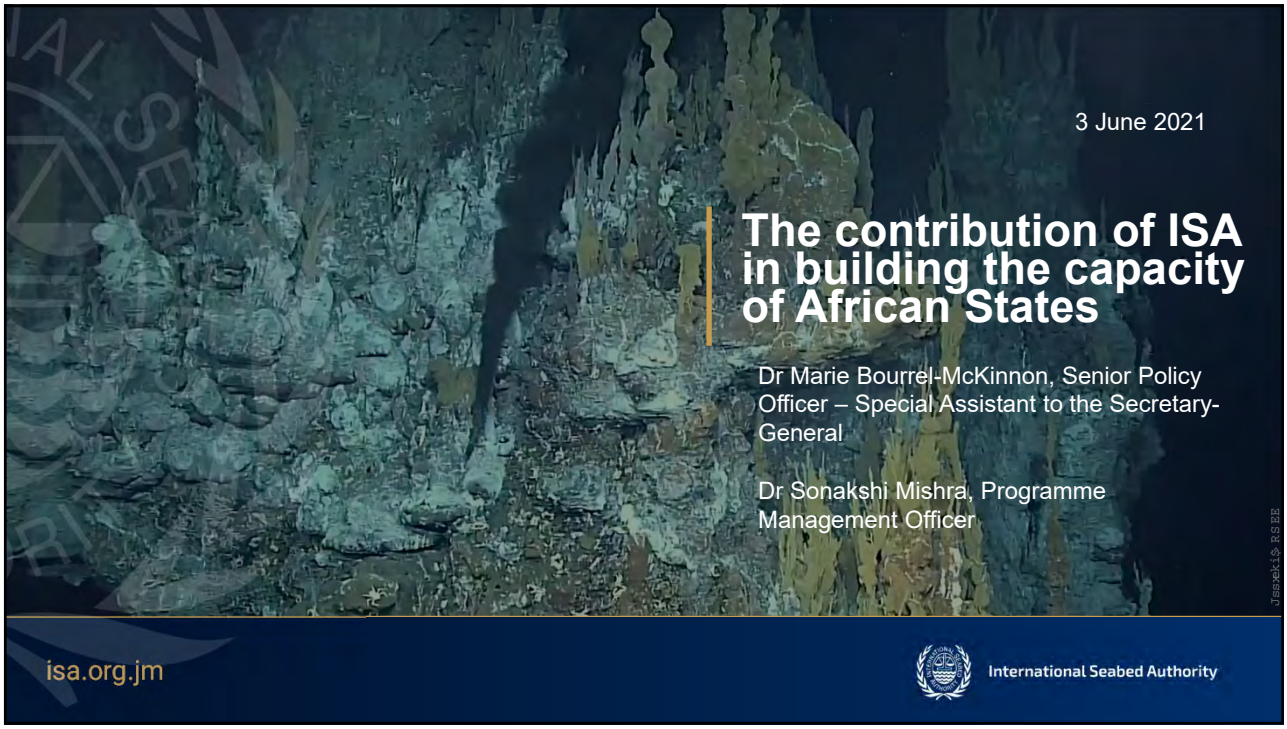
Africa's Deep-Seabed Resources Project

Third Workshop
1-3 June 2021

Day 3 Presentations

Project partners

Workshop co-host



1

Outline

1. Role & mandate of ISA with respect to CB/CD
2. ISA CB/CD programmes & initiatives : an overview
3. Benefits to African nationals
4. Where to from here?

2


Effective participation of developing States
Technology transfer
ROLE & MANDATE OF ISA WITH RESPECT TO CAPACITY-BUILDING
Protection of the marine environment
Marine scientific research
-2500
-3000
-3500
-4000
-4500
-5000
-5500
3

3


@NOAA
ISA CB/CD programmes & initiatives : an overview
International Seabed Authority
4

4

ISA Capacity-building/development programmes & activities

Contractors Training Programme

Endowment Fund for MSR

Internships

Information workshops

Voluntary Commitments

Joint training Center

International Seabed Authority

5

Africa Deep Seabed Resources Project

Supporting Africa's Blue Economy

#OceanAction #16374

2017 UN Ocean Conference Voluntary Commitment

Goal

Enabling conditions for African counties to fully benefit from the Blue Economy through sustainable development of their deep-seabed resources

(i) Regional Workshops

- Côte d'Ivoire 2018
- South Africa 2019
- Mauritius **2021**
- Morocco [2021]
- Ethiopia [2021]

(ii) Deployment of National Experts

10

(iii) Environment and socio-economic benefit assessment

Key areas of Focus

- Understanding the legal, strategic and policy frameworks for sustainable management of deep-seabed resources
- Raise awareness of the benefits for African States to participate in activities in the Area
- Capacity development

6

Women in Deep Sea Research (WIDSR) Project

Enhancing the role and participation of women in deep-sea research

#OceanAction15467

2017 UN Ocean Conference Voluntary Commitment

Goal

Women empowerment and leadership in DSR (focus groups: LDCs, LLDCs and SIDS)

Strengthened human resource base of developing countries in emerging sectors

Launch

High-level Webinar on, International Women's Day, 8 March 2021

Partnerships

Governments, International and Regional, Organizations, Industry, Academia

Key areas of Focus

- Policy Development
- Capacity Development
- Sustainable Partnerships
- Communication &Outreach

International Seabed Authority

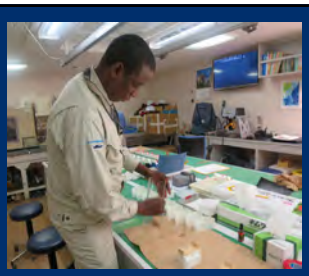
7

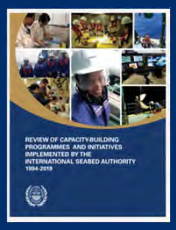
8

Benefits to African Nationals

9

Impact





1994-2021
513

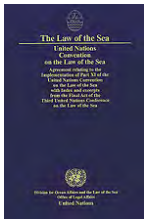
	Contractors' training programmes	EFMSR	Internships	
Total	163	145	35	170
African Group	59 (36%)	52 (36%)	0 (0%)	170 (100%)

10

Where to from here?

11

ISA Programmatic approach for capacity-development

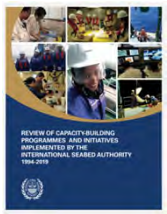


ISA Strategic Plan 2019-2023

2018

ISA HLAP 2019-2023

2019



Decision ISBA/26/A/18

2020

ISA MSR Action Plan

ISA Capacity Development Strategy

2021

12

Overview of priority assessment needs of ISA Members


NATIONAL CAPACITY DEVELOPMENT PRIORITIES IDENTIFIED BY MEMBERS OF THE INTERNATIONAL SEABED AUTHORITY IN 2021

Survey – April/June 2020
47 responses from 33 countries

Algeria, Cote d'Ivoire, Ghana, Guinea, Kenya, Mauritius, Morocco, Nigeria, Seychelles, Sierra Leone, south Africa, Zambia.

Figure 1: Number of respondents to the survey by region

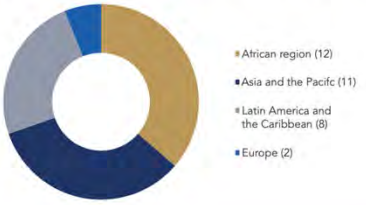


Figure 2: Core national priority needs

Figure 3: 5 most important capacity development needs

Figure 4: Tools identified

13

Progress

Decision ISBA/26/A/18

ISA MSR Action Plan

Nomination of National Focal Points for CD matters with ISA (NAFOP)

ISA Capacity Development Strategy

2019

2020

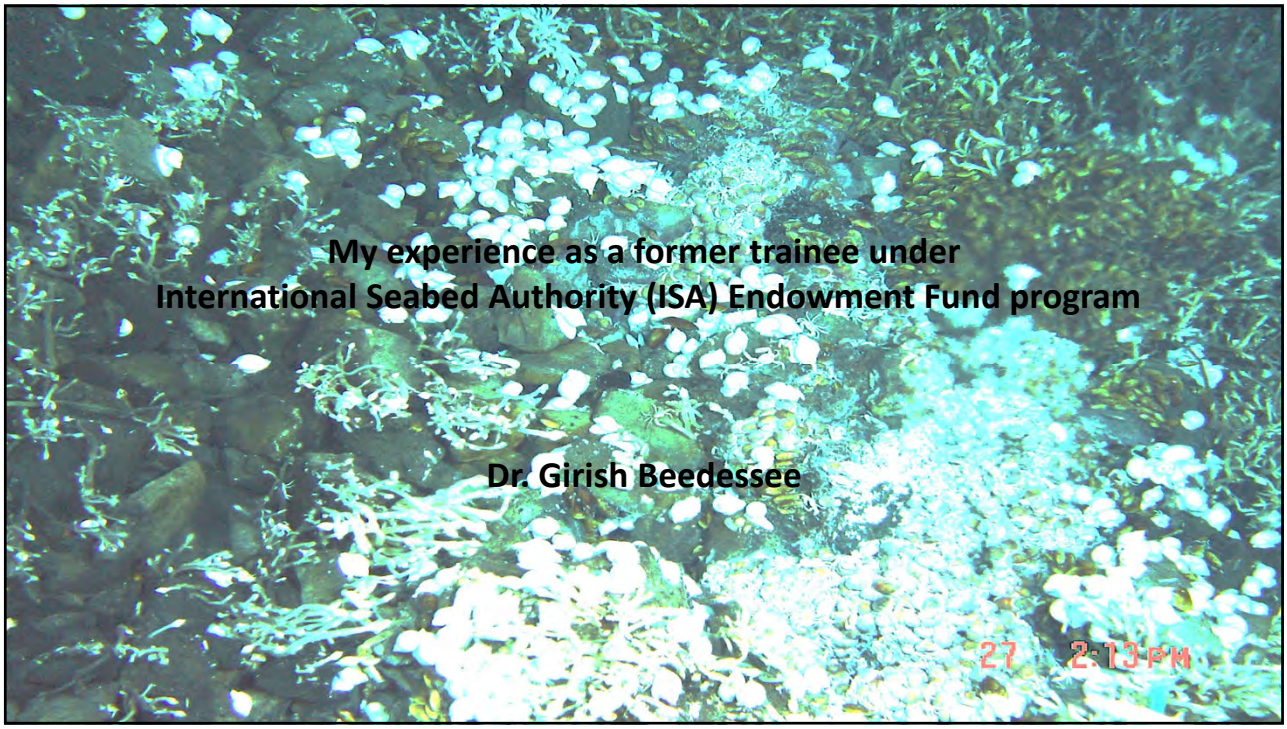
2021

39

Algeria, Botswana, Egypt, Eswatini, Kenya, Mozambique, Somalia, Togo

14

15



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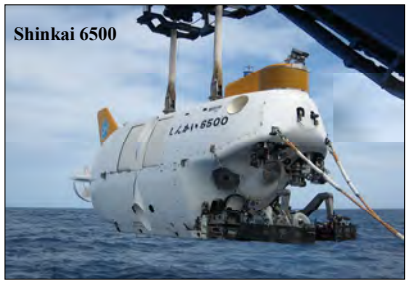
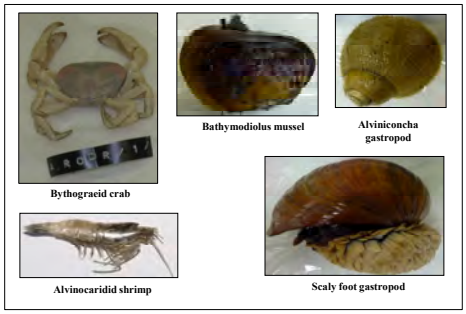
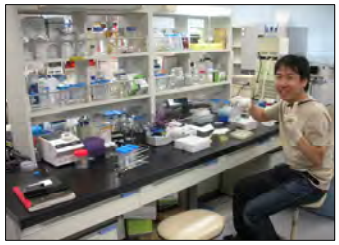
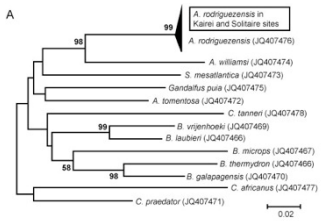
InterRidge-ISA Fellowship (2011)

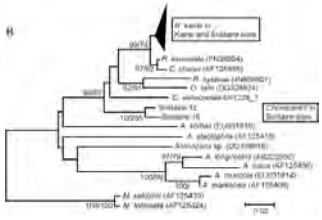






Dr. Ken Takai

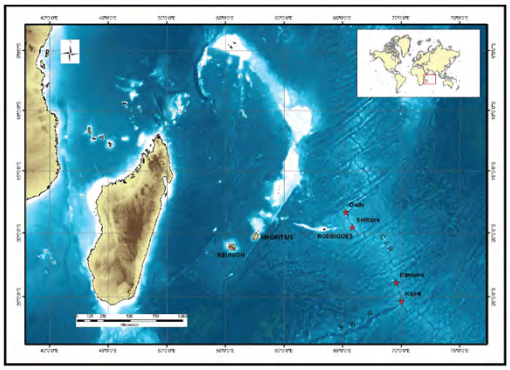


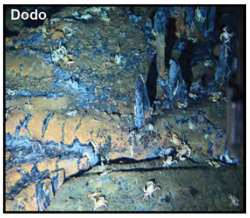


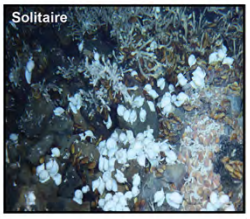
Discovery of new deep sea species

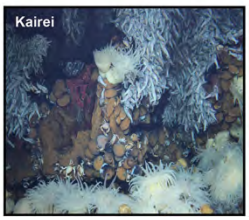
2

ISA Endowment Fund Travel Bursary (2012)









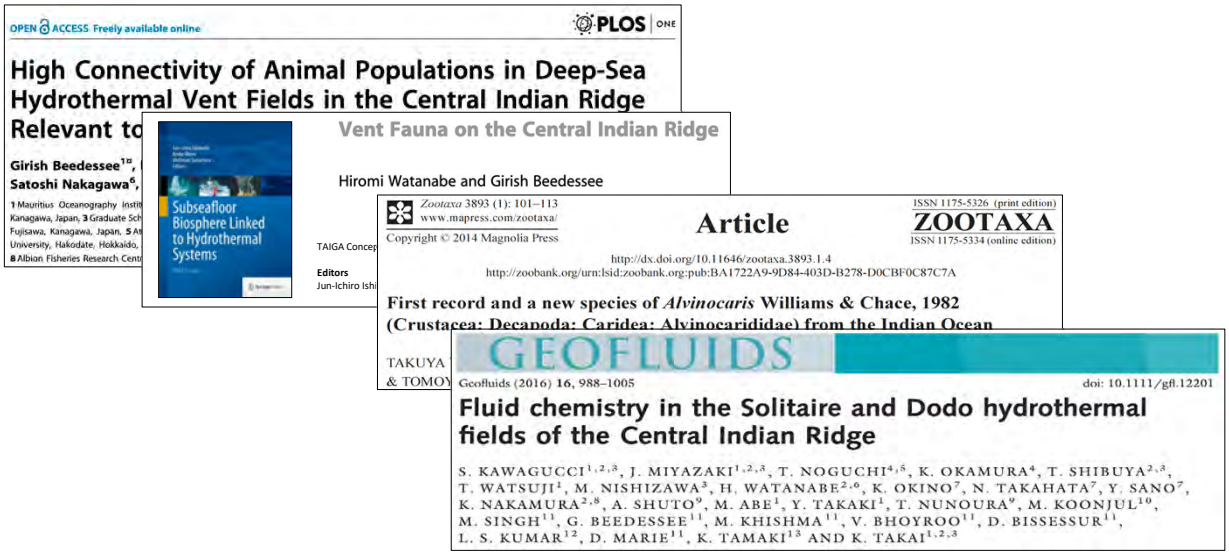
Dispersal abilities of hydrothermal vent animals in Indian Ocean inferred from mitochondrial DNA sequence. 13th International Deep-Sea Biology Symposium (3rd -7th December 2012,Wellington, New Zealand)

MAJOR RESULTS

- Migrate analysis suggest Edmond as source of dispersal
- Possible role of environment

3

Outcomes of these awards



OPEN ACCESS Freely available online

PLOS ONE

High Connectivity of Animal Populations in Deep-Sea Hydrothermal Vent Fields in the Central Indian Ridge Relevant to

Girish Beedessee[1¤], Satoshi Nakagawa[6],

1 Mauritius Oceanography Institute, Kanagawa, Japan, 3 Graduate School, Fujisawa, Kanagawa, Japan, 5 Atmosphere and Ocean Research Institute, University, Hakodate, Hokkaido, 8 Albion Fisheries Research Centre

Subseafloor Biosphere Linked to Hydrothermal Systems

Vent Fauna on the Central Indian Ridge

Hiromi Watanabe and Girish Beedessee

TAIGA Concept

Editors

Jun-Ichiro Ishi

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http://zoobank.org/urn:lsid:zoobank.org:pub:BA1722A9-9D84-403D-B278-D0CBF0C87C7A

First record and a new species of *Alvinocaris* Williams & Chace, 1982 (Crustacea: Decapoda: Caridea: Alvinocarididae) from the Indian Ocean

TAKUYA
& TOMOY

GEOFLUIDS

Geofluids (2016) 16, 988–1005

doi: 10.1111/gfl.12201

Fluid chemistry in the Solitaire and Dodo hydrothermal fields of the Central Indian Ridge

S. KAWAGUCCI[1,2,3], J. MIYAZAKI[1,2,3], T. NOGUCHI[4,5], K. OKAMURA[4], T. SHIBUYA[2,3], T. WATSUJI[1], M. NISHIZAWA[3], H. WATANABE[2,6], K. OKINO[7], N. TAKAHATA[7], Y. SANO[7], K. NAKAMURA[2,8], A. SHUTO[9], M. ABE[1], Y. TAKAKI[1], T. NUNOURA[9], M. KOONJUL[10], M. SINGH[11], G. BEEDESSEE[11], M. KHISHMA[11], V. BHOYROO[11], D. BISSESSUR[11], L. S. KUMAR[12], D. MARIE[11], K. TAMAKI[13] AND K. TAKAI[1,2,3]

4

How the ISA Endowment Fund has helped my career

Genomic insights on secondary metabolism in symbiotic dinoflagellates

Unit: Marine Genomics Unit
Supervisor: Professor Noriyuki Satoh
Graduation Date: April 30, 2019 Nationality: Mauritius

UNIVERSITY OF CAMBRIDGE

Girish Beedessee, 2020

Girish was born in Mauritius and completed his PhD in the field of marine genomics at Okinawa Institute of Science and Technology, Japan. He continued as a JSPS fellow exploring long read sequencing platforms to understand transcriptomic events. He is interested in investigating the role of biosynthetic enzymes in metabolite combinatorial chemistry. During his time at Cambridge in the Waller lab, Girish will combine biophysics, biochemistry and computational reconstruction of microscopy data to solve an evolutionary novel mode of re-engineering DNA condensation. Outside the lab, Girish loves playing football and travelling.

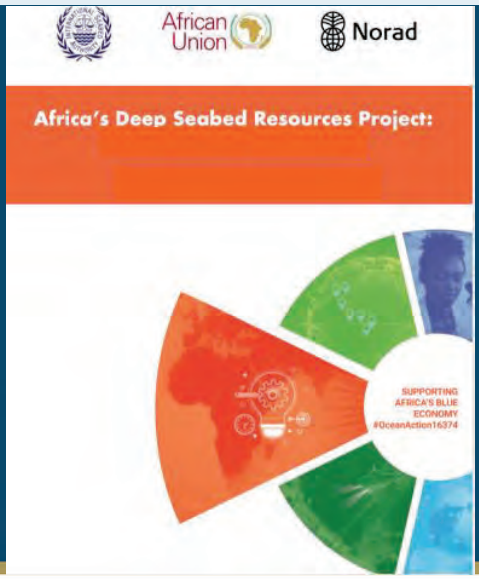
Website: Department of Biochemistry

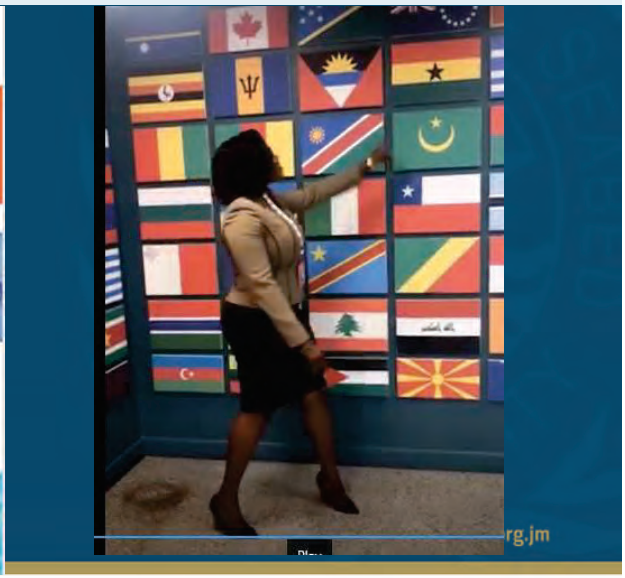
Email: gb629@cam.ac.uk

Acknowledgement

- Mauritius Oceanography Institute
- Dr. Hiromi Watanabe & Dr. Ken Takai (JAMSTEC)
- InterRidge-ISA

5





Ghana National Petroleum Corporation
GNPC

Judith and the ADSR experience
(Jan-March 2020)

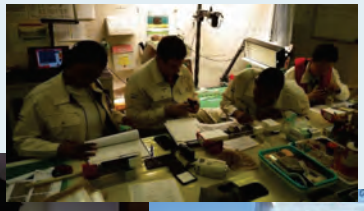
Outline

- About me
- At sea training
- ADSR Secondment
- Achievements after Secondment

A little about Judith

- First female Petroleum Geochemist from Ghana
- Akan tribe
- First female scientist in my family
- Work with the Ghana National Petroleum Corporation
- Loves to look my best when I can
- Loves new challenges
- Loves to impact knowledge when I can

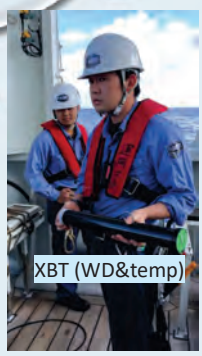
AT- SEA

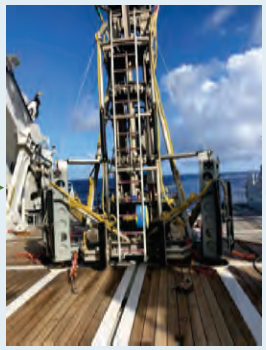


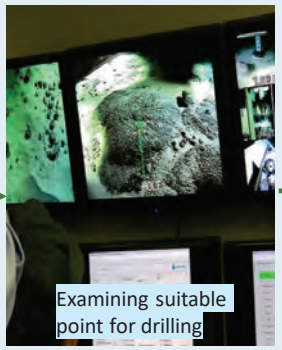
Personal Objectives

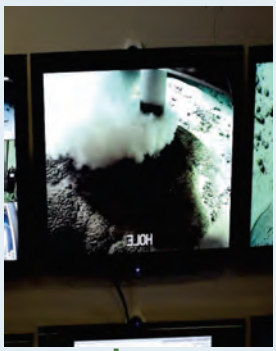
- Learn more Seabed mining exploration since it's a relatively new area of science
- To improve skills in the planning and executing of research
- To acquire additional skill of core sample preparation, description and elemental analysis
- Improve my social networking

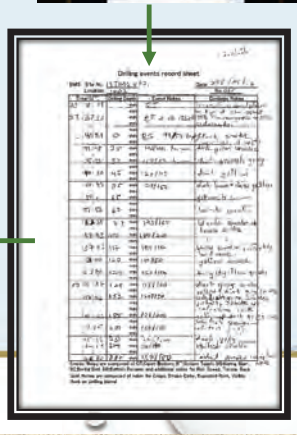
AT-SEA TRAINING


XBT (WD&temp)

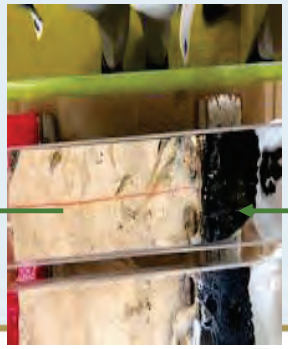



Examining suitable point for drilling






Sample retrieval



Achievements

- Knowledge about the seabed minerals; Seafloor Massive Sulphides (SMS), Polymetallic Nodules/Manganese Nodules and Cobalt-rich Crusts (CRC).
- skill of research planning and execution was greatly improved
- exposure and interaction with JOGMEC, JAMSTEC and Kochi Core centre presented new ideas on how and where to approach research and how to mechanically execute it successfully.
- Their origin and distribution across the globe and the need to explored and exploited

ADSR project secondment

Africa's Deep-Seabed Resources Project

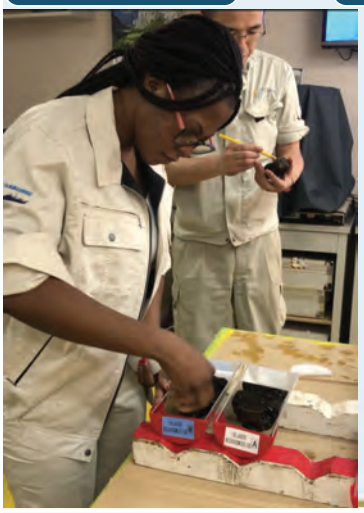
INTERNATIONAL SEABED AUTHORITY

Norad

African Union

How I heard about the Secondment and why I applied

Ghana permanent missions → Ministry of Foreign Affairs → Ministry of Energy → Ghana National Petroleum Corporation → Internal advert to all Geoscientists



- To satisfy my curious after the Exploration for CFC mineral with JOGMEC
- Familiarize myself with the deposit-specific regulations for prospecting, exploration and exploitation of the seabed mining
- To understand how the ISA manages, regulate and monitors seabed exploration.

9

The Experience

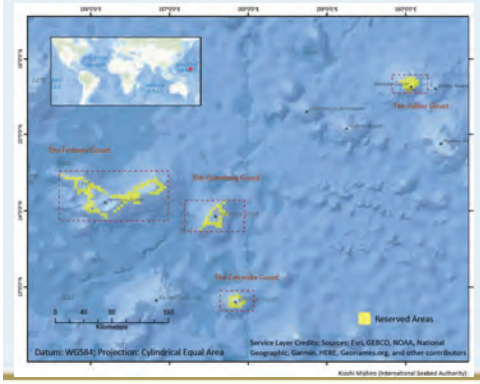
- **Resource assessment in the Reserved Area**

The strategy for this exercise has been grouped into 3 stages,

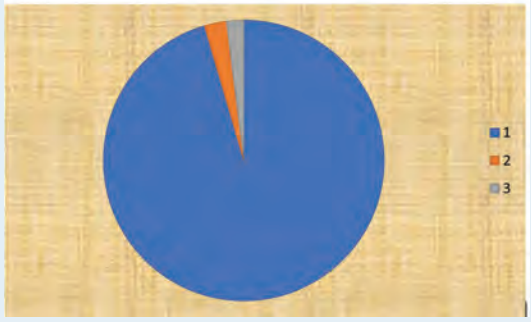
(i)Analysis of the data and information enclosed in the ISA database

(ii) Authentication and fine-tuning of the data and information that it contained

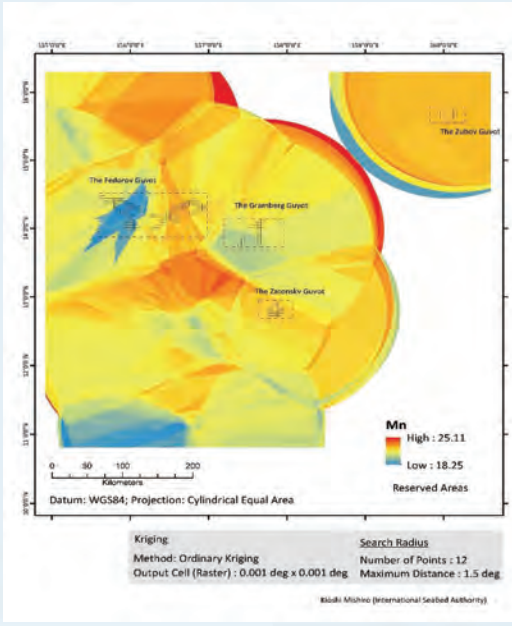
(iii)Geostatistical analysis and assessment of the metals contained in deposits in reserved areas.



Density crust. g/cm3	Wet crust. %	Metal content in crust. %		
		Mn	Co	Ni
1.800	35.214	20.523	0.545	0.429



Mineral percentages of manganese, cobalt, and Nickle in the Fedorov guyot (1-Mn=95%,2-Co=3% and 3-Ni=2%- % based on the 3 minerals). NB- % are only based on the 3 dominant minerals



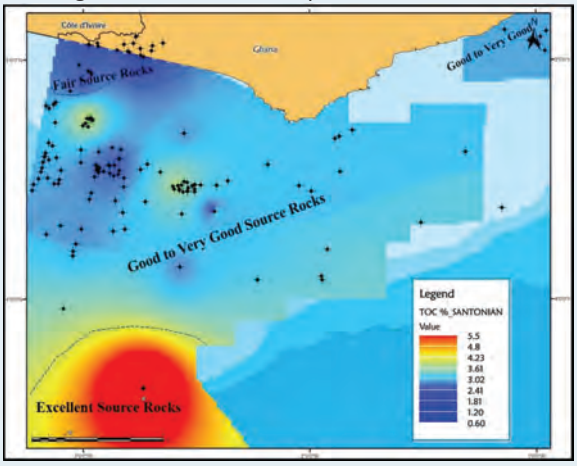
10

The Experience

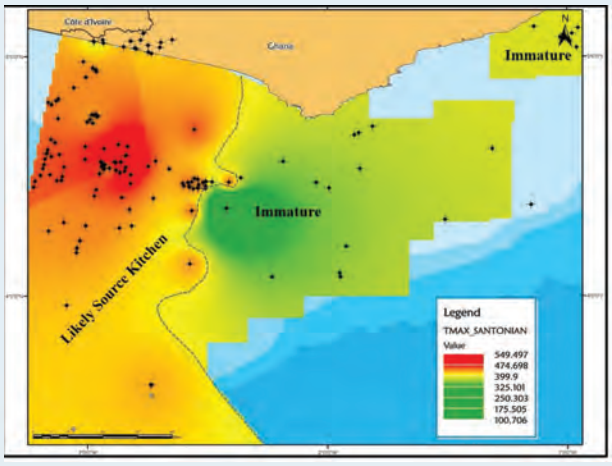
- Resource assessment in the Reserved Area
- The Capacity Building Workshop
- The Open-Ended Working Group (OEWG) on the Financial Model
- The Council Meeting
- The Legal and Technical Commission Meeting

Post secondment

- Detailed orientation to department on ISA is and stands for
- Lead a team to conduct a resource estimation assessment of the Tano offshore Basin using the skills set I developed from GIS



Lateral distribution of organic richness in the Santonian interval



Lateral distribution of thermal maturity in the Santonian interval

Achievements after Secondment

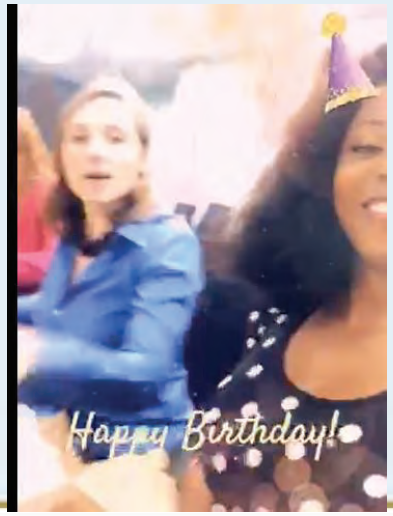
- Confidently educate my country through my company on deep-seabed mineral exploration and exploitation
- A proud ambassador of the the International seabed Authority
- Successfully conduct mineral resource assessment to enable future projections.
- Assisted in the upgrading of the ISA website
- Established contacts with contractors for a potential joint venture with Ghana for exploration/exploitation licence
- Adequately informed on the REMPs project
- Boost in self confidence

13

The ISA experience

14

The memorable surprise!!!



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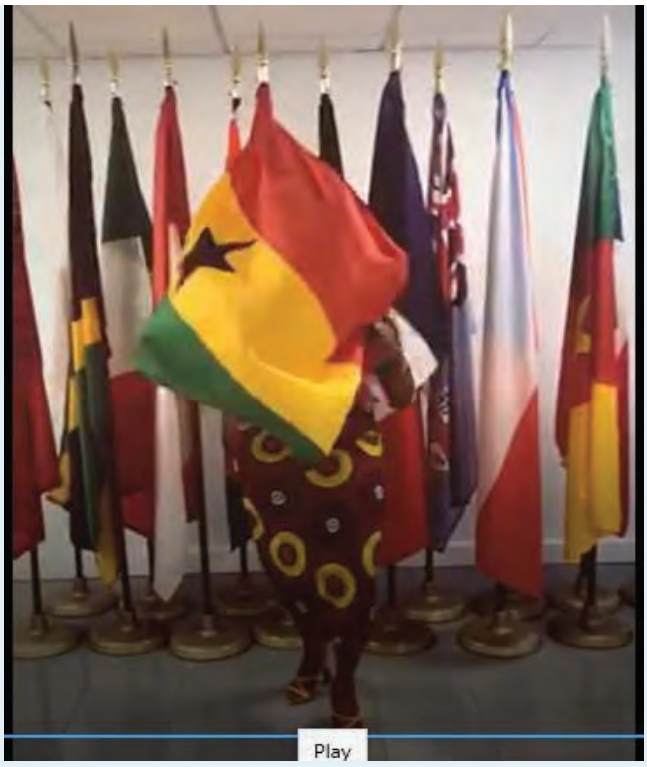

Medaase

(Thank you)

16

My experiences as a former ISA trainee

Presenter: Abdulqadir Ziyad (Somalia)

Date: 03.05.2021

1

The opportunity ISA gave me

- **On-land training program on the exploration of deep-sea minerals** conducted by the ministry of earth sciences (MoES), Government of India in accordance with its contract for the exploration for polymetallic sulphides with the International Seabed Authority.
- It's been a great opportunity that substantially transformed my career path.
- The training was multi-faceted in nature as it involved all aspects of earth sciences.

2

The training was conducted in……..

- We were exposed to the facilities for deep sea mineral explorations of a number of Indian research institutes that fell under the mandate of the ministry of earth sciences of India namely;

1. National Centre for Antarctic and Ocean Research **(NCPOR)**
2. Indian National Centre for Ocean Information Services **(INCOIS)**
3. National Institute of Ocean Technology **(NIOT)**
4. Central Marine Fisheries Research Institute **(CMFRI)**
5. Centre for Marine Living Resources & Ecology **(CMLRE)**
6. National Centre for Earth Science Studies **(NCESS)**
7. National Institute of Oceanography **(NIO)**

3

A paradigm shift

- The training has literally changed my perspective toward the ocean and its resources especially deep sea.
- The training opened my eyes and broadened the horizons of my knowledge about the various minerals in deep sea.
- Prior to the training, I only focused on the living marine resources but after getting this training, I developed a huge interest in the non-living resources specifically minerals.

4

How the training has helped me…..

- Based on my educational background including the one I got from ISA, I was elected to be the head of marine science department at the faculty of science, Somali National University.
- I was also selected to be one of the technical working group for the "Preliminary Strategic Environmental Assessment for the Government of the Federal Republic of Somalia's Petroleum Sector".

5

Conclusion

- I suggest that ISA should increase capacity building projects in developing countries by providing more post-graduate programs and short-term internships.
- ISA should empower marine and geological research institutions in Somalia by training their staff and providing state-of-the-art laboratories.
- ISA should either recruit its trainees or support the organizations that they belong to.

6

A group photo with NCPOR staff

7