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Results Framework Document

for

Ministry of Earth Sciences

(2010-2011)

Section 1:
Vision, Mission, Objectives and Functions

Vision

To excel in knowledge and technology enterprise for the earth system science (atmosphere, biosphere, hydrosphere, cryosphere and geosphere) realm towards socio-economic benefit of the Indian Sub-continent and in the Indian Ocean region.

Mission

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Primarily aimed to develop and improve capability to forecast, weather, climate and hazard related phenomena for societal, economic and environmental benefits including addressing climate change science and developing climate services and integrated Himalayan meteorology, Secondly, exploring ocean resources for socio-economic benefit including develop required state-of-the art technology for harnessing marine non-living resources is major mission of the ministry. One of the prerequisites to achieve this is to defining and deploying satellite based, airborne and in-situ atmospheric, ocean and lithosphere observing systems, which is also a part of the mission.

Objectives

1	To improve weather forecast and provide advisory to agriculture, aviation, shipping, sports including the extended , Long Range Seasonal Monsoon forecast
2	To provide a wide range of ocean information advisories including fishery information
3	To improve the understanding of Polar Science and its implications for climate change
4	To developing technology for harnessing marine resources
5	To conduct survey for assessing non-living resources
6	To asses coastal marine productivity and Marine Ecosystems
7	To improve understanding of Climate Change Science
8	To provide early warning of natural hazards viz. cyclone, tsunami, sea level rise.
9	To promote basic research including Capacity building in the Earth System Science
10	To promote awareness and educate the public by extending support to seminars, symposia, conferences and conduct workshops with stakeholders
11	To evolve a long-term Strategic and Prospective Plan of the ministry.

Functions

1	• To promote dissemination of information in Meteorological and Ocean sectors regarding work being performed by the department and its autonomous bodies to stakeholders and promote establishment of an ocean related information system; • To tune system with a view to encourage formulation of research and development schemes in the ocean sector in a transparent manner, create capacity building and promote human resource development by encouraging research; • To

Section 1:
Vision, Mission, Objectives and Functions

process research proposal for schemes on basic research, application areas and manpower development programmes for Ocean Sciences in a transparent and time-bound manner; • To create awareness about Meteorology/ocean sectors by participation in educational programmes, exhibitions and trade fairs and through partnership with NGOs in order to appreciate the role of the ocean system both as a provider of living and non-living resources, and as major contributor to earth's climate and ecological balance.

Section 2:
Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	VeryGood	Good	Fair	Poor
						100%	90%	80%	70%	60%
1 To improve weather forecast and provide advisory to agriculture, aviation, shipping, sports including the extended , Long Range Seasonal Monsoon forecast	18.00	Integrated Agro Advisory Services	Number of Districts covered by Agro Advisory	number	3.60	500	490	480	460	440
		Improve Operational Weather Services	Commissioning & Operation of Super Computer	number	1.80	1	1	0	0	0
			Strengthen of Observational Network(AWS, ARGs)	number	3.60	800	700	600	500	400
			Quality of Research Publications	number of publicati on	4.50	105	97.5	90	82.5	75
			Application of higher resolution Global Numerical Models	Horizont al resolutio n (km)	1.80	35	36	37	38	39
			Completion of Admission process of the first batch of ten students for the advanced training program in Earth System Sciences and Climate	Date	2.70	31/07/2010	31/08/2010	30/09/2010	31/10/2010	30/11/2010
2 To provide a wide range of ocean information advisories including fishery information	10.00	Strengthening of Ocean Observational network	Number of deployments	number	2.00	200	180	160	140	120
		Site Preparation for Oceansat-II-ground station	Establishment of ground station for Oceansat–II	Date	3.00	31/10/2010	31/12/2010	31/01/2011	28/02/2011	31/03/2011
		Potential Fishing Zone Advisory & Ocean State Forecast Services	Potential Fishing Zone Advosory	number	2.00	60	54	48	42	36
			Ocean State Forecast	number	3.00	365	328	292	255	219
3 To improve the understanding of Polar Science and its implications for climate change	15.00	Planning, Coordination and implementation of Indian Antarctic Program	Launching of 30th Indian Antarctic Expedition; pre-construction and site-	Date	3.00	10/11/2010	20/12/2010	11/01/2011	11/02/2011	11/03/2011

Section 2:
Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	VeryGood	Good	Fair	Poor
						100%	90%	80%	70%	60%
			preparation work for the 3rd station; floating of the global tender and identification of the the date							
		Planning, Coordination and implementation of Scientific Expeditions to the Arctic	Launching of Winter (2009-10 and 10-11) and summer (2010-11) phases of study in the Arctic region; completion of targeted scientific and logistics activites at Ny-Alesund	%	4.50	100	90	80	70	60
		Planning, Coordination and implementation of Scientific studies in the Indian Ocean sector of the Southern Ocean	Launching of Southern Ocean Expedition (2010-11); completion of analytical work of data collected during the previous expedition ; submission of report.	%	3.00	100	90	80	70	60
		Collection and analysis of ice core from Antarctica	Collection and analyses of ice and snow samples from Antarctica; continuation of in-house R&D activities in the field of polar Remote Sensing.	samples collected and analysed ;completion of analytical work vis a vis target	4.50	5	4	3	2	1
4 To developing technology for harnessing marine resources	11.50	Design, Development, installation and Commissioning of Desalination Plant	Setting up of land based desalination plants in the Minicoy island	Date	3.68	31/01/2011	28/02/2011	31/03/2011	30/10/2011	30/11/2011
		Design, Development, installation, and Commissioning of Desalination Plant at Androth	Setting up of land based desalination plant in the Androth island	Date	1.84	31/03/2011	15/04/2011	30/04/2011	15/05/2011	30/05/2011

Section 2:
Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	VeryGood	Good	Fair	Poor
						100%	90%	80%	70%	60%
		Development of Remotely Operable Vehicle ROSUB 6000 for survey of at PMN site	Sea trials of ROSUB in the Deep Sea at 4000m depth	Date	1.84	03/01/2011	28/02/2011	10/03/2011	20/03/2011	31/03/2011
		Development of Underwater Collector & Crushing Systems for manganese nodule mining and testing in shallow waters	Realization artificial nodule laying system and sea trials	%	1.38	80	75	70	65	60
		Technology Development for Gas Hydrates – Development of Autonomous coring system and sea trials	Sea trials of ACS	%	2.76	100	95	85	75	70
5 To conduct survey for assessing non-living resources	7.50	Survey, exploration for Polymetallic Nodules, Cobalt crust, hydrothermal sulphides ,gas hydrates,and topographic survey of Exclusive Economic Zone	Deployment of Research Vessel	Days of cruises	3.75	160	130	100	90	70
		Geological and Tectonic Evolution of the Northern Indian Ocean and activities related to Integrated Ocean Drilling Program (IODP)	Data analyses pertaining to the Laccadive offshore region; data collection from the forearc region of Andamans; finalization and submission of India's Science Plan in IODP activities; completion and submission of the scientific proposal for deep ocean drilling in the Arabian Sea basin through IODP; participation of Indian scientists in IODP activities.	Date	3.75	10/10/2010	10/11/2010	10/12/2010	11/01/2011	11/01/2011
6 To asses coastal marine productivity and Marine Ecosystems	5.00	Collection of field data and analysis required for preparation of Shoreline management plan for Gopalpur	Development first out of 2 stage hydrodynamic, wave and sediment transport models using data collected.	Date	2.00	31/01/2011	15/02/2011	28/02/2011	15/03/2011	31/03/2011
		Establishment of Indian Ocean biogeographical Information System (IndOBIS)	No. of records.	number	1.00	100	90	80	70	60

Section 2:
Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	VeryGood	Good	Fair	Poor
						100%	90%	80%	70%	60%
		Perfect technology for breeding and rearing of 5 species of clownfish and one specie of damsel fish at CMLRE hatchery at Lakshadweep and its commercialisation	No. of species.	number	2.00	100	90	80	70	60
7 To improve understanding of Climate Change Science	5.00	To set up Centre for Climate Change Research (CCCR) at IITM with dedicated research facilities	Recruitment of Executive Director and other scientific positions	number	2.50	5	4	3	2	1
			Cumulative Impact Factor of the Research Papers	number	2.50	15	13.5	12	10.5	9
8 To provide early warning of natural hazards viz. cyclone, tsunami, sea level rise.	5.00	Tsunami Advisory Services	Issue of Tsunami warning with minimum time lag after the earth quake on sea-bed	Minutes after the quake	2.50	30	45	60	90	120
			Issue of Tsunami warning with minimum time lag after the earth quake on sea-bed	Accuracy of warning(%)	2.50	100	90	80	70	60
9 To promote basic research including Capacity building in the Earth System Science	2.50	To strengthen capacity development and promote research outside the ministry	Supporting research and academic programmes in Earth System Science	Number of Projects	2.50	110	105	100	90	80
10 To promote awareness and educate the public by extending support to seminars, symposia, conferences and conduct workshops with stakeholders	5.00	Conducting user oriented workshops with key stakeholder to promote awareness	Conducting user oriented workshops with key stakeholder to promote awareness	Number	2.50	15	10	7	5	3
			Support seminar/symposium/conference in the field of earth sciences	Number	2.50	75	50	30	40	20
11 To evolve a long-term Strategic and Prospective Plan of the ministry	2.50	A set of 4 committees have been constituted for development of long-term Strategy Plan in Ocean and	Strategy Documents in Ocean Technology, Atmospheric Services, Ocean Research &	Date	2.50	05/01/2011	31/01/2011	15/02/2011	28/02/2011	15/03/2011

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Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	VeryGood	Good	Fair	Poor
						100%	90%	80%	70%	60%
		Atmospheric Science services, Technology, Polar and geosciences.	information services, Polar and Geosciences							
* Efficient Functioning of the RFD System	5.00	Timely submission of Draft for Approval	On-time submission	Date	2.00	05/03/2010	08/03/2010	09/03/2010	10/03/2010	11/03/2010
		Timely submission of Results	On- time submission	Date	1.00	02/05/2011	03/05/2011	04/05/2011	05/05/2011	06/05/2011
		Finalize a Strategic Plan	Finalize the Strategic Plan for next 5 years	Date	2.00	10/12/2010	15/12/2010	20/12/2010	24/12/2010	31/12/2010
* Improving Internal Efficiency / Responsiveness / Service delivery of Ministry / Department	6.00	Develop RFDs for all Responsibility Centers (Subordinate Offices, Attached Offices,Autonomous Bodies)	Percentage of RCs covered	%	2.00	100	95	90	85	80
		Implementation of Sevottam	Create a Sevottam compliant to implement, monitor and review Citizen's Charter	Date	1.00	01/10/2010	05/10/2010	11/10/2010	15/10/2010	20/10/2010
			Create a Sevottam Compliant system to redress and monitor public Grievances	Date	1.00	01/10/2010	05/10/2010	11/10/2010	15/10/2010	20/10/2010
			Independent Audit of Implementation of Citizen's Charter	%	1.00	100	95	90	85	80
			Independent Audit of implementation of public grievence redressal system	%	1.00	100	95	90	85	80
* Ensuring compliance to the Financial Accountability Framework	2.00	Timely submission of ATNS on Audit Paras of C&AG	Percentage of ATNS submitted within due date (4 months) from date of presentation of Report to Parliament by CAG during the year.	%	0.50	100	90	80	70	60

* Mandatory Objective(s)

Section 2:
Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	VeryGood	Good	Fair	Poor
						100%	90%	80%	70%	60%
		Timely submission of ATRs to the PAC Sectt. on PAC Reports.	Percentge of ATRs submitted within due date (6 months) from date of presentation of Report to Parliament by PAC during the year.	%	0.50	100	90	80	70	60
		Early disposal of pending ATNs on Audit Paras of C&AG Reports presented to Parliament before 31.3.2010.	Percentage of outstanding ATNs disposed off during the year.	%	0.50	100	90	80	70	60
		Early disposal of pending ATRs on PAC Reports presented to Parliament before 31.3.2010	Percentage of outstanding ATRs disposed off during the year.	%	0.50	100	90	80	70	60

* Mandatory Objective(s)

Section 3:
Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 08/09	Actual Value for FY 09/10	Target Value for FY 10/11	Projected Value for FY 11/12	Projected Value for FY 12/13
1 To improve weather forecast and provide advisory to agriculture, aviation, shipping, sports including the extended , Long Range Seasonal Monsoon forecast	Integrated Agro Advisory Services	Number of Districts covered by Agro Advisory	number	300	440	500	600	--
	Improve Operational Weather Services	Commissioning & Operation of Super Computer	number	0	1	3	4	--
		Strengthen of Observational Network(AWS, ARGs)	number	100	190	600	800	--
		Quality of Research Publications	number of publication	--	42	45	50	--
		Application of higher resolution Global Numerical Models	Horizontal resolution (km)	45	40	35	35	--
		Completion of Admission process of the first batch of ten students for the advanced training program in Earth System Sciences and Climate	Date	--	--	31/08/2010	--	--
2 To provide a wide range of ocean information advisories including fishery information	Strengthening of Ocean Observational network	Number of deployments	number	70	80	90	100	--
	Site Preparation for Oceansat-II- ground station	Establishment of ground station for Oceansat–II	Date	--	15/03/2010	31/10/2010	--	--
	Potential Fishing Zone Advisory & Ocean State Forecast Services	Potential Fishing Zone Advosory	number	40	70	130	190	--
		Ocean State Forecast	number	--	--	365	700	--

Section 3:
Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 08/09	Actual Value for FY 09/10	Target Value for FY 10/11	Projected Value for FY 11/12	Projected Value for FY 12/13
3 To improve the understanding of Polar Science and its implications for climate change	Planning, Coordination and implementation of Indian Antarctic Program	Launching of 30th Indian Antarctic Expedition; pre-construction and site-preparation work for the 3rd station; floating of the global tender and identification of the the date	Date	--	--	20/12/2010	--	--
	Planning, Coordination and implementation of Scientific Expeditions to the Arctic	Launching of Winter (2009-10 and 10-11) and summer (2010-11) phases of study in the Arctic region; completion of targeted scientific and logistics activites at Ny-Alesund	%	--	60	80	100	--
	Planning, Coordination and implementation of Scientific studies in the Indian Ocean sector of the Southern Ocean	Launching of Southern Ocean Expedition (2010-11); completion of analytical work of data collected during the previous expedition ; submission of report.	%	--	60	80	100	--
	Collection and analysis of ice core from Antarctica	Collection and analyses of ice and snow samples from Antarctica; continuation of in-house R&D activities in the field of polar Remote Sensing.	samples collected and analysed; completion of analytical work vis a vis target	35	55	75	100	--
4 To developing technology for harnessing marine resources	Design, Development, installation and Commissioning of Desalination Plant	Setting up of land based desalination plants in the Minicoy island	Date	--	--	28/02/2011	--	--
	Design, Development, installation, and	Setting up of land based desalination plant in the	Date	--	--	31/05/2010	--	--

Section 3:
Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 08/09	Actual Value for FY 09/10	Target Value for FY 10/11	Projected Value for FY 11/12	Projected Value for FY 12/13
	Commissioning of Desalination Plant at Androth	Androth island						
	Development of Remotely Operable Vehicle ROSUB 6000 for survey of at PMN site	Sea trials of ROSUB in the Deep Sea at 4000m depth	Date	--	--	28/02/2011	--	--
	Development of Underwater Collector & Crushing Systems for manganese nodule mining and testing in shallow waters	Realization artificial nodule laying system and sea trials	%	50	70	80	100	--
	Technology Development for Gas Hydrates – Development of Autonomous coring system and sea trials	Sea trials of ACS	%	--	--	100	100	--
5 To conduct survey for assessing non-living resources	Survey, exploration for Polymetallic Nodules, Cobalt crust, hydrothermal sulphides ,gas hydrates,and topographic survey of Exclusive Economic Zone	Deployment of Research Vessel	Days of cruises	320	480	640	800	--
	Geological and Tectonic Evolution of the Northern Indian Ocean and activities related to Integrated Ocean Drilling Program (IODP)	Data analyses pertaining to the Laccadive offshore region; data collection from the forearc region of Andamans; finalization and submission of India's Science Plan in IODP activities; completion and submission of the scientific proposal for deep ocean drilling in the Arabian Sea basin through IODP; participation of Indian scientists in IODP activities.	Date	--	--	10/11/2010	--	--
6 To asses coastal marine productivity and Marine	Collection of field data and analysis required for	Development first out of 2 stage hydrodynamic, wave	Date	--	--	15/02/2011	--	--

Section 3:
Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 08/09	Actual Value for FY 09/10	Target Value for FY 10/11	Projected Value for FY 11/12	Projected Value for FY 12/13
Ecosystems	preparation of Shoreline management plan for Gopalpur	and sediment transport models using data collected.						
	Establishment of Indian Ocean biogeographical Information System (IndOBIS)	No. of records.	number	0	20	50	80	--
	Perfect technology for breeding and rearing of 5 species of clownfish and one specie of damsel fish at CMLRE hatchery at Lakshadweep and its commercialisation	No. of species.	number	30	60	80	100	--
7 To improve understanding of Climate Change Science	To set up Centre for Climate Change Research (CCCR) at IITM with dedicated research facilities	Recruitment of Executive Director and other scientific positions	number	--	19	24	35	--
		Cumulative Impact Factor of the Research Papers	number	--	7.5	23	45	--
8 To provide early warning of natural hazards viz. cyclone, tsunami, sea level rise.	Tsunami Advisory Services	Issue of Tsunami warning with minimum time lag after the earth quake on sea-bed	Minutes after the quake	80	95	98	100	--
		Issue of Tsunami warning with minimum time lag after the earth quake on sea-bed	Accuracy of warning(%)	--	60	70	80	--
9 To promote basic research including Capacity building in the Earth System Science	To strengthen capacity development and promote research outside the ministry	Supporting research and academic programmes in Earth System Science	Number of Projects	64	99	110	122	--
10 To promote awareness and educate the public by extending support to seminars, symposia, conferences and conduct workshops with stakeholders	Conducting user oriented workshops with key stakeholder to promote awareness	Conducting user oriented workshops with key stakeholder to promote awareness	Number	--	10	20	40	--

Section 3:
Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 08/09	Actual Value for FY 09/10	Target Value for FY 10/11	Projected Value for FY 11/12	Projected Value for FY 12/13
		Support seminar/symposium/conference in the field of earth sciences	Number	--	75	150	250	--
11 To evolve a long-term Strategic and Prospective Plan of the ministry	A set of 4 committees have been constituted for development of long-term Strategy Plan in Ocean and Atmospheric Science services, Technology, Polar and geosciences.	Strategy Documents in Ocean Technology, Atmospheric Services, Ocean Research & information services, Polar and Geosciences	Date	--	21/01/2010	31/12/2012	--	--
* Efficient Functioning of the RFD System	Timely submission of Draft for Approval	On-time submission	Date			--	--	--
	Timely submission of Results	On- time submission	Date			--	--	--
	Finalize a Strategic Plan	Finalize the Strategic Plan for next 5 years	Date			--	--	--
* Improving Internal Efficiency / Responsiveness / Service delivery of Ministry / Department	Develop RFDs for all Responsibility Centers (Subordinate Offices, Attached Offices,Autonomous Bodies)	Percentage of RCs covered	%			--	--	--
	Implementation of Sevottam	Create a Sevottam compliant to implement, monitor and review Citizen's Charter	Date			--	--	--
		Create a Sevottam Compliant system to redress and monitor public Grievances	Date			--	--	--
		Independent Audit of Implementation of Citizen's Charter	%			--	--	--
		Independent Audit of implementation of public	%			--	--	--

* Mandatory Objective(s)

Section 3:
Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 08/09	Actual Value for FY 09/10	Target Value for FY 10/11	Projected Value for FY 11/12	Projected Value for FY 12/13
		grievence redressal system						
* Ensuring compliance to the Financial Accountability Framework	Timely submission of ATNS on Audit Paras of C&AG	Percentage of ATNS submitted within due date (4 months) from date of presentation of Report to Parliament by CAG during the year.	%	--	--	--	--	--
	Timely submission of ATRs to the PAC Sectt. on PAC Reports.	Percentge of ATRs submitted within due date (6 months) from date of presentation of Report to Parliament by PAC during the year.	%	--	--	--	--	--
	Early disposal of pending ATNs on Audit Paras of C&AG Reports presented to Parliament before 31.3.2010.	Percentage of outstanding ATNs disposed off during the year.	%	--	--	--	--	--
	Early disposal of pending ATRs on PAC Reports presented to Parliament before 31.3.2010	Percentage of outstanding ATRs disposed off during the year.	%	--	--	--	--	--

* Mandatory Objective(s)

Section 4:
Description and Definition of Success Indicators and Proposed Measurement Methodology

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Section 4:

Description and Definition of Success Indicators and Proposed Measurement Methodology

Objective	Action	Success Indicator	Definitions/Methodology
1. To improve weather forecast and provide specific advisory to agriculture, aviation, shipping, sports including the extended , Long Range Seasonal (Monsoon) forecast	Integrated Agro Advisory Services	Number of Districts covered by Agro Advisory	Weekly District level weather forecast &advisories to farmers in India
	Improve Operational Weather Services	Commissioning &Operation of Super Computer	
		Strengthen of Observational Network(AWS, ARGs)	AWS= Automatic Weather Stations to acquire real-time data ARG= Automatic Rain Gauge to acquire real-time data on rainfall
		Research Publications for operational forecast	
		Application of higher resolution Numerical Models	Progressive decrease in Root Mean Square Error (RMSE) of forecast fields. (eq. 850hPa winds over the Indian region)

2. To provide a wide range of ocean information advisories including fishery information	Strengthening of Ocean Observational network	Number of deployments	Observational platforms viz Argo floats, satellite tracked drifters, current meter moorings, ADCP moorings, XBTs, etc are to be deployed to strengthen and expand the ocean observational network.
	Site Preparation for Oceansat-II- ground station.	Establishment of ground station for Oceansat-II.	ISRO has agreed for the set up ground station at INCOIS for the direct reception of ocean colour data used to issue the potential fishing zone advisories. The ground station includes the installation of 7.5 dia antenna, tracking system and data processing system. The construction of tower for the installation of antenna will be completed in March 2009.
	Potential Fishing Zone Advisory &Ocean State Forecast Services.	Increase in dissemination of Advisories through installation of Electronic Boards	The advisories on Potential Fishing Zone and Ocean State Forecast are provided to fishing community through the Electronic Display Boards installed at fishing harbours and fish-landing centers. More number of such boards will be installed at more locations to increase the dissemination.

3. To improve the understanding of Polar Science and its implications in climate change	Planning, Coordination and implementation of Indian Antarctic Program	Launching of Annual Expedition to Antarctica, Strengthening of Maitri, Establishment of New Station, and completion of targeted scientific and logistics activities	Actual completion of all targeted scientific data collection; Launching and returning of the expedition as per schedule.
	Planning, Coordination and implementation of Scientific Expeditions to the Arctic	Launching of Summer &Winter Indian Arctic Expeditions, and completion of targeted scientific and logistics activities	Actual completion of all targeted scientific data collection; Launching and returning of the expedition as per schedule.
	Planning, Coordination and implementation of Scientific studies in the Indian Ocean sector of the Southern Ocean	Launching of Southern Ocean Expedition	Actual completion of all targeted scientific data collection; Launching and returning of the expedition as per schedule.
	Collection and analysis of ice core from Antarctica	Ice Coring and Cryospheric research	No. of cores collected vis-à-vis planned and No. of samples analysed vis-à-vis planned
4. To developing technology for harnessing the marine resources	Design, Develop, install, and Commission of Desalination Plant	Setting up of land based desalination plants in the lakshadweep islands	Desalination Plants to convert sea water into potable water
	Development of Remotely Operable Vehicle(ROSUB 6000) for survey at PMN site	Sea trials of ROSUB in the Deep Sea	Equipment for survey and exploration
	Technology Development for Gas Hydrates – Development of Autonomous coring system(ACS) and sea trials	Sea trials of ACS	Equipment for collection of samples

	Maintenance of buoy network	Continuous, high quality data return	Instrument for Acquisition of real-time data from seas around India
5. To conduct survey for assessing the non-living resources	To acquire the scientific and technical data from parts of the Bay of Bengal and the Arabian Sea in and off the Indian EEZ and to prepare and submit the claims in accordance with the provisions of United Nation's Convention on Law of Sea (UNCLOS).	Preparation of Documentation and submission of India's claim to the Commission on Limits of Continental Shelf (CLCS)	Submission of India's claims to the CLCS Completion and commissioning of the marine geophysical data base.
6. To asses the coastal marine productivity and Marine Ecosystems	Demonstration of hatchery technology on Ornamental fish and setting-up of field station at Lakshadweep.	Establishment of laboratory in Agatti for Ornamental fish culture.	Operationalisation of Hatchery
	Integrated Coastal Marine Area Management	Development of sediment transport model for Gopalpur, Orissa	Management Plan
7. To improve the understanding of Climate Change Science	To set up the Centre for Climate Change Research (CCCR) at IITM with dedicated research facilities	Establishment of centre by inducting scientists	Centre for conducting research in the field of climate change

8. To provide early warning of natural hazards viz. cyclone, tsunami, sea level rise.	Tsunami Advisory Services	Issue of Tsunami warning with minimum time lag after the occurrence of earthquake on the sea-bed.	The process of issuing the tsunami early warning involves the detection of the occurrence of earthquake its magnitude and location, assessment of tsunami genesis potential and confirmation of the generation of tsunami through the real time monitoring of sea levels at nearest sea level gauges and bottom pressure recorders. For the warning to be effective and useful, the time lag between the occurrence of earthquake on the sea bed and the tsunami early warning should be minimum.
9. To promote basic research including Capacity building in the Earth System Science	To strengthen capacity development and promote research outside the ministry	Supporting research and academic programmes in Earth System Science	Number of i) Research projects awarded ii) Academic Programmes initiated iii) Centres Established with MoES Supported (iv) collaborative projects at national and International levels

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Section 5:
Specific Performance Requirements from other Departments

Section 5; Specific Performance Requirements from other Departments

S.No.	Objective	Department	Relevant Success Indicator	What do you need?	Why do you need it	How much you need?	What happens if you do not get it?
1	To improve understanding of Polar Science and its implications for climate change	Planning Commission	Launching Expeditions to the Antarctic and Arctic	Mandatory ingredients for program implementation	Funds required for launching expeditions	In full measure	Project could not be implemented fully
2	To develop technology for harnessing the marine resources	Lakshadweep Administration	Setting up of one land based desalination plant in Lakshadweep island	Provide Logistical support for construction and transport of material	To set up Desalination Plant	Full	Project gets delayed 6 to 8 months
3	To assess coastal marine productivity and Marine Ecosystems	Lakshadweep Administration	Establishment of Laboratory in Kavaratti for Ornamental fish culture	Transfer of Lakshadweep administration Bldg.	To set up Hatchery	50% of Lakshadweep Administration place.	Project gets delayed by 1- 2 years