

Factsheet of 2018-19 (As on 01-Apr-2019) on Activities of ENVIS Resource Partner
"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Government of India
 Ministry of Environment, Forest & Climate Change
 (EI Division)

Annual Progress Report (APR)
Factsheet of 2018-19 (As on 1-Apr-2019) on Activities of ENVIS Resource Partner

1.	Name of Host Organization:	Indian Institute of Tropical Meteorology (IITM), Pune
2.	Assigned Subject Area:	Atmospheric Pollution and Climate Change
3.	Date/Month/Year of establishment of ENVIS Centre:	10 th Feb 2003
4.	Name and designation of ENVIS Coordinator (2018-19):	Dr. G. Beig, Scientist-G & Project Director-SAFAR
5.	Has the Host Organization constituted an Advisory Committee for guiding the activities of the Centre?	Yes
	<p>Composition of the Advisory Committee:</p> <p>(Select YES or NO: if YES kindly fill the right column space; if NO kindly leave it blank)</p> <p>o YES</p> <p>o NO</p>	<p><input type="checkbox"/> Dr. Chhemendra Sharma - Chairman Principal Scientist, Radio & Atmospheric Sciences Department National Physical Laboratory (NPL), DELHI E-mail : csharma@nplindia.org, chhemendrasharma@gmail.com</p> <p><input type="checkbox"/> Dr. G. Beig - Committee Members Scientist - G & ENVIS Co-ordinator Indian Institute of Tropical Meteorology, Pune E-mail : beig@tropmet.res.in</p> <p><input type="checkbox"/> Dr. N. S. Rajurkar - Committee Members Former Professor & Head Department of Environment Sciences, Savitribai Phule Pune University, Pune E-mail : nnilima@rediffmail.com</p> <p><input type="checkbox"/> Dr. B. S. Murthy - Committee Members Scientist - E Indian Institute of Tropical Meteorology, Pune E-mail : murthy@tropmet.res.in</p> <p><input type="checkbox"/> Dr. Suvarna Tikle- Convener Scientific Coordinator Indian Institute of Tropical Meteorology, Pune E-mail : suvarna.tikle@tropmet.res.in sstikle@gmail.com</p>

6. Current ENVIS Staff Structure:							
Name	Position held	Qualification and Experience	Joining Date in ENVIS Centre	Joining Date in current position	Leaving Date (if applicable)	2018-19	
						Emoluments drawn (Rs.)	
						Monthly	Annual
Dr. Suvarna Tikle	Program Officer	Ph.D. Environmental Sciences	15/03/2018	15/03/2018	23/07/2018	38,587/-	1,47,612/-
Samir Dhapare	Program Officer	M. Sc. Environmental Sciences	06/08/2018	06/08/2018	NA	38,587/-	3,02,472/-
Aishwarya Purwant	Information Officer	M. Sc. Environmental Sciences	21/07/2016	21/07/2016	21/12/2018	32,229/-	2,53,291/-
Gaurav P. Shinde	IT Officer	MBM (CM)	27/01/2014	27/01/2014	31/01/2019	26,066/-	2,60,660/-
Gaurav P. Shinde	Information Officer	MBM (CM)	27/01/2014	01/02/2019	NA	32,000/-	64,000/-
Ms. Darshana Jadhav	Data Entry Operator	B.Sc.	11/06/2018	11/06/2018	NA	12,100/-	1,16,966/-
						TOTAL	11,45,001/-

7.	Mandate of the Host Organization	Mandate of the ENVIS Centre
	Basic research on Ocean-Atmosphere Climate System for improvement of Weather and Climate Forecasts including hardcore multidimensional interactive earth system modeling and observational experimental measurements; Publishes fundamental research papers.	Systematically collect, compile and disseminate data on "Atmospheric Pollution and Climate Change" which includes data on air pollution, climate change, meteorological parameters, acid rain, extreme events and emissions etc. This data will be of immense use to several research organizations and other stakeholders. Conduct two courses under 'Green Skill Development Program'. Undertake 'National Environment Survey' in various districts of Maharashtra.

8. Databases:**8.1. Catalogue of Non-numeric Databases compiled by the ENVIS Centre till date:**

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Extreme Weather & Air Pollution Events	Compendium of Extreme Weather & Air Pollution Events observed at global as well as national scale (both human induced and natural) has been compiled and categorized under two heading "Atmospheric Pollution" and "Climate Change". It includes name of event, year, its cause and effect.	Descriptive information	Update as per the occurrence of event Last data point :2018-2019	Scientific articles, Books, research paper, online sources etc.	Available online
Abstract Servicing	Collection and compilation of abstract of research papers published in the field of Acid rain, Air pollution, climate	Research Abstracts	Monthly update (Last data point : March 2019)	Various national and international research journal	Available online
Articles in media	In this section articles published on acid rain, atmospheric pollution, green solution in various newspapers have been compiled	News articles	Daily update (Last data point : March 2019)	Different environmental news and website	Available online
Air Pollution Hotspot	Air pollution hotspot for pollutants PM10, PM2.5, CO, NOx, VOC's, BC, OC, SO2 has been shown over Delhi and Pune region. It also gives	Geospatial and graph	Last data point :Delhi-2010, Pune-2013	Special scientific report – SAFAR-Delhi-2010 A; Special scientific	Available online

<p>Basic Scientific Information- Atmospheric Pollution</p>	<p>This section has information on Earth's atmosphere (troposphere, stratosphere, mesosphere, thermosphere, and exosphere), atmospheric composition, what is air pollution and air pollutants including Particulate Matter, Ground level Ozone (O₃), Carbon Monoxide (CO), Oxides of Sulphur and Nitrogen, Volatile Organic Compounds (VOCs), Lead(Pb), Stratospheric Ozone Depleters (SOD), Green House Gases (GHG) etc. It also covers details of various processes affecting air pollution levels including emission, chemistry, meteorology, deposition along with some eye opening facts about air pollution and its effect on health and environment specifically on biological systems and non biological systems. It also covers information on SMOG a type of air pollution which drastically affects visibility.</p>	<p>Descriptive information with explanatory images</p>	<p>Basic scientific information- One time update, provided new findings are observed</p>	<p>Scientific Books, articles, research paper, online sources etc.</p>	<p>Available online</p>
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"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Basic Scientific Information - Acid Rain	It covers details such as what is Acid Rain, Acid deposition, Discovery of acid rain, Causes of Acid Rain (General/ SO ₂ / NO _x), Chemistry of acid rain, effects of Acid Rain, World affected areas, Possible solutions. Acid Rain Status : Indian Scenario	Descriptive information	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online
Basic Scientific Information- Geographical Scenario of Acid Rain	This section of website gives basic information on Indian scenario of acid rain, acid rain studies in India, acid rain global scenario, spread of acid rain across world, population ,emission and acid rain, and critical and target load.	Descriptive information Graphical representation	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available Online
Basic Scientific Information- Climate Change	It covers what is Climate Change, its driving factors, current facts on climate change, Effects of climate change, challenges on changing earth, adaptation & mitigation to Climate Change, information of GLOBAL WARMING (GW) - What is global warming and its causes, How Green House Gases induce GW, Effects of GW and what we can do about GW.	Descriptive information with explanatory images	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	<p>GREEN HOUSE EFFECT (GHE)- What is GHE, Enhanced GHE, concept of Radiative Forcing, Global Warming Potential, Human contribution and their impacts.</p> <p>GREEN HOUSE GASES (GHG) – What are GHG, Global emissions, Main GHG- Carbon Dioxide, Methane, Nitrous Oxide, Water vapour, Fluorinated gases, Chlorofluorocarbons, their sources and present concentration, methods to reduce them and international measures.</p>				
Basic Scientific Information- Ozone Layer Depletion	<p>What is good ozone & bad ozone, Natural formation & destruction of ozone, Causes of depletion, Ozone depleting gases, Effects of ozone depletion, Ozone hole & observed ozone holes (Antarctica, Arctic, Tibet), Current status of Ozone layer, Highlights of UNEP/WMO Executive summary (2014), National & International efforts to protect ozone layer, Discovery of recovery of ozone hole</p>	Descriptive information with explanatory images	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online

"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/yea r of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
ENVIS Library	Comprises more than 100 books/magazines/statistical/ scientific reports related to acid rain, air pollution, climate change, global warming, effect of air pollution and climate change on human health and agriculture etc. Also, a collection of newsletters published by the Centre as well as other ENVIS centers during past 10 years	Books, Magazines, Bulletins, Journals, Annual Reports etc.	Updated on March 2018	-	List is Available online
Multimedia	Scientific Documentary & Videos on major issues of air pollution, its impact on environment and human being	Documentary & Videos	Yearly update	Various paid and unpaid data sources	Available online
Kids Corner	Information of Clouds, Rain, Flood, Wind, Thunderstorms, Lightning, Earthquakes, Volcanoes, Climate, Atmosphere, Optical illusion, Ozone, Green House Effect, Weather and season	Descriptive information Animations, Videos, Games for students	Basic scientific information- One time update, provided new findings are observed	Scientific Books, articles, research paper, online sources etc.	Available online
Glossary	It includes alphabetic list of various terms used in the field of air pollution and climate change.	Descriptive	One time update , can be modified as per new available information	Scientific Books, articles, research paper, online sources etc	Available Online

"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Environmental Calendar	It gives information about various national and international days celebrated on different environmental themes.	Descriptive	One time update	Online sources	Available online
Secondary Links	Troposphere Data, MOPITT Data and information	Secondary link	-	Atmospheric Science Data Center	Available online
	Air Quality Online	Secondary link	-	SAFAR, GoI	Available online
	Weather Online	Secondary link	-	IMD, GoI	Available online
	Climate Change Reports	Secondary link		International Panel on Climate Change (IPCC)	Available online
	Links to other organizations working in the field of air pollution	Secondary link	-	National- CPCB, MPCB, NEERI, Physical research Laboratory, Ahmadabad, National Physical Laboratory, New Delhi, International- USEPA, WHO, IPCC, NCAR, WMO	Available online
News letters	Till date centre has published 51 newsletters	Newsletters	Quarterly publication	ENVIS-IITM Centre	Available online
Other publications	Till date centre has published 22 extra publications	Descriptive information	Yearly publication	Online sources, research publications and articles	Available online
National and Intentional policies	Information on national and international policies developed to tackle air pollution and climate change	Descriptive	Annual or as per availability of new information	Online sources	Available online

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Air quality and Health	Information of impact of various health hazardous pollutants on human health and different body parts has been collected	Graphics/ Animation	One time update. Provided new information is available	Online Sources	Available online
Face book Page	Dissemination media	Descriptive	Based on events and availability of news information	ENVIS-IITM	Available online
Acid Rain Point Map	Acid Rain database point map using Google map	Point Map	Annual or as per availability of data	Acid Rain Monitoring Project	Available online

8.2. Catalogue of Numeric and Time-series Databases compiled by the Centre till date:

Name of Database	Description (in brief)	Time Period (Starting year- Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Acid Rain Database	pH and alkalinity of 187 global sites (lakes and ponds)	Annual; 2001-2017	Acid Rain Monitoring Project	Availability Online
	Three Year wet Inorganic Nitrogen Deposition	Annual; Geospatial Data 2012-14, 2013-15	Various paid and unpaid data sources	Available online
	Three Year Wet Sulfate Deposition	Annual; Geospatial Data 2012-14, 2013-15	Various paid and unpaid data sources	Available online
	Trend analysis results for ions and color	Annual; April 1983 – April 2014	Various paid and unpaid data sources	Available online

"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	Comparison of percent of sites showing changes in pH and alkalinity	Annual; 2011-2014	Various paid and unpaid data sources	Available online
	Trend analysis results for pH and alkalinity	Annual; April 1983 – April 2014	Various paid and unpaid data sources	Available online
Air Pollution Data base	Air Quality: World record PM_{10} concentration (Annual mean for different world cities)	Annual; 2006-2010	WHO	Availability Online
	Air quality: Particulate Matter (PM10): annual mean concentrations in Europe-2013	Annual; 2013	European environmental agency	Available online
	Emission Data: Emission load of vehicles in Delhi; (CO , HC , NO_x , PM , Benzene, Ozone)	Annual; 2000, 2005, 2010	Various paid and unpaid data sources	Available online
	Emission Data: Vehicular emission load in 12 cities (CO , HC , NO_x , PM , Benzene, Ozone)	Annual; 1994	Transport fuel quality for year 2005. CPCB, MoES, GoI	Available online
	Emission Data: Green House Gas – (Sector, CO_2 equivalent emission)	Annual; 2007	Various paid and unpaid data sources	Available online
	Emission Data: Total SO_2 and NO_x emissions, US plants	Annual; 2004	Benchmarking Air Emissions of the 100 Largest Electric Power Producers in the United States – 2004, Online source	Available online
	Emission Data: Region wise total absolute emissions of CO_2 from Power Sector in India	Annual; 2000 -01 – 2012-13, 2013-14	Various paid and unpaid data sources	Available online
	Pollution Reduction: Reduction in pollution due to change in fuel quality in India (Pollutant, Percentage	Tabular statement 2000 - 2005	Various paid and unpaid data sources	Available online

"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	<i>reduction in emission for diesel and gasoline vehicle)</i>			
	Emission Norms and Pollution Reduction: Emission norms in use in India (Norm, Year of implementation, technology improvement in the vehicle)	Tabular statement	Various paid and unpaid data sources	Available online
	<i>Total consumption of Ozone depleting substances (MT) in India</i>	Annual 2000-2015	Various paid and unpaid data sources	Available online
Pollution norms and standards	Current <i>National Ambient Air Quality Standards (NAAQS)</i> developed for verities of air pollutants	Most recent notification -2009	CPCB	Availability Online
	Emission norms in use in India	Annual	Various paid and unpaid data sources, Govt. reports	Available online
	Concentration standard in industrial units	Annual	CPCB	Available online
	Emission standard for coal mines	Annual / 24 hr avg. latest available standard	CPCB, Online source	Available online
	<i>SO₂ standards for oil refinery,</i>	Tabular statement These are the latest available standards.	Environmental standards for ambient air, automobile fuels, industries and noise, CPCB, MoEF	Available online
	<i>Stack height for kiln unit, diesel generator set, thermal power plants for optimum dispersion of SO₂, etc.</i>	Tabular statement These are the latest available standards.	Environmental standards for ambient air, automobile fuels, industries and noise, CPCB, MoEF	Available online
	<i>Stack height limit for diesel generator set</i>	Tabular statement These are the latest available standards.	Environmental standards for ambient air, automobile fuels,	Available online

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
			industries and noise, CPCB, MoEF	
	Stack height limit of thermal power plants	Tabular statement These are the latest available standards.	Environmental standards for ambient air, automobile fuels, industries and noise, CPCB, MoEF	Available online
National and international treaties	Countries with status of ratification to <i>Kyoto protocol</i>	Tabular statement 2013	Various online sources	Available online
Major Air Pollution Sources	Polluting industries: State-wise Distribution (number) of 17 categories of industries	Annual; 2000	Pollution potential of industries in coastal areas of India, CPCB, MoEF	Available online
	Industrial Sector: State-wise number of highly polluting (17 category) industries	Annual; 2002 - 2004	Lok Sabha Question No.1673,2004	Available online
	Industrial Sector: No. of industrial units found violating pollution control norms (Year, number)	Annual; 2005- 2006, 2006 - 2007, 2007- 2008	Lok Sabha Question No.688, 2008	Available online
	Industrial Sector: Status of Pollution control in 17 categories of Industries (State, compliance status, number of industries)	Annual; Upto July, 2009	Lok Sabha Question No.3204, 2009	Available online
	Transport Sector – State wise Number of registered Two wheelers, three wheelers, cars, jeeps,	Annual; 1995, 2001, 2005, 2009, 2010, 2011, 2012, 2013, 2014, 2015 ,2016	Compiled from Various paid and unpaid data sources	Available online

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	taxies, Heavy/ Light commercial vehicles, Buses etc.			
	Transport Sector- Metropolitan city wise total registered motor vehicles in India	Annual; 2012-2016	Compiled from Various paid and unpaid data sources	Available online
	Transport Sector- Total Number of Registered Motor Vehicles in India	Annual; 1951, 1956 and 1959 to 2016	Compiled from Various paid and unpaid data sources	Available online
	Fuel consumption by different sectors: Coal: Fuel consumption by coal based Thermal Power units in India	Annual; 2007 - 2008 to 2013 - 2014	Compiled from Various paid and unpaid data sources	Available online
	Coal production in India	Annual 1990-00-2016-17, 2017-18,2018-19	Compiled from Various paid and unpaid data sources, Ministry of commerce and industry, Govt. of India	Available online
	State-wise Projected Coal Production in India	Annual for year 2011 and 2017	Compiled from Various paid and unpaid data sources	Available online
	Production, consumption, import and export of coal in India	Annual 1995-96 – 2012-13	Compiled from Various paid and unpaid data sources. The fertilizers association of India	Available online
	Demand and Supply of Coal in India	Annual; 2002-03 to 2017-18	Various paid and unpaid data sources	Available online
	Consumption of coal by different sectors in India	Annual 1991-92 – 2011-12	CIER	Available online
	Consumption of raw coal by industry in India	Annual 1970-1971 to 2016-17	Various paid and unpaid data sources	Available online
	Fuel consumption by different sectors: Energy oil: Annual demand of gasoline, diesel in different	Annual; 1990 - 91 – 2010 - 11	Compiled from Various paid and unpaid data sources	Available online

"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	cities, Delhi, Calcutta, Mumbai, Bangalore			
	Coal Based Thermal Power Plants: Existing coal based Thermal Power Plants in India 1996-2010 (State, district, name, address, capacity) with their geographical coordinates	Annual; 1996 - 2011	Website of each thermal power plant or company or their annual reports.	Available online
	Coal Based Thermal Power Plants: Upcoming thermal power plants in India up to 2017 (State, district, name, address) with their geographical coordinates	Annual; 2017	Website of each thermal power plant or company or their annual reports & by considering 5 year plan during the year 2011-2012.	Available online
Other vital Statistics	Other vital Statistics: Emission factors for different categories of vehicles	Tabular statement 1986-90 to 2006-10	ARAI, Pune reports	Available online
	Other vital Statistics: Driving cycles and cold start for two and three wheelers except diesel vehicles – specifications for various test cell conditions like soak temperature, period, preparatory running before sampling, number of test cycles and break down of cycles	Tabular statement	Environmental standards for ambient air, automobile fuels, industries and noise, CPCB, MoEF	Available online
	Population data – district-wise, state-wise total population	Annual; 2011	Online source	Available online
	Indian states and geographical areas	Tabular statement	Online source	Available online
	Indian state and geographical area	Annual	Various paid and unpaid data sources	Available online

"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Air Quality Data:	Air Quality Index (AQI) data of PM10, PM2.5, CO, O3, NOx, for Delhi, Pune and Mumbai	Online data along with 3 days advance forecast data	SAFAR-India, MoES, GoI.	Available online
Graphical View	Time series; Daily and hourly plots of PM10, SO2, NOx, O3 for Delhi	2 Yearly update/ as per data availability 2001- 2006	CPCB	Available online
Meteorological Data	Meteorological Stations in India – Name, State, District, Altitude, Latitude, Longitude	Tabular statement	IMD	Available online
	Maximum and minimum temperature at Meteorological Stations in India	Annual; 1998 -2017	IMD	Available online
	Monthly Rainfall (actual and normal) at Meteorological Stations in India	Monthly; 2000 – January 2019	IMD	Available online
	Station wise highest 24 hr rainfall (mm) in India	Annual 2008-2017	IMD	Available online
	Distribution of area according to annual rainfall in India – Type of area (dry/ medium/ assured), amount of rainfall, approximate % of area received rainfall	Annual; 2002	Agricultural research Data Book	Available online
	Season-wise distribution of rainfall (actual and normal) in India	Annual; 1992 – 2016, 2016-17	Various paid and unpaid data sources	Available online
	Wind speed at Meteorological Stations in India	Monthly; 2000	Various paid and unpaid data sources	Available online
Agriculture data :Climate change	Area under crops (State-wise)	1950 – 2009	Ministry of agriculture, Govt of India, Loksabha Questions, 2011, 2010, Reserve bank of India, The	Available online

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
			fertilizer association of India etc.	
	State wise area under crops	1995-2000; 2000-2009; 2009-2010; 2010-2011; 2011-2012	Ministry of Agriculture, Govt. of India. (ON802)	Available online
	Wastelands area (State-wise)	2010	Various paid and unpaid data sources	Available online
	State-wise Wastelands of India	Annual 2011	Various paid and unpaid data sources	Available online
	Degraded area (State-wise)	2010 - 2011	Various paid and unpaid data sources	Available online
	Cropping patterns (net/gross sown/irrigated area)	1950 - 1951-2008 - 09	Various paid and unpaid data sources	Available online
	Irrigation (gross area irrigated by canals, tanks, etc, State-wise.)	1997 - 1998 – 2014-15	Various paid and unpaid data sources	Available online
	Water requirement for crops	2001	Various paid and unpaid data sources	Available online
	Fertiliser product consumption (State-wise)	Yearly; 2012 -13,2014-15 ,2016-17	Various paid and unpaid data sources	Available online
	Consumption of Fertiliser Products in India	Yearly; 1990-1991 to 2016-2017	Various paid and unpaid data sources	Available online
	Fertilizer consumption in terms of N,P,K	1951 - 1952 – 2012 - 2013	Various paid and unpaid data sources	Available online
	Consumption of major fertilizers in India	1999 - 2000 – 2016 - 2017	Various paid and unpaid data sources	Available online
	Pesticide consumption (State-wise)	2000 - 2001 – 2015 – 2016	Various paid and unpaid data sources	Available online
	Estimated demand of pesticide in India (State-wise)	2009 - 2010 -2012 - 2013	Various paid and unpaid data sources	Available online
	Demand of Pesticide in India (State-wise)	1998 - 1999 – 2007 - 2008	Various paid and unpaid data sources	Available online
	Supply and demand of green and dry fodder in India	1995 - 2025	Various paid and unpaid data sources	Available online

Name of Database	Description (in brief)	Time Period (Starting year-Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	State-wise Dry and Green Fodder Production in India 2000-2003	Annual 2000-2003	Ministry of agriculture	Available online
	Fodder for livestock: Estimates of annual requirement of green fodder and dry fodder in India	1996, 2001, 2006	Various paid and unpaid data sources	Available online

8.3. New Databases developed during the Financial Year (2018-19)

8.3.1. Non-numeric Databases:

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Extreme weather & air pollution events	Extreme weather & air pollution events observed at global as well as national scale (both human induced and natural) has been compiled and categorized under two heading "Climate Change" and "Air Pollution". It includes name of event, year, its cause and effect.	Descriptive information	2018-2019	Scientific Books, articles, research paper, Various paid and unpaid data sources etc.	Available online
Article in media	News articles published during last financial year on acid rain, atmospheric pollution, climate change, green solutions etc. has been compiled	News articles /Descriptive	Daily update. 2018-2019	Different environmental and news website	Available online
Abstract Service	Collection and compilation of abstract of research papers published during last year in the field of "acid rain and atmospheric pollution"	Research Abstracts	Monthly update 2018-2019	Various national and international research journal	Available online
National and International policies	Information on national and international policies developed to tackle air pollution and climate	Descriptive	Annual or as per availability of new information	Online sources	Available online

Name of Database	Description (in brief)	Data type (descriptive/ graphical/ geospatial/ etc.)	Status of Updation/ Periodicity/ Data Points Compiled (including date/month/year of last data point)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
	change				
Air quality and Health	Information of impact of various health hazardous pollutants on human health and different body parts has been collected	Animation / Graphics	One time update. Provided new information is available	Online Sources	Available online

8.3.2. Numeric and Time-series Databases:

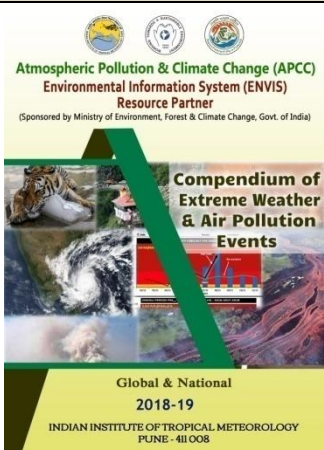
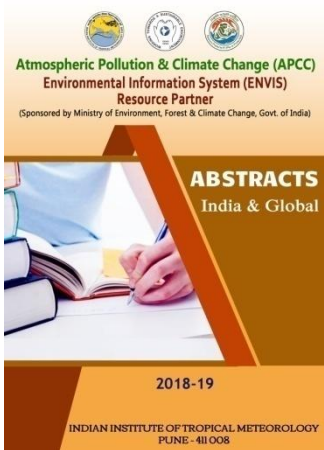
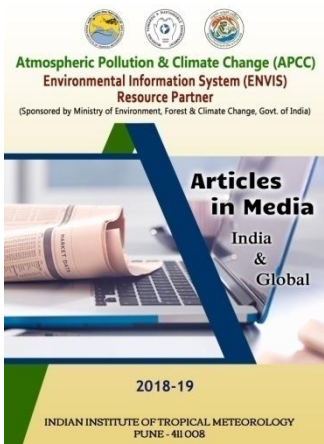
Name of Database	Description (in brief)	Time Period (Starting year- Ending year) and Periodicity (annual/ monthly/ other)	Source(s) of data	Online Availability (Whether uploaded on ENVIS Website)
Air Pollution Database	Air Quality Data: Concentration data of PM10, PM2.5, CO, O3, NOx, for Pune and Delhi	Updated for 2018	SAFAR-India MoES, GoI	Offline data base, available on project based request.
	<i>Total consumption of Ozone depleting substances (MT) in India</i>	Annual ; 2015	Various paid and unpaid data sources	Available online
Major Air Pollution Sources	Month-wise coal production in India	Annual ; 2018-19	Various paid and unpaid data sources	Available online
Meteorological database	Station wise highest 24 hr rainfall (mm) in India	Annual; 2017	IMD	Available online
	<i>Maximum and minimum temperature at Meteorological Stations in India</i>	Annual; 2017	IMD	Available online
	<i>Monthly Rainfall (actual and normal) at Meteorological Stations in India</i>	Monthly; March-2018 to January 2019	IMD	Available online
Agriculture database	<i>Fertilizer product consumption (State-wise)</i>	Annual; 2016-17	Various paid and unpaid data sources	Available online

9. Information/ Knowledge Products:

9.1. ENVIS Newsletters published during the Financial Year (2018-19):2018

Cover snapshot	Quarter/ Volume/ Issue/ Theme	Number of copies printed and circulated	URL of the PDF file in ENVIS website
	Volume-17, Issue-4, October-December -2018	100	http://iitmenvis.nic.in/
	Volume-17, Issue-3, July-September - 2018	100	http://iitmenvis.nic.in/
	Volume-17, Issue-2, April-June -2018	100	http://iitmenvis.nic.in/
	Volume-17, Issue-1, January-March -2018	100	http://iitmenvis.nic.in/

9.2. Other publications/ information products brought out during the Financial Year (2018-19):

Cover snapshot	Publication/ Product Theme(s)/ Subject Area(s)	Number of copies printed and circulated	URL of the PDF file in ENVIS website
 <p>Atmospheric Pollution & Climate Change (APCC) Environmental Information System (ENVIS) Resource Partner (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India)</p> <p>Compendium of Extreme Weather & Air Pollution Events</p> <p>Global & National 2018-19 INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE - 411 008</p>	<p>Compilation of extreme air pollution and weather events recorded worldwide during Year 2018</p>	<p>5 + 100 Copies of CDs</p>	<p>http://iitmenvis.nic.in/</p>
 <p>Atmospheric Pollution & Climate Change (APCC) Environmental Information System (ENVIS) Resource Partner (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India)</p> <p>ABSTRACTS India & Global</p> <p>2018-19 INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE - 411 008</p>	<p>Compilation of abstracts of latest research published during Year 2018</p>	<p>2</p>	<p>http://iitmenvis.nic.in/</p>
 <p>Atmospheric Pollution & Climate Change (APCC) Environmental Information System (ENVIS) Resource Partner (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India)</p> <p>Articles in Media India & Global</p> <p>2018-19 INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE - 411 008</p>	<p>Compilation of news articles published worldwide during Year 2018 on Atmospheric Pollution and Climate Change</p>	<p>2</p>	<p>http://iitmenvis.nic.in/</p>

Cover snapshot	Publication/ Product Theme(s)/ Subject Area(s)	Number of copies printed and circulated	URL of the PDF file in ENVIS website
	IITM-GSDP Documentary video	100	
	World Environment Day 2018 Pamphlet on Beat Plastic Pollution	1000	http://iitmenvis.nic.in/
	IITM-GSDP 2018 Pamphlet	1000	http://iitmenvis.nic.in/
	IITM-GSDP 2018 Pamphlet in Regional Language (Marathi)	1000	http://iitmenvis.nic.in/
	Jute Bag for World Environment Day-2018	1000	-

"Indian Institute of Tropical Meteorology (IITM), Pune" on "Atmospheric Pollution and Climate Change"

Cover snapshot	Publication/ Product Theme(s)/ Subject Area(s)	Number of copies printed and circulated	URL of the PDF file in ENVIS website
	GSDP Course “Emission Inventory” manual 2018	50	http://iitmenvis.nic.in/
	IITM-GSDP certification courses Success Stories -2018	50	http://iitmenvis.nic.in/
	GSDP –Course manual for ‘Emission Inventory’	50	http://envis.tropmet.res.in/publications/GSDP_EI_MANUAL%202018.pdf
	ENVIS Cap	100	

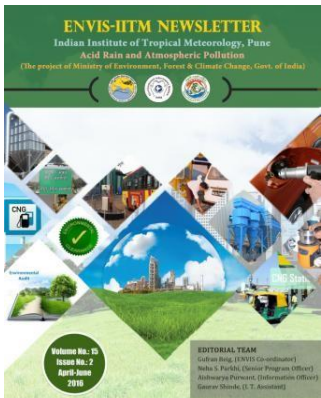
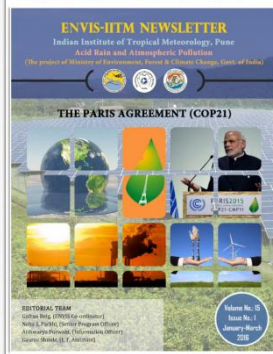
9.3. Information Products published/ released during last 5 years

Cover snapshot	Quarter/ Volume/ Issue/ Theme	Number of copies printed and circulated	URL of the PDF file in ENVIS website
	<p>Volume-16, Issue-4, October-December -2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-16, Issue-3, July-September -2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-16, Issue-2, April-June -2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-11, Issue-1, January-March -2017</p>	<p>100</p>	<p>http://iitmenvis.nic.in/</p>

"Indian Institute of Tropical Meteorology (IITM), Pune " on **"Atmospheric Pollution and Climate Change"**


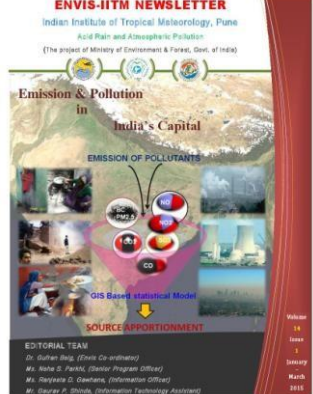

Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
	<p>Compilation of extreme air pollution and weather events recorded worldwide during Year 2017</p>	<p>2017</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of news articles published worldwide during year 2017 on acid rain, atmospheric pollution and climate change</p>	<p>2017</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Compilation of abstracts of latest research published during year 2017</p>	<p>2017</p>	<p>http://iitmenvis.nic.in/</p>

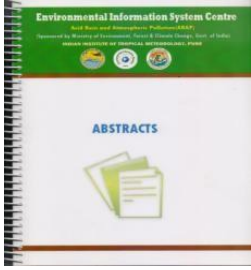

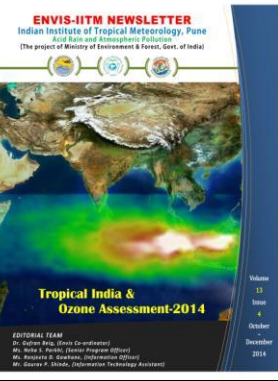
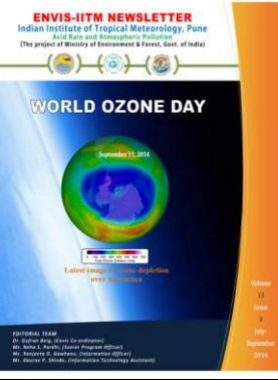

Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
 <p>The cover of the ENVIS pamphlet for 2017-18 features a collage of images including the Taj Mahal, a globe, and industrial smokestacks. The text on the cover includes 'ENVIS Environmental Information System Ministry of Environment, Forest and Climate Change' and 'INDIAN INSTITUTE OF TROPICAL METEOROLOGY (Autonomous Institute of Ministry of Earth Sciences, Govt. of India)'.</p>	<p>ENVIS-IITM Pamphlet</p>	<p>2017-18</p>	<p>http://envis.tropmet.res.in/publications/ENVIS%20Pamphlet2017.pdf</p>
 <p>The cover of the Swachh Bharat Abhiyan pamphlet features a map of India with a person cleaning. The text includes 'SWACHH BHARAT ABHIYAN EK KADAM SWACHHATA KI ORE' and 'Our Place... Our Planet... Our Responsibility'. It also contains a quote from Mahatma Gandhi: 'I will remain committed towards cleanliness and devote time for this. I will devote one hour per year that is two hours per week, to voluntarily work for cleanliness. I will neither blame nor be blamed. I will initiate the spirit for cleanliness with myself, my family, my locality, my village and my work place.'</p>	<p>Pamphlet to create awareness about Swachh Bharat Abhiyan: Our Place... Our Planet... Our responsibility</p>	<p>2016</p>	<p>http://envis.tropmet.res.in/publications/Swach_bharat_Pamphlet2016.pdf</p>
 <p>The cover of the ENVIS-IITM Newsletter, Volume-15, Issue-4, October-December-2016, features a collage of images related to acid rain and atmospheric pollution. The text includes 'ENVIS-IITM NEWSLETTER Indian Institute of Tropical Meteorology, Pune Acid Rain and Atmospheric Pollution (The project of Ministry of Environment, Forest & Climate Change, Govt. of India)'. The editorial team listed includes Gulshan Singh (ENVIS Co-ordinator), Nisha S. Parkhi (Senior Program Officer), Ashwarya Patil (Information Officer), and Geeta Shinde (I. T. Assistant).</p>	<p>Volume-15, Issue-4, October-December-2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
 <p>The cover of the ENVIS-IITM Newsletter, Volume-15, Issue-3, July-September-2016, features images of a hydrogen station and a car with a 'Titanic Dioxide Battery' label. The text includes 'ENVIS-IITM NEWSLETTER Indian Institute of Tropical Meteorology, Pune Acid Rain and Atmospheric Pollution (The project of Ministry of Environment, Forest & Climate Change, Govt. of India)'. The editorial team listed includes Gulshan Singh (ENVIS Co-ordinator), Nisha S. Parkhi (Senior Program Officer), Ashwarya Patil (Information Officer), and Geeta Shinde (I. T. Assistant).</p>	<p>Volume-15, Issue-3, July-September-2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>


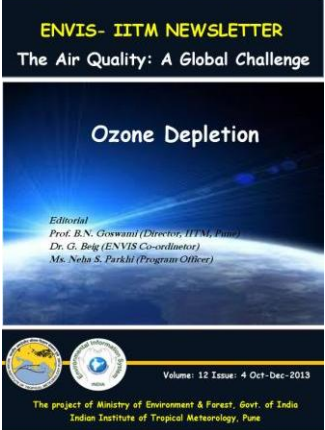
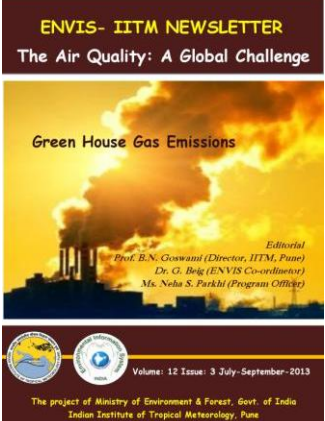
Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
	<p>Volume-15, Issue-2, April-June-2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Volume-15, Issue-1, January-March 2016</p>	<p>2016</p>	<p>http://iitmenvis.nic.in/</p>
	<p>Mobile app-SAFAR-Air</p>	<p>-</p>	<p>https://play.google.com/store/apps/details?id=com.cloud.mobile.android.airqualityindex</p>
	<p>Compilation of news articles published worldwide during year 2016 on acid rain, atmospheric pollution and climate change</p>	<p>2016</p>	<p>http://envis.tropmet.res.in/publications/Articles_in_media_2017.pdf</p>

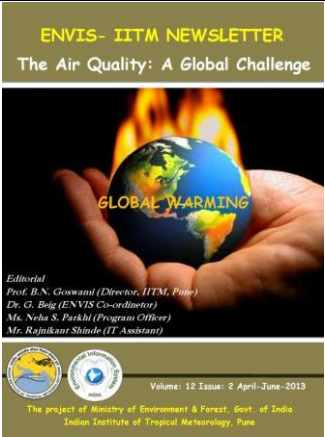
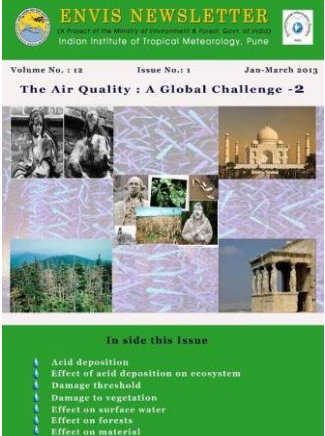
Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
 <p>Acid Rain and Atmospheric Pollution (ARAP) Environmental Information System Centre (ENVIS) (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India)</p> <p>COMPENDIUM OF EXTREME WEATHER AND EXTREME AIR POLLUTION EVENTS Global & National 2016-17</p> <p>INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE - 411 008</p>	<p>Compilation of extreme air pollution and weather events recorded worldwide during year 2016</p>	<p>2016</p>	<p>http://envis.tropmet.res.in/publications/Extreme_Event_2017.pdf</p>
 <p>Acid Rain and Atmospheric Pollution (ARAP) Environmental Information System Centre (ENVIS) (Sponsored by Ministry of Environment, Forest & Climate Change, Govt. of India)</p> <p>ABSTRACTS India & Global 2016-17</p> <p>INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE - 411 008</p>	<p>Compilation of abstracts of latest research published during year 2016</p>	<p>2016</p>	<p>http://envis.tropmet.res.in/publications/Abstract_2017.pdf</p>
 <p>ENVIS-IITM NEWSLETTER Indian Institute of Tropical Meteorology, Pune Acid Rain and Atmospheric Pollution (The project of Ministry of Environment, Forest & Climate Change, Govt. of India)</p> <p>Volume No.: 14 Issue No.: 4 Oct-Dec 2015</p> <p>NATIONAL POLLUTION CONTROL DAY</p> <p>Observed each year in India to memorise Bhopal Gas Tragedy On 2nd December</p> <p>EDITORIAL TEAM Gufran Belg Neha S. Parkhi, Ranjeeta Gawhane, Gaurav Shinde</p>	<p>Volume-14, Issue-4, October-December 2015</p>	<p>December 2015</p>	<p>http://envis.tropmet.res.in/NewsLetters/Viewer.aspx?SelNewsLet=38</p>
 <p>ENVIS-IITM NEWSLETTER Indian Institute of Tropical Meteorology, Pune Acid Rain and Atmospheric Pollution (The project of Ministry of Environment, Forest & Climate Change, Govt. of India)</p> <p>Volume No.: 14 Issue No.: 3 July-September 2015</p> <p>INDIAN MONSOON AND AIR POLLUTION</p> <p>EDITORIAL TEAM Gufran Belg Neha S. Parkhi, Ranjeeta Gawhane, Gaurav Shinde</p>	<p>Volume-14, Issue-3, July-September 2015</p>	<p>September 2015</p>	<p>http://envis.tropmet.res.in/NewsLetters/Viewer.aspx?SelNewsLet=37</p>

"Indian Institute of Tropical Meteorology (IITM), Pune " on **"Atmospheric Pollution and Climate Change"**

Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
	<p>Volume-14, Issue-2, April-June 2015</p>	<p>June 2015</p>	<p>http://envis.tropmet.res.in/NewsLetters_Viewer.aspx?SelNewsLet=36</p>
	<p>Volume-14, Issue-1, January-March 2015</p>	<p>March 2015</p>	<p>http://envis.tropmet.res.in/NewsLetters_Viewer.aspx?SelNewsLet=35</p>
	<p>Compilation of news articles published worldwide during 1992 to February 2015 on acid rain, atmospheric pollution and climate change</p>	<p>2015</p>	<p>http://envis.tropmet.res.in/publications/2016_NewsArticles.pdf</p>
	<p>Compilation of extreme air pollution and weather events recorded worldwide during 1930 till 2014</p>	<p>2015</p>	<p>http://envis.tropmet.res.in/publications/2015_Extreme_Events.pdf</p>

Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
	<p>Compilation of 410 abstracts published during 2006 to 2014</p>	<p>December 2015</p>	<p>http://envis.tropmet.res.in/publications/2015_Abstract_Service.pdf</p>
	<p>Ozone layer, Path to Ozone recovery</p>	<p>2014</p>	<p>http://envis.tropmet.res.in/publications/Ozone14_Pamplate.pdf</p>
	<p>Volume-13, Issue-4, October-December 2014</p>	<p>December 2014</p>	<p>http://envis.tropmet.res.in/Newsletters/Images/Oct_Dec_2014.pdf</p>
	<p>Volume-13, Issue-3, July-September 2014</p>	<p>September 2014</p>	<p>http://envis.tropmet.res.in/Newsletters/Images/July_Sept_2014.pdf</p>
	<p>Volume-13, Issue-2, April-June 2014</p>	<p>June 2014</p>	<p>http://envis.tropmet.res.in/Newsletters/Images/April_June_2014.pdf</p>

Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
	<p>Volume-13, Issue-1, January-March 2014</p>	<p>March 2014</p>	<p>http://envis.tropmet.res.in/Newsletters/Images/Jan-March-2014.pdf</p>
	<p>Volume-12, Issue-4, October-December 2013</p>	<p>December 2013</p>	<p>http://envis.tropmet.res.in/Newsletters/Images/October_December_2013.pdf</p>
	<p>Volume-12, Issue-3, July-September 2013</p>	<p>September 2013</p>	<p>http://envis.tropmet.res.in/Newsletters/Images/July-September-2013.pdf</p>

Publication / Product	Theme(s)/ Subject Area(s)	Year of Publication	URL of the PDF file in ENVIS website
	Volume-12, Issue-2, April-June 2013	June 2013	http://envis.tropmet.res.in/Newsletters/Images/April-June-2013.pdf
	Volume-12, Issue-1, January-March 2013	March 2013	http://envis.tropmet.res.in/Newsletters/Images/January_March_2013.pdf

10. ENVIS Website(ENVIS Centres whose Website has been restructured may provide the Performance Report/Graphs generated therein wherever possible):

10.1. URL: <http://iitmenvis.nic.in/> and <http://envis.tropmet.res.in/>

10.2. Status of restructuring of Website: Not restructured

10.3. Frequency of updating Website 2018-19 (as on Apr-2019): Daily, Monthly, Yearly based on database type

10.4. Subject-specific database updating (numeric/ others): Daily, Monthly, Yearly based on database type

10.5. Publication uploaded/ updated on Website: 52

11. User Engagement and Interaction

<i>User engagement and interaction</i>	<i>FY 2015-16</i>	<i>FY 2016-17</i>	<i>FY 2017-18</i>	<i>FY 2018-19 (As on 01- Apr-2019)</i>
i. Total number of visits	168218	180602	193857	199195
ii. Number of unique visits	210	259	287	296
iii. Reports Downloaded/Read	25	80	-	-
iv. Total Number of Queries received	450	527	612	520
v. Number of Queries responded	450	527	612	520
vi. Grade received	A			

11.1 Total number of visits on Website (2018-19): 5338

11.2 Number of unique visits on Website (2018-19): 296

11.3 Number of reports downloaded/ read by stakeholders: -

11.4 Query-Answer Statistics 2018-19: As on Apr-2019

Mode of Query Receipt	Number of Queries Received	Number of Queries Responded	Reasons for shortfalls, if any, and action taken to rectify
Online (CMS based website)	-	-	-
Email (official NIC server)	7	7	-
Postal/Telephonic (incl. hand post)	240	240	-
Physical	273	273	-

12. Implementation of Annual Plan of Activities of the Financial Year (2018-19):

Activity/ Target	Achievements	Shortfalls, if any, and reasons therefore
Centre's proposed activities 2018-19		
1. Implementation of GSDP Master trainer courses for two subject areas- 1. 'Pollution Monitoring (Air & Water)' 2. 'Emission inventory'	Successfully completed two courses	

Activity/ Target	Achievements	Shortfalls, if any, and reasons therefore
2. Website will be upgraded and will be made more interactive and user friendly	Completed	-
3. Existing abstracting service related to Atmospheric pollution & climate change will be updated and value addition will be made by changing its representation.	Completed & uploaded on Website	-
4. Existing articles in media will be updated on daily basis	Implemented	-
5. The Newsletters on the thematic area are planned to published in regional language Marathi and distribution of them will be ensure amongst the local educational institutions to spread our message more rapidly.	GSDP Pamphlet were publish in Marathi and English to reach more number of unemployed local youth.	-
6. Environmental Awareness Event will be organized in coming year to improve public outreach.	Successfully implemented	-
7. As per the guidelines received by MoEF&CC, centre will select one village to conduct various awareness programs regarding thematic area. Awareness programs will be conducted in nearby villages regarding impact of air pollution on human health and how to prevent it, importance of clean fuel, use of cleaner chulas and its health benefits etc.	In Process	-
8. Extra publication will be targeted preferably on extreme pollution and weather events.	Successfully completed.	-
9. Regular Web based data related Atmospheric Pollution & Climate change will be updated.	Successfully completed.	-

Activity/ Target	Achievements	Shortfalls, if any, and reasons
10. Improve public outreach	<p>Environmental Awareness event – “Science day 2019” on that day 200+ students participated and World Environment Day 2018 has been celebrated on theme “Beat Plastic Pollution” in which around more than 1000 civilian participated enthusiastically. Ozone day Celebrated by quiz competition in 10 schools in Pune city.</p> <p>Cleanness drive with GSDP candidates on Swachhata Pakhawada .</p> <p>Skit on Conservation of Water to reach common public.</p> <p>Information of ENVIS centers and activities to more than 7000 school children, more than 2000 college students and more than 200 delegates has been spread during their visit to IITM campus</p>	
11. Mobile App	In Process	
A. Regular Activities: Web-based Environmental Information		
Collection and Compilation of Information and Data		
1. Development and regular updation of <i>databases</i> (descriptive, numeric, pictorial, geospatial, etc.) on the assigned subject area and regular uploading of the same in the <i>Subject Area</i> section of the ENVIS Website, after due verification/ authentication, with suitable referencing of data sources.	Done	NIL
2. Compilation of <i>Abstracts, Bibliography, News articles, Events, etc.</i> on the subject area and uploading the same in therelevant section of ENVIS Website.	Done	NIL
3. Identification of data gaps and formulation with implementation of action plan to fill them.	Data collected on the Air quality status. The compilation has been Initiated. Spatial distributed map has been prepared for Pune Metropolitan region	-

Maintenance of ENVIS Website and User Engagement through it		
4. Maintaining the ENVIS Website up-to- date and user-engaging, and as an inventory of authentic and reliable information in the subject area	Done	NIL
5. Query-Response/ Referral service to stakeholders.	Service is already in place at ENVIS-IITM RP.	NIL
6. Developing and upgrading a Kids' Corner.	It is already developed by ENVIS-IITM.	NIL
7. Maintaining a disaggregated record of visitors, including unique visitors, to the Website.	Done	NIL
Publications and Value-Addition		
8. Publishing 4 Newsletters and uploading the same in the relevant section of	Done	NIL
9. Processing/ analyzing data collected and bringing out value-added information	Centre is involved in data analysis and has come up with various thematic maps	Limited man power
10. Collecting books, reports and journals on the subject area; Uploading e-versions of books, reports, etc. on the	Done	NIL
11. Scientific Publications, Awards & recognition	<p>1) Development of Ahmedabad's Air Information and Response (AIR) Plan to Protect Public Health, Vijay S. Limaye 1,*, Kim Knowlton 1,2, Sayantan Sarkar 1, Partha Sarthi Ganguly 3, Shyam Pingle 3, Priya Dutta 3, Sathish L. M. 3, Abhiyant Tiwari 3,4, Bhavin Solanki 5, Chirag Shah 5,6, Gopal Raval 7, Khyati Kakkad 8, Gufran Beig 9, Neha Parkhi 9, Anjali Jaiswal 1 and Dileep Mavalankar 3, <i>Int. J. Environ. Res. Public Health</i> 2018, <i>15</i>(7), 1460; https://doi.org/10.3390/ijerph15071460</p> <p>2) Winter Burst of Pristine Kashmir Valley Air, Zainab Q. Hakim, Gufran Beig, Srinivas Reka, Shakil A. Romshoo & Irfan Rashid, <i>Scientific Reports</i> volume 8, Article number: 3329 (2018)</p> <p>3) The impact of power generation emissions on ambient PM2.5 pollution and human health in China and India; Meng Gao, G. Beig, S. Song, H. Zhang, J. Hu, Qi Ying, Fengchao Liang, Y. Liug, H. Wang, X. Luai, T. Zhu, G. R. Carmichael, C. Nielsen, M. B. McElroya https://doi.org/10.1016/j.envint.2018.09.015</p>	

Activity/ Target	Achievements	Shortfalls, if any, and
	<p>4) Radiative Forcing of Carbonaceous Aerosols over Two Urban Environments in Northern India, Abhilash S. Panicker*, Rathod Aditi, Gufran Beig, Kaushar Ali, Fabien Solmon Aerosol and Air Quality Research, 18: 884–894, 2018 Copyright © Taiwan Association for Aerosol Research ISSN: 1680-8584 print / 2071-1409 online doi: 10.4209/aaqr.2017.01.</p> <p>4) India State-Level Disease Burden Initiative Air Pollution Collaborators, Impact of air pollution on deaths, disease burden, and life expectancy across the states of India; Balakrishnan K., Dey S., Gupta T., Dhaliwal R.S., Brauer M., Cohen A.J., Stanaway J.D., Beig G. et.al. the Global Burden of Disease Study 2017, Lancet, online, December 2018, DOI:10.1016/S2542-5196(18)30261-4, e26-e39.</p> <p>5) Evaluation of tropospheric ozone and ozone precursors in simulations from the HTAPII and CCMI model intercomparisons – a focus on the Indian Subcontinent; Hakim Z.Q., Archer-Nicholls S., Beig G., Folberth G.A., Sudo K., Abraham N.L., Ghude S., Henze D., Atmospheric Chemistry and Physics Discussions, online, December 2018, DOI:10.5194/acp-2018-1235, 1-36</p> <p>6) Influence of Meteorology on Particulate Matter (PM) and Vice-Versa over Two Indian Metropolitan Cities, Krishna K.R., Beig G., Open Journal of Air Pollution, 7, August 2018, DOI:10.4236/ojap.2018.73012, 244-262.</p> <p>7) Surface PM_{2.5} estimate using satellite-derived Aerosol Optical Depth over India, Krishna R.K., Ghude S., Kumar Rajesh, Beig G., KulkarniRachana, Nivdange S., Chate D., Aerosol and Air Quality Research, 19, April 2019, DOI:10.4209/aaqr.2017.12.0568, 25-37</p> <p>8) On the contribution of particulate matter (PM_{2.5}) to direct radiative forcing over two urban environments in India, Krishna R.K., Panicker A.S., Yusuf A.M., BeigG., Aerosol and Air Quality Research, online, October 2018, DOI:10.4209/aaqr.2018.04.0128, 1-12</p> <p>Awards & Recognitions: *Dr. Beig: “Prize in Hindi Rajbhasha Puraskar” in Hindi Pakhwada to Dr. G. Beig *Dr. Suvarna Tikle: “Best Field Coordinator” for Delhi Emission</p>	

	* Mr. Gaurav Shinde: “ Best field Supervisor” for Delhi Emission Inventoey-2018	
Reaching-out/Networking Activities		
11. Liaison and coordination with other relevant ENVIS Centres, both State Centres and Thematic Centres, for providing data/ information links in the relevant part of the ENVIS Website (to avoid duplication and conflicts in	Centre is in process to identify potential research areas which can be done in collaborative mode and will come up with project proposals for the same.	
12. Build linkages with other information sources in the country and abroad. Providing hyperlinks to the information	Done	NIL
13. Maintaining a list of Experts in the subject area and uploading the same, along with updated C.V., in the relevant section of ENVIS	Done	-
14. Coordination with the Ministry for timely dissemination of relevant and adequate information to stakeholders.	Centre is coordinating with ministry and submits information about atmospheric pollution & climate Change episodes as and when required.	-
15. Formulate strategic plans to generate sources of funds from corporate sector and/ or through subscriptions of Newsletters/ other	NA(Being Government Organization)	-
B. SPECIAL ACTIVITIES		
16. Focus on database development (numeric and descriptive), with due authentication in consultation with Line Departments/ research institutes, etc.	Centre is involved in database development and has robust up to date data set for air pollution and climate change related information.	Information for acid rain episodes in India is scare however centre is Compiling and developing data base for the same.
17. Network and undertake outreach activities with Universities/ Research bodies/ researchers in the State, similar to those of Odisha ENVIS, so that the ENVIS collections/ repositories can be enriched, including with their contact details/ CVs, etc.	Centre is conducting outreach activities with local schools and colleges. Also have organized environmental awareness event in association with Vvijnan Bharati, India Meteorological Department Pune University & Internal departments of IITM etc. to enhance awareness about the centers activities.	NIL

Activity/ Target	Achievements	Shortfalls, if any, and
18. Circulate Newsletters and knowledge products to as many stakeholders as possible in the State, especially policy makers/ planners.	Centre is distributing newsletters to relevant stakeholders including universities, schools, and colleges. Centre will also distribute newsletter to local Municipal Corporation PMC and PCMC.	-
19. Link its Website to other Government Websites; develop the vernacular Website; and undertake other awareness enhancing activities within the State.	Centre's website is linked with the official website of IITM, Ministry of Earth Sciences. And time to time conduct various awareness activities in the city.	-
20. Maintain a Register for keeping track of queries received and transferred/ answered.	Most of the queries received are from physical interaction with the visitors and on telephone and has been answered time to time.	-
21. Build institutional repositories of various types of media related to environmental issues.	Yes	
22. Bring out a Brochure on environmental issues to spread awareness about World Environment Day, focusing on forestry/ mining/ Climate Change/ disasters/ etc.	Centre is publishing brochure to create awareness about world environmental day, swatch bharat abhiyan, forest conservation, ozone depletion etc.	
23. Outreach Activities like rally, skit, song etc.	During GSDP RP has stage skit on conservation of water; also with SAFAR team & GSDP candidates a one day cleanliness drive with rally was organized to support 'Swachata Hi Seva' Campaign.	
24. Other Activities	ENVIS Staff has actively participated in the Emission Inventory of Delhi-2018	

13. New initiatives taken during the Financial Year (2018-19):

- Organized an Environmental Awareness event – “World Environment Day 2018” in which more than 1000 civilian participated enthusiastically.
- Celebration of Science Day at IITM, Pune & GMRT, Narayangaon,Pune 2019 in which more
 - than 1000 school and college students were made aware about issues regarding Air Pollution
 - and control measures.
- Conducted cleanliness drive & awareness rally at Pashan lake under ‘Swatchata Hi Seva’ campaign

14. Date of most recent physical verification by the Ministry: 02/04/2015

Recently on 25/09/2018, Dr. Anandi Subramanian, Senior Advisor & Mr. Rajnish Kumar, National Coordinator-ENVIS had visited IITM,Pune. They were satisfied with the facilities present at IITM,Pune for execution of ENVIS activities.

15. Status of existing hardware:

	Hardware item	Specification	Sanction Order with Date	Date of procurement
Procured from ENVIS Grant (2014-15)	Printer	Office Laser Multi function printer-Print, copy, scan, fax	No. 11/27/2004-EI Dated 30 th June, 2014	10/02/2015
	Laptop	Intel Core i5-HD Touch screen-4GB RAM-1TB HDD-15.6 Inches Screen-Windows 8.1-2GB Graphics	No. 11/27/2004-EI Dated 30 th June, 2014	10/02/2015

16. Status of utilization of grant during the financial year 2018-19 as on 31-March-2019 and reasons for shortfalls, if any:

	Head of Expenditure	Sanctioned amount (Rs.)	Received Amount	Actual Expenditure	Reasons for Shortfall/ Excess (if any)
Recurring Annual	Manpower	12,71476.80	12,71476.45	11,45,001	Nil
	Others, etc.	4,65,300	4,65,300	4,62,742	Nil
	Travel & Training	55,000	55,000	53,651	The sanction amount is insufficient for lowest Air fare, hence may be increase for upcoming budget
Non-Recurring	-	-	-	-	Nil

17. Issues/ hurdles faced in undertaking ENVIS activities:

1	Lack of Manpower: Manpower upgradation as suggested by our centre will help to achieve the targets set for upcoming years, As programs under ENVIS are getting expanded, there is need of scientific staff to promote research & to transform research into knowledge, so that general public can be benefited
2	
3	

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