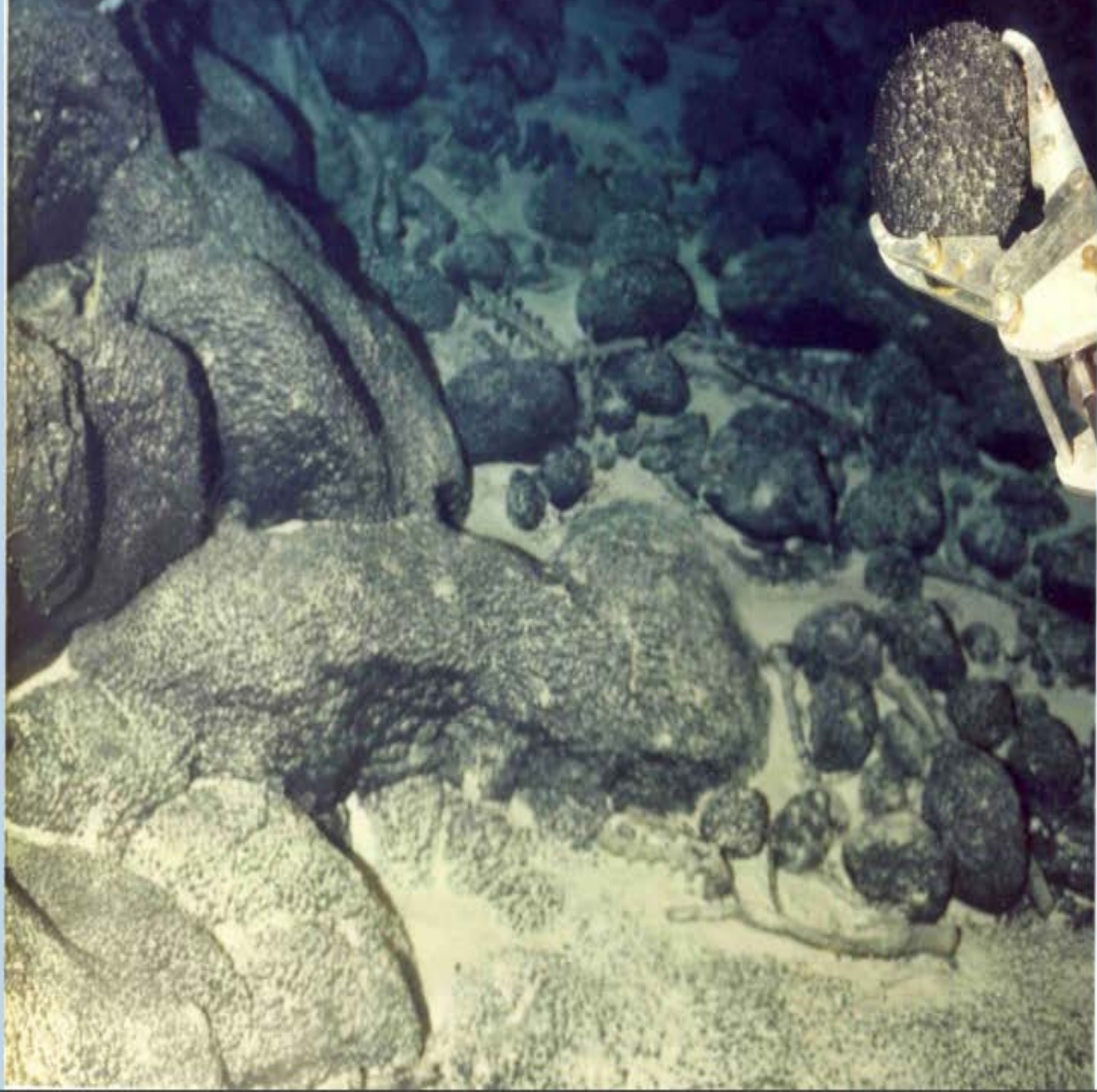


Sensitization seminar of SA South Africa
17 – 19 March, 2015

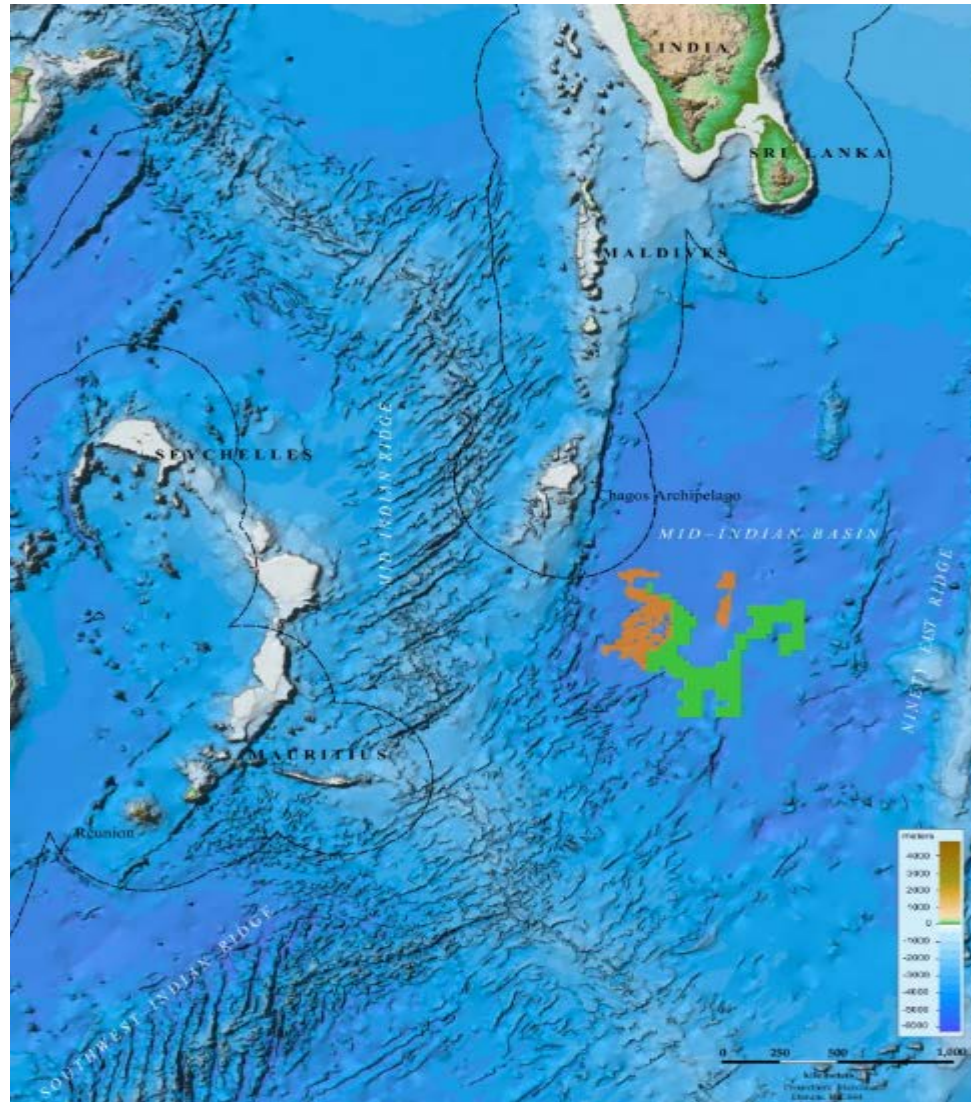
Petersen, 2011



Crusts and nodules



Polymetallic Nodules

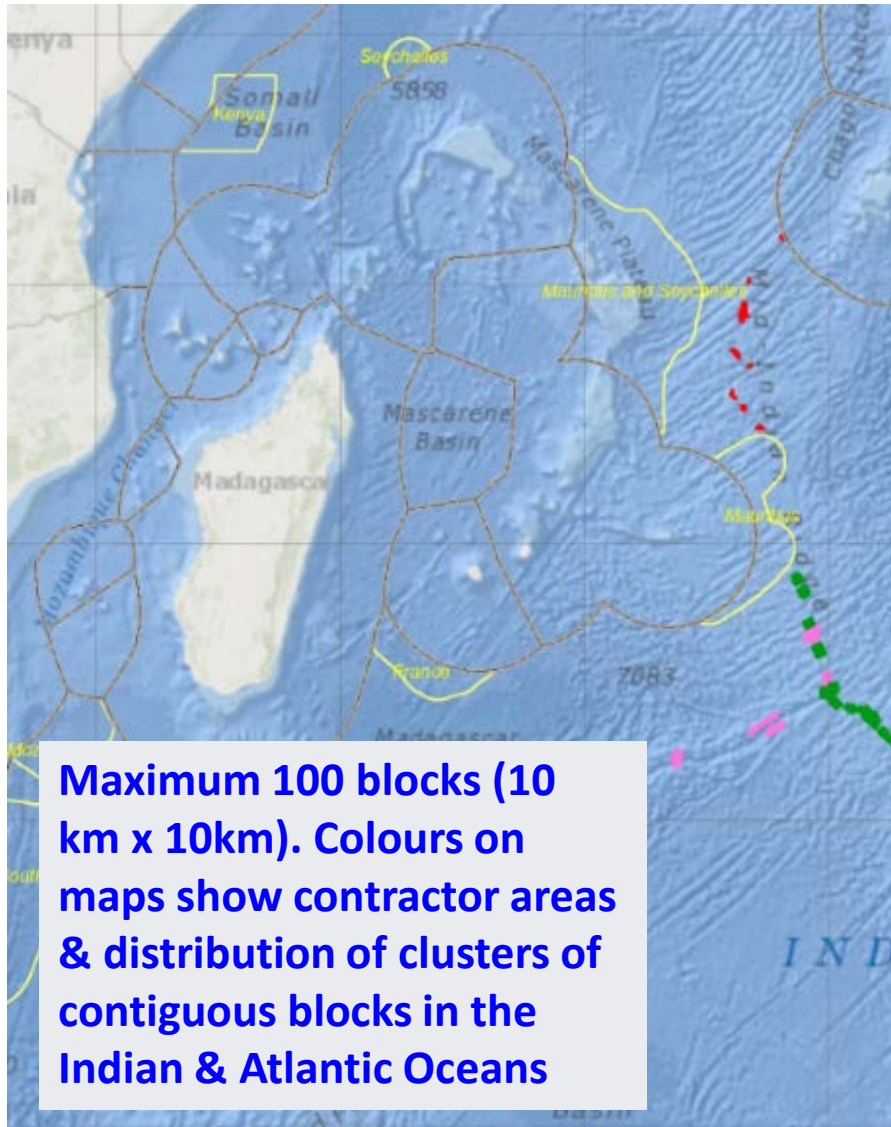


Two sites of equal estimated commercial value (one for the Contractor, one to be reserved).

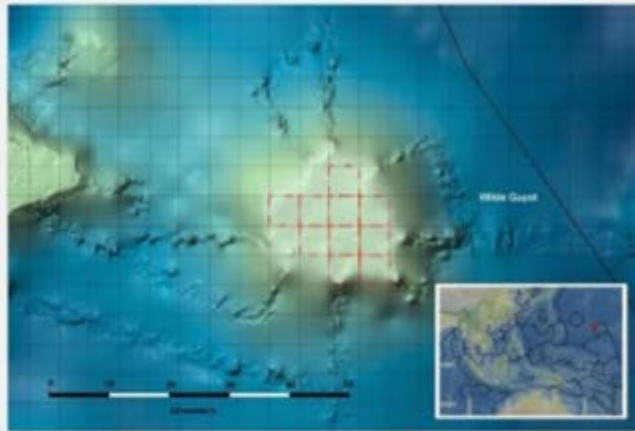
Each site not more than 150,000 Km² in size, relinquish to 75,000 km²

Any geographical configuration and need not be a single 'continuous' area.

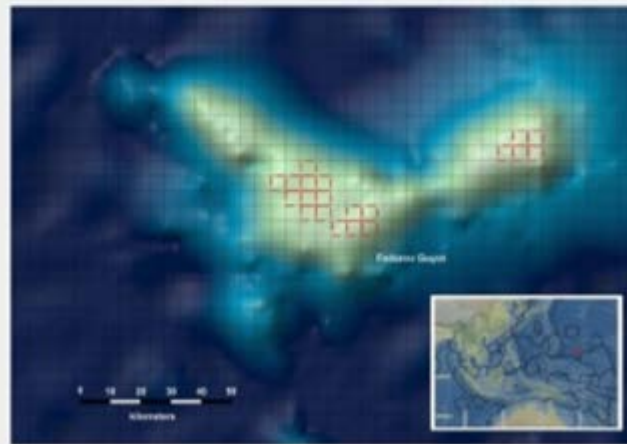
Polymetallic sulphides



Cobalt-rich crusts



Example: Wilde Guyot with cluster of 10 blocks (5 x 5 km)



Example: Fedorov Guyot with 20 blocks (5 x 5 km) in 2 clusters

Exploration Block (5 x 5 km) Limits of Exclusive Economic Zones (Indicative only)

Each exploration block no more than 20 Km² , may be square or rectangle.

Maximum of 150 blocks, arranged in clusters of maximum 5 contiguous Blocks.

Clusters need not be contiguous but must be in a constraint area measuring 550 x 550 Km² .

Total exploration area 3,000 Km² , to be relinquished down to 500 Km² .

Contractors – some obligations

- Under the Regulations on Prospecting and Exploration, an exploration Contract is for **fifteen years duration**, and is to be executed in **three phases of five years** each.
- Each contractor is required to submit an **annual report** to the **Secretary General** covering the program of activities in their exploration area
- Upon expiry of contract the Contactor shall submit the data & information to the Secretary General. This includes estimation of mineable areas, grade and quantity of the **proven, probable and possible nodule reserves** & anticipated mining conditions.

➤ **Six contracts were to expire in 2016 and one in 2017.**

These are given further extension of five years. One application is under processing

➤ **Unlike land based resources, there were no standards in place for deep sea minerals for assessment & categorizing mineral deposits**

➤ **Therefore, ISA organized a workshop in collaboration with MOES-India in Goa in October 2014. CRIRSCO experts helped in the workshop.**

➤ **ISA Template** has been prepared at the request of ISA by a group **which included CRIRSCO experts**, Dr. C. Antrim, Dr. H. Parker, Dr. P. Stephenson with inputs from other CRIRSCO members. It follows guidelines drawn up by a working group a workshop convened by the Authority.....at Goa, **India, 2014.**

Mining Journal – 31 May 2016:

The International Seabed Authority (ISA)....

Since the standard is based on the November 2013 edition of the International reporting template (IRT) of CRIRSCO, it will ensure that private reports lodged with the ISA follow the same guiding principles and use the same definitions as public reports that comply with reporting standards such as CRIRSCO, JORC 43-101, SAMREC, etc.

“The new ISA reporting standard provides extensive guidelines for the reporting of seafloor mineral resources.”

A beginning has been made. 2015 annual reports had three contractors follow the ISA Template. The LTC has advised all contractors to follow the Template for reporting

✓ This work has to continue for Polymetallic sulphides and Co-rich Crusts

Mining Code

Authority is engaged in formulating a mining code for PMN. This marks a New phase in the work of Authority. This is a transition of MSR to commercialization of the discovered ore deposits.

It is important that resource assessment standards are in place in relation to resource assessment



Press Release

Number 2016 – 25

Nautilus Minerals EGM Results – Shareholders approve bridge financing

Toronto Ontario, October 26, 2016 - Nautilus Minerals Inc. (TSX:NUS, OTCQX:NUSMF, OTC:NUSMF Nasdaq Intl Designation) (the "Company" or "Nautilus") announces the results of its Extraordinary General Meeting (EGM) held today in Vancouver, BC.

Neither the TSX nor the OTCQX accepts responsibility for the adequacy or accuracy of this press release.

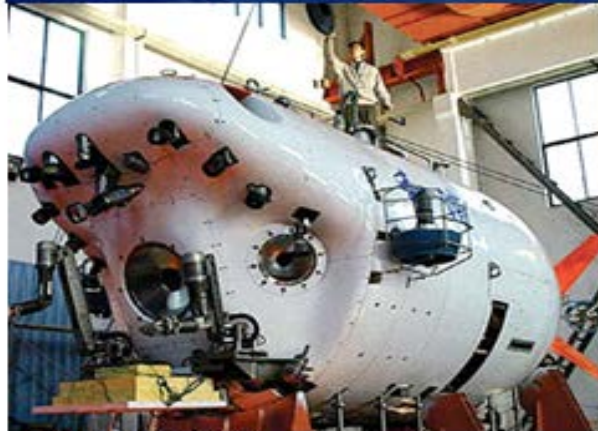
“As the company has not completed an economic study in respect of the Solvara Project, there can be no assurance that the company’s production plans will, if fully funded and implemented, successfully demonstrate that seafloor production is commercially viable.”

THANK-YOU!

AUV-R2D4



ROV-Victor

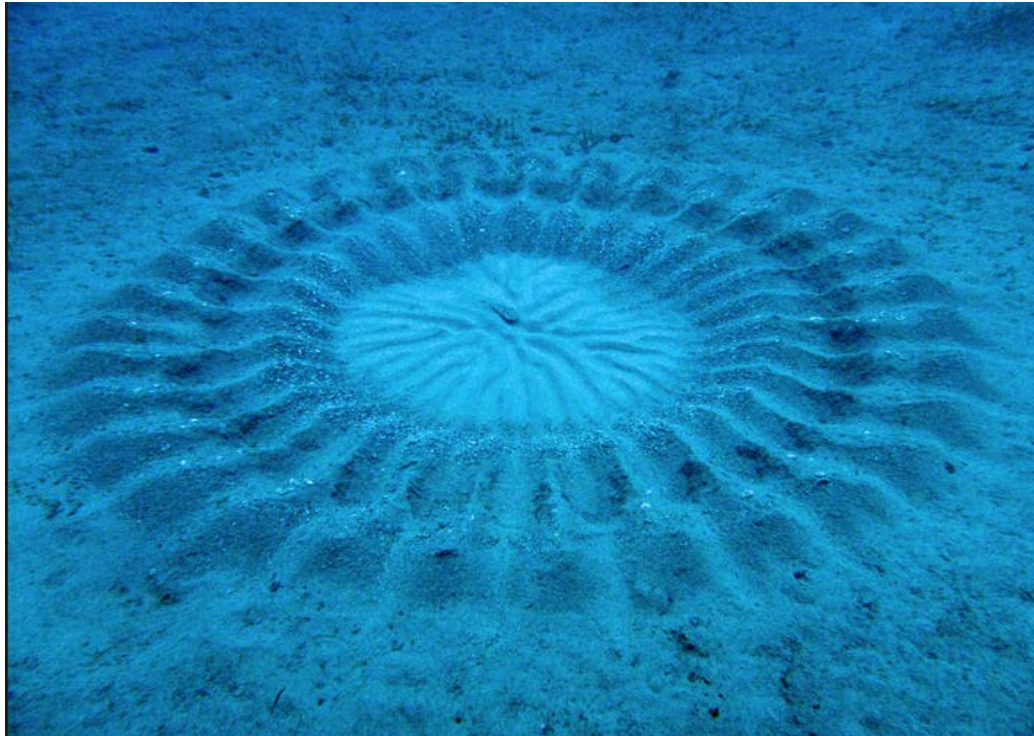


HOV-Jiaolong

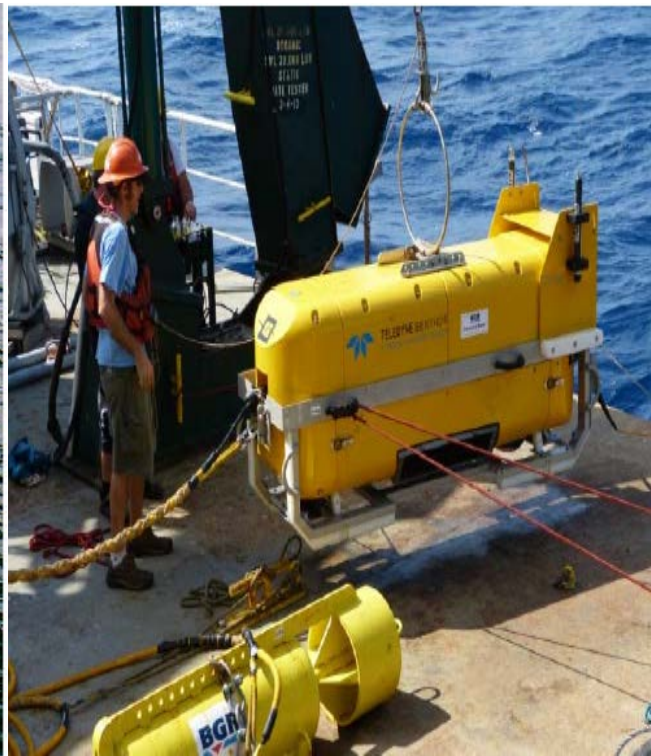
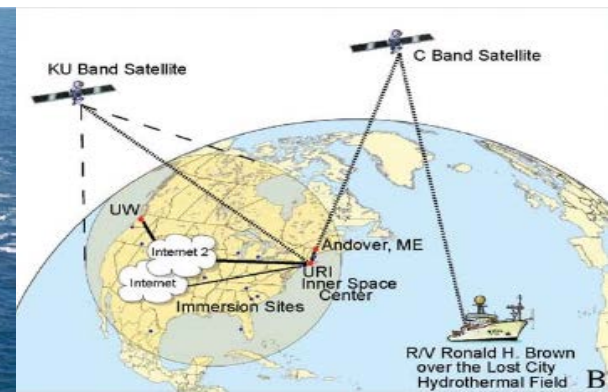


ROV Deep Discoverer

Magnificent fish-working on the sea floor.



Exploration technology





The United Nations System



UN Principal Organs

General Assembly

Security Council

Economic and Social Council

Secretariat

International Court of Justice

Trusteeship Council⁶

Subsidiary Organs

Main and other sessional committees
Disarmament Commission
Human Rights Council
International Law Commission
Standing committees and ad hoc bodies

Funds and Programmes¹

UNDP United Nations Development Programme
• **UNCDF** United Nations Capital Development Fund
• **UNV** United Nations Volunteers
UNEP⁸ United Nations Environment Programme
UNFPA United Nations Population Fund
UN-HABITAT⁸ United Nations Human Settlements Programme
UNICEF United Nations Children's Fund
WFP World Food Programme (UN/FAO)

Research and Training

UNIDIR United Nations Institute for Disarmament Research
UNITAR United Nations Institute for Training and Research
UNSSC United Nations System Staff College
UNU United Nations University

Other Entities

ITC International Trade Centre (UN/WTO)
UNCTAD^{1,8} United Nations Conference on Trade and Development
UNHCR¹ Office of the United Nations High Commissioner for Refugees
UNOPS United Nations Office for Project Services
UNRWA¹ United Nations Relief and Works Agency for Palestine Refugees in the Near East
UN-Women¹ United Nations Entity for Gender Equality and the Empowerment of Women

Related Organizations

CTBTO Preparatory Commission
Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization
IAEA^{1,3} International Atomic Energy Agency
ICC International Criminal Court
ISA International Seabed Authority
ITLOS International Tribunal for the Law of the Sea
OPCW³ Organisation for the Prohibition of Chemical Weapons
WTO^{1,4} World Trade Organization

Subsidiary Organs

Counter-terrorism committees
International Criminal Tribunal for Rwanda (ICTR)

International Criminal Tribunal for the former Yugoslavia (ICTY)
Mechanism for International Criminal Tribunals (MICT)
Military Staff Committee

Peacekeeping operations and political missions
Sanctions committees (ad hoc)
Standing committees and ad hoc bodies

Advisory Subsidiary Body

Peacebuilding Commission

HLPF High-level Political Forum on sustainable development

Functional Commissions

Crime Prevention and Criminal Justice
Narcotic Drugs
Population and Development
Science and Technology for Development
Social Development
Statistics
Status of Women
United Nations Forum on Forests

Regional Commissions⁸

ECA Economic Commission for Africa
ECE Economic Commission for Europe
ECLAC Economic Commission for Latin America and the Caribbean
ESCAP Economic and Social Commission for Asia and the Pacific
ESCWA Economic and Social Commission for Western Asia

Other Bodies

Committee for Development Policy
Committee of Experts on Public Administration
Committee on Non-Governmental Organizations
Permanent Forum on Indigenous Issues
UNAIDS Joint United Nations Programme on HIV/AIDS
UNGEGN United Nations Group of Experts on Geographical Names

Research and Training

UNICRI United Nations Interregional Crime and Justice Research Institute
UNIRISD United Nations Research Institute for Social Development

Specialized Agencies^{1,5}

FAO Food and Agriculture Organization of the United Nations
ICAO International Civil Aviation Organization
IFAD International Fund for Agricultural Development
ILO International Labour Organization
IMF International Monetary Fund
IMO International Maritime Organization
ITU International Telecommunication Union
UNESCO United Nations Educational, Scientific and Cultural Organization

UNIDO United Nations Industrial Development Organization
UNWTO World Tourism Organization
UPU Universal Postal Union
WHO World Health Organization
WIPO World Intellectual Property Organization
WMO World Meteorological Organization
World Bank Group⁷
• **IBRD** International Bank for Reconstruction and Development
• **IDA** International Development Association
• **IFC** International Finance Corporation

Departments and Offices

EOSG Executive Office of the Secretary-General
DESA Department of Economic and Social Affairs
DFS Department of Field Support
DGACM Department for General Assembly and Conference Management
DM Department of Management
DPA Department of Political Affairs
DPI Department of Public Information
DPKO Department of Peacekeeping Operations
DSS Department of Safety and Security
OCHA Office for the Coordination of Humanitarian Affairs

OHCHR Office of the United Nations High Commissioner for Human Rights
OIOS Office of Internal Oversight Services
OIA Office of Legal Affairs
OSAA Office of the Special Adviser on Africa
PBSO Peacebuilding Support Office
SRSG/CAAC Office of the Special Representative of the Secretary-General for Children and Armed Conflict
SRSG/SVC Office of the Special Representative of the Secretary-General on Sexual Violence in Conflict
UNISDR United Nations Office for Disaster Risk Reduction

UNODA United Nations Office for Disarmament Affairs
UNODC¹ United Nations Office on Drugs and Crime
UNOG United Nations Office at Geneva
UN-OHRLS Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States
UNON United Nations Office at Nairobi
UNOP² United Nations Office for Partnerships
UNOV United Nations Office at Vienna

Notes:

- All members of the United Nations System Chief Executives Board for Coordination (CEB).
- UN Office for Partnerships (UNOP) is the UN's focal point vis-à-vis the United Nations Foundation, Inc.
- IAEA and OPCW report to the Security Council and the GA.
- WTO has no reporting obligation to the GA, but contributes on an ad hoc basis to GA and Economic and Social Council (ECOSOC) work on, inter alia, finance and development issues.
- Specialized agencies are autonomous organizations whose work is coordinated through ECOSOC (intergovernmental level) and CEB (inter-secretariat level).
- The Trusteeship Council suspended operation on 1 November 1994, as on 1 October 1994 Palau, the last United Nations Trust Territory, became independent.
- International Centre for Settlement of Investment Disputes (ICSID) and Multilateral Investment Guarantee Agency (MIGA) are not specialized agencies but are part of the World Bank Group in accordance with Articles 57 and 63 of the Charter.
- The secretariats of these organs are part of the UN Secretariat.