

# Meteorological Training Facilities in India

by  
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भारत मौसम विज्ञान विभाग  
INDIA METEOROLOGICAL DEPARTMENT



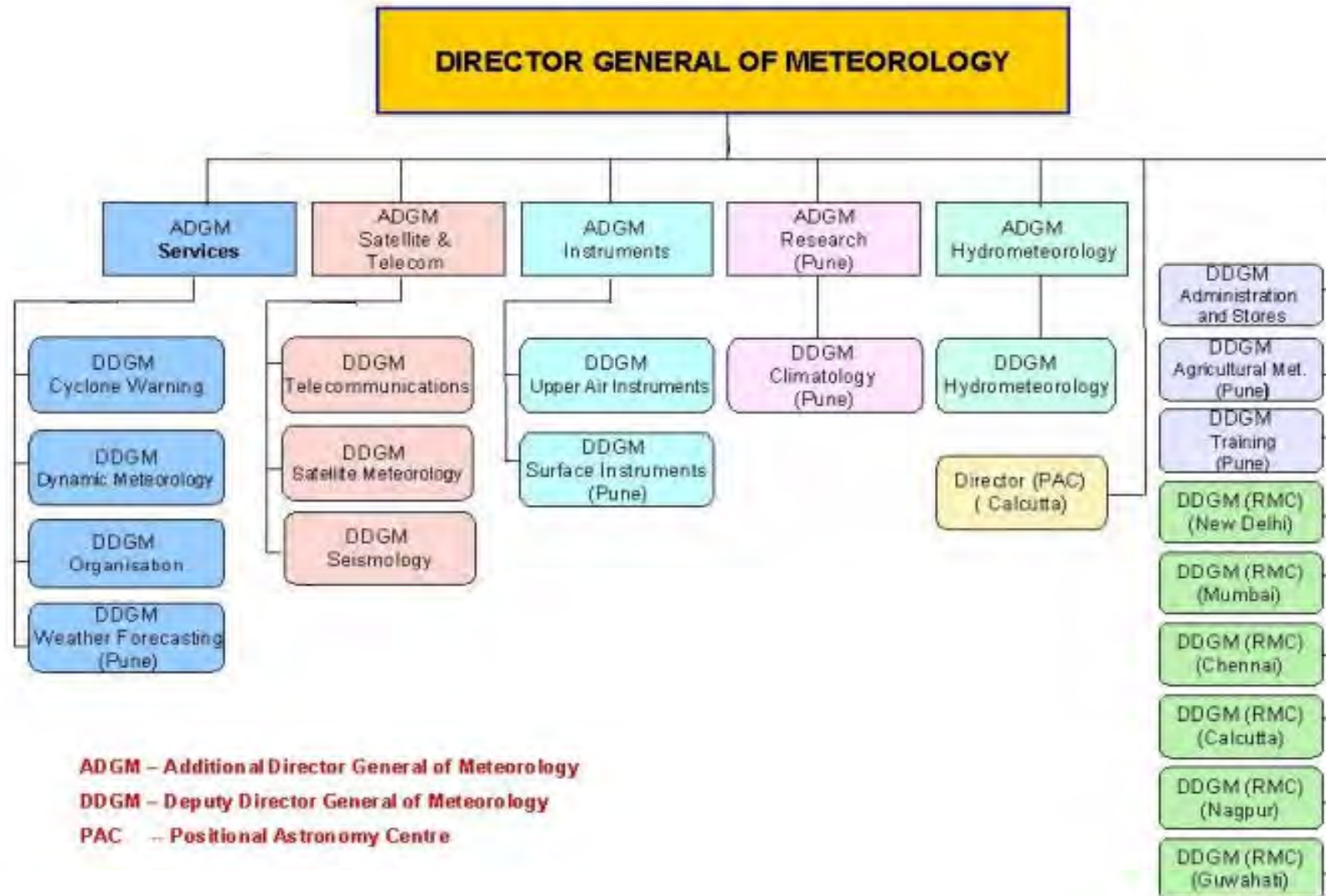
# Scope of Presentation

- Introduction
- Historical landmarks
- Courses conducted
- Syllabus in brief
- Statistics
- Infra-structure



# INDIA METEOROLOGICAL DEPARTMENT

## Organisational Structure



# Organisational setup of Training Centre

## **Owner :**

India Meteorological Department

## **Stake Holders :**

India Meteorological Department

WMO (RAII mainly)

Meteorological Users and customers (governmental, non-governmental agencies)

## **GOVERNING COUNCIL :**

- Prepares and updates syllabi and supervise smooth functioning of the human resources development in Meteorology, Atmospheric Sciences and allied sciences.

## **DGM of IMD and PR with WMO - CHIEF ADVISOR**

- Coordinates training activities with other international organizations like WMO, ICAO, UNDP and UNESCO and national organizations in India.
- Approves training of foreign national in India.



# MEMBERS OF GOVERNING COUNCIL

DGM of IMD and PR with WMO - CHIEF ADVISOR	
ADGM (Services)	ADGM (Research)
DDGM (Training)	DDGM (Agricultural Meteorology)
DDGM (Weather Forecast)	DDGM (Surface Instruments)
DDGM (Telecommunication)	DDGM (Upper Air Instruments)
DDGM (Satellite Communication)	Director NCMRWF or Nominee
Director IITM or Nominee	



# Objectives

- To provide training to support operational activities
- To conduct periodic regular courses to support career development of IMD personnel
- To conduct refresher courses to maintain and enhance job competency
- To function as an effective RMTC for Regional Association II.
- To respond to trends, developments and evolving needs in keeping with the rapid technological and scientific advancements
- To improve scientific content of research in IMD



# Central Training Institute

(WMO Recognized Regional Meteorological Training Centre)

## Main centre

- Located at Pune
- Conducts all regular and special training courses except training in upper-air instruments and Tele-communication

## Sub-Centers

- New Delhi
  - Conducts training in upper-air instruments and Tele-communication
  - Conducts Basic course in Meteorology
- Chennai
  - Conducts Basic course in Meteorology





# Historical Milestones

1942	As an outcome of World War II, the necessity of meteorological training was felt
1943-1944	Commencement of an organized training school at Pune
1952	Three new courses in meteorology started viz. <ul style="list-style-type: none"><li>•Elementary,</li><li>•Intermediate and</li><li>•Advanced Course</li><li>•Radio-sonde and Radar at New Delhi.</li></ul>





# Historical Milestones

<b>1963</b>	<b>Training to the Naval and Air Force Officers started.</b>
<b>1965</b>	<b>Re-organization of intermediate and advance training courses</b>
<b>1967</b>	<b>First foreign trainee admitted.</b>
<b>1968</b>	<b>The silver jubilee of the meteorological training</b>
<b>1969</b>	<b>Training Directorate came into existence</b>



# Historical Milestones

1970	Commenced advanced refresher courses on special subjects: <ul style="list-style-type: none"><li>• Numerical Weather Prediction,</li><li>• Satellite Meteorology</li></ul>
1976	Agro-meteorological training unit started.
1977	Training centre for telecommunication established at New Delhi.
1980	<ul style="list-style-type: none"><li>• Ab-initio Training course for Class-I meteorologists started.</li><li>• WMO seminar for instructors from RA II and RA V was held.</li></ul>
1985	WMO Secretary General visited training centers at Pune and New Delhi



# Historical Milestones

<b>1986</b>	<b><u>Recognition by WMO as Regional Meteorological Training Centre.</u></b>
<b>June 15, 1988</b>	WMO Secretary General and Director General of Meteorology signed the agreement concerning the new R.M.T.C. in India.
<b>1989</b>	An exclusive trainees hostel facility started in 1989.
<b>1990</b>	Training Directorate was upgraded into the Training Division headed by Deputy Director General of Meteorology (Training).
<b>1995</b>	<ul style="list-style-type: none"><li>• An exclusive building for the training division was constructed at Pashan, Pune</li><li>• The training in hydrology courses commenced under the World Bank funded Hydrology project.</li></ul>



# Historical Milestones

July 26, 1999	The Training Division at Pune re-designated as Central Training Institute (CTI).
2000	Commencement of Tailor Made training modules catering to the specific requirements of various user agencies.
2008	Training Policy Revised & Syllabus upgraded
2009	New Training Syllabus implemented since Sept 2009



# International co-operation

- CTI participates in VCP, UNDP & ITEC Programmes
- Provides training to meteorological personnel nominated by WMO
- Provides training to meteorological personnel nominated by any NMHS (mainly RA II ) on direct request too.

## No fee is charged

## Contact for Training

**Fax No. : 91 - 11 - 24699216**  
**E-mail : [dgm.hq@imd.gov.in](mailto:dgm.hq@imd.gov.in)**

**Fax No. : 91 - 020 - 25893330**  
**E-mail : [ddgmt@imdpune.gov.in](mailto:ddgmt@imdpune.gov.in)**  
**[cti@imdpune.gov.in](mailto:cti@imdpune.gov.in)**



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# Main Disciplines

- **General Meteorology : Including Aviation & non-Aviation Weather forecasting)** --- Conducted by DDGM(Trg)
- **Instruments (Operation & Maintenance)**
  - ❖ **Surface instruments** --- Conducted by DDGM(SI)
  - ❖ **Upper Air Instruments ,including RADAR** --- Conducted by DDGM(UI)
- **Agricultural Meteorology** ---- Conducted by DDGM(AgriMet)
- **Meteorological Telecommunications** --- Conducted by DDGM(Telecom)
- **Hydrometeorology** ---- Conducted by DDGM(Trg)



# Regular Training Courses



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# Discipline- General Meteorology

## Officers' Training

SN	Course Name	Eligibility	Duration (month)	Freq/ Yr	Commence-ment date	Centres
1	Advanced Met. Training Course	<b>Direct recruited Gr-A officers,</b> Indian Navy, Indian Coast Guard, foreign trainees, M.Sc./ Ph.D/BE/BTech.	12	1	First Monday of September.	<b>CTI- Pune</b>
2	Forecaster Training Course	<b>Intermediate Course passed</b> Foreign and IMD personnel <b>with sufficient work experience</b>  Graduates (AM I / AM II ) PG with Phy/Maths	6	1	2 <sup>nd</sup> Monday of Sept	<b>CTI - Pune</b>



# Discipline - General Meteorology

## Scientific Staffs' Training

SN	Course Name	Eligibility	Duration	Freq/ Year	Commencement date	Centres
<b>OLD</b> <b>1</b>	<b>Intermediate Course</b>	Basic Course Passed	4 months	3	2 <sup>nd</sup> Monday of Mar, Jul, Nov,	Pune, New Delhi
<b>2</b>	<b>Basic Course</b>	Observer/ Senior Observer B.Sc.	4 months	3	2 <sup>nd</sup> Monday of Jan, May, Sept	<u>Presently No course</u> (Pune, New Delhi, Chennai, Kolkata)

**Note– (i) Newly recruited Senior Observers to undergo **Integrated Course of 6 months durations****  
**(ii) Intermediate course to continue to clear backlog of untrained staff.**

<b>NEW</b> <b>1</b>	<b>Integrated Course</b> (Basic+Intermediate)	Newly recruited Senior Observers B.Sc.	6 MONTHS	2	2 <sup>nd</sup> Monday of Jan, Jul	Pune, New Delhi
<b>2</b>	<b>Lab Assistants- Modular Course</b>	Gr-D (Met Attendt)	2 Months	3	2 <sup>nd</sup> Monday of Feb, June, Oct	Pune, New Delhi, Chennai, Kolkata



# Discipline - Agricultural Meteorology

## Officers' & Staff

S..	CourseName	Eligibility	Duration	Frq/Y	Commencement date	Course Meant for
1	<b>Met II course in Agricultural Meteorology</b>	M.Sc./Ph.D.	10 Months	1	Subject to Met-II Recruitment	For entry level class I officers Exam Phases A, B , C
2	<b>Foreign Trainees' course in Agri.Met</b>	Non-IMD, B.Sc.( Agri.)	6 Months	2	1 <sup>st</sup> January & 1 <sup>st</sup> July (As per need)	From RA II / RA V Nations
3	<b>Agromet Core Course</b>	Non-IMD M.Sc./ B.Sc	6 weeks	1	Mid April	For Univ. professors/ Scientists Agri Research Orgn.
4	<b>Basic Agri. Met Course</b>	B.Sc.(IMD)	8 weeks	1	Mid July	For SAs/ SOs engaged in Agromet Advis Services
5	<b>Summer Placement Course</b>	BE/B.Tech students	4 weeks	1	First week of June	Agomet Instr, observation,,projects



## Discipline - Instrumentation

## Officers' & Staff

S.N.	Course Name	Eligibility	Duration (months)	Freq/ Year	Commence-ment date	Centres
1	<b>Met - II Instrumentation course (1980-2003)</b>	M.Sc.(Electronics) BE(Electronics)	12	1	----	New Delhi
2	<b>Advanced Course (Instrumentation)</b>	Passed Intermediate Instrumentation Training	6	1	20th Sep – <b>Even Year</b> 20 <sup>th</sup> July – <b>Odd year</b>	New Delhi
3	<b>Intermediate Course (Instrumentation)</b>	B.Sc.+ Passed Basic Elementary Training	4	2  1	20th June & 20 <sup>th</sup> May – <b>Even Year</b> 20 <sup>th</sup> Mar – <b>Odd Year</b>	New Delhi



## Discipline - Telecommunication

## Officers' & Staff

SN	Course Name	Eligibility	Duration (months)	Freq/ Year	Nature of work
1	Course in Meteorological Telecommunication ---Level III	M.Sc./B.Sc. MET- I / Met- II / AM -I/ AM- II + Level II Passed	3	1	Maintenance/ supervisory work in communication field
2	Course in Meteorological Telecommunication ---Level II	M.Sc./B.Sc. AM -I/ AM- II/ SAs/SOs + Basic Met Training Passed	3	1	Operation/ maintenance in communication field



# Syllabus



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# Syllabus: **Integrated Basic Course**

( Six-Month duration)	
Subject	Hour
Observational system (Theory+Practical)	75+150=225
Dynamic Meteorology (Theory + Practical)	60+20=80
Physical Meteorology & Oceanography (Theory + Practical)	60+20=80
Synoptic Meteorology & Aviation (Theory + Practical)	60+90=150
Climate Science	50
Statistics (Theory+Practical)	25+25=50
Computer Programming and basics of Information Technology	50+25=75
Applied Meteorology	20
Satellite Meteorology	15
Radar Meteorology	5
<b>Total</b>	<b>700</b>





# Syllabus: **Forecasters Training Course**

( Six-Month duration)	
Subject	Hour
Dynamic Meteorology/Geophysical fluid dynamics (Theory + Practical)	60+20=80
Numerical weather prediction (Theory + Practical)	60+40=100
Physical Meteorology(Theory + Practical)	40+20=60
Physical Oceanography	30
Model output diagnostics (Theory + Practical)	80+70=150
Climate Science	60
Statistics (Theory + Practical)	20+30=50
Hydrometeorology	20
Satellite Meteorology(Theory + Practical)	30+25=55
Radar Meteorology	20
Computer Programming and applications	40+35=75
<b>Total</b>	<b>700</b>



# Syllabus: **Advance Course in Instrumentation**

( Six-Month duration)	
Subject	Hour (Theory + Practicals)
Theoretical Electronics	75 + 40
RS/RW Systems	37 + 80
Meteorological Radar	37 + 48
Surface Meteorological Instruments	30 + 32
Radiation Instrument	25 + 32
AWS	30 + 32
Aviation Meteorological Instruments	25 + 32
Basic Telecommunication	20 + 24
Satellite Meteorology (Instruments)	10 + 24
Seismology (Instruments)	15 + 24
Workshop and calibration	16
<b>Total</b>	<b>688</b>



# **Met –II Training Course in General Meteorology**

**(One year duration - each phase of Six months duration)**

<b>Phase I Subject with Hours</b>	
Observational system	(150)
Dynamic Met	(130)
Physical & Environ Met	(140)
Synoptic & Aviation Met	(140)
Climate Science & Statistics	(100)
Computer Programming & application	(50)
Basics of Seismology	(10)
Basics of Astronomy	(10)
<b>Total Hours</b>	<b>730</b>

<b>Phase II Subject with Hours</b>	
Geophysical Fluid Dynamics	(40)
NWP	(180)
Adv. Physical Met	(60)
Physical Oceanography & Ocean-Atmosphere interaction	(50)
Model output diagnostic	(110)
Climate Science & Advanced Statistics	(95)
Computer Programming & application	(80)
Hydromet	(20)
Sat Met & Radar Met	(80)
<b>Total Hours</b>	<b>715</b>



# Statistics

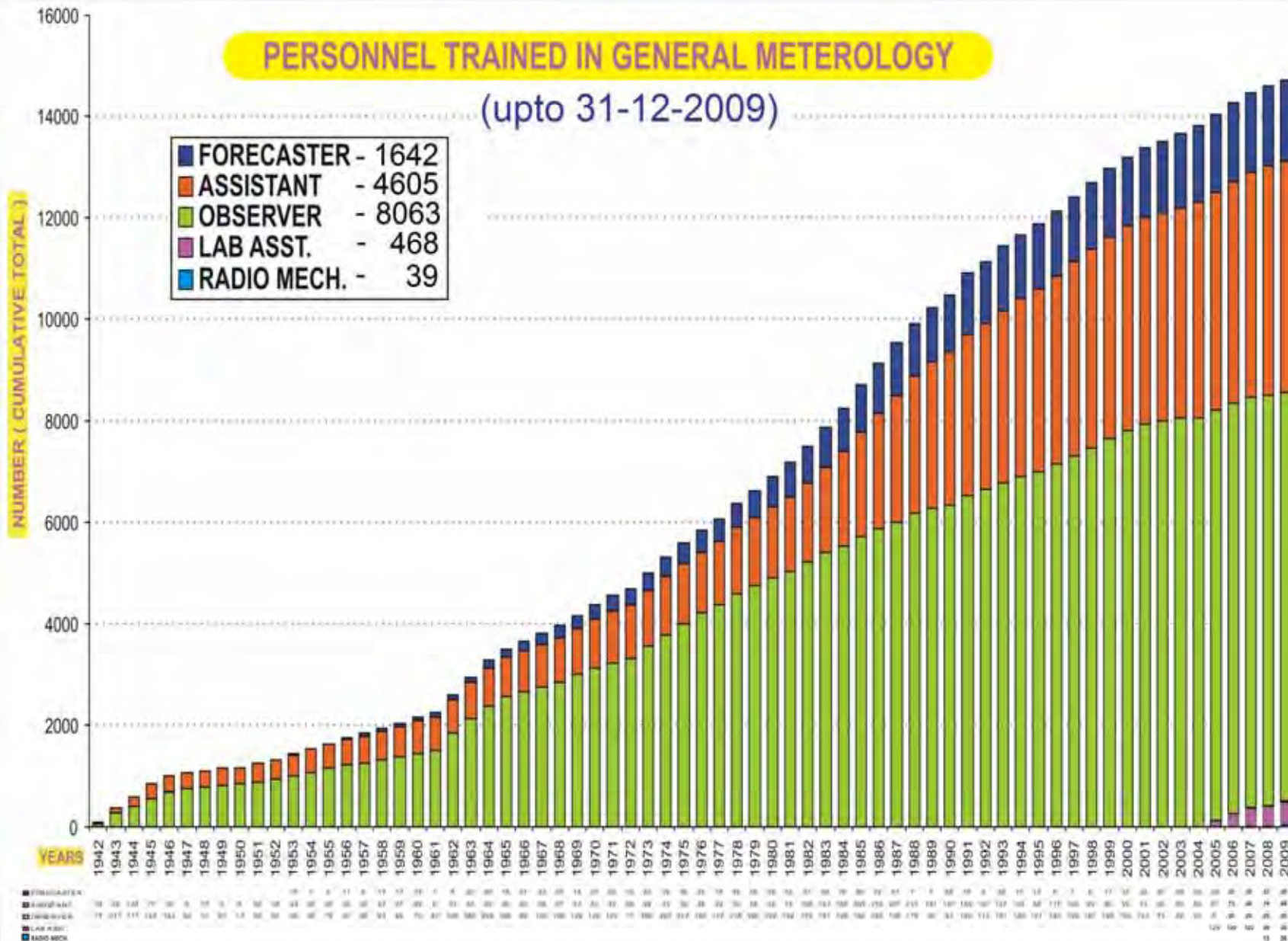


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## PERSONNEL TRAINED IN GENERAL METEOROLOGY

(upto 31-12-2009)



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**FOREIGN TRAINEES TRAINED IN GENERAL METEOROLOGY TILL DECEMBER 2009 = 266**

AFGHANISTAN	19	GHANA	01	LESOTHO	10	NEPAL	05	SRI LANKA	26	UAE	02
BANGLADESH	11	IRAN	02	MALDIVES	29	NEW GUINEA	02	SUDAN	05	UGANDA	01
BHUTAN	14	INDONESIA	02	MAURITIUS	17	NIGERIA	12	SYRIA	09	VIETNAM	06
DOHA QATAR	02	KENYA	01	MALAYSIA	11	OMAN	03	TANZANIA	02	YEMEN	14
EAST AFRICA	03	KOREA	03	MONGOLIA	02	PHILIPPINES	04	THAILAND	03	ZAMBIA	01
ETHIOPIA	35	LAOS	04	MYANMAR	02	SEYCHELLES	01	TRINIDAD & TOBAGO	01	VANUATU	01



# Infra-structure



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# Infra-structure

- Class Rooms all with LCD Projectors
- PCs'/printers/copiers facilities
- Internet facilities
- Library facility
- Auditorium/conference room facility with LCD Projectors and interactive board audio-systems
- On the Job Training Facilities at WS/ACWCs'/International Airports
- Hostel with Boarding and Lodging
- Guest Room facilities (Air Conditioned) for outstations faculty members
- Entertainment –sports, TV, indoor games, etc



Central Training Institute



OBSERVATORY



## RMTC's INFRASTRUCTURAL FACILITIES At Pune

COMPUTER AND INTERNET FACILITY



LIBRARY



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**REPROGRAPHIC FACILITY**



**OJT**



**Hostel Building**



**CTI -Transport**



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# Thanks for Kind Attention



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