

OCEANQUEST

NEWSLETTER

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FOREWORD BY DJRECTOR



A very warm welcome to our eighth edition of the Ocean Quest Newsletter. We have had a busy but productive year and are pleased to share our work with you.

Climate change is real and if left unchecked, it will threaten our very existence. A two-day workshop aimed at tackling climate change was conducted at the MOI involving various representatives from the City and the District Councils of Mauritius, wherein various strategies and objectives were outlined in order to effectively, and efficiently, address climate change issues in Mauritius. In order to empower coastal communities, staff at the MOI have been busy carrying out training programmes on the implementation phase of the "Community-based Coral Farming Project". Members of the coastal communities of La Gaulette and Quatre Soeurs are trained in coral biology, ecology and coral cultivation techniques. This training programme aims not only to repopulate our reefs with cultured corals but also to sensitise local communities on the vulnerability of coral reefs to various anthropogenic and climate related impacts and the importance of safeguarding the reefs for protection of our coastline and for providing habitats and shelter for many marine organisms. A port baseline survey of Port Mathurin harbour was also conducted earlier this year by a multidisciplinary team of scientists from the MOI.

Renewable energies are currently the focus of every country striving for sustainable development. In this respect, the MOI is researching on the scope of developing renewable energy from marine sources for the sustainable development of the Republic of Mauritius. In this context, firstly, a model for the Ocean Thermal Energy Conversion (OTEC) system is being developed, with the addition of remote sensing data and hydrodynamics data being computed into this system. The feasibility of this technology is being assessed by a team of scientists from the MOI in order to find out the most convenient location around Mauritius for tapping into this renewable energy resource. Secondly, a scientific paper on the potential of wave energy development in Mauritius has been published by MOI staff- the findings of which are outlined in this newsletter.

Please read on to find out more about these research activities which have been selected for this edition of the Ocean Quest newsletter. A more exhaustive description of our research projects can be found on the Mauritius Oceanography Institute's website. I would like to wish all our readers... Happy reading! Dr. Ruby MOOTHIEN PILLAY Director

PREFACE BY CHAJRMAN



Welcome to the 8th edition of the Mauritius Oceanography Institute (MOI) e-newsletter. I do hope you find it informative and enjoyable. This newsletter mirrors the various activities, events and scientific research programmes of the MOI during the current year. All these are showcased as you scroll through.

One of the aims of the MOI is to look beyond the horizon and in widening the space of its networking web for exchange of ideas and of good practice with other Institutions, Universities and Organizations. As a Small Island State with a high vulnerability index, this networking with coastal nations is a must for survival. You will come to term with such programmes in this newsletter.

The concept of "Blue Economy" is explained with emphasis on a sustainable exploitation of our marine resources and on the need to explore new opportunities which the sea offers to us.

There is overwhelming evidence that the frequency, duration, intensity and timing of extreme events on land are changing under global warming, Climatic extremes also occur in the ocean and recent decades have seen many high-impact marine heat waves (MHWs) with anomalously warm water events that may last many months and extend over thousands of square kilometres.

The MOI is well aware of the 1.5 degrees Celsius issue and of the fact that major

die-offs have hit coral reefs around the globe and in our lagoons and fringing coral reefs. This is why techniques for culture of corals on-land and at sea for conservation purposes and for maintaining the quality of the coral communities are being propagated to coastal communities island wide through awareness raising and Coral Culture Training Programmes. The newsletter has included some interesting snapshots on these issues.

It is the role of MOI to sensitize the youth of our country, our future leaders, on the importance of protecting our marine environment and particularly on the danger of plastic pollution. In this issue of the MOI Newsletter, this initiative is discussed.

I hope you will enjoy reading this newsletter and any comments and suggestions would be most welcomed.

Prem Saddul, Associate Professor Chairman

The Blue Economy

The Blue Economy is a relatively new concept aimed at sustainably utilizing the resources harboured by the oceans for economic growth, all the while addressing, and possibly reversing the ongoing trend of degradation to our marine ecosystem- be it of natural or anthropogenic origin.

The term 'green economy', coined back in 1989, resulted in a revolution. It was a concept developed to encompass the development of a country, its land and its people, all the while "maintaining the healthy functioning of the Earth's ecosystem" (United Nations Economic Commission for Africa, 2014). During the 2012 Rio+20 summit, the concept of the green economy was being further developed when coastal nations questioned the validity of such a concept for their limited land mass and asked for the development of the 'Blue concept' in a green economy.

Coastal nations, especially Small Island Developing States (SIDS), are constrained by their limited land size, isolation and remoteness, increased vulnerability to environmental hazards and disasters and climate change. These nations additionally rely heavily on international trade for their daily commodities. It was recognised that these coastal nations have however a vast oceanic expanse at their disposal, courtesy of each nation's extensive coast line and Exclusive Economic Zone (EEZ). This was recognised to be particularly important in the case of coastal Least Developed Countries (LDCs) and SIDS, giving them access to vast maritime resources. For instance, SIDS such as Mauritius (land mass: 2000 km²) and the Seychelles (land mass: 437 km²), have access to 1.96 million square km and 1.37 million square km of oceanic resources through their respective EEZ, which could potentially generate considerable revenues through the sustainable development of these thus-far, underutilised resources.

The importance of the ocean for the economic expansion of coastal nations has been perfectly summed up last year by Ms. Laura Tuck, Vice President, Sustainable Development, World Bank Group: "The value provided by marine and coastal ecosystems often goes unrecognized because it isn't that easy to quantify. If we value these resources better, they will be better protected and better able to sustainably provide the foundation for economic growth and poverty reduction – particularly for SIDS and coastal LDCs."

The challenges faced by SIDS and coastal LDCs are certainly numerous: land, marine and coastal pollution, bleaching events, tsunamis, increasing global population, decreasing fish stocks, increasing sea surface temperatures, rising sea levels, and ocean acidification amongst others. The opportunities which exist for these countries also abound, albeit under-exploited at the moment. Many SIDS, including Mauritius, rely on coastal tourism as a main pillar of their economy. Fisheries, shipping and port activities provide not only food security but also job opportunities and livelihoods for local and especially coastal communities. The marine environment is in itself a rich source of genetic diversity, with the next potential cure of cancer or Huntington's hidden within its depths. It not only helps in climate regulation but is also the largest natural carbon sink.

The task consequently arising: to strike a balance between developing the ocean to benefit society at large and protecting the environment. This poses a major challenge in itself in view of the damages already caused by natural hazards, disasters, climatechange and anthropogenic actions. One cannot expect to keep depleting and unsustainably exploit the sea without causing irreversible damage. There is ergo, an imperative need to reverse this ongoing trend of degradation of the marine ecosystem.

And so, after much effort and brainstorming, the term 'Blue Economy' was coined to reflect on the development of the 'blue aspect' of the "Green economy in a Blue world" (UNEP, 2012). The Blue Economy has been described as the "long-term strategy aimed at supporting sustainable economic growth through oceans-related sectors and activities, while improving human well-being and social equity and preserving the environment" (Wu Hongbo, Secretary-General of the Ocean Conference and Under-Secretary-General of UN DESA, 2017).

The Blue economy aims at sustainably developing marine resources such as fishing, tourism, marine renewable and non-renewable energies, shipping and maritime transport, genetic resources, pharmaceutical and cosmeceutical and other general sea-based products, and blue-carbon trading opportunities (Figure 1). The Blue Economy is thus not only about utilizing all these various resources for economic benefits but rather simultaneously ensuring that these resources and the ocean are exploited in a sustainable and environmentally friendly way. In order to do this, a deeper understanding of oceanic parameters such as sustainable fisheries, ecosystem health and pollution, amongst others are required.



Sectors of the Blue Economy as defined by the World Bank and the United Nations in 2017 (Source: World Bank and United Nations Department of Economic and Social Affairs. (2017))

Figure 1: Sectors of the Blue Economy as defined by the World Bank and United Nations in 2017

(Adapted from: The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries. (2017) World Bank and United Nations Department of Economic and Social Affairs)

On the global scale, the United Nations and the World Bank are working tirelessly to help coastal nations to develop their Blue Economy programmes. For instance, the World Bank has a budget of US\$ 3.7 billion allocated to the Blue Economy portfolio to be used in the development of various sectors. It is providing finances of up-to US\$ 1.1 billion for the development of sustainable fisheries and aquaculture, US\$ 1.5 billion for efforts in the enhancement and conservation of coastal and marine habitats, and the remaining US \$1.1 billion are to be used for the management of coastal infrastructure (waste treatment and other activities aimed at reducing coastal and marine pollution).

Global economies have much to gain from the sustainable development of this sector. Coastal nations have to work together not only on an international scale but also at regional level to enhance the economic benefits to be reaped in their respective regions. The focus for the development of the Blue Economy relies heavily on the social inclusion and the sustainable exploitation of available marine resources for economic growth. The emerging development paradigm of the Blue Economy is hence inclusive of the Ocean Economy, the Green Economy and the Coastal Economy.

(This article is the first part of a three series article focusing on the Blue Economy, the Ocean Economy in Mauritius and their implications for Small Island Developing states, which will continue in the future editions of the MOI newsletter.)

Dr. N. Reetoo



MOI Newsletter

Community Based Coral Culture in the Republic of Mauritius

Over the decade, the Mauritius Oceanography Institute (MOI) has successfully developed and optimised locally adapted techniques for culture of corals on-land and at sea for conservation purposes. The institute has recently initiated a community based coral culture project in the Republic of Mauritius. This three year project primarily aims at training and capacity building of coastal communities in coral farming and reef rehabilitation techniques hence providing additional skills to the communities. The project falls under the budgetary measures for the financial year 2017-2018 (Budget para-104) and coincides with the Government's initiative of "Promoting coral culture as an alternative livelihood for fisherman and coastal communities for conservation of marine biodiversity". The project which is funded by the Ministry of Finance and Economic Development is being jointly implemented by the MOI and the Albion Fisheries Research Centre (AFRC), under the aegis of Minister of Ocean Economy, Marine Resources, Fisheries, and Shipping, at different locations around he island.

Sensitisation and awareness raising

In the late months of 2017, awareness raising programmes were undertaken island-wide for sensitisation of stakeholders, coastal communities and the public at large. Meetings and interviews have been undertaken in the North (Poudre D'Or, Trou aux Biches, Pointe aux Piments, Grand Gaube), West (Case Noyale, Flic en Flac, La Gaulette, Le Morne), South (Souillac, Surinam, Bel Ombre) and East (Mahebourg, Quatre Soeurs, Bambous Virieux, Trou d'eau Douce) of the island. These surveys have helped in the identification of potential sites for implementation of the project (i.e., La Gaulette, Quatre Soeurs, Bel Ombre and Grand Gaube) (Figure 1).





Figure 1: Meeting with representatives of fishermen associations at Poudre D'Or and Case Noyale



Coral Farming Training Programme

Inception workshops and registration of trainees

During the early months of 2018, inception workshops were undertaken at selected project implementation sites (namely Quatre Soeurs, La Gaulette, Bel Ombre and Grand Gaube) (Figure 2). The main aim of these inception workshops was to identify potential candidates for enrolment under the "Coral Culture Training Programme" (CCCP). Currently, 65 participants have registered under the CCTP (75% male & 25% female). These trainees are from the regions of La Gaulette (31 trainees) and Quatre Soeurs (34 trainees), with 10% comprising young candidates aged lower than 30 years. (Figure 3).



Figure 2: Inception workshops at La Gaulette, Quatre Soeurs, Grand Gaube and Bel Ombre



Figure 3: Mean % number of trainees registered under the CCTP at La Gaulette and Quatre Soeurs

Training under the CCTP

Since February 2018, registered participants have been trained (through classroom lectures and/or hands-on practical sessions) in (i) coral biology (Figure 4), (ii) nursery construction (Figure 5), and (iii) nursery set-up, monitoring, maintenance and management (Figure 6). CCTP participants have also been trained in snorkelling and First Aid/Emergency First Response (EFR).



Figure 4: Classroom sessions at Quatre Soeurs and La Gaulette



Figure 5: Nursery construction Quatre Soeurs and La Gaulette



Figure 6: Nursery set-up, monitoring, maintenance and management at Quatre Soeurs and La Gaulette

Demo Coral Farms

A Demo Coral Farm was established at Albion in October 2017. Presently, the farm comprises 3 nursery units with a total of 3,200 coral fragments under culture. Coral species under culture in the farm are from the Acroporidae, Pocilloporidae, Poritidae and Helioporidae families. Mean survival rate for all coral species under culture in the Albion farm is > 70% (over a 10 months period) (Figure 7). The Albion farm serves as a demonstration site which is visited by CCTP trainees.

Likewise, Demo Coral Farms have been set up at La Gaulette and Quatre Soeurs in March 2018. At both sites, nurseries comprises 3 nursery units with a total of 2,600 coral fragments under culture. Coral species under culture in the farms are from the Acroporidae, Pocilloporidae, and Poritidae families. The mean survival rate for all coral species under culture at La Gaulette and Quatre Soeurs is > 80% (over a 6 months' period) (Figure 7).

At all sites, maintenance of Demo Coral Farms (i.e. cleaning up of fouling organisms, predators, algae, etc.) twice per month to allow for limited negative pressure on coral growth.



Figure 7: Mean percentage (%) survivorship for nursery-grown corals at Albion, La Gaulette and Quatre Soeurs (Data from Oct-17 to May-18 for Albion and, Mar-18 to May-18 for La Gaulette and Quatre Soeurs) (n=200-800)

Way forrward

Training of CCTP participants will continue at La Gaulette and Quatre Soeurs until early next year. Participants will be trained in creation of coral gardens viz. transplantation of nursery-grown corals to degraded reef sites. In October 2018, enrolment of participants under the CCTP will take place at two additional sites namely at Grand Gaube and Bel Ombre. Overall, approximately 110 participants will be trained in coral culture and gardening techniques.

Acknowledgments: Fisheries Protection Service, National Coast Guards, Representatives of Registered Fisherman Associations, Presidents of La Gaulette, Grand Gaube and Bel Ombre Village Halls, Ministry of Social Security, National Solidarity and Environment and Sustainable Development (Community Centres)

Mr. S. Bacha Gian

Interactive Session at Telfair International School

The MOI was invited, in the context of the celebrations of World Oceans Day 2018, for a Citizenship Presentation at Telfair International Primary School with around 120 students aged between 5 to 11 years on Friday 22nd June 2018. An interactive session was held with the students with the assistance of Ms. R. Boyjoonauth, Public Relations Officer and Mr. J. Doorga, Service to Mauritius Intern, whereby Dr. Y. Neehaul, Associate Research Scientist explained about the dangers of plastic pollution on the coastal as well as marine environment while Mrs. A. Audit-Manna, Associate Research Scientist stressed on the importance of the ocean. The students were divided into four groups to discuss about solutions to end plastic pollution and how to protect the coastal and marine environment.

Ms. R. Boyjoonauth

Seagrass training workshop – Identification, mapping & monitoring

Seagrasses are submerged plants found in marine waters: they have roots, stems, leaves and produce flowers and seeds. These unique marine flowering plants are found mainly in clear coastal waters where they propagate both sexually and vegetatively. They can form dense underwater meadows, some of which are large enough to be seen from space. Seagrass meadows are a critical component of the coastal marine environment worldwide, providing some of the most economically and environmentally valuable ecosystem services. They provide food, habitat and nursery areas for numerous vertebrate and invertebrate species. The extensive roots system in seagrasses, which extends both vertically and horizontally, helps stabilise the sea bottom. Seagrass meadows trap fine sediments and particles that are suspended in the water column, thus improving water quality. They also filter nutrients that come from land-based industrial discharge and storm-water runoff before these nutrients are washed out to sea and other sensitive habitats such as coral reefs. Despite their importance, seagrass meadows are experiencing high rates of loss globally and a proper monitoring programme is required to assess their health. In this context, the Indian Ocean Commission (IOC) in collaboration with the Albion Fisheries Research Centre (AFRC) organised a seagrass training workshop to develop national capacity in monitoring seagrass meadows. During the workshop, a two-day training session was held at Le Morne and La Gaulette whereby field-based identification was undertaken. Participants were given the opportunity to identify and quantify different types of seagrass along a defined transect. In addition, a hands-on session on QGIS was carried out whereby an overview was given on how to undertake the delineation of seagrass patches on processed satellite imagery.

Mr. S. Curpen

Interactive Session at Telfair International School

Mr O. Gooroochurn (Associate Research Scientist) attended a training and capacity building workshop on Indicator Reporting Information System (IRIS) under the Environment data sharing and reporting in support of a Shared Environment Information System (SEIS) at Ravenala Attitude Hotel, Balaclava on the 11th and 12th July 2018. The workshop was organised by the Ministry of Social Security, National Solidarity, and Environment and Sustainable Development (Environment and Sustainable Development Division). The purpose of the workshop was to bring together all the relevant stakeholders under the same platform and to build capacity for the forward-looking indicator-based reporting system IRIS.

During the workshop, the IRIS platform was presented and participants were trained on how to use the IRIS interface and the requirements for implementing the system. The IRIS would be connected to the open data portal of the Government of Mauritius and would be implemented by the Ministry of Social Security, National Solidarity, and Environment and Sustainable Development (Environment and Sustainable Development Division). There would be data uniformisation so as to ease reporting burden and reduce reporting time. This will eventually generate statistical digests electronically that can be showcased to policy makers and finance people in a standardised manner.

3rd National Communication – Capacity Building on Vulnerability Assessment and Adaptation

With the significant warming trend of about 1.2°C, a decreasing trend in rainfall amount of about 8% and a projected rise of sealevel ranging between 52 cm and 98 cm by the end of the century if no mitigating action is taken (IPCC, 2013), the risk from natural disasters arising from extreme events such as cyclones, flood and droughts are expected to increase. Already, according to the World Risk Report 2016, Mauritius is ranked as the 13th country with the highest disaster risk and 7th on the list of countries most exposed to natural hazards (UNU-EHS, 2015). The vulnerability of the RoM is projected to increase with these phenomena impacting adversely on its socio-economic and environmental sectors.

The assessment of the vulnerability made on the basis of climate trend projections of the regional climate model COSMO-CLM, developed under the Disaster Risk Reduction Strategic Framework and Action Plan 2013 (DRR, 2013), predicts temperature to increase, with a range (depending on the seasons and scenarios) between 1°C and 2°C for the period 2061-2070, with respect to the period 1996-2005 (TNC, 2016).

The threatening impacts of climate change are increasingly being felt with an accelerated sea level rise, accentuated beach erosion, increase in frequency and intensity of extreme weather events, decreasing rainfall patterns as well as recurrent flash floods. The climate challenges ahead for Mauritius should not be underlooked, especially when considering the facts that water supply by 2030 may not be sufficient to satisfy projected demand, agricultural production may decline by as much as 30% and that several beaches, that are so important for our tourism industry may slowly disappear, thus severely undermining one of our major economic pillars and depriving the economic value of this sector, worth over USD 50 million by 2050.

A two-day workshop was held in July 2018 to test a user-friendly toolkit developed to assess vulnerability and adaptation for the Republic of Mauritius. The VAA for seven sectors were assessed in the Third National Communications (TNC) Report (2016) for the various climate change-related impacts observed in the various sectors in the Republic.

The VAA (Mauritius) Toolkit performs basic calculations taking the indicators of the Environmental Vulnerability Index (EVI) under related sector issues. Applicable sector and related indicators were shortlisted, besides some common indicators about climate. Users of the VAA (Mauritius) Toolkit can adjust the indicators by choosing appropriate parameters/assumptions to suit their needs of the vulnerability assessment.

Main Objective:

• To test and identification of bugs in the development of a user friendly toolkit to asses vulnerability and adaptation for the Republic of Mauritius.

Discussions:

• Presentations were done by various stakeholders namely the university of Mauritius, Ministry of Social Security, National Solidarity and Environment (Environment and Sustainable Development Division)

A demonstration was given on the use of the toolkits for the different categories, namely:

- 1 Agriculture
- 2 Biodiversity
- 3 Coastal Zone
- 4 Health
- 5 Fisheries
- 6 Infrastructure
- 7 Water

For coastal zone, attention has been focussed on how to predict the sea surface temperature based on previous data from previous year. From the data, one can predict the sea surface temperature for a particular year.

Mr. M. Sadien

Workshop on Maritime Law and Human Rights

From the 30th July to the 2nd August 2018, the Director, along with four scientists namely Mr P. Mussai, Dr. M Singh, Dr. Y Neehaul and Dr. D Dumur Neelayya attended the Workshop on Maritime Law and Human Rights organized by the American Embassy and facilitated by the members from the Defense Institute of Legal Studies (DILS), USA. This workshop was also attended by staff from the Ministry of Ocean Economy, Marine Resources, Fisheries and Shipping, Ministry of Defence and Rodrigues including the Mauritius Police Force and the National Coast Guard, and personnel from the Attorney General's Office and the Judiciary.

The workshop was intensive and covered a wide range of subjects including an overview of the UN Law of the Sea Convention, Maritime Law Enforcement, Rules of Engagement, Illegal Drugs at Sea, Piracy and Armed Robbery at Sea, Maritime Migration, Trafficking of Persons at Sea and Fisheries Law and Enforcement.

Dr. D. Dumur-Neelayya

Training Course in Coral and Sponge Taxonomy

Mr. S. Bacha Gian, Research Scientist from Biological Oceanography Unit at MOI attended a training course in Coral and Sponge Taxonomy at the Institute of Marine Sciences (IMS), Zanzibar from the 5th to the 11th August 2018, organised by IMS and the Indian Ocean Commission (IOC). The overall objective of the training course was to contribute to the sustainable management of marine biodiversity through improvement of coral reefs and associated biodiversity knowledge. The training also aimed to strengthen capacities of members of the Western Indian Ocean (WIO) national coral reef monitoring teams in sponges and hard coral taxonomy, hence contributing more to marine biodiversity monitoring and management.

Through lecture classes and practical sessions, participants under this training course benefited in acquiring advanced knowledge in morphological identification of scleractinian corals and sponges both in field and in lab.



Video transect survey during a field training session



Microscopic view of sponge sample after acid digestion during a lab training session

Acquired knowledge gained through this training will help in:

• Morphological characterisation of the corals Mauritius (revisit of coral fauna) and characterisation of coral fauna at other outer islands (namely, Agalega and St Brandon islands).

• Field identification and monitoring of the Terpios sponge at MOI's permanent stations, through the incorporation of the sponge component in the MOI's on-going ecological monitoring programme Morphological identification of sponges when undertaking an inventory of sponges under MOI's "Assessment of living resources in the EEZ of Mauritius" project.

Mr. S. Bacha Gian

Capacity building Workshop on Climate Finance Bankable Projects

A two-day capacity building workshop for "Preparation of Climate Finance Bankable Projects" held at the Intercontinental Resorts at Balaclava on the 23rd and the 24th August 2018, was attended by Dr. D. Dumur Neelayya. Organised by the Ministry of Social Security, National Solidarity, and Environmental and Sustainable Development, the workshop was facilitated by Mr. P. Karani, National Advisor on Climate Finance (Mauritius), and involved resource persons from the Ministry of Finance and Economic Development (MoFED), United Nations Development Programme (UNDP), and European Union (EU) Delegation.

The workshop comprised presentations on different project cycles and terminologies by different donors e.g. Global Environment Facility VII, Green Climate Finance, etc., including a presentation by the EU Delegation representative on the EU Project cycle and terminologies. This was followed by a session on "Experiences in Project Design and UNDP Quality Assurance", whereby the lessons learnt from past projects were shared. A presentation on "Preparing a fit for purpose Terms of Reference" was also part of the event, during which the importance of a proper TOR was highlighted. The Logical Framework Process was introduced to the participants before a comprehensive concluding session on Budgeting and costing/co-financing by representatives from MoFED.

Training course on Data Visualization of Marine Met data using FERRET

Associate Research Scientist, Mrs. Khishma Modoosoodun-Nicolas attended a five-day training course on Data Visualization of Marine Met data using Ferret software, jointly organized by the International Oceanographic Data and Information Exchange-IOC/UN-ESCO-Ocean Teacher Global Academy and the Indian National Centre for Ocean Information Services (INCOIS) in Hyderabad, India from the 27th to the 31st August 2018. The training course gathered scientists, meteorologists, oceanographers, researchers, scholars and navy commanders around the globe, namely Mauritius, Malaysia, Vietnam, Bangladesh, Sri Lanka, Philippines, Iran, Thailand, Fiji and India. The main objective of the training was on Data Visualization. The training demonstrated the use of open source software FERRET for generation of NetCDF data to visualize various types of plots, save and reuse them at a later stage. Since data visualization is the science of describing the significance of data by placing it in a visual context, it is very useful for dealing with marine met data as patterns, trends and correlations that might go undetected in text-based data that can be exposed and recognized easier with data visualization software. The learning outcomes showed how to use and understand FERRET software; how to generate different types of JNL scripts for visualization and analysis; to visualize ocean datasets, in situ, remote sensing and model outputs data. The last day comprised a mini-assessment including the use of Ferret JNL scripts to visualize oceanographic Argo datasets followed by a closing ceremony.

African Blue Economy, Fish Trade and Leadership Symposium

The University of Wollongong in collaboration with the University of Mauritius had organized on 3rd September 2018 at the Core, University of Mauritius, Ebene, a one day symposium for the Australian Awards Africa training programme 'Ocean Management-Sustainable Fisheries Governance' of the Department of Foreign Affairs and Trade, Government of Australia. The symposium was attended by 28 awardees from 12 African nations.

The keynote address was given by the International Fish Trade expert, Dr Amadou Tall, Senegal. Speakers spoke on various issues such as challenges for the Indian Ocean Tuna Industry, Blue economy and fisheries development in Mauritius, professionalizing women in the Shipping sector, Mauritius Maritime cluster, marine plastic debris and the blue economy.

The Director of the MOI made a presentation on 'Marine Science and developing the Blue economy' during the symposium and later addressed the audience on 'Encouraging women in marine science' during a reception at the Hilton Mauritius Resort and Spa, Flic en Flac

1st GMES & Africa support programme communications working group inaugural meeting

GMES & Africa is a joint AU-EU programme designed to respond to global needs to manage the environment, understand and mitigate the effects of climate change as well as ensure civil security. It is also meant to address the growing needs of African countries to access and use Earth Observation (EO) data for the implementation of sustainable development policies.

A key pillar of the GMES & Africa is communications and awareness-raising, which are central to the successful implementation of the programme. The African Union Commission and Consortia of African institutions selected to implement GMES & Africa consider it imperative to mobilize their communications representatives.

In the context above, Ms. R. Boyjoonauth, Public Relations Officer participated in the 1st GMES & Africa support programme communications working group inaugural meeting from the 23rd to the 24th July 2018 at the African Union Commission (AUC) headquarters in Addis Ababa, Ethiopia.

The overall objective of the GMES & Africa Communications Working Group Inaugural Meeting and Workshop was to galvanize the efforts and harmonize the contributions of Communications experts and focal points of GMES & Africa and its Consortia.

Relevance of the meeting

1. Raise the awareness of communications experts and focal persons of Consortia on the mandate and implementation of GMES & Africa Support Programme.

2. Discuss the principles underpinning communi¬cations for GMES & Africa and provide a launching pad for Consortia to prepare their local communications strategies.

- 3. Discover and share the regional experience of various consortia in communicating on Earth Observation
- 4. Strategize on working methods for the most ef-fective ways of communicating about GMES & Africa.

5. Devise concrete mechanisms for seamless communication between and among communications experts and focal points of Consortia and GMES & Africa.

- 6. Create an avenue for direct interaction and net¬working among communications experts of Consortia and GMES & Africa.
- 7. Formalize the creation of the GMES & Africa Communications Working Group.
- 8. Introduce communications experts of Consortia to AUC communications policies and systems.

9. Plan around the modalities of planning and cov¬ering the first GMES & Africa Forum to be held from 19 - 23 November 2018 in Libreville, Ga¬bon.

Value Added to MOI

1. Knowledge and understanding of GMES & Africa's state of play

2. Better understanding of the GMES & Africa Communications Strategy, and the possibility to use it as a guide to develop local communications strategies for the consortia.

- 3. Acquisition of working knowledge of AUC branding guidelines.
- 4. Sharing of ideas and networking among participants for future collaboration.

Enhanced Research Capacity

• Trained in conveying scientific information in a simple wrapping for the decision makers.

Implementation/Way Forward

- Implementation of the GMES & Africa Communication Strategy
- Development of a GMES & Africa Operational Plan at the level of the MOI Consortium

SCIENTIFIC EXPEDITION

Understanding the deep sea biosphere on seafloor hydrothermal vents in the Indian Ridge on board the Korean Marine Scientific Research Vessel- RV ISABU within the Mauritius Maritime Zones

The Republic of Mauritius has under its jurisdiction a vast maritime zone to manage and to explore, with the MOI being the leading oceanographic institution in Mauritius with the responsibility of fulfilling the Government Vision 2030 on Ocean Economy.

Understanding the deep sea biosphere on the seafloor hydrothermal vents in the Indian Ridge would bring new knowledge about the deep sea biodiversity which is currently limited in the EEZ of Mauritius. The hydrothermal vents are storehouses of endemic marine genetic diversity including resources that contribute to the wellbeing of humans. The study of the hydrothermal vents would be useful for the Republic of Mauritius in the context of the sustainable development of the Ocean Economy in the discovery and development of biofuel, nutraceutical, biomimetic, pharmaceutical, cosmetic, and other by products.

In line with the above, Mr. O. Sadasing, Associate Research Scientist in the Biological Oceanography Unit participated in a scientific expedition entitled "Understanding the deepsea biosphere on seafloor hydrothermal vents in the Indian Ridge on board the Korean Marine Scientific Research Vessel- RV ISABU within the Mauritius Maritime Zones" from the 13th to 30th June 2018. It should be noted that this research exploration is in line with the strategic objective of the Institute and also applied to current and future themes for marine sciences relevant to the MOI inter alia assessment of living resources in the EEZ of Mauritius ecosystem health and sustainability, natural resource management.

Opportunities to expand knowledge and capacity building of MOI staff in terms of scientific cruise planning, onboard practices, demonstrations of the use of marine sampling equipment, oceanographic sampling, data collection and storage, as well as a hands on experience onboard the vessel were acquired during the scientific expedition.

The objectives of this scientific expedition were to:

1. Exploration of a new hydrothermal vent in the central of Indian ridge using a hydrophone, multi-beam, an activity of hydrothermal vent.

- 2. Collection of the hydrothermal vent animals and analysis of the biodiversity and biogeography.
- 3. Understand community structures and ecological functions of the hydrothermal ecosystems.
- 4. Analyse biomarker and metagenome of vent species.
- 5. Analyse genetic resource of vent species.
- 6. Discover useful vital function and associated natural products.

7. Explore environmental systematics of hydrothermal vents including formation of system, geological background, and dispersion of hydrothermal plume.

8. Setting up of a database of the exotic hydrothermal vent biosphere which can be used for fundamental biotechnology.

9. Understand mid ocean ridge processes and ingenious technology for deep sea research which will be useful for policy making of marine scientific issues.

- 10. Understand the origin of the life based on the adaptation and function of the extreme hydrothermal vent systems
- 11. Seek international collaboration for systematic investigation of hydrothermal system

The key outcomes include:

1. Potential joint collaboration for the exploration of the hydrothermal vents.

2. Participating in the cruise provided valuable exposure to the hydrothermal vent survey methodology, data collection by the use of TV Grab, CTD, Mocness and data analysis.

3. Data collected during the cruise was provided to the institute. CTD Data and TV grab data of the hydrothermal vent could provide a better insight into the diversity of animal communities and understanding of the marine ecosystem.

4. Increased international visibility for the MOI.

5. Potential future opportunities for MOI scientists to participate in international oceanographic expedition and capacity building.

- 6. Increase understanding of the hydrothermal vents characteristics of the Mauritius waters.
- 7. Reaffirming the country's interest in participating in the exploration of the Indian Ocean waters.

Mr. O. Sadasing & Ms. R. Boyjoonauth

Gdynia Maritime Academy Visit

The MOI received the visit of around 80 international students from the Gdynia Maritime Academy who arrived on board the s/v Dar Młodzieży on Tuesday the 4th of September 2018. The Director conveyed a welcoming speech and Mr. J. I. Mosaheb, Principal Research Scientist gave a brief introduction of the MOI and the research activities carried out by and at the Institute. The following presentations were made by scientific staff: (1) "Microplastics, just because you can't see it doesn't mean it's not there!" by Dr. Y. Neehaul, Associate Research Scientist; (2) "Ocean economy and ocean related Sustainable Development Goals" by Mr. K. Ramdhony, Associate Research Scientist: (3) "Physical / Satellite Oceanography – Key contributions at regional/national levels and ongoing projects" by Mr. O. Gooroochurn, Associate Research Scientist; (4) "Unveiling the ocean renewable energy potential of Mauritius: How do we supply the country's energy needs?" by Mr. J. Doorga, Service to Mauritius (STM) Intern.

Ms. R. Boyjoonauth



Welcome speech by MOI Director



Presentation by Dr. Y.Nehaul



Presentation by Mr. K. Ramdhony



Group photo of students