NinthSessionofthelOCRegionalCommitteefortheCentralIndianOcea n(IOCINDIO-IX)Dhaka,Banqladesh,28–30March2023

NationalReport-Sri Lanka

Please, provide a brief description of the country programmes related to the IOCINDIOW or kprogramme based on the IOC global functions.

NB: Feelfree to provide additional programmes even if different of the below listed.

Country : Sri Lanka

Presenter(s)full names and position

Fullcontactaddressofthepresenter(s)

Names of members of the national delegation attending IOCINDIO-VIII:

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IOCFunctionA:Ocean Science and Research					
IOCINDIOProgramme:Effectsofhuman- inducedchanges:Oceanacidification,eutrophication,hypoxia,harmfulalgalblooms(HABs)incoastalwatersofth eNorth-westernIndianOcean					
Projects Titles/ Scope & Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/ International	Results/ Impacts	
Ocean Acidification	,	l	I	,	
Project –A(01): Project title or scope: Ocean acidification and changes in the marine carbon system (2019-2020). Project leaders: W.R.W.M.A.P. Weerakoon, W.N.C. Priyadharshani, Ph.D. H.B.U.G.M. Wimalasiri	 Conducting coastal water and offshore surveys, and performing wet and dry lab assessments to measure the pH, pCO₂, and HCO₃⁻concentrations of surface waters and the ocean water column. Timeseries data collection, quality control, processing, and analysis. Generation of country and regional maps based on cruise data. Data warehousing, and time series data management. Data and knowledge sharing, Scientific publications. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka and Indian Ocean rim countries.	Funding sources: National: National treasury of Sri Lanka. Regional: None. International: None	Results: Knowledge and understanding of the changes in the marine carbon system. Impacts: Knowledge sharing with stakeholders, i.e., the ministry of fisheries and aquatic resources development of Sri Lanka via presentations, cruise reports, project reports, and scientific publications.	
Project -A(02): Project title or scope: Ocean acidification and changes in the marine carbon system (2021-2022). Project leaders: W.R.W.M.A.P. Weerakoon, W.N.C. Priyadharshani, Ph.D.	 Conducting coastal water and offshore surveys to assess the pH, pCO₂, and HCO₃-concentrations in the ocean. Timeseries data collection, quality control, processing, and analysis. Generation of country and regional maps based on cruise data. Data warehousing, and time series data management. Data and knowledge sharing. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lankaand Indian Ocean rim countries.	Funding sources: National: National treasury of Sri Lanka. Regional: None. International: None	Results: Knowledge and understanding of the changes in the marine carbon system. Impacts: Knowledge sharing with stakeholders, i.e., the ministry of fisheries and aquatic resources development of Sri Lanka via presentations, cruise reports, project reports, and scientific publications.	
Project -A(03): Project title or scope: Ocean acidification (As a Subcomponent of the EAF-Nansen, Ecosystem Survey, 2018). Project leaders: W.R.W.M.A.P. Weerakoon K.A.D.A.T. Harishchandra	 Coastal and offshore collection of surface and subsurface water samples. Laboratory analysis of water samples (Onboard RV. Dr. F. Nansen). Data processing and analysis. Generation of country and regional maps based on cruise data. Data and knowledge sharing. Scientific publications. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka and Indian Ocean rim countries.	Funding sources: National: National treasury of Sri Lanka. Regional: None. International: Food and Agriculture Organization (FAO); the EAF-Nansen Program.	Results: Knowledge sharing with stakeholders, i.e., the ministry of fisheries and aquatic resources development of Sri Lanka via presentations, cruise reports, project reports, and scientific publications. Impacts Initiation of research activities on ocean acidification in Sri Lanka.	

Microplastic Pollution

Project -A(04):

Project title or scope:

A combination of projects on Ocean pollution by microplastics and marine debris (2016-to date).

Project leaders:

W.R.W.M.A.P. Weerakoon D.B.D.T. Samaranayake

- Conducting coastal water and offshore surveys for surface water, subsurface water, and sediment sampling.
- Timeseries data collection, quality control, processing, and analysis on marine microplastics.
- Enumeration and characterization of microplastics in Sri Lankan waters.

Geographical scope:

- National: Sri Lankan waters.
- Regional: Arabian sea, and the Bay of Bengal.

Benefitting countries:

• Sri Lanka

Funding sources:

- National: National treasury of Sri Lanka.
- Regional: None.
- International: Food and Agriculture Organization (FAO); the EAF-Nansen Program.

Results:

 Knowledge of microplastic pollution levels in different coastlines.

Impacts

 Knowledge sharing for policy reviews, and national-leveldecision-making on curtailing plastic pollution in Sri Lanka.

Eutrophication

Project -A(05):

Project title or scope:

An integrated subcomponent of the oceanography projects at NARA (2018-to date).

Project leaders:

W.N.C. Priyadharshani, Ph.D. N.G.L. Uthpala

 Conducting assessments on nitrates, nitrites, phosphates, etc., and other nutrients in coastal waters, lagoons, and offshore waters, in view of river outfalls, coastal agriculture activities, water and ocean fronts, and alongshore currents.

- Assessment of nutrients in relation to major monsoon seasons, and pollution incidents such as ship/ cargo spills of chemicals, fertilizers, etc.
- Assessment of nutrients in relation to rainy seasons, extreme weather events (i.e., cyclones), consequent coastal flooding, and surface runoff to waterbodies and the ocean.

Geographical scope:

- National: Sri Lankan waters.
- Regional: Arabian sea, and the Bay of Bengal.

Benefitting countries:

- Sri Lanka
- Indian Ocean rim countries.

Funding sources:

- National: National treasury of Sri Lanka.
- Regional: None.
- International: None.

Impacts:

 Knowledge sharing with the ministry of fisheries and aquatic resources development, and other institutions of Sri Lanka through presentations, cruise reports, project completion reports, and scientific publications.

Impacts

 Created knowledge as inputs and baseline data for provincial-level and national-level feasibility assessments, initial environment assessments, and environmental impact assessments.

Hypoxia

Project -A(06):

Project title or scope:

Subcomponents of the oceanography studies of EAF-Nansen Ecosystem Survey (2018).

Project leaders:

W.R.W.M.A.P. Weerakoon K.A.D.A.T. Harishchandra

- Assessment of hypoxia and the occurrence of dead zones in coastal and marine waters around Sri Lanka.
- Identification of dead zones in submersed waters/ in the ocean water column.
- Conducting surveys to assess dissolved oxygen, biological oxygen demand (BOD), chemical oxygen demand (COD), and biomass.

Geographical scope:

- National: Sri Lankan waters.
- Regional: Arabian sea, and the Bay of Bengal.

Benefitting countries:

 Sri Lanka and Indian Ocean rim countries.

Funding sources:

- National: None.
- Regional: None.
- International: Food and Agriculture Organization (FAO); the EAF-Nansen Program.

Results:

 Knowledge sharing with the ministry of fisheries and aquatic resources development, and other institutions of Sri Lanka through presentations, cruise reports, project completion reports, and scientific publications.

Impacts:

 Created knowledge as inputs and baseline data for provincial-level and national-level feasibility assessments, initial environment assessments, and environmental impact assessments.

IOCFunctionB:ObservingSystems&Data				
<u>IOCINDIOProgramme</u> :Oceanobservations,coastalzonemanagement,circulations,andfisheries.				
ProjectsTitles/ Scope &Leaders	Activities	GeographicalscopeRe gional/Nationalbenefitti ngcountries	Budget/fundingsour cesNational/Regiona I/ International	Results/ Impacts
Project -B(01): Project title or scope: Sea level observation and formulation of an Oceanographic Database (2018). Project leaders: K. Arulananthan, Ph.D. K.W. Indika Weligamage	Design, establishment, maintenance, and improvement of temporary and permanent sea level and ocean monitoring systems. Improvement, and expansion of the current monitoring network in the country.	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka and Indian Ocean rim countries.	Funding sources: National: National treasury of Sri Lanka. Regional: None. International: Intergovernmental Oceanographic Commission (IOC), UNESCO, and PR China.	Results: Permanent sea level and ocean monitoring stations (network). Knowledge of local and regional sea level rise, and its magnitude. Knowledgeofflood inundation areas, trends, and maps. Impacts: Inputs to the national disaster risk management framework (Disaster management center), Sri Lanka., and to the standard operational procedure (SOP) of disaster risk management.
Project -B(02): Project title or scope: Development of a satellite-based ocean forecasting system (2012) Project leaders: J.K. Rajapaksha, Ph.D. S.S. Gunasekara	 Fishery data collection from tuna (longline/gillnet) for modeling and forecasting, Timeseries data collection, processing, and analysis for surface temperature, chlorophyll, depth-based temperature data, and catch effort. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka. Regional: None. International: Food and Agriculture Organization (FAO), Indian Ocean Tuna Commission (IOTC).	Results: Fishing ground forecasting system for Sri Lankan offshore fisheries sector. Impacts: Enhanced the economic efficiency of the offshore fishery sector Improved capacity for satellite data processing for fishing ground forecasting. Awareness and knowledge of fishermen.
Project -B(03): Project title or scope: Improvement of the existing tuna fishing ground forecasting system (2012- to date) Project leaders: J.K. Rajapaksha, Ph.D. S.S. Gunasekara	 Incorporation of satellite data, in-situ field data, and in-situ ocean observation data. Development of a methodology to predict/ estimate hooking depth in tuna longlines. 	Geographical scope: National: Sri Lankan waters. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka. Regional: None. International: Food and Agriculture Organization (FAO), Indian Ocean Tuna Commission (IOTC).	Results: Improved dissemination of forecasts to fishermen, and fisheries harbors. Impacts: Fishing efficiency improved. Dissemination of information to fishermen and other stakeholders improved.

Project -B(04): Project title or scope: Monitoring and numerical modeling in assessing the impact of offshore dredging on the coastal environment. Project leader: R.M.R.M. Jayathilaka	 Conducting coastal and offshore surveys to determine the impact of dredging on different coastal stretches and ecosystem compartments in coastal waters. Monitoring coastal dynamics, and collection of in-situ oceanography data, for the purpose of numerical modeling and interpretations. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka	Funding sources: • National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of the impacts of offshore dredging. Impacts: Inputs for decision-making on offshore dredging, and sustainable use of offshore resources.
Project -B(05): Project title or scope: Monitoring the aggregation of microplastics in coastal waters around Sri Lanka (2016- to date) Project leader: W.R.W.M.A.P. Weerakoon	 Conducting coastal and offshore surveys to determine the pollution levels, and the sources of pollution. Monitoring the changes in microplastics and marine debris pollution levels in different coastal stretches and ecosystem components. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka and Indian Ocean rim countries.	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of the changes in microplastics and marine debris pollution in different compartments of the ocean. Impacts: Inputs for national and global level decision-making on curtailing plastic pollution.
Project -B(06): Project title or scope: Observation of oceanographic conditions for ocean-based disaster early warning operation (2011). Project leader: K. Arulananthan, Ph.D.	 Conducting coastal and offshore surveys to determine changes in coastlines, near offshore and offshore waters. Conduct satellite-based data analysis for wind and wave climate assessments. Assessment of sea-level data to identify contributions to the national disaster risk management system of Sri Lanka. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka.	Results:
Project -B(07): Project title or scope: Improvement of the ocean observation system and network. (2012-2018). Project leaders: K, Arulananthan, Ph.D. R.M.R.M. Jayathilake K.W. Indika	 Improvement of the sea level monitoring and ocean observation network. Introduction of wind data assessment to the network Conduct advanced satellite-based data analysis for wind and wave climate assessments. Assessment of sea-level data to identify contributions to the national disaster risk management system of Sri Lanka. 	Geographical scope: National: Sri Lankan waters. Regional: Arabian sea, and the Bay of Bengal. Benefitting countries: Sri Lanka and Indian Ocean rim countries.	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of ocean observation for early warning and disaster risk management. Impacts: Collaborations with the disaster management center, department of meteorology, and ministries for disaster risk management. Improved data dissemination and sharing.

Project -B(08): Project title or scope: Monitoring and modeling of hydrology and circulation of coastal waters (2014-2022). Project leaders: K, Arulananthan, Ph.D. H.B. Jayasirim Ph.D. R.M.R.M. Jayathilaka H.A.S.D. Perera	 Monitoring and assessment of hydrological parameters of coastal waters including coastal lagoons. Assessment of physical, chemical, and biological parameters of surface and subsurface waters. 	Geographical scope: National: Sri Lankan waters. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of hydrological aspects and circulation patterns of coastal waters. Impacts: Collaborations with the ministry of fisheries in management planning to develop fisheries resources in the assessed coastal waterbodies.
Project -B(09): Project title or scope: Investigation of internal wave propagation along the East coast of Sri Lanka (2011). Project leader: S.U.P. Jinadasa	 Designing and conducting surveys and insitu data collections to enumerate wave climate along the east coast. Collection, quality control, analysis, and interpretation of wave data. 	Geographical scope: National Sri Lankan waters. Regional: Bay of Bengal. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of wave propagation patterns, on the East coast of Sri Lanka. Knowledge ofcirculation patterns of coastal waters around Sri Lanka. Impacts: Impacts: Initiation of collaborations to design and conduct advanced research studies on the subject.
Project -B(10): Project title or scope: Geological and geophysical exploration of near-shore placer mineral deposits (2011). Project leader: S.U.P. Jinadasa	Conducting surveys for the identification and quantification of nearshore placer mineral deposits. Physical and chemical characterization of nearshore placer mineral deposits.	Geographical scope: National: Sri Lankan waters and coastline. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of the availability and usability of nearshore placer mineral deposits. Impacts: Inputs of knowledge for authorities to make decisions on the sustainable use of ocean resources.
Project -B(11): Project title or scope: Assessment of climate change impacts on the ocean environment (2018-2021). Project leader: W.R.W.M.A.P. Weerakoon K.A.D.A.T. Harishchandra H.B.U.G.M. Wimalasiri	 Monitoring the changes in environmental parameters, <i>i.e.</i>,ocean water temperature, salinity, etc., around coral reefs in Sri Lanka. Monitoring the impacts of those changes on coral reefs on the East and the West coasts of Sri Lanka. 	Geographical scope: National: Sri Lankan waters and coastline. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of the changes in environmental parameters, i.e.,temperature, salinity, etc., change in two major coral reefs in Sri Lanka. Impacts: Inputs of knowledge for authorities to make decisions on managing the studied coral reefs.

IOCFunctionC:OceanHazards

IOCINDIOProgrammes
- Coastalvulnerabilityassessmentforsealevelriseandstormsurges.

ProjectsTitles/ Scope&Leaders	Activities	GeographicalscopeRegi onal/Nationalbenefitting countries	Budget/fundingsources National/Regional/ International	Results/ Impacts
Project –C(01): Project title or scope: Marine pollution by microplastics and marine debris caused by particular incidents (2019-to date). Project leader: W.R.W.M.A.P. Weerakoon	 Global-level baseline data collection on different incidents in the ocean and the coastline. Time series data collection, and analysis. 	Geographical scope: National Sri Lankan waters. Regional: Bay of Bengal. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of marine pollution caused by unprecedented incidents Inputs and data for environmental damage and impact assessment. Impacts: Inputs for public awareness, critical decisionmaking, and policy reviews.
Project -C(02): Project title or scope: Combination of research projects:Integrated research studies on sea level changes, climate change, and natural hazards. Project leader: K.W. Indika Weligamage	Global-level baseline data collection on sea level, tide, extreme weather events, wind, and waves. Time series data collection, and analysis on sea level, tides, etc.	Geographical scope: National Sri Lankan waters. Regional: Bay of Bengal. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka. Regional: None. International: None.	Results: Establishment of permanent sea-level monitoring stations. Data and research findings as inputs for advanced research on sea level rise, flood inundation, and other related natural hazards. Impacts: Contribution with information as Inputs for public awareness, critical decision-making by authorities for appropriate policy reviews, and action plans in view of disaster risk management.
Project -C(03): Project title or scope: Quantifying land losses in Dondra-Hambanthota-Kirinda coastal stretch due to shoreline changes (2011-2012). Project leader: T.K.D. Tennakoon, Ph.D.	 Assessment of spatiotemporal changes in the coastline. Time series data collection, and analysis on coastal dynamics. 	Geographical scope: National: Sri Lankan waters. Benefitting countries: Sri Lanka	Funding sources: National: National treasury of Sri Lanka.	Results: Improved knowledge and understanding of the magnitude and risk of land losses that could be caused by shoreline changes. Impacts: Inputs of knowledge for authorities to make timely decisions on implementing management plans and actions to minimize land losses in the coastal belt.

	<u>IOCFu</u>	nctionD:Assessments&infor	mationforPolicy	
OCINDIOProgrammes:20	50IntegratedOcear	PolicyAdviceforProactivePla	anningandManagementf	orIOCINDIOMemberStates.
Projects Titles/ Scope& Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/Internat ional	Results/ Impacts
IA	NA	NA	NA	NA
OCINDIOProgramme:Blue	eEconomyBusines	IOCFunctionE:G		onandDisasterRiskReduction.
Projects Titles/ Scope& Leaders	Activities	Geographical scope	Budget/funding sources	Results/ Impacts
		Regional/National benefitting countries	National/Regional/Internat ional	·
NA .	NA	NA	NA	NA
OCINDIO Programmo I OC	INDIONetworking	IOCFunctionF:Capac	·	
<u>JCINDIOProgramme</u> .iOC	INDIONELWORKING	kesearciiiii astructures,raci	iillesanunumankesourd	es.
Projects Titles/ Scope& Leaders	Activities	Geographical scope Regional/National benefitting countries	Budget/funding sources National/Regional/internat ional	Results/ Impacts
IA	NA	NA	NA	NA
ANYOTHERPROGRA	 MMES/PROJECTSRI	ELEVANTTOIOC,IOCINDIOAND	 	SCIENCEFORSUSTAINABLEDEVELOP