

Proposal of the **TRIANGLE PROJECT** for cobalt-rich ferromanganese crusts in the northwest Pacific Ocean

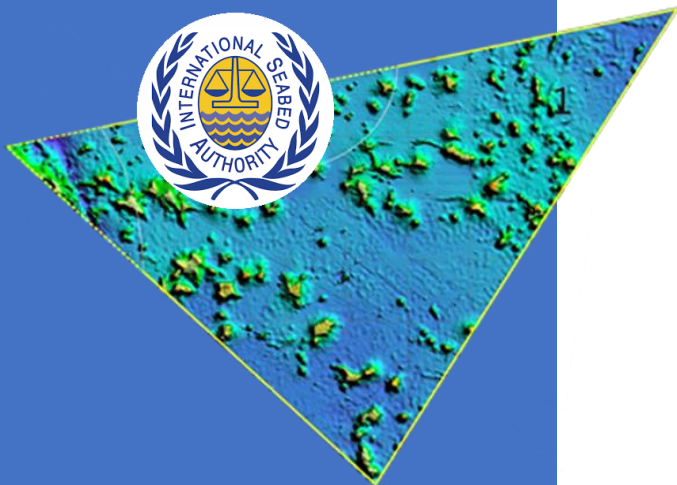
COMRA: LIU Feng, LI Bo, KANG Jian, SONG Cheng-Bin, LI Xiang-Yang, *et al.*



國家海洋局第二海洋研究所
Second Institute of Oceanography, SOA

Xue-Wei Xu
29/05/2018 in Qingdao

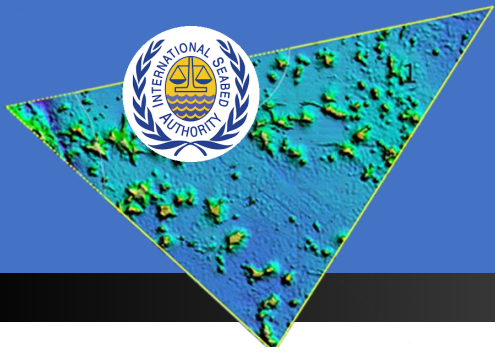




SIO **Background**

SIO **Preliminary Thinking**

SIO **Proposal TRIANGLE PROJECT**



Resolutions Adopted by General Assembly of the UN

United Nations A/RES/68/70

A/RES/68/70
 General Assembly Distr.: General
27 February 2014

Sixty-eighth session
 Agenda item 76 (a)

Resolution adopted by the General Assembly on 9 December 2013
 [without reference to a Main Committee (A/68/L.18 and Add.1)]

68/70. Oceans and the law of the sea

The General Assembly,
Recalling its annual resolutions on the law of the sea and on oceans and the law of the sea, including resolution 67/78 of 11 December 2012, and other relevant resolutions concerning the United Nations Convention on the Law of the Sea (the Convention),¹

United Nations A/RES/70/235*

A/RES/70/235*
 General Assembly Distr.: General
15 March 2016

Seventieth session
 Agenda item 79 (a)

Resolution adopted by the General Assembly on 23 December 2015
 [without reference to a Main Committee (A/70/L.22 and Add.1)]

70/235. Oceans and the law of the sea

United Nations A/RES/69/245*

A/RES/69/245*
 General Assembly Distr.: General
24 February 2015

Sixty-ninth session
 Agenda item 74 (a)

Resolution adopted by the General Assembly on 29 December 2014
 [without reference to a Main Committee (A/69/L.29 and Add.1)]

69/245. Oceans and the law of the sea

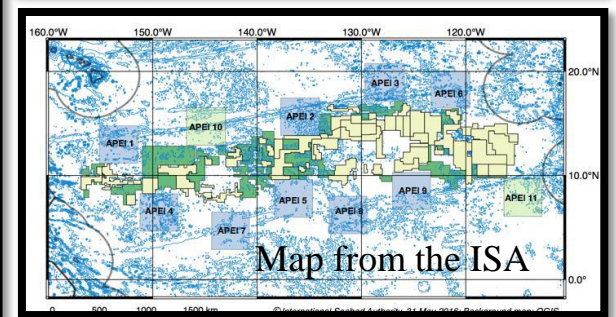
51. **Recalls** that the environmental management plan for the Clarion-Clipperton Zone, including the designation, on a provisional basis, of a network of areas of particular environmental interest, was approved in 2012, to be implemented over an initial three-year period so that it may be improved as more scientific, technical and environmental baseline and resource assessment data become available and that, for that purpose, the conduct of marine scientific research in those areas and the supply of available results to the Authority was encouraged,²⁸ and **invites** the Authority to consider developing and approving environmental management plans in other international seabed area zones, in particular where there are currently exploration contracts:

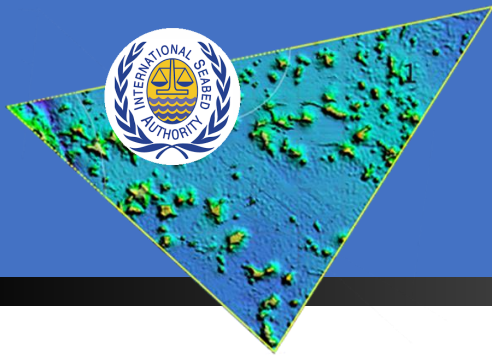
United Nations A/RES/72/73

A/RES/72/73
 General Assembly Distr.: General
4 January 2018

Seventy-second session
 Agenda item 77 (a)

Resolution adopted by the General Assembly on 5 December 2017





ISA Council's Documents

International Seabed Authority

ISBA/24/C/8

ISBA/24/C/8

International Seabed Authority

ISBA/23/C/18

ISBA/23/C/18

International Seabed Authority

ISBA/22/C/28

ISBA/22/C/28

12. *Further encourages* the Commission and the secretariat to make progress on the development of environmental management plans in other international seabed area zones, in particular where there are currently exploration contracts, recalling paragraph 60 of United Nations General Assembly resolution 70/235;

IV. Short-term strategy and recommendations

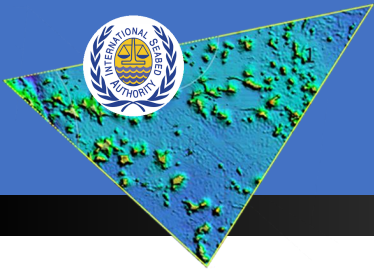
12. In the light of such constraints and considering the current status of exploration in the Area, the priority areas for development of regional environmental management plans in the Area have been identified on a preliminary basis as the Mid-Atlantic Ridge,⁶ the Indian Ocean triple junction ridge and nodule-bearing province,⁷ as well as the North-west Pacific and South Atlantic for seamounts.⁸

ISBA/24/C/3

ISBA/24/C/3

Distr.: General
16 January 2018

Original: English



Proposal by COMRA

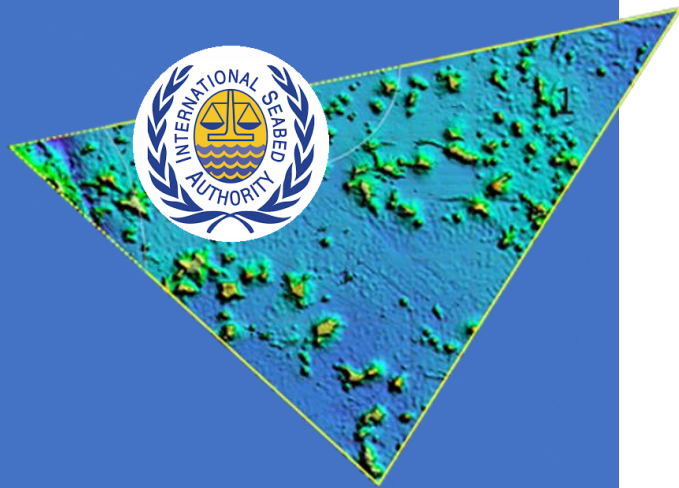
During the 23rd session, the COMRA proposed to develop a REMP for the cobalt-rich crusts located in the northwest Pacific through a cooperative effort.



ISBA/23/C/8:

**Report of
Secretary-General**

23. The Secretary-General has taken note of the views expressed by the Council in this regard and proposes to give consideration to how best to initiate action in this respect, taking into account budgetary constraints. The Commission has also held a general discussion on the approach to the development of environmental management plans and the need for environmental data from contractors and open sources to be made available for that purpose. The Commission and the Secretary-General have also taken note of external initiatives to develop a scientific basis for **an environmental management plan in the Atlantic Ocean**, and they intend to hold discussions with relevant stakeholders on how the outcomes of such initiatives may help to advance the work of the Authority. **The Secretary-General also held preliminary discussions with the China Ocean Mineral Resources Research and Development Association regarding its interest in pursuing a cooperative effort with other contractors to develop an environmental management plan for the cobalt-rich ferromanganese crust zones in the Pacific Ocean. This initiative is welcomed and further discussions will be held in due course.**



- **Background**
 - **Preliminary Thinking**
 - **Proposal TRIANGLE PROJECT**
-

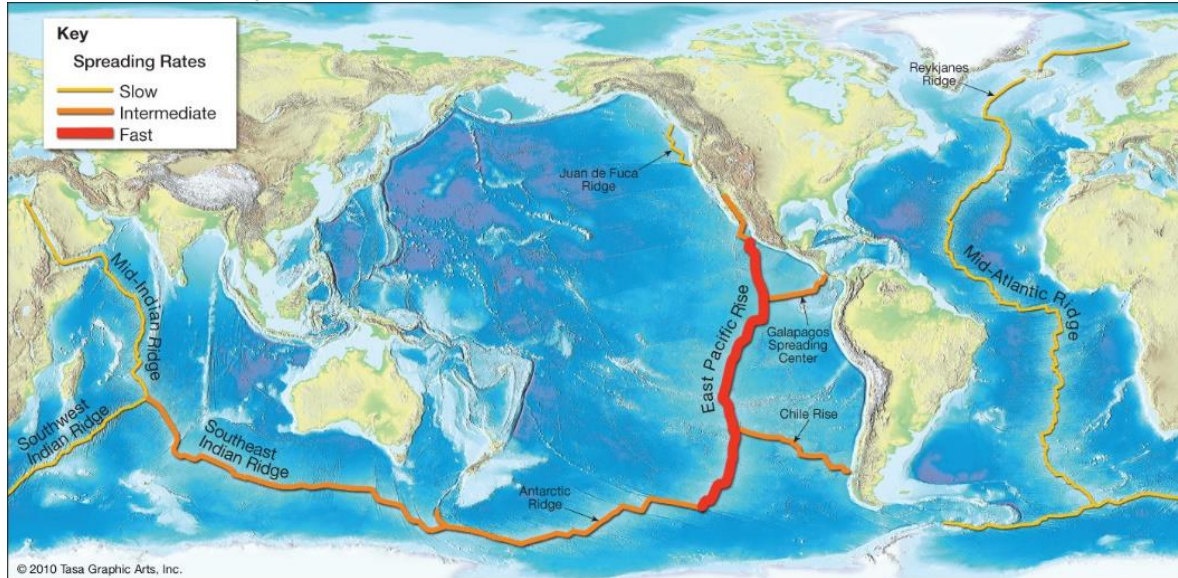


Differences among Three Resources Areas

Resources	Polymetallic Nodules	Polymetallic Sulfides	Cobalt-Rich Crusts
Typical topography	Abyssal plain (table)	Ocean ridge (belt)	Seamount (dot)
Representative areas	CCZ	Mid-Atlantic Ridge, Indian Ridge	Triangle Area in the Northwest Pacific Ocean
Food resource and pattern	Photoautotroph (upper ocean) Uniform distribution	Chemoautotroph (hydrothermal fluid) Shaped distribution	Photoautotroph (upper ocean) Inhomogeneous distribution
Benthos distribution characteristics	Longitude and latitude (table, 1D)	Distance away from ridge (belt, 1.5D)	Height of seamounts (dots, 2D)
Complexity for connectivity	+	++	+++
REMP	+	-	-



Distribution of Seamounts



Map from cooklowery13

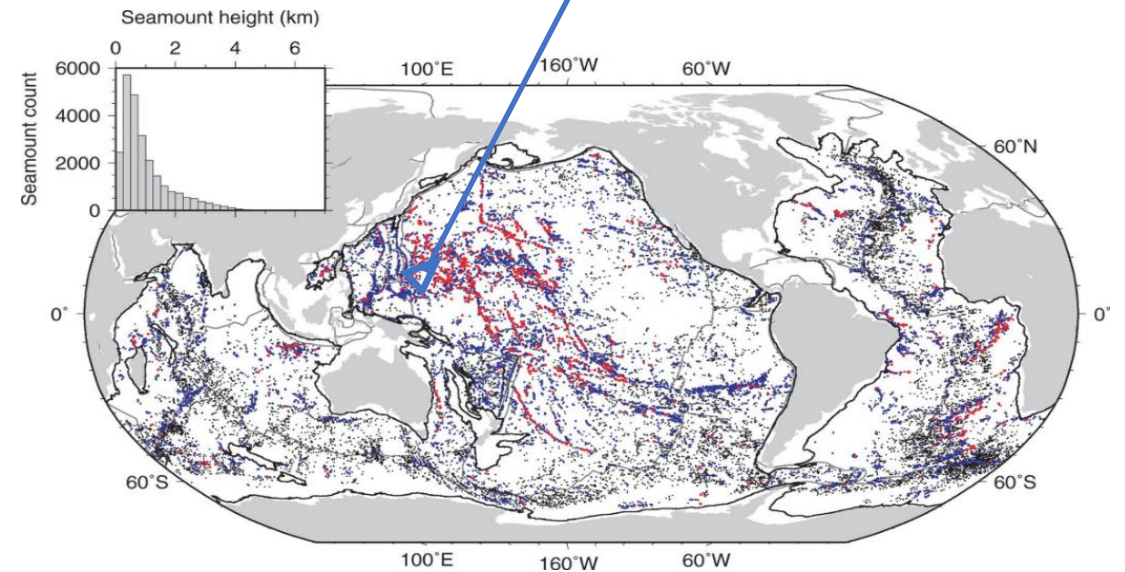
Black: $0.1 \leq h < 1$ km (n = 16,185)

Blue: $1 \leq h < 3$ km (n = 7514)

Red: $h \geq 3$ km (n = 944)

Distribution pattern of seamounts (crusts) is dotted, which is different with that of hydrothermal vents (sulfides).

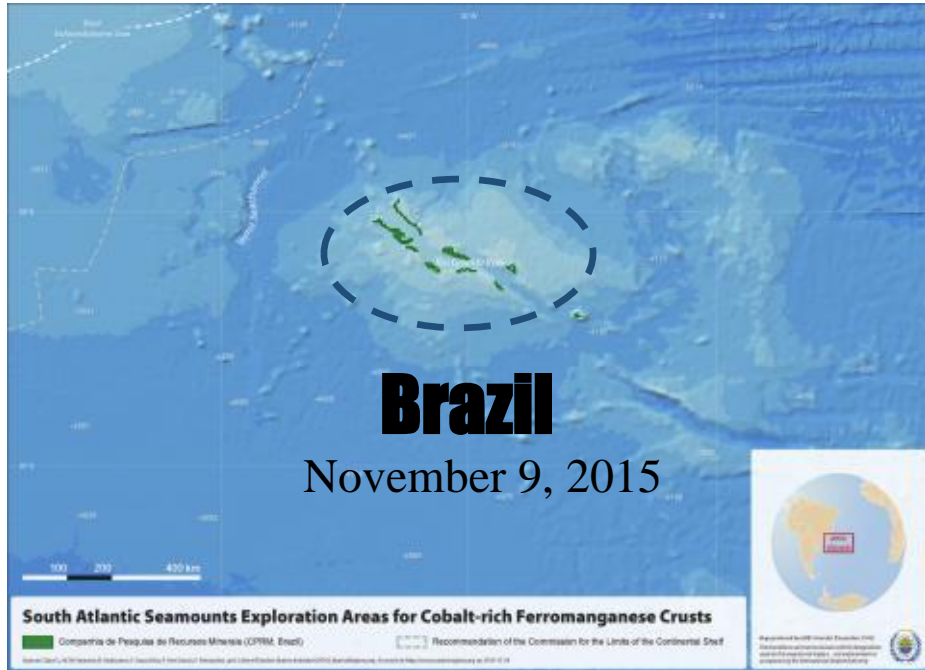
Triangle Area in the northwest Pacific Ocean



Map from Kim & Wessel (2011) Geophys J Int

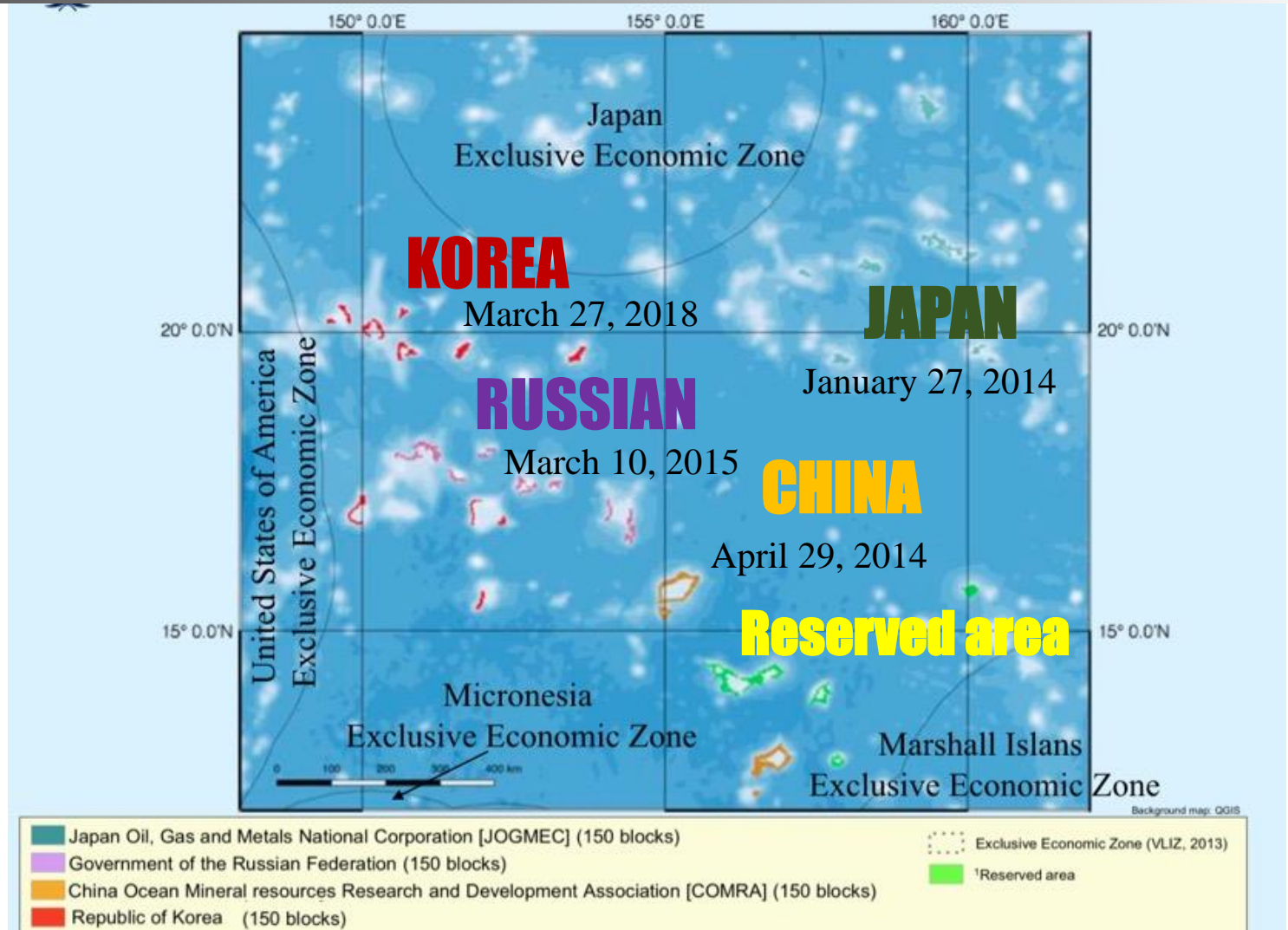


Contract for Cobalt-rich Ferromanganese Crusts



South Atlantic Ocean

Map from ISA





Triangle Area within the Northwest Pacific Ocean

White curves represent the areas within 200 n miles of island, including EEZ and US monument.

Ave. depth of top: 1524m (n=38)

Ave. altitude: 3578 m (n=38)

➤ **Area: 1.74 million km²**

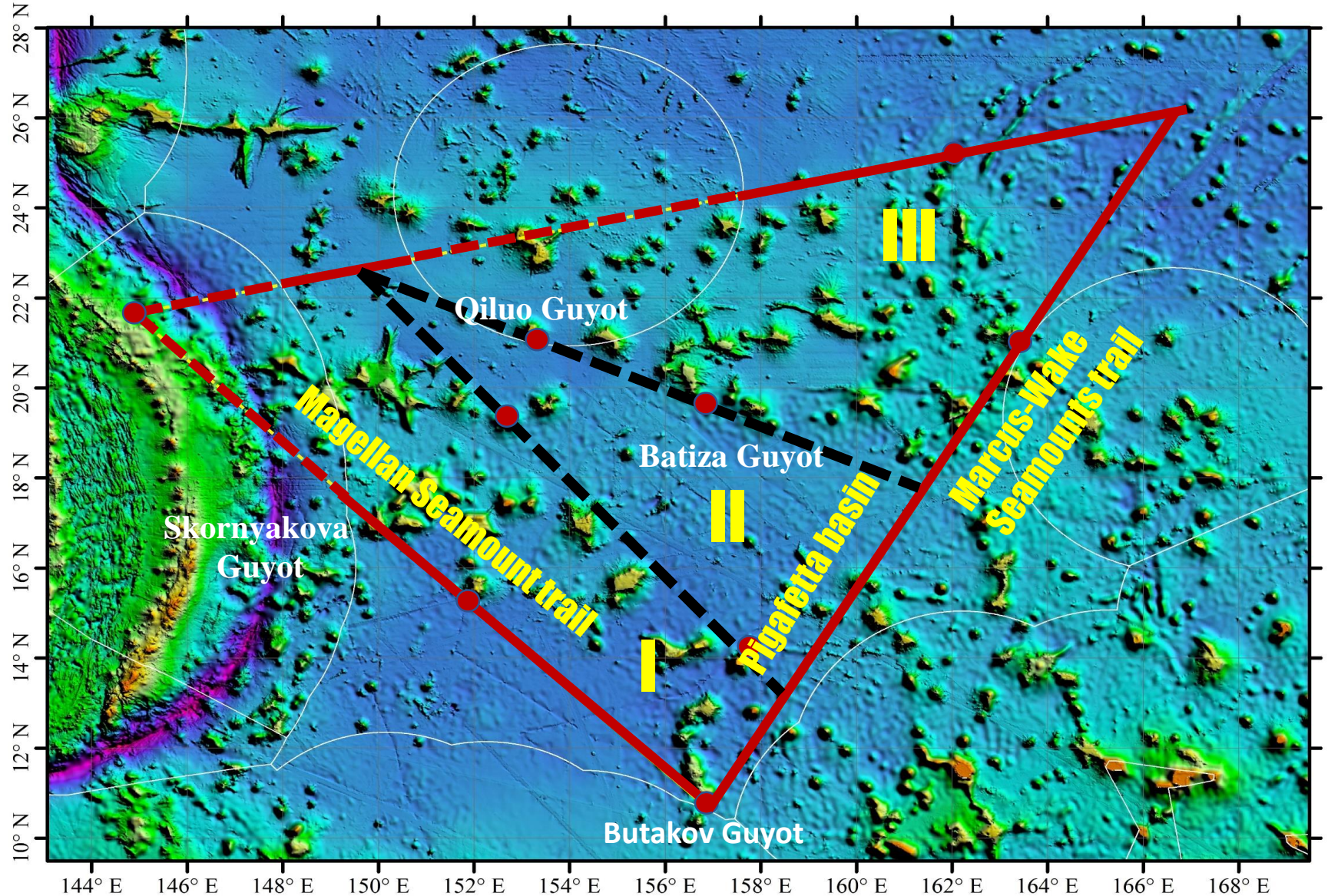
➤ **Seamount: ~227 thousand km²**

Area ratio

➤ **I : 36.0%**

➤ **II : 21.4%**

➤ **III : 42.6%**





Exploration Contract Areas in the Triangle Area

 **COMRA**

 **JOGMEC**

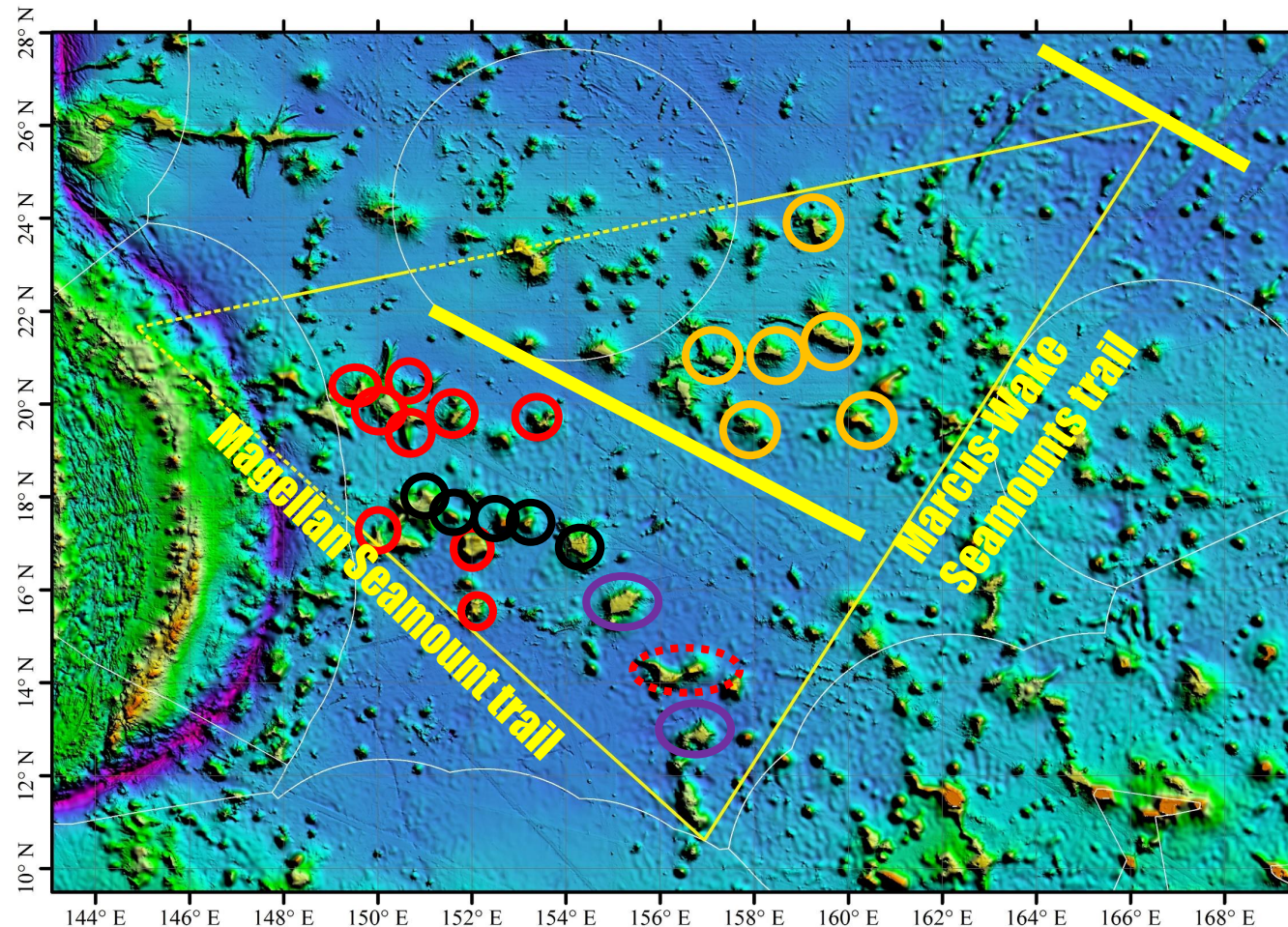
 **Russian**

 **Korea**

 **Reserved areas**

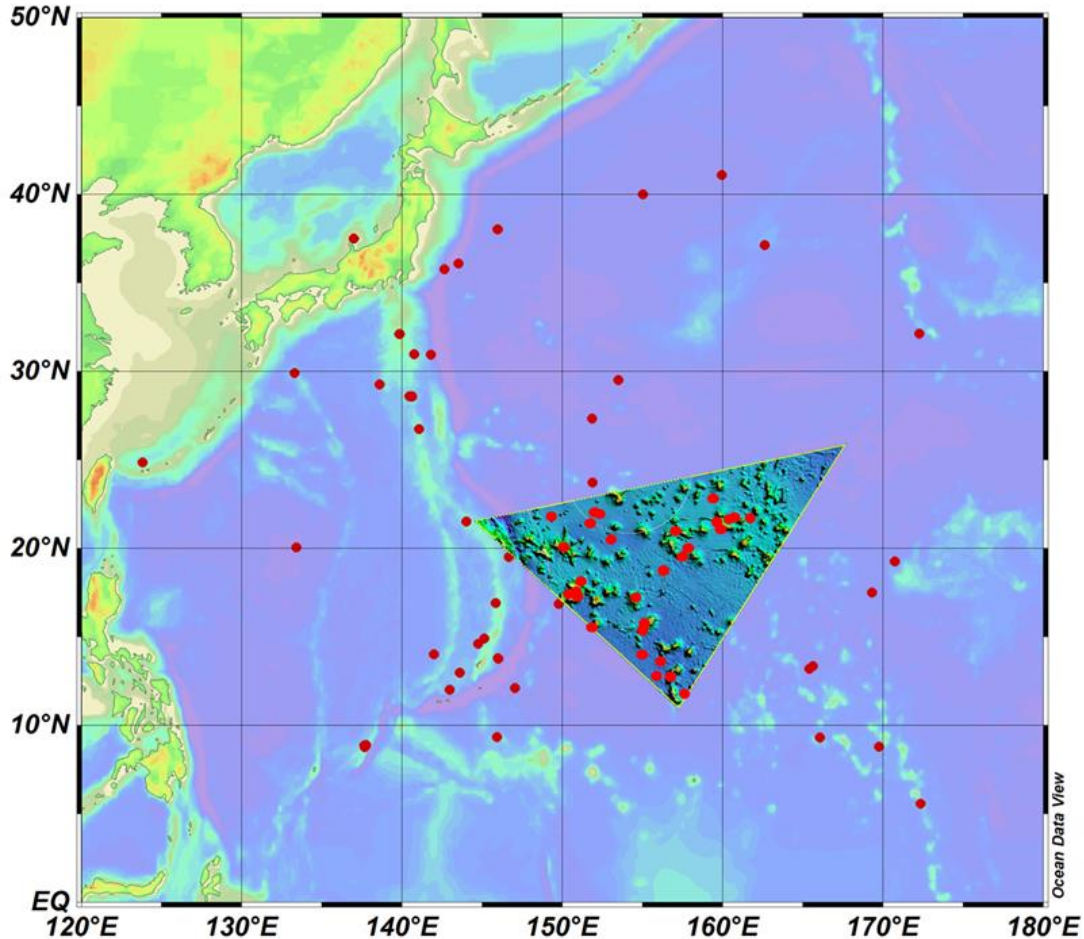
The situation is urgent and we don't have much choice.

White curves represent the areas < 200 n miles.

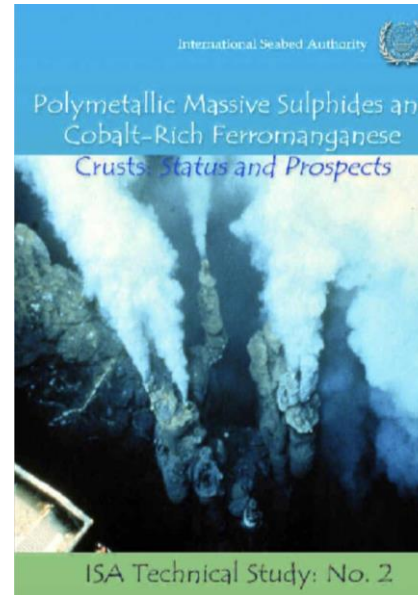
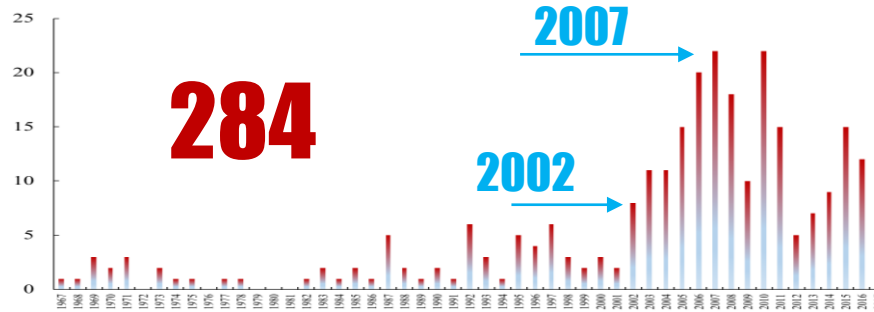




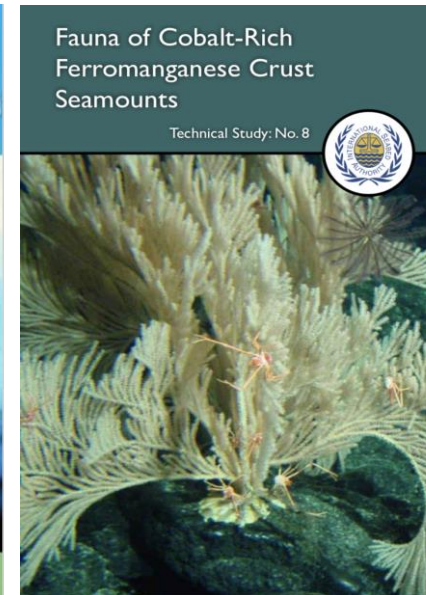
Current Knowledge



Publications regarding the northwest Pacific



ISA Technical Study



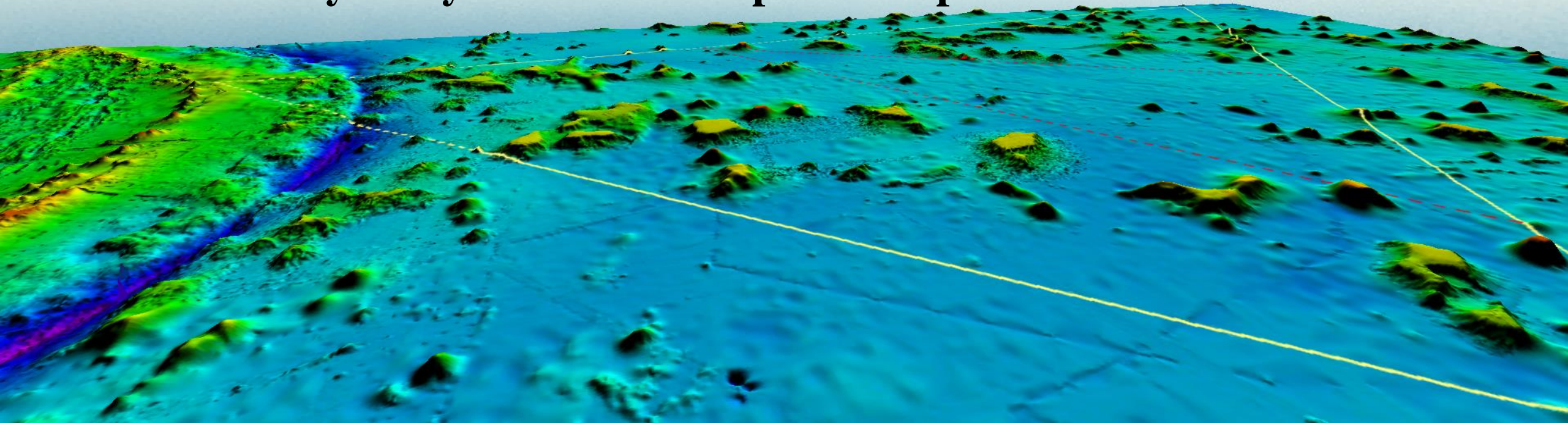
Workshops





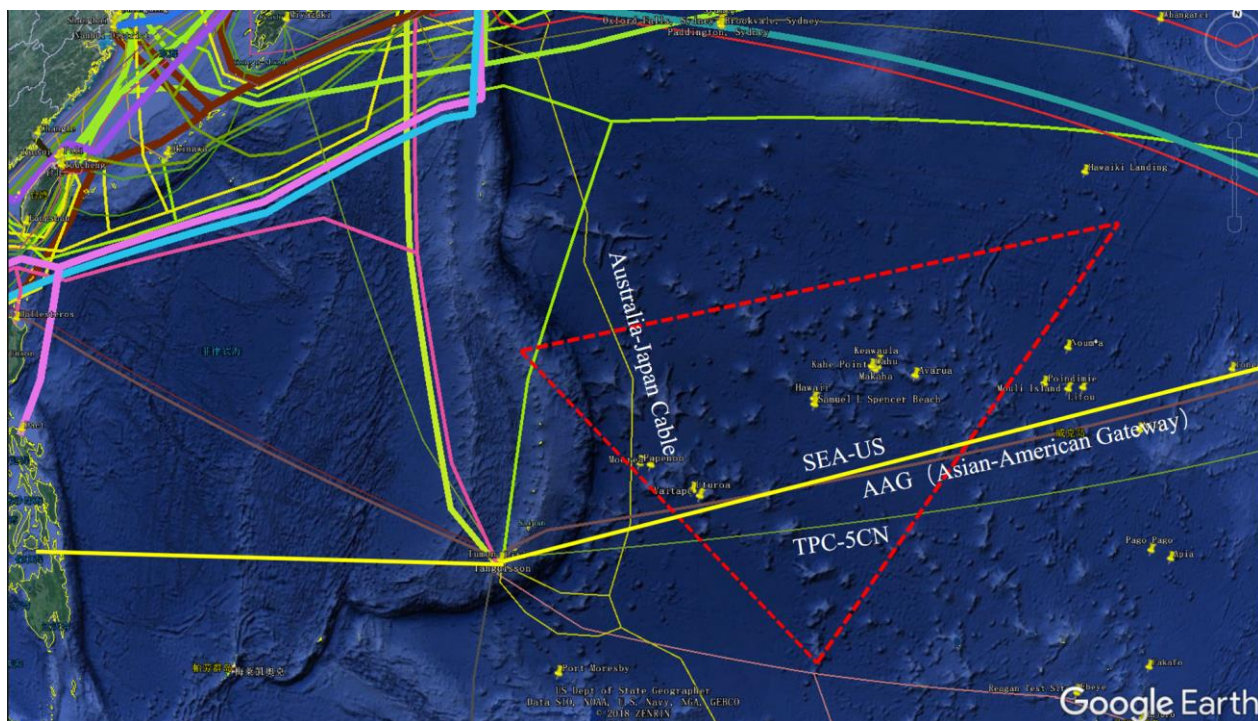
Key Scientific Questions

- **What factors determine the delineation of biogeographic provinces in the seamount area?**
- **How do topographic features affect biodiversity?**
- **How does hydrodynamics affect species dispersal?**

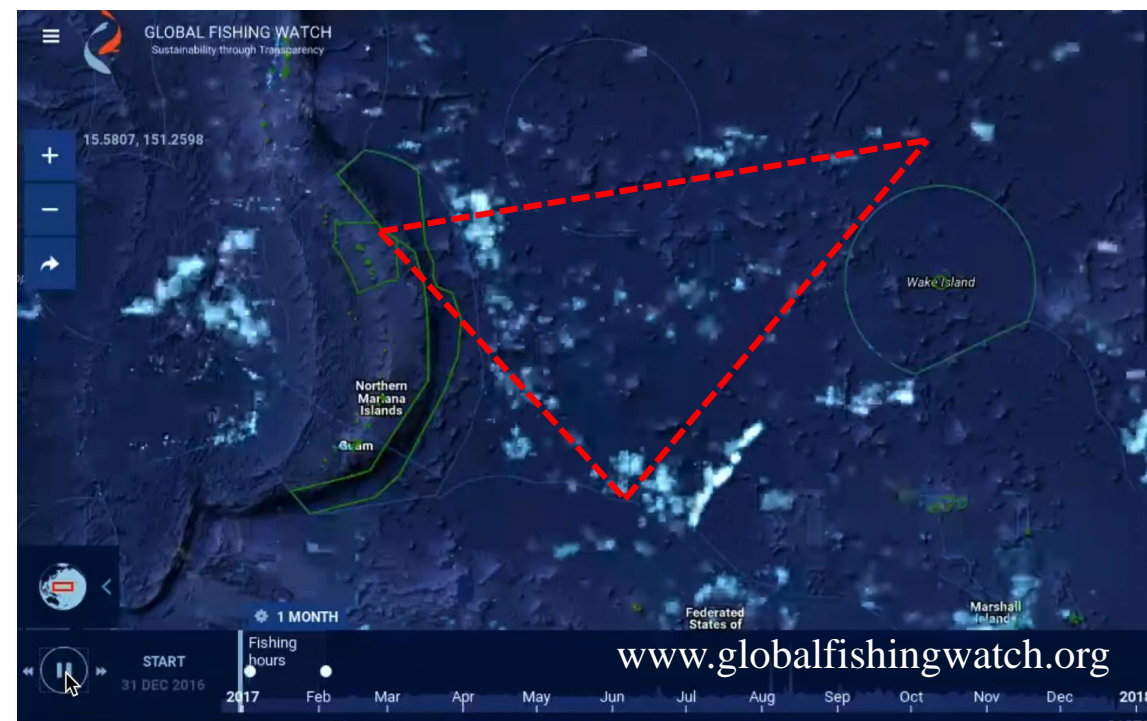




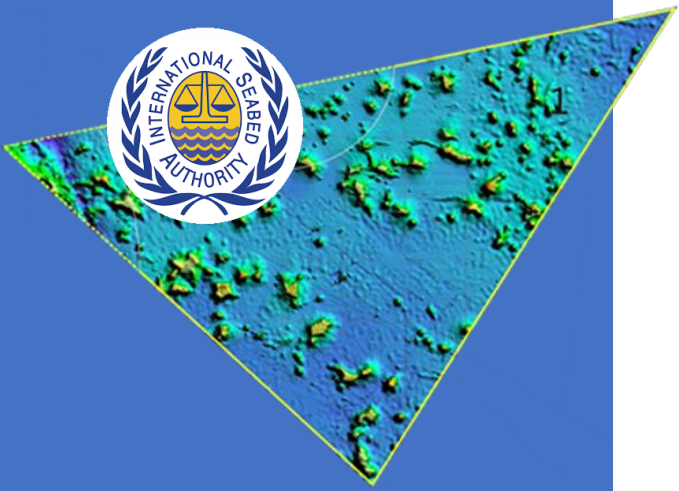
Cables & Fishing



Undersea cables



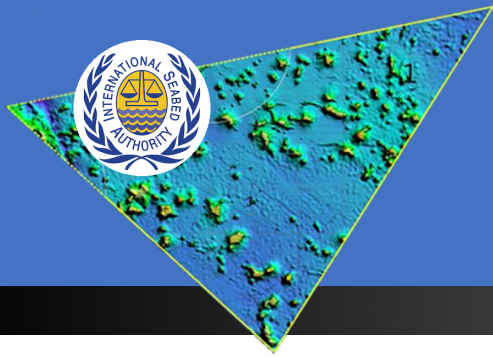
Commercial fishing activity



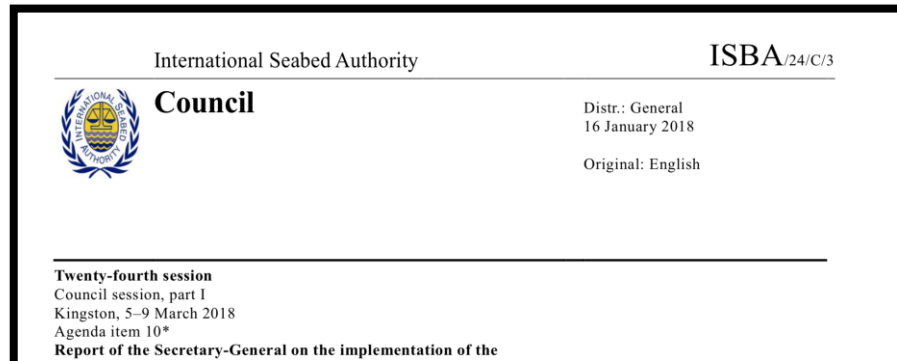
SIO **Background**

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Strategy for the Development of REMP



IV. Short-term strategy and recommendations

12. In the light of such constraints and considering the current status of exploration in the Area, the priority areas for development of regional environmental management plans in the Area have been identified on a preliminary basis as the Mid-Atlantic Ridge,⁶ the Indian Ocean triple junction ridge and nodule-bearing province,⁷ as well as the North-west Pacific and South Atlantic for seamounts.⁸



Objectives

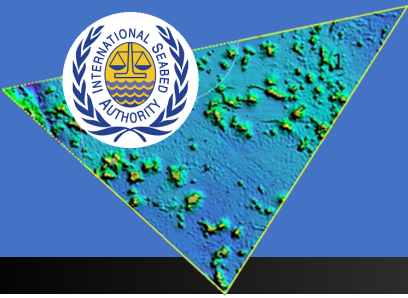
Objective of REMP:

- To provide a **proactive area-based management tool** to support informed decision-making that balances resource development with conservation.
- To provide the Authority with **a clear and consistent mechanism to identify particular areas** thought to be representative of the full range of habitats, biodiversity and ecosystem structures and functions within the relevant management area, and provide those areas **with appropriate levels of protection**.

--Preliminary strategy for the development of regional environmental management plans for the Area (ISBA/24/C/3)

Objective of TP:

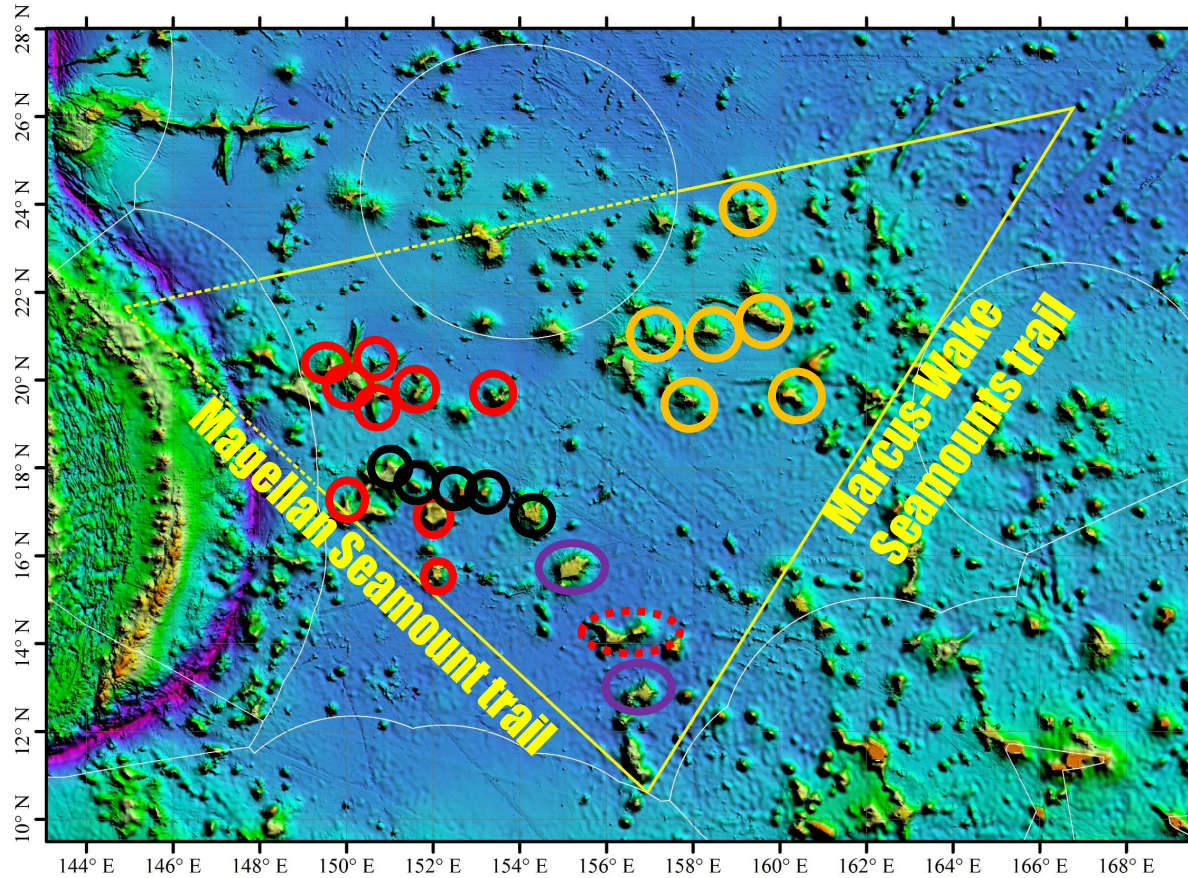
- To solve the **management problems** of biodiversity and maintenance of ecosystem functions;
- To emphasize **the basic and key role of science** in the research of biodiversity at seamount areas;
- To propose the **coordination, cooperation and communication** among international organizations, contractors and experts;
- To provide **scientific principles for the framework of the REMP**.



Establishment and implementation of the REMP need **cooperation and sharing** among contractors, international organizations and the ISA

TRIANGLE PROJECT

-  **COMRA**
-  **JOGMEC**
-  **Russian**
-  **Korea**
-  **Reserved areas**



Organizational Guarantee

Scientific Support

Legal Framework



Consideration

Legal Framework

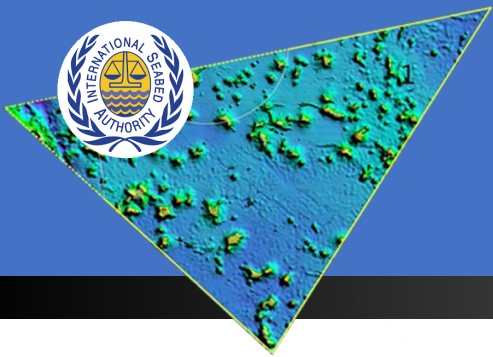
- **ISA Strategy / Regulation**
- **Policy or regulation of other organizations /countries / institutions**
- **Experience and insufficiency of other REMP's**

Scientific Support

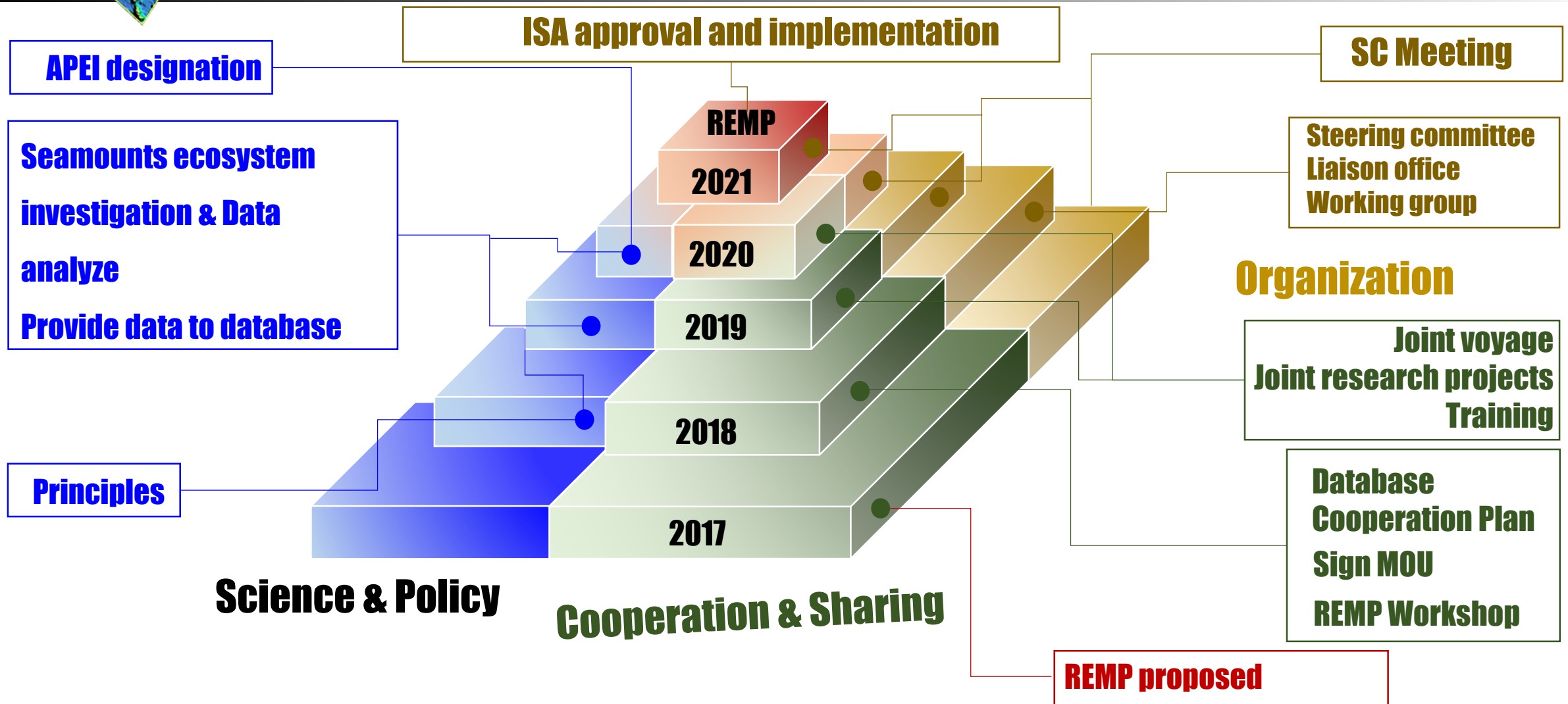
- **Characteristic of seamount ecosystems, impacts of human activities, and approaches of the scientific conservation**
- **Current scientific knowledge, APEI designate, future survey methods and environmental research orientations in the northwest Pacific Ocean**

Organizational Guarantee

- **Objectives of the REMP for CFC**
- **Sources of environmental data, principle and approach of sharing, roles of ISA and stakeholders in sharing data**
- **Training and technical assistance**
- **Joint voyage & joint research / funding**
- **Committee, liaison office, working group**
- **Dissemination**

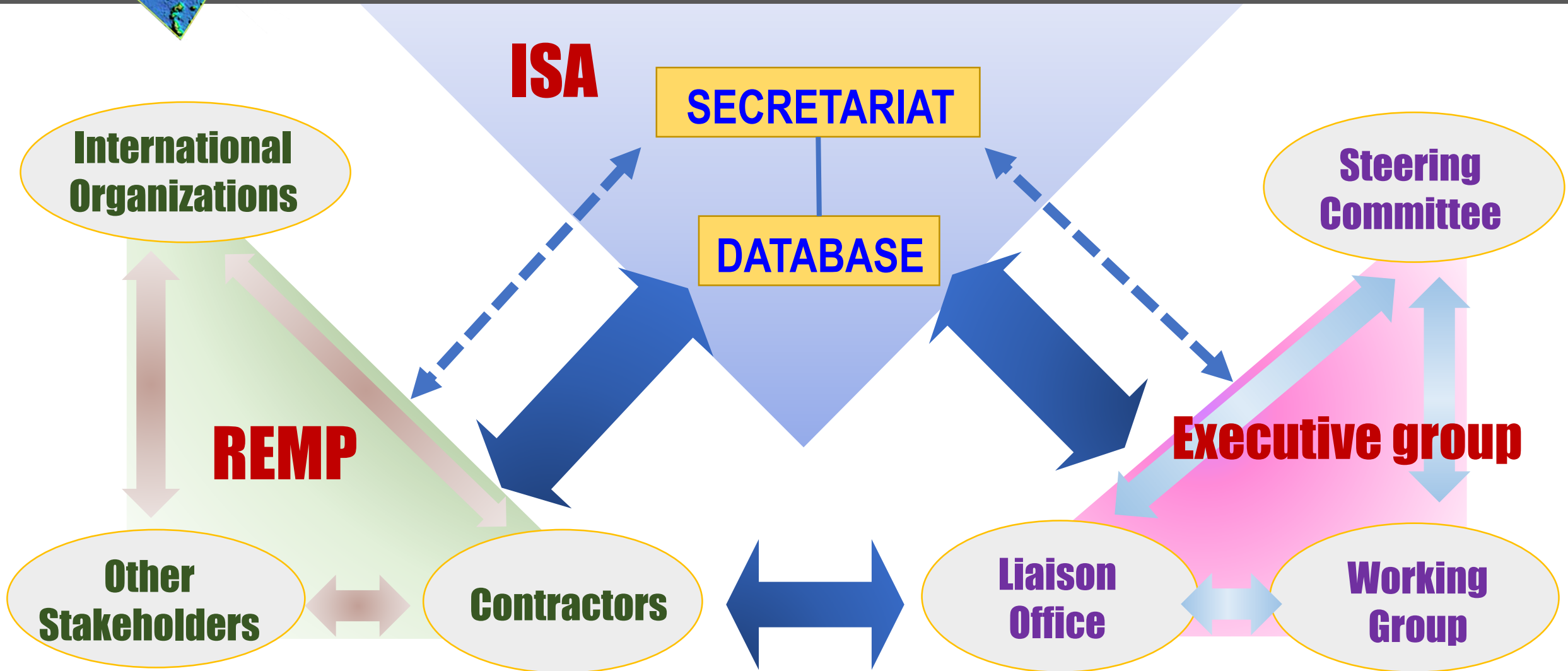


Suggested roadmap





Organization of REMP



THANK YOU!

Chairman



Michael Lodge
Secretary-General
International Seabed
Authority
Jamaica



Feng Liu
Secretary-General
China Ocean Mineral
Resource R&D
Association
China

Steering Committee



Xue-Wei Xu
Second Institute of
Oceanography, State
Oceanic Administration
China



Sandor Mulsow
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Irina Ponomareva
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Malcolm Clark
National Institute for
Water and Atmospheric
Research
New Zealand



Pei-Yuan Qian
Hong Kong University of
Science and Technology
China



Extensive consultation
Joint contribution
Shared benefits

共商

共享



共建