



Government of India

R F D

(Results-Framework Document)
for

Indian Institute of Tropical Meteorology

(2014-2015)

Section 1: Vision, Mission, Objectives and Functions

Vision

To make the Indian Institute of Tropical Meteorology (IITM), Pune a World Centre of Excellence through basic research on all aspects of Tropical Ocean-Atmosphere System required for improving the Tropical Weather and Climate Forecasts

Mission

To develop outstanding research talent for improving the skill of weather and climate forecasts in the country through development of appropriate Training Program. To advance understanding of variability and predictability of the tropical coupled ocean-atmosphere-land system through basic research by undertaking relevant scientific programmes. To develop tools for seasonal and extended range prediction of monsoon and to take up research program to improve the skill. To collaborate with other similar research institutions, in the development and application of climate study.

Objectives

- 1 To conduct basic research in all aspects of atmosphere-ocean-land system with special reference to the tropics required to improve weather and climate forecasts of tropics.
- 2 To develop a system for seasonal and extended range prediction of Indian monsoon and improve its skills.
- 3 To develop expertise in understanding physics and dynamics of clouds required to improve the representation of cloud processes and their interaction with large scale environment in models.
- 4 To generate reliable answers to all science questions related to regional climate change in the backdrop of global climate change.
- 5 To build trained human resource in the field required by the country.

Functions

- 1 The IITM functions as a National Centre for basic and applied research in Tropical Meteorology
- 2 To conduct basic research in all aspects of atmosphere-ocean-land system with special reference to the tropics required to improve weather and climate forecasts of tropics.
- 3 To organize interdisciplinary research aimed at understanding the fundamental atmospheric and oceanic processes controlling weather and climate in tropics and its practical application to the society (e.g. prediction & predictability)
- 4 To generate reliable answers to all science questions related to regional climate change in the backdrop of global climate change.
- 5 To develop necessary infrastructure.
- 6 To build trained human resource in the field of atmospheric and oceanic sciences required by the country.

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

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
[1] To conduct basic research in all aspects of atmosphere-ocean-land system with special reference to the tropics required to improve weather and climate forecasts of tropics.	18.00	[1.1] To implement, evaluate, validate and improve the forecast skills of Coupled Climate Forecast System (CFS) for seasonal and extended range forecast.	[1.1.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	4.50	20	16	13	10	8
		[1.2] To study the role of internal and external forcing that regulates the Indian summer monsoon rainfall variability on intraseasonal, interannual and inter-decadal time scales.	[1.2.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	4.50	20	16	13	10	8
		[1.3] To develop regional chemistry-transport air pollution model with baseline air quality and meteorological input and to study the regional transport of pollutants and simulate short term air quality level and long term chemical-climate scenarios.	[1.3.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	4.50	9	8	7	6	5
		[1.4] Set up the System for Air Quality Forecasting and Research (SAFAR) for real time monitoring and forecasting air quality in a metropolitan city	[1.4.1] Date of completion of work	Date	4.50	14/09/2014	14/10/2014	14/11/2014	14/12/2014	14/01/2015

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

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
[2] To develop a system for seasonal and extended range prediction of Indian monsoon and improve its skills.	18.00	[2.1] To build a working partnership between the Academic R & D Organizations and the Operational Agency to improve the monsoon forecast skill under the Monsoon Mission	[2.1.1] Funding the approved proposals	No. of proposals	6.00	7	5	3	2	1
		[2.2] To set up a state of the art dynamical modelling framework for improving prediction skill of seasonal extended, short and medium range prediction systems	[2.2.1] Issuing of experimental forecast to IMD	No. of times issued per yr	5.00	4	3	2	1	0
		[2.3] To carry out model sensitivity experiment	[2.3.1] Carrying out Experiments with CFS model	No. of Experiments	5.00	4	3	2	1	0
		[2.4] To publish research results	[2.4.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	2.00	12	10	8	6	4
[3] To develop expertise in understanding physics and dynamics of clouds required to improve the representation of cloud processes and their interaction with large scale environment in models.	18.00	[3.1] To analyze the observational data collected during the national program of CAIPEEX carried out with instrumented aircraft (s) during the 11th Five Year Plan period	[3.1.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	7.20	20	17	14	10	8
		[3.2] To study cloud microphysics through	[3.2.1] Research Papers published in peer	No. of papers	7.20	15	14	12	11	9

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

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
		ground based continuous observations of clouds and aerosol at High Altitude Cloud Physics Laboratory at Mahabaleshwar in Maharashtra.	reviewed journals of good impact factor	publishe d						
		[3.3] To study thunderstorms and lightning under different environments.	[3.3.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers publishe d	3.60	15	14	12	11	9
[4] To generate reliable answers to all science questions related to regional climate change in the backdrop of global climate change.	18.00	[4.1] To carry out development of Earth System Model (ESM), dynamical downscaling of regional climate and analysis of model outputs and publish the results.	[4.1.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers publishe d	9.00	6	5	4	3	2
		[4.2] To make high resolution projections of future monsoon climate until 2100 for different climate scenarios for various impact assessment studies (e.g., climate, water resources, agriculture, health, etc) and publish the results.	[4.2.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers publishe d	9.00	32	29	26	22	19
[5] To build trained human resource in the field required by the country.	15.00	[5.1] To run the Ph.D. programme of the Institute through recruitment of Research Fellowships	[5.1.1] Recruitment of Research Fellows	number	3.00	9	8	7	6	5

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

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
		[5.2] Complete the three Semester Induction Training of the batch starting in August of every year	[5.2.1] Complete the three Semester Induction Training of the batch starting in August of every year	Date	9.00	13/01/2015	19/01/2015	23/01/2015	28/01/2015	04/02/2015
		[5.3] Complete Admission Process for the next batch of the training	[5.3.1] Complete Admission Process for the next batch of the training	Date	0.00	--	--	--	--	--
		[5.4] Recruit Faculty for the Centre for Advanced Training in Earth System Science and Climate	[5.4.1] Recruit Faculty for the Centre for Advanced Training in Earth System Science and Climate	Date	3.00	14/10/2014	14/11/2014	04/12/2014	24/12/2014	05/01/2015
* Efficient Functioning of the RFD System	3.00	Timely submission of Draft RFD for 2014-2015 for Approval	On-time submission	Date	2.0	15/05/2014	16/05/2014	19/05/2014	20/05/2014	21/05/2014
		Timely submission of Results for 2013-2014	On-time submission	Date	1.0	01/05/2014	02/05/2014	05/05/2014	06/05/2014	07/05/2014
* Enhanced Transparency / Improved Service delivery of Ministry/Department	3.00	Rating from Independent Audit of implementation of Citizens' / Clients' Charter (CCC)	Degree of implementation of commitments in CCC	%	2.0	100	95	90	85	80
		Independent Audit of implementation of Grievance Redress Management (GRM) system	Degree of success in implementing GRM	%	1.0	100	95	90	85	80
* Administrative Reforms	7.00	Update organizational strategy to align with revised priorities	Date	Date	2.0	01/11/2014	02/11/2014	03/11/2014	04/11/2014	05/11/2014

* 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	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
		Implementation of agreed milestones of approved Mitigating Strategies for Reduction of potential risk of corruption (MSC).	% of Implementation	%	1.0	100	90	80	70	60
		Implementation of agreed milestones for ISO 9001	% of implementation	%	2.0	100	95	90	85	80
		Implementation of milestones of approved Innovation Action Plans (IAPs).	% of implementation	%	2.0	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 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
[1] To conduct basic research in all aspects of atmosphere-ocean-land system with special reference to the tropics required to improve weather and climate forecasts of tropics.	[1.1] To implement, evaluate, validate and improve the forecast skills of Coupled Climate Forecast System (CFS) for seasonal and extended range forecast.	[1.1.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	22	16	18	20	22
	[1.2] To study the role of internal and external forcing that regulates the Indian summer monsoon rainfall variability on intraseasonal, interannual and inter-decadal time scales.	[1.2.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	24	19	20	22	24
	[1.3] To develop regional chemistry-transport air pollution model with baseline air quality and meteorological input and to study the regional transport of pollutants and simulate short term air quality level and long term chemical-climate scenarios.	[1.3.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	8	10	12	14	16
	[1.4] Set up the System for Air Quality Forecasting and Research (SAFAR) for	[1.4.1] Date of completion of work	Date	31/03/2013	01/05/2013	17/10/2014	17/03/2016	17/03/2017

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
	real time monitoring and forecasting air quality in a metropolitan city							
[2] To develop a system for seasonal and extended range prediction of Indian monsoon and improve its skills.	[2.1] To build a working partnership between the Academic R & D Organizations and the Operational Agency to improve the monsoon forecast skill under the Monsoon Mission	[2.1.1] Funding the approved proposals	No. of proposals	16	10	6	4	2
	[2.2] To set up a state of the art dynamical modelling frame work for improving prediction skill of seasonal extended, short and medium range prediction systems	[2.2.1] Issuing of experimental forecast to IMD	No. of times issued per yr	2	2	2	2	2
	[2.3] To carry out model sensitivity experiment	[2.3.1] Carrying out Experiments with CFS model	No. of Experiments	2	2	2	2	2
	[2.4] To publish research results	[2.4.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	16	11	16	17	18
[3] To develop expertise in understanding physics and dynamics of clouds required to improve the representation of cloud processes and their	[3.1] To analyze the observational data collected during the national program of CAIPEEX carried out with instrumented	[3.1.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	22	23	24	25	26

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
interaction with large scale environment in models.	aircraft (s) during the 11th Five Year Plan period							
	[3.2] To study cloud microphysics through ground based continuous observations of clouds and aerosol at High Altitude Cloud Physics Laboratory at Mahabaleshwar in Maharashtra.	[3.2.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	15	18	20	22	24
	[3.3] To study thunderstorms and lightning under different environments.	[3.3.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	15	15	16	17	18
[4] To generate reliable answers to all science questions related to regional climate change in the backdrop of global climate change.	[4.1] To carry out development of Earth System Model (ESM), dynamical downscaling of regional climate and analysis of model outputs and publish the results.	[4.1.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	4	6	7	8	10
	[4.2] To make high resolution projections of future monsoon climate until 2100 for different climate scenarios for various impact assessment	[4.2.1] Research Papers published in peer reviewed journals of good impact factor	No. of papers published	30	32	33	35	37

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
	studies (e.g., climate, water resources, agriculture, health, etc) and publish the results.							
[5] To build trained human resource in the field required by the country.	[5.1] To run the Ph.D. programme of the Institute through recruitment of Research Fellowships	[5.1.1] Recruitment of Research Fellows	number	3	14	14	15	16
	[5.2] Complete the three Semester Induction Training of the batch starting in August of every year	[5.2.1] Complete the three Semester Induction Training of the batch starting in August of every year	Date	31/12/2012	31/12/2013	13/01/2015	--	--
	[5.3] Complete Admission Process for the next batch of the training	[5.3.1] Complete Admission Process for the next batch of the training	Date	31/07/2012	13/08/2013	--	--	--
	[5.4] Recruit Faculty for the Centre for Advanced Training in Earth System Science and Climate	[5.4.1] Recruit Faculty for the Centre for Advanced Training in Earth System Science and Climate	Date	31/10/2012	14/10/2013	14/03/2015	14/03/2016	14/03/2017
* Efficient Functioning of the RFD System	Timely submission of Draft RFD for 2014-2015 for Approval	On-time submission	Date	11/05/2012	13/05/2013	15/05/2014	15/05/2015	15/05/2016
	Timely submission of Results for 2013-2014	On-time submission	Date	14/05/2012	14/05/2013	19/05/2014	18/05/2015	18/05/2016
* Enhanced Transparency / Improved Service delivery of	Rating from Independent Audit of implementation of	Degree of implementation of commitments in CCC	%	--	--	95	--	--

* Mandatory Objective(s)

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
Ministry/Department	Citizens' / Clients' Charter (CCC)							
	Independent Audit of implementation of Grievance Redress Management (GRM) system	Degree of success in implementing GRM	%	--	--	95	--	--
* Administrative Reforms	Update organizational strategy to align with revised priorities	Date	Date	--	--	27/11/2014	--	--
	Implementation of agreed milestones of approved Mitigating Strategies for Reduction of potential risk of corruption (MSC).	% of Implementation	%	--	--	90	--	--
	Implementation of agreed milestones for ISO 9001	% of implementation	%	--	--	95	--	--
	Implementation of milestones of approved Innovation Action Plans (IAPs).	% of implementation	%	--	--	90	--	--

* Mandatory Objective(s)

Section 4: Acronym

Sl.No	Acronym	Description
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Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
1	[1.1.1] Research Papers published in peer reviewed journals of good impact factor	Publication of research papers in peer reviewed journals of good impact factor	Research output to be published	Number of papers and Cumulative Impact Factor of the journals in which published	
2	[1.4.1] Date of completion of work	To set up the System for Air Quality Forecasting and Research (SAFAR) for real time monitoring and forecasting air quality in a Metropolitan city	Work as per the schedule	Date of completion of work	
3	[2.1.1] Funding the approved proposals	Selected proposals will be funded for research leading to improvement in the model for making the forecasts more useful.	To build a working partnership between the Academic R & D organizations and the Operational Agency to improve the monsoon forecast skill under the Monsoon Mission	Number of Proposals funded	
4	[2.2.1] Issuing of experimental forecast to IMD	To set up state of art dynamical modeling framework for improving the skill of seasonal, extended, short and medium range prediction of monsoon rainfall	Making the forecast and validating it with the observational data	Number of times issued	
5	[5.1.1] Recruitment of Research Fellows	To run the Ph.D. programme of the Institute through recruitment of Research Fellowships	To recruit the Research Fellows	Number of Research Fellows recruited in a year	

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

SI.No	Success indicator	Description	Definition	Measurement	General Comments
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Section 5 : Specific Performance Requirements from other Departments

Location Type	State	Organisation Type	Organisation Name	Relevant Success Indicator	What is your requirement from this organisation	Justification for this requirement	Please quantify your requirement from this Organisation	What happens if your requirement is not met.
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Section 6: Outcome/Impact of Department/Ministry

Outcome/Impact of Department/Ministry	Jointly responsible for influencing this outcome / impact with the following department (s) / ministry(ies)	Success Indicator	Unit	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
1 Understand Climate Variability Monsoon Variability and Predictability and carry out basic research in all aspects of atmosphere-ocean-land system		Research Papers published in peer reviewed journals of good impact factor	No. of papers published	32	32	34	36	38
2 Develop a system for seasonal and extended range prediction of Indian monsoon and improve its skills		Research Papers published in peer reviewed journals of good impact factor	No. of papers published	38	30	38	40	42
3 Understand physics and dynamics of clouds, cloud-aerosol interaction and parameterization of clouds for large scale models.		Research Papers published in peer reviewed journals of good impact factor	No. of papers published	52	56	58	60	62
4 Generate reliable answers to all science questions related to regional climate change in the backdrop of global climate change through establishment and functioning of the Centre for Climate Change Research (CCCR) at IITM		Research Papers published in peer reviewed journals of good impact factor	No. of papers published	34	32	35	37	39

Section 6: Outcome/Impact of Department/Ministry

Outcome/Impact of Department/Ministry	Jointly responsible for influencing this outcome / impact with the following department (s) / ministry(ies)	Success Indicator	Unit	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
5 Build trained human resource in the field required by the country through establishment and functioning of the Advanced Training Centre in Earth System Science and Climate (CATESSC) at IITM	Ministry of Earth Sciences, Govt. Of India and all the Institutions	Complete the three semester Induction Training	Date	31/12/2012	31/12/2013	13/01/2015		
		Complete the Admission Process	Date	31/07/2012	14/08/2013			
		Recruit Faculty for the Centre for Advanced Training in Earth System Science and Climate (CAT ESSC)	Date	31/10/2012	14/10/2013	14/03/2015	14/03/2016	14/03/2017