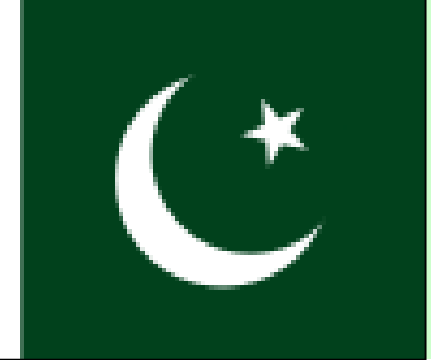


Islamic Republic of Pakistan

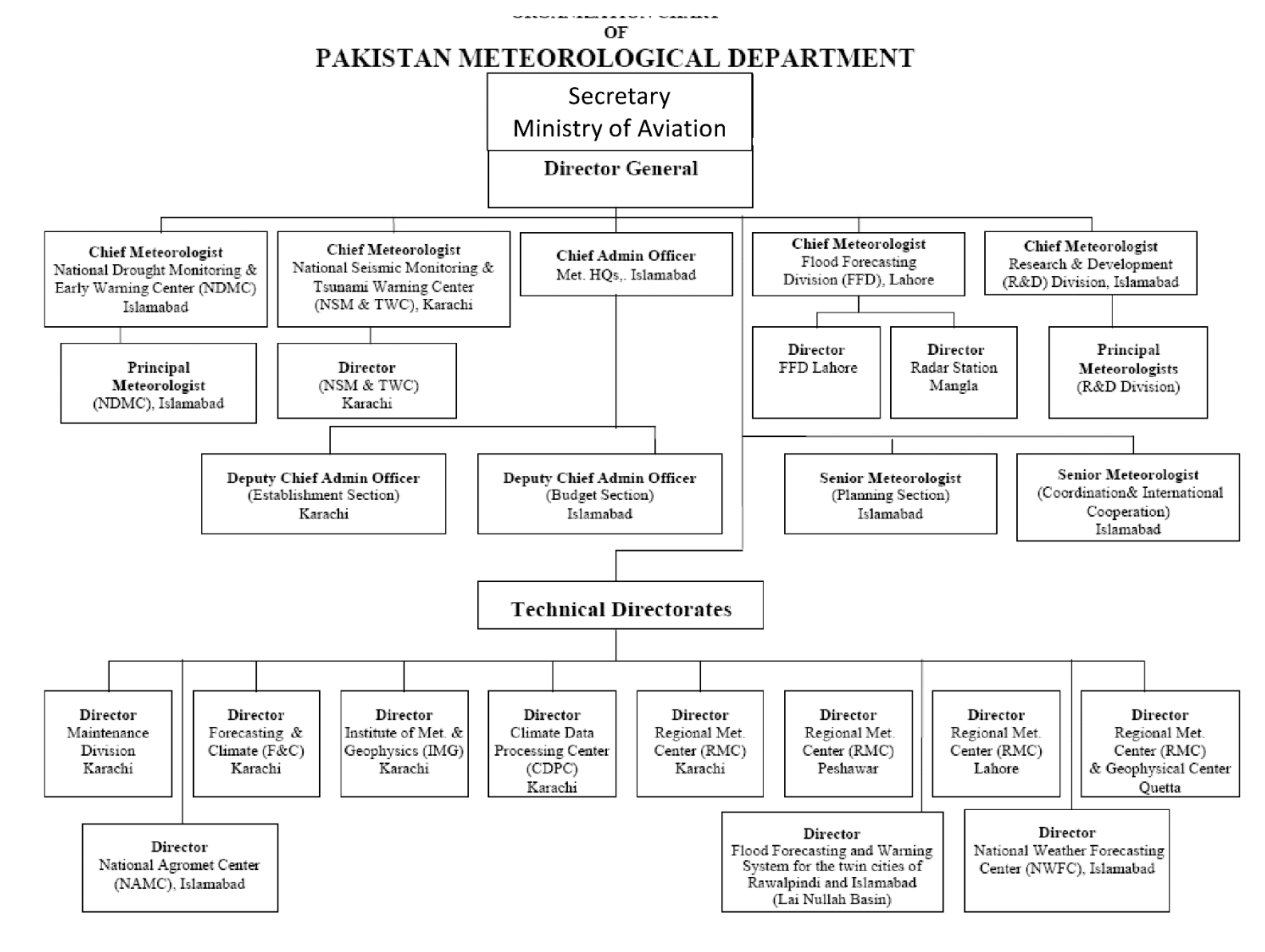


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Session 3.3
Country report
Pakistan

Muhsin Ali
Pakistan Meteorological Department
Aviation Ministry

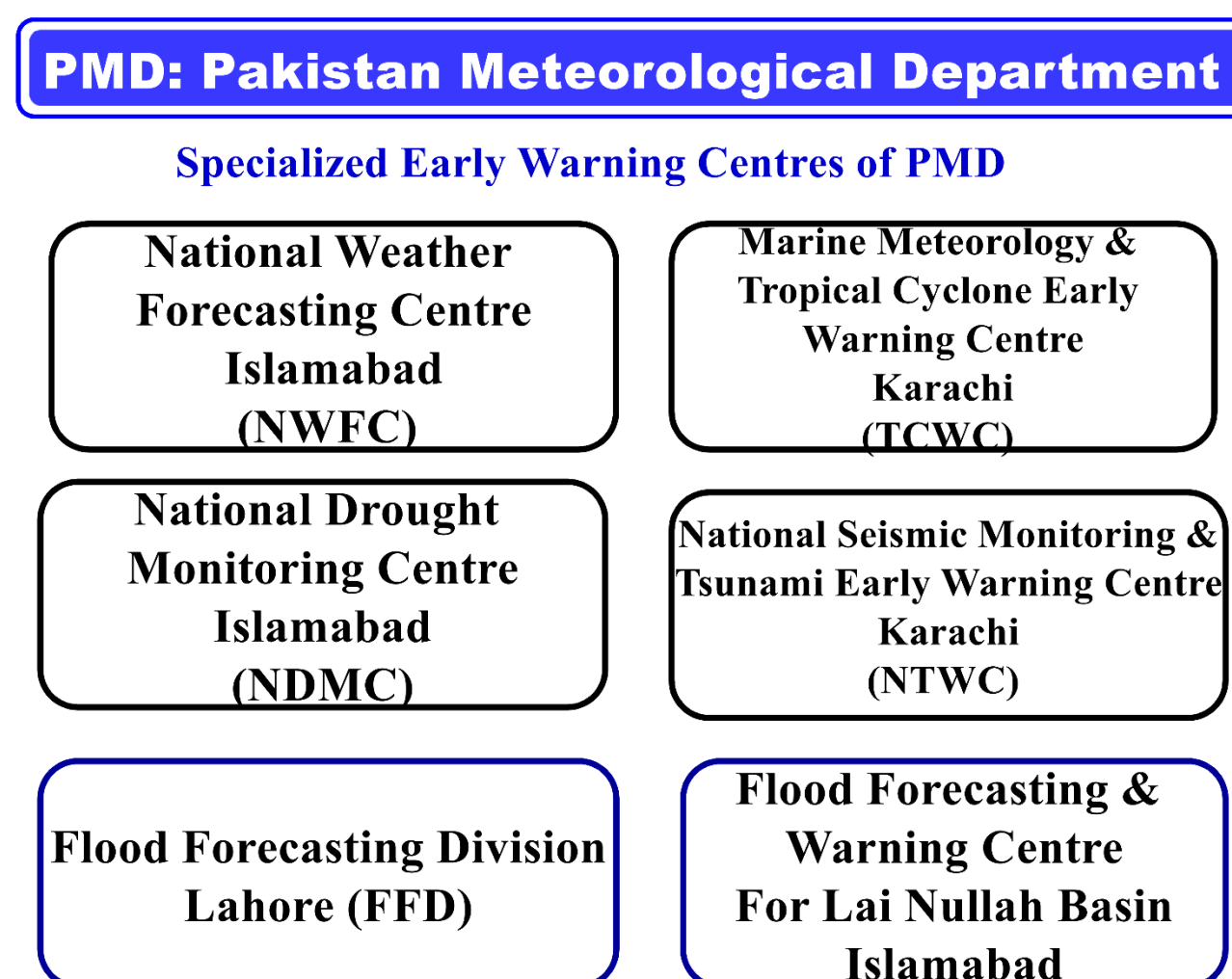
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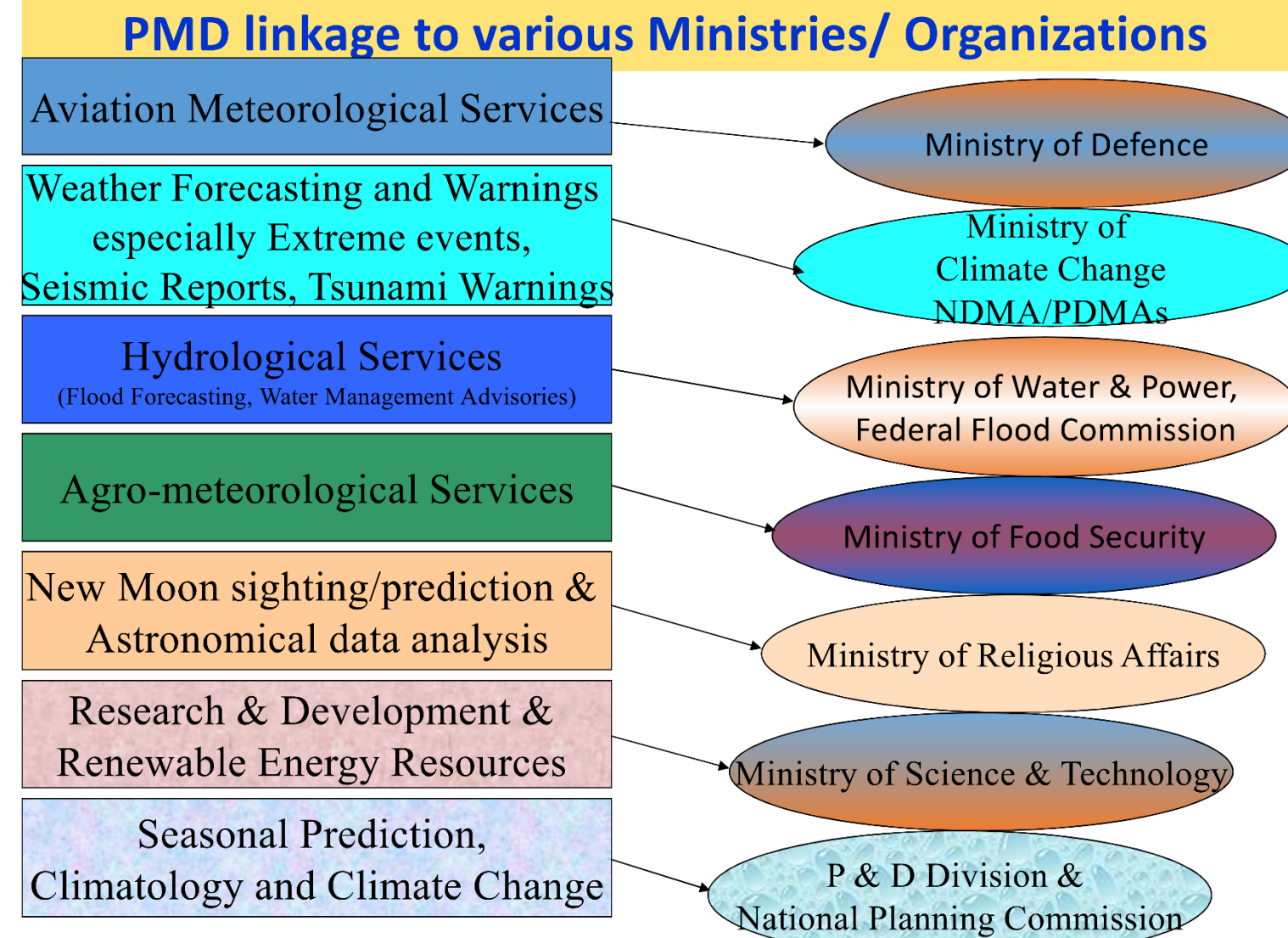
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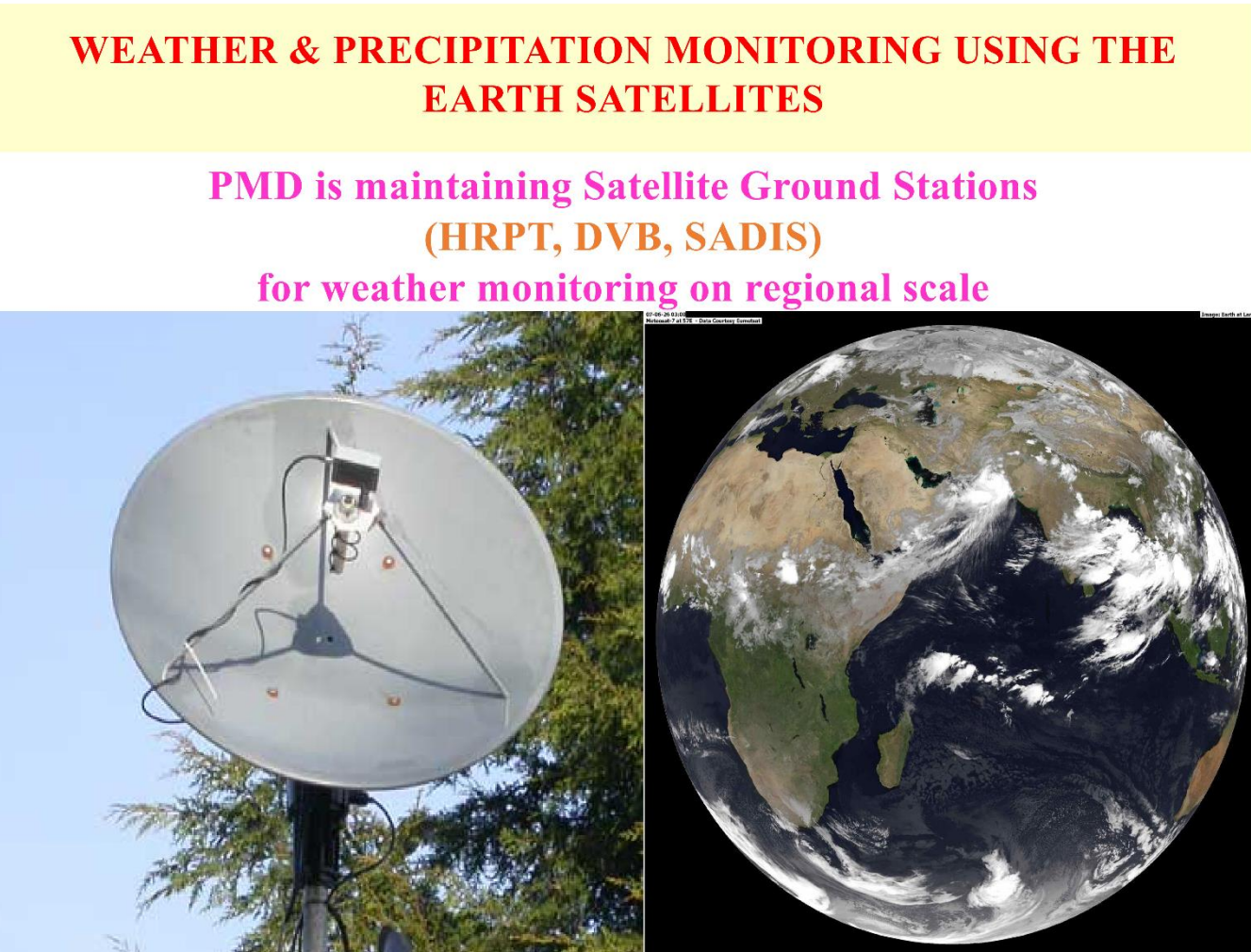
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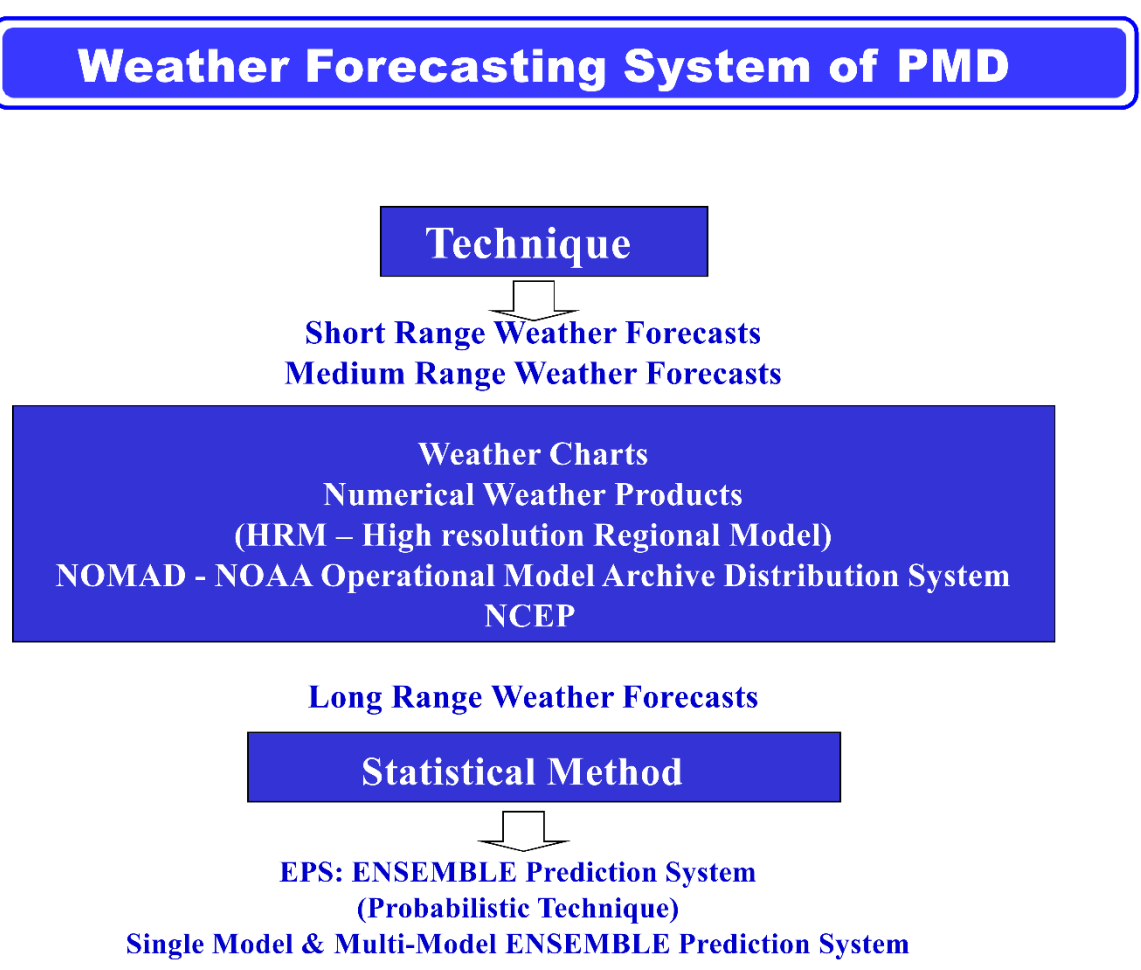
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- Aviation Meteorological Services of PMD**
- a) Objectives
- Safety
 - Economy
- b) Products Supplied For Aviation Users
- Upper Levels Wind Charts
 - Significant Weather Prognostic Charts
 - METAR (Current Weather)
 - SPECI (Special Weather Report)
 - TAFORs (Terminal Aerodrome Forecast)
 - ROFOR (Route Forecast)
 - SIGMET (Significant Meteorological Informations)
 - Volmet Broadcast

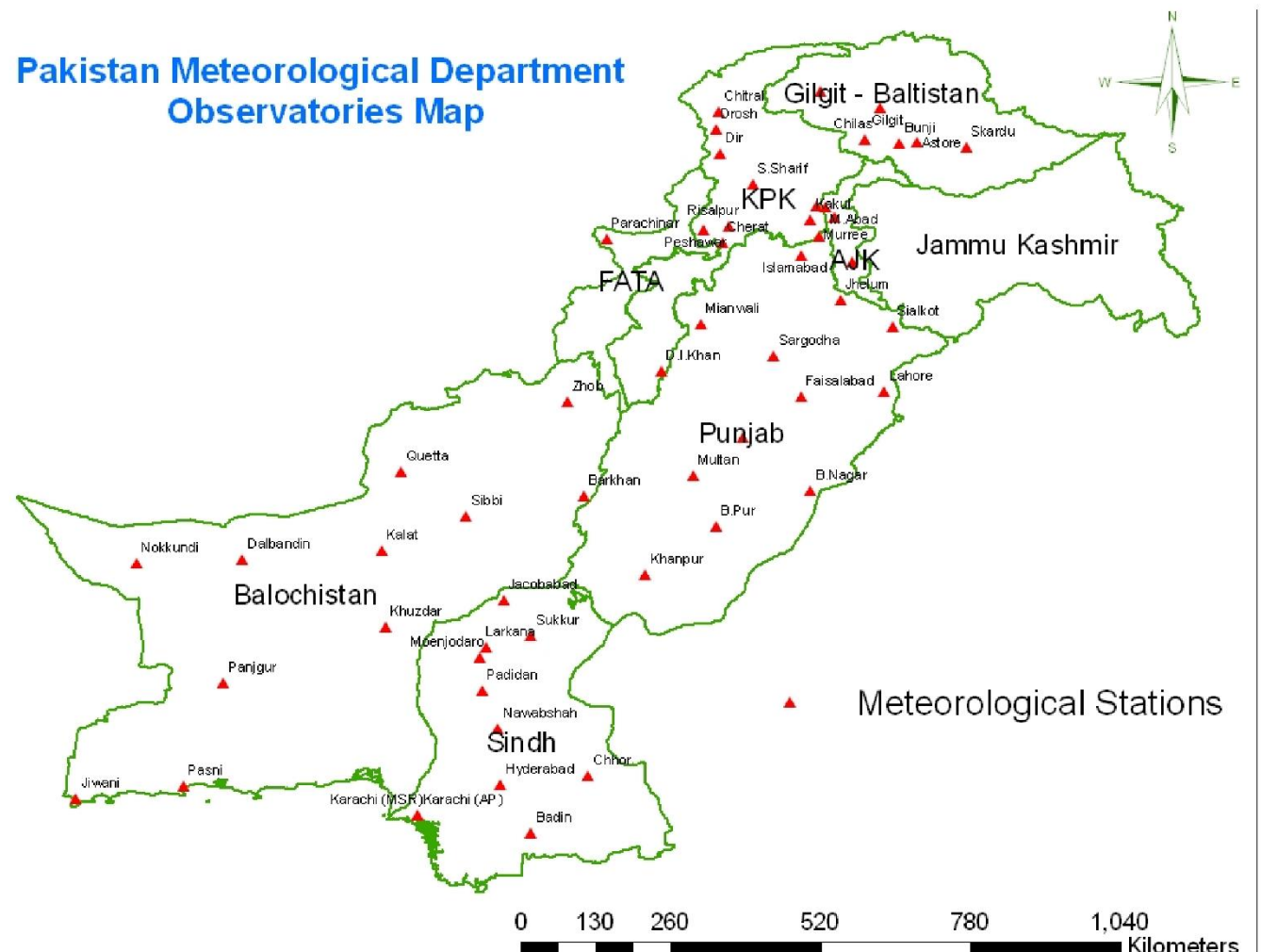
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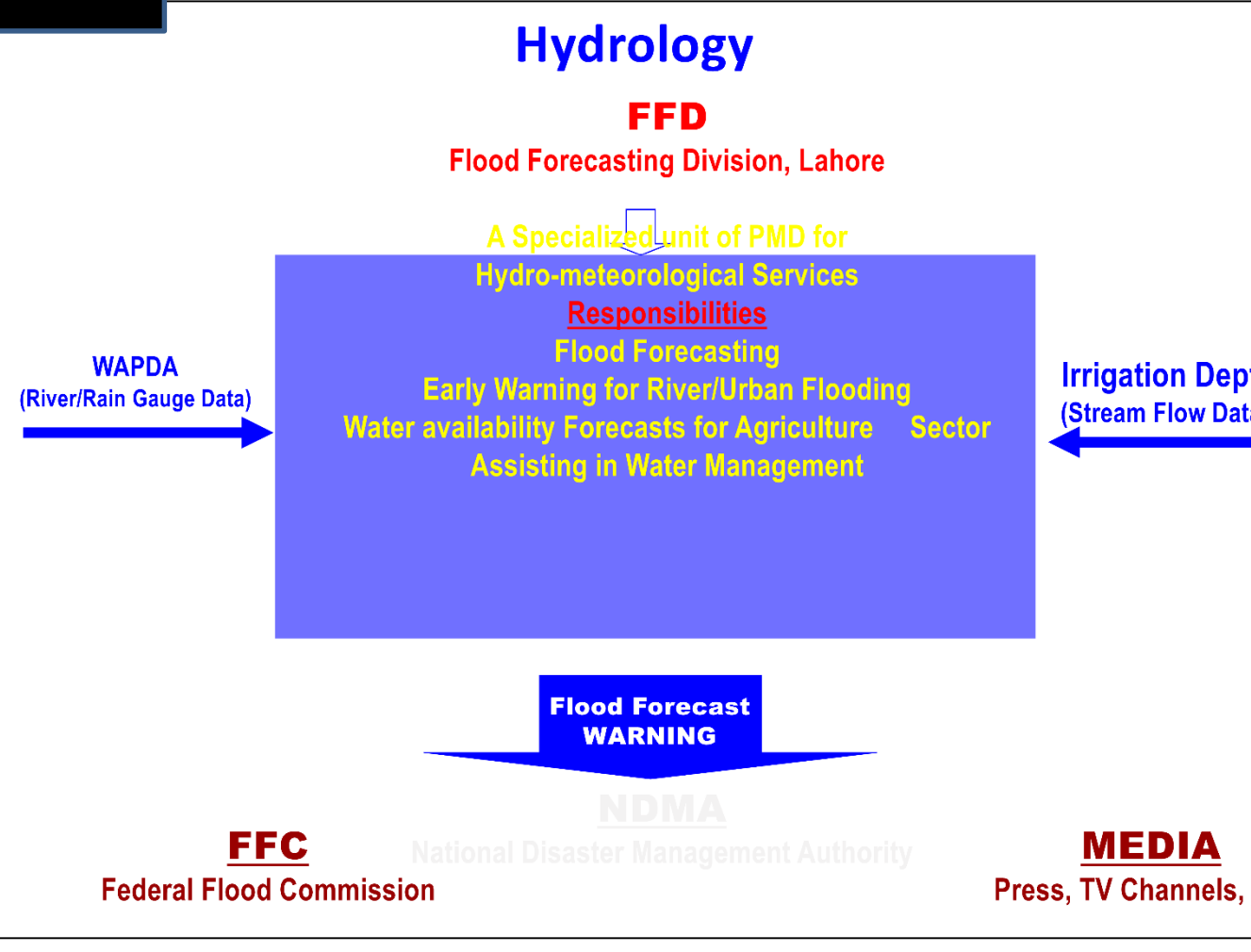
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- HYDROMETEOROLOGICAL SERVICES AND FLOOD FORECASTING**
- Flood Forecasting Division (FFD) Lahore is a specialized unit of PMD for this purpose.
- Responsibilities**
- Flood Forecasting
 - River stream flow forecasting
 - Water availability Forecast for Dams
 - Assisting Water Management at Dams specially during Monsoon

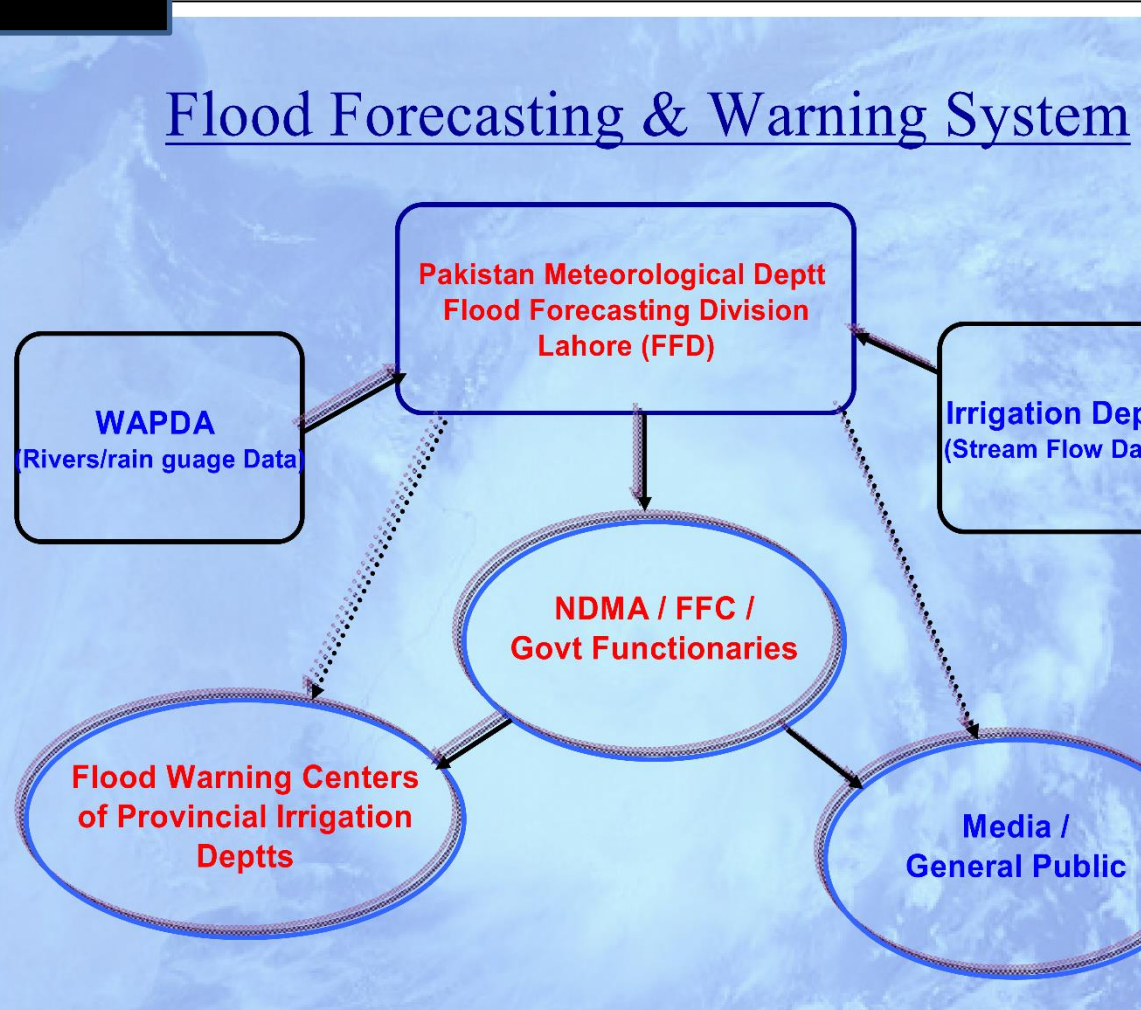
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- Flood Forecasting System in Pakistan Meteorological Department**
- 10-cm Doppler Radar at (FFD) Lahore Mangla
 - QPM Radar at Sialkot
 - Nationwide Network of Weather Surveillance Radars.
 - Satellite Ground Station
 - Numerical Forecasting Models
 - Meteorological Analysis Centre

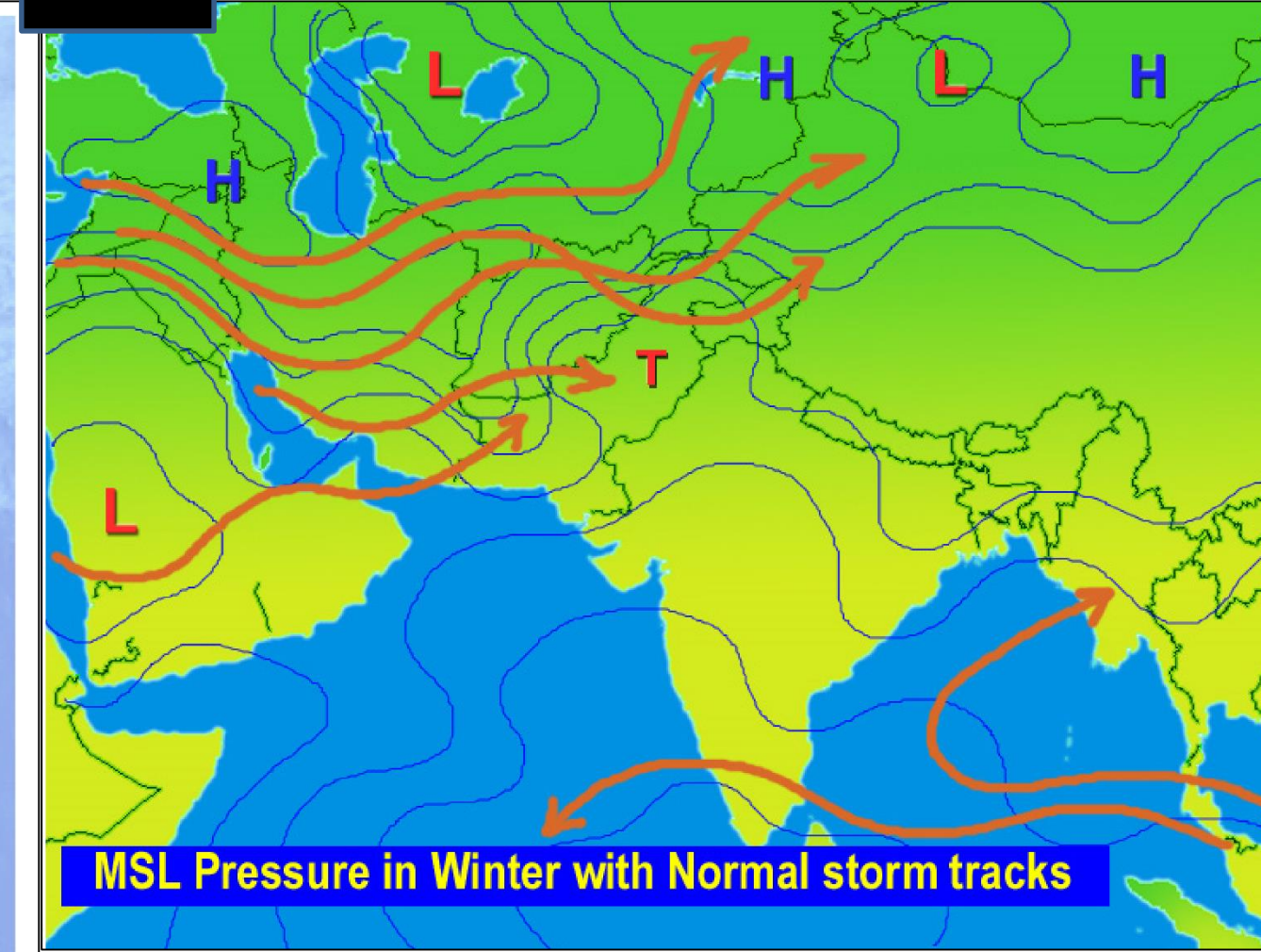
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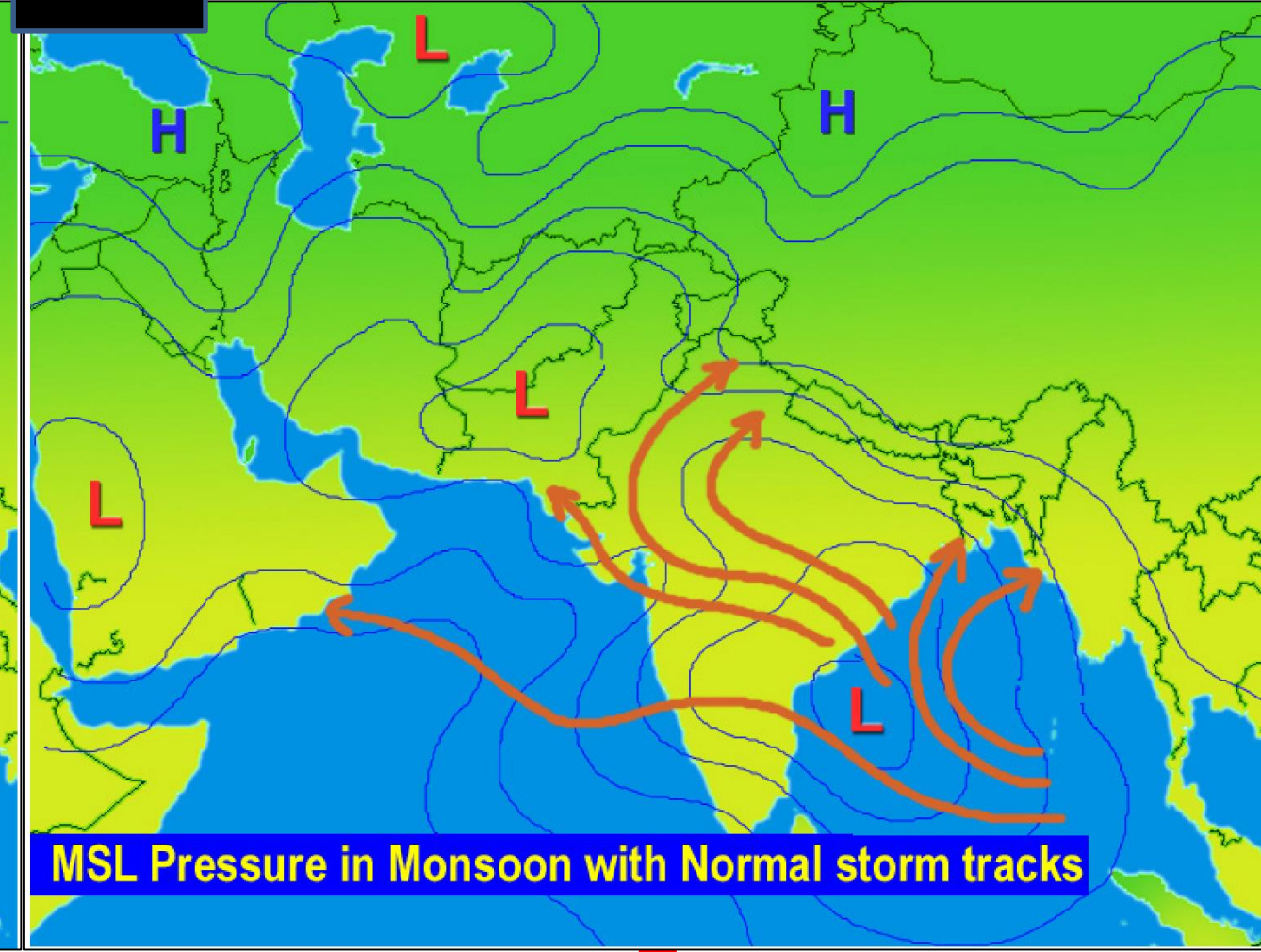
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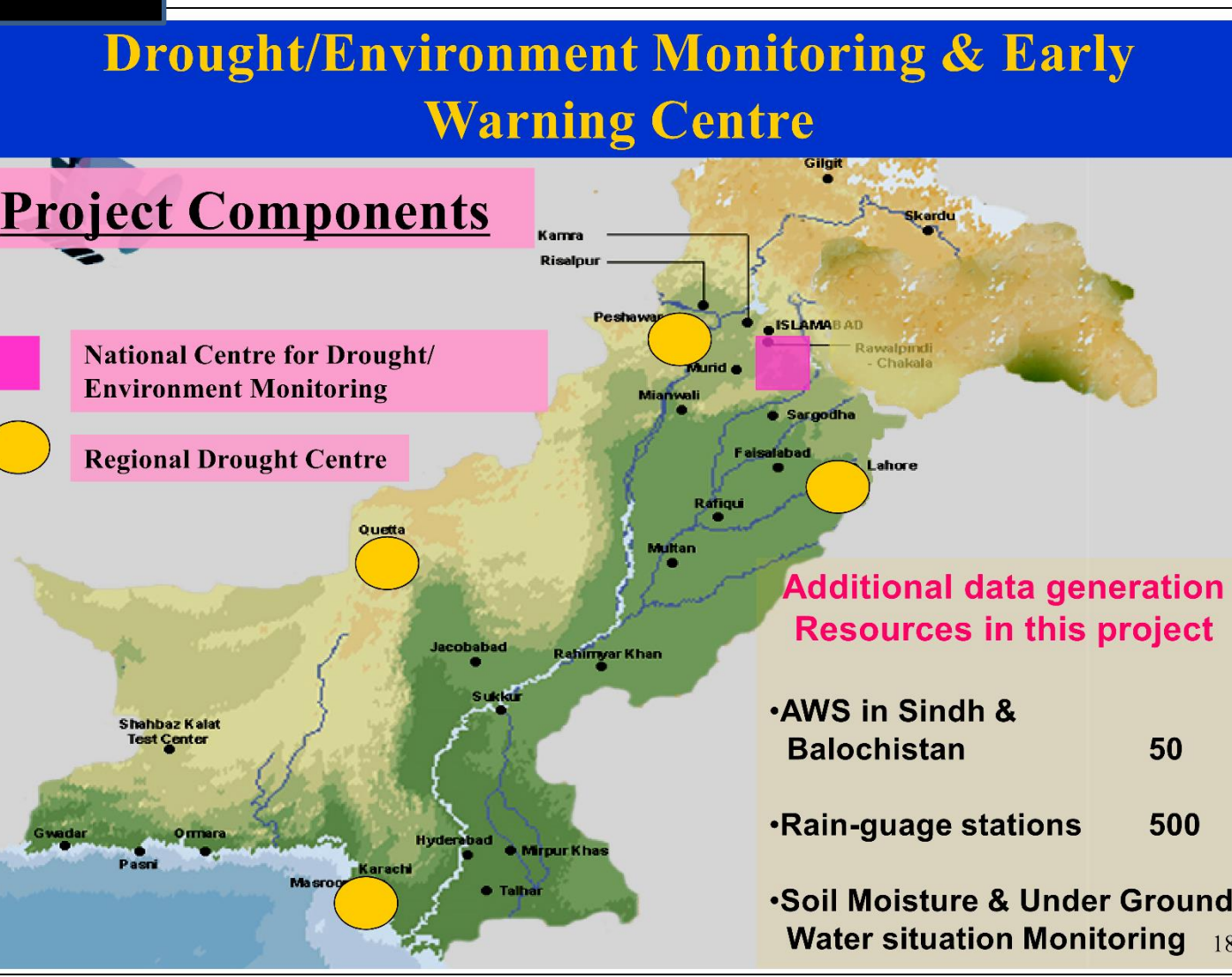
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- Numerical Weather Prediction (NWP)**
- High resolution Regional Model (HRM) as an operational tool for Numerical Weather Prediction (NWP) in Pakistan
- 384.0 GHz (1.54 T-FLOPS) Processing Speed
 - Model resolution has been improved from 22 km to 11 km since September, 2010.
 - Weather Products (Prognostic Charts) are available at PMD Website on daily basis

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- AGRO-METEOROLOGICAL SERVICES**
- Rain Predictions
 - Frost Predictions
 - Soil Moisture Information
 - Time of Crop Sowing/Harvesting
 - Spraying of Pesticides on Crops
 - Water Requirement of Crops
 - Heat Wave and Cold Wave Forecast
 - Special Weather Advisories for Farmers
 - Monthly Agromet Bulletin of Pakistan
 - Research on Regional Basis in Collaboration with Agriculture Research Institutions.

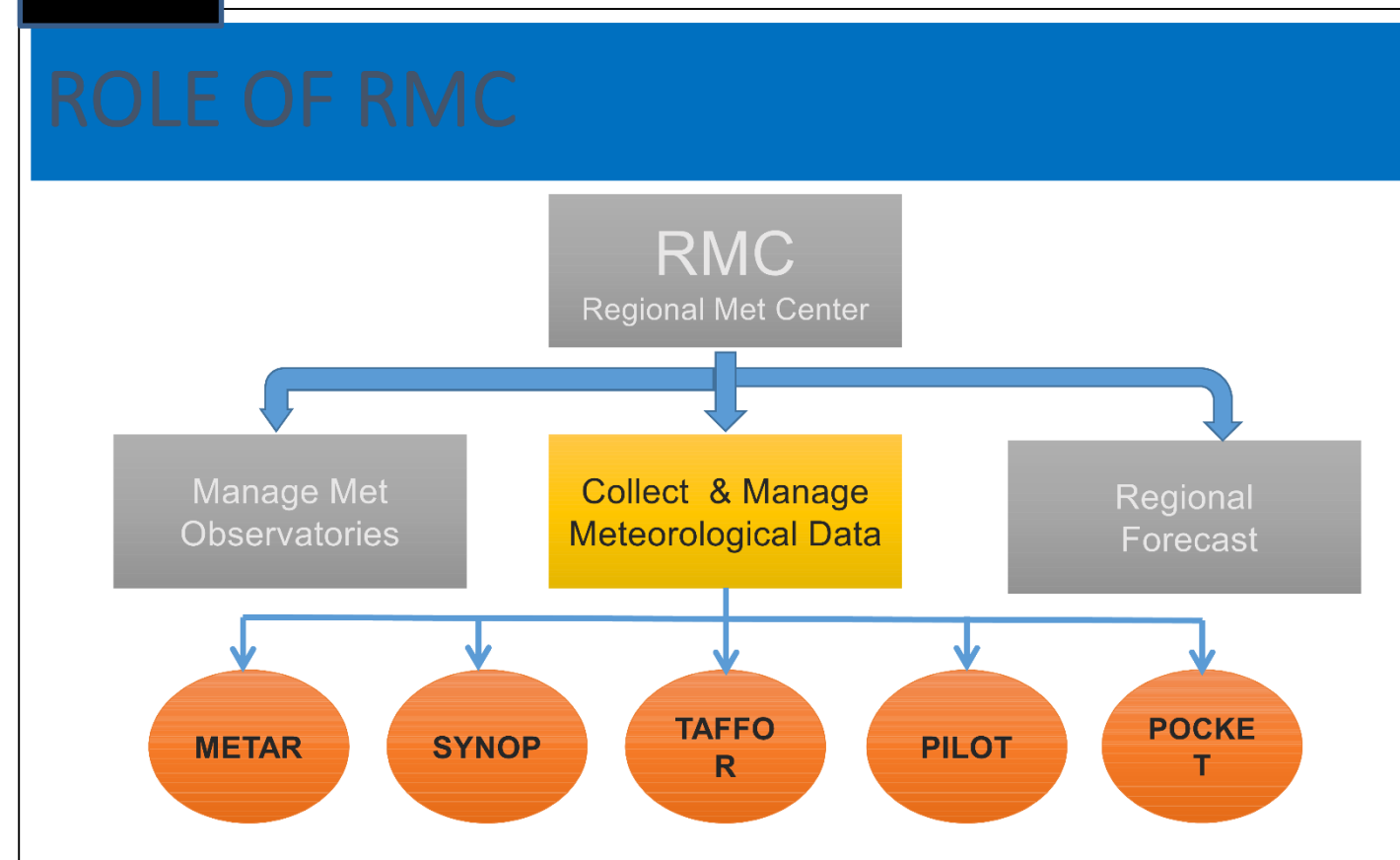
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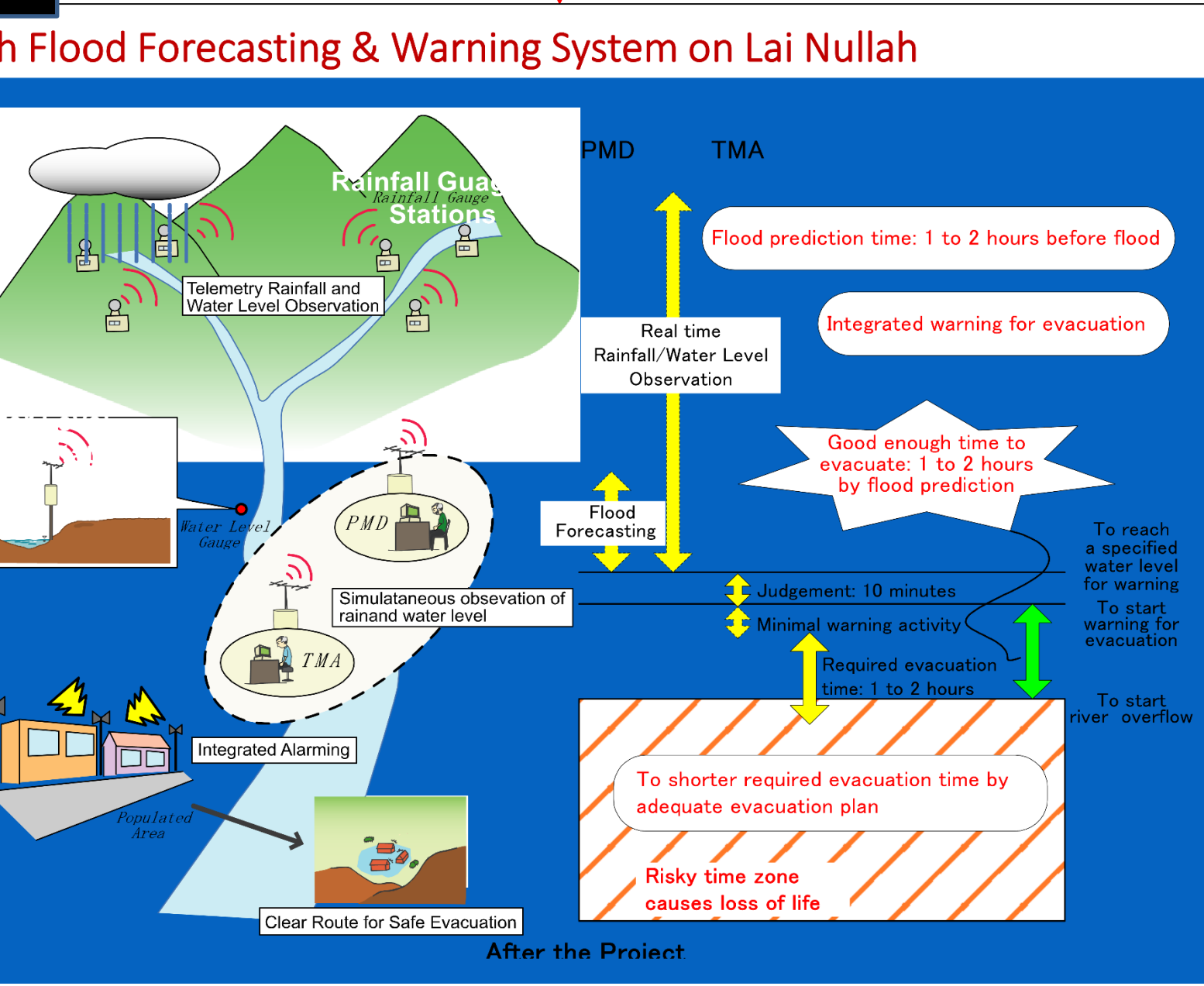
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- Dissemination of Flood Forecast**
- Web service
 - Fax/phone/mobile
 - Electronic & Print Media (Advisories/ tickers/ interviews)

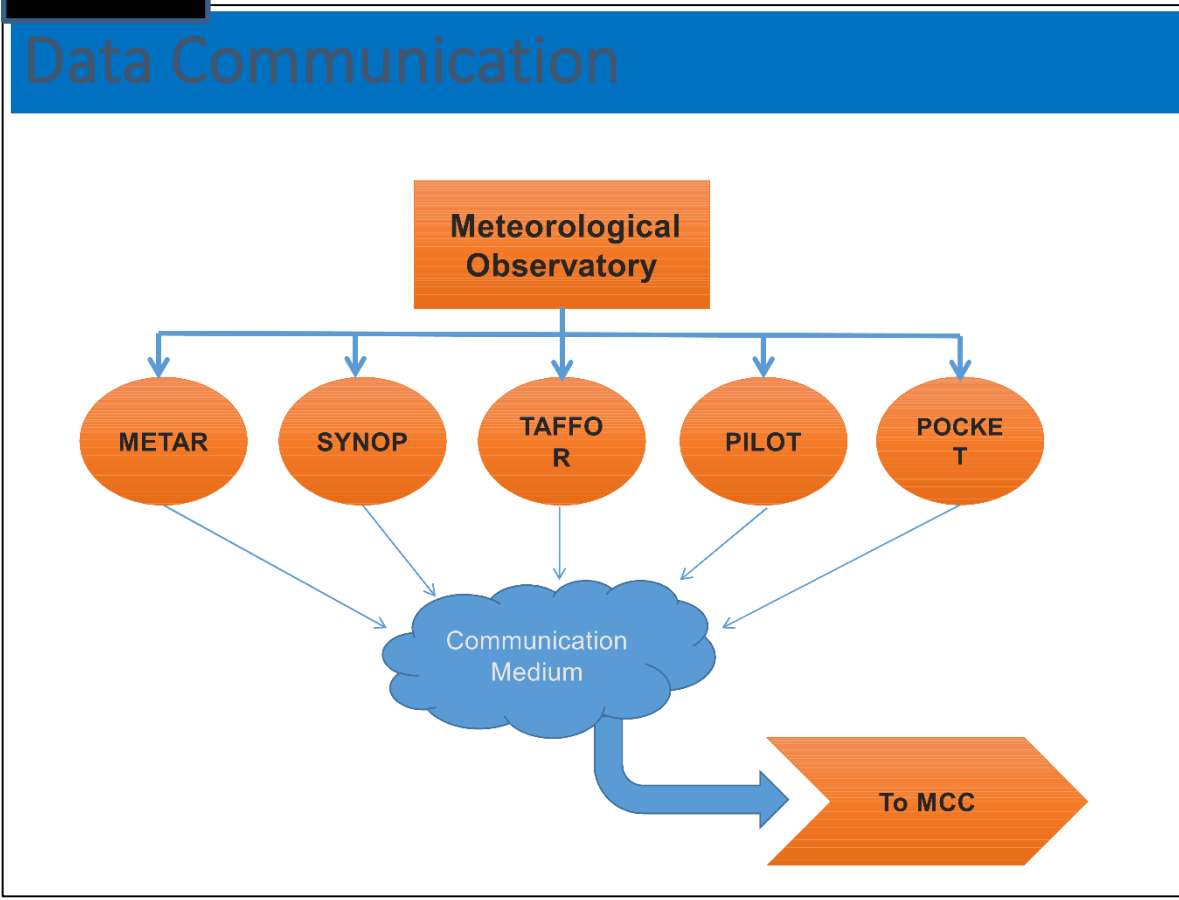
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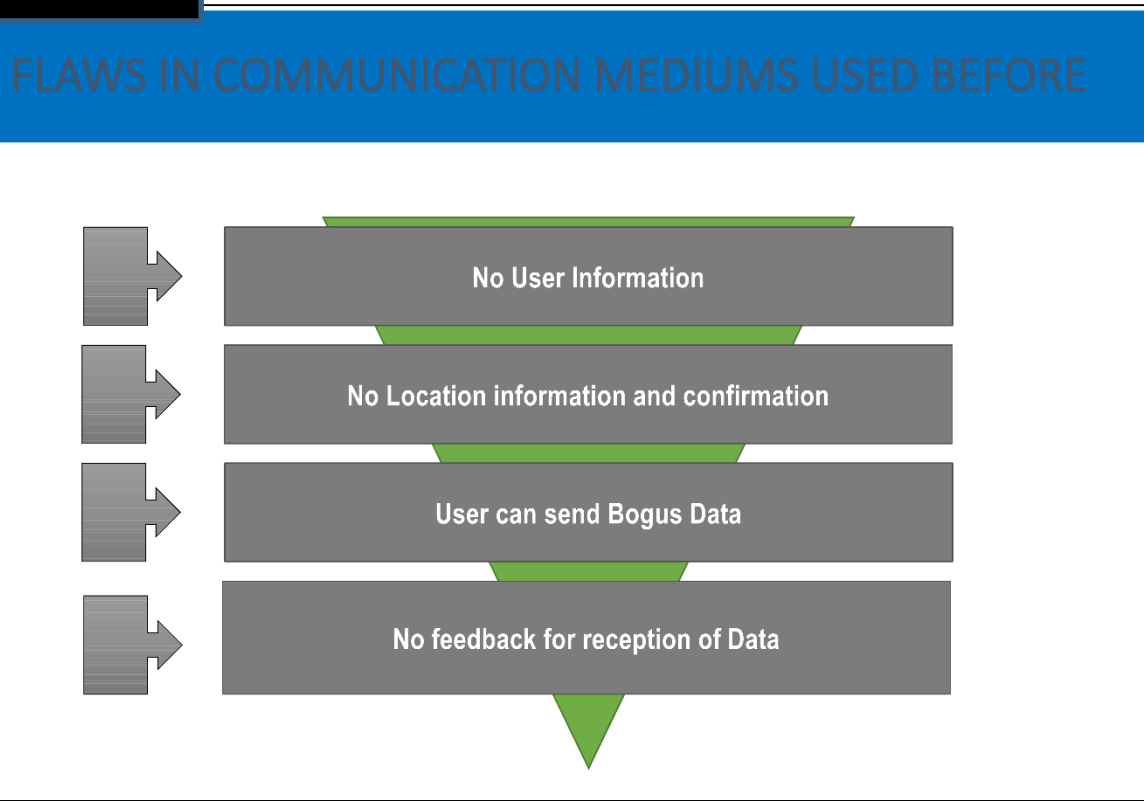
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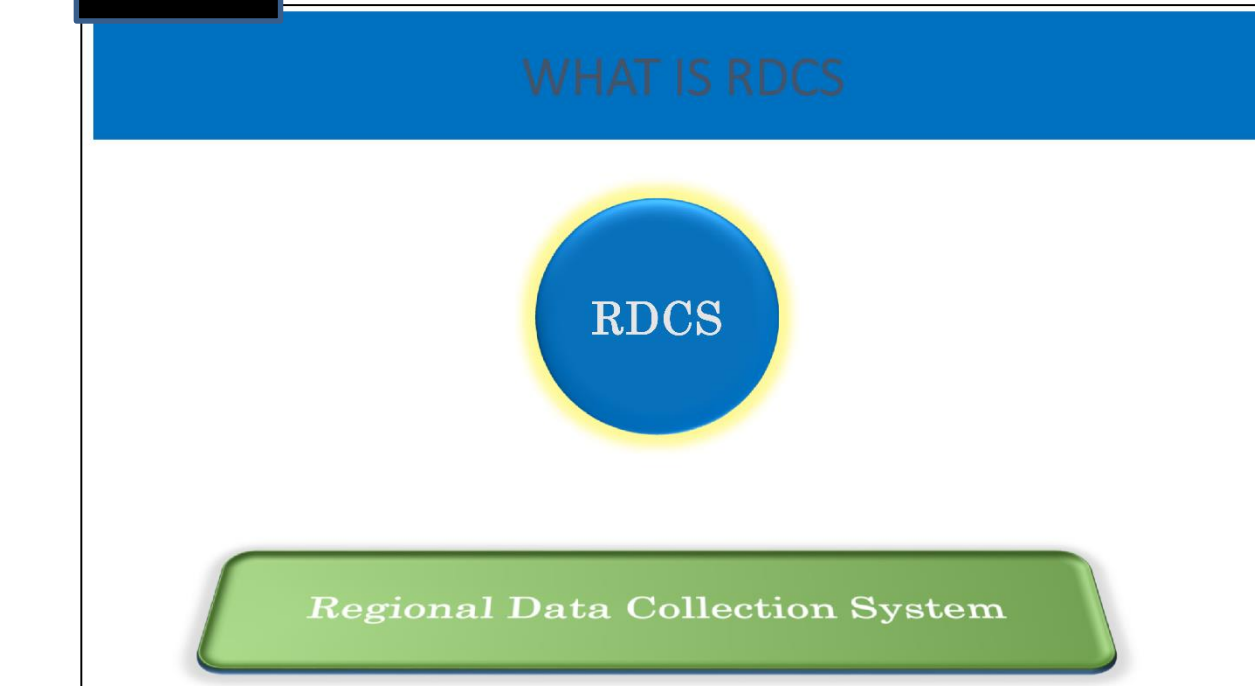
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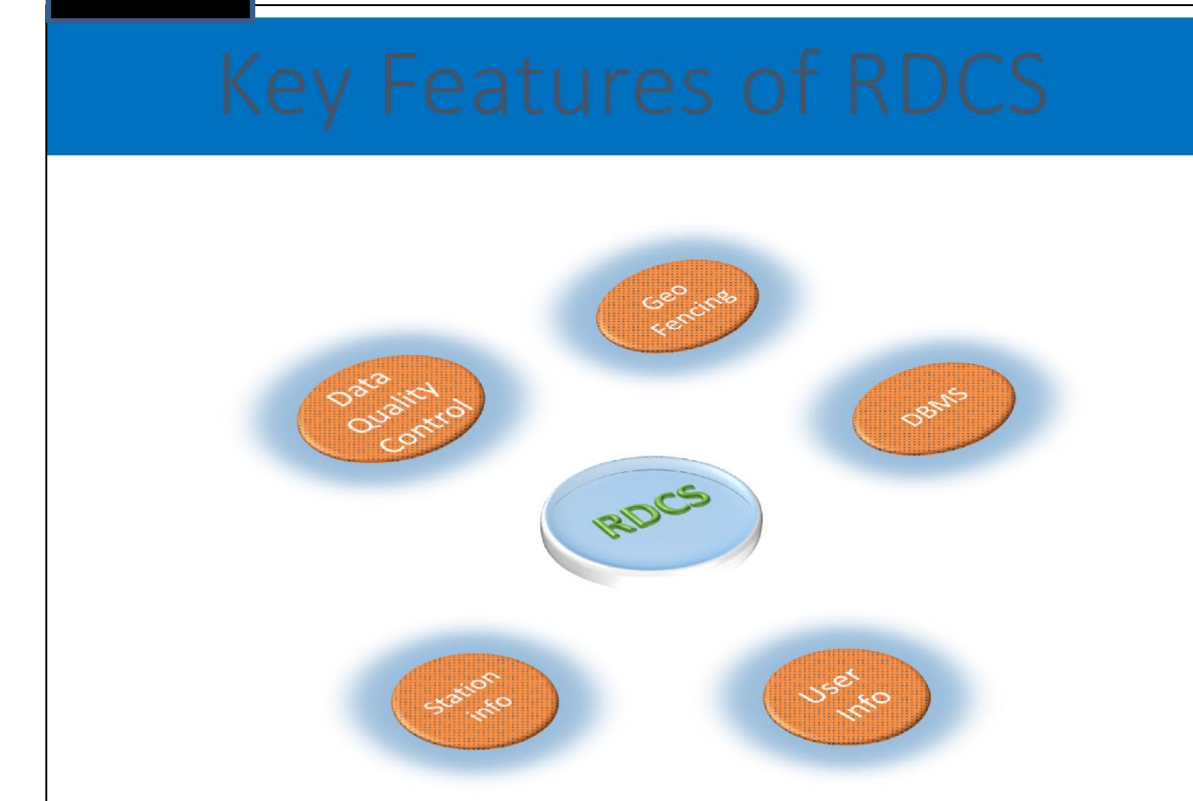
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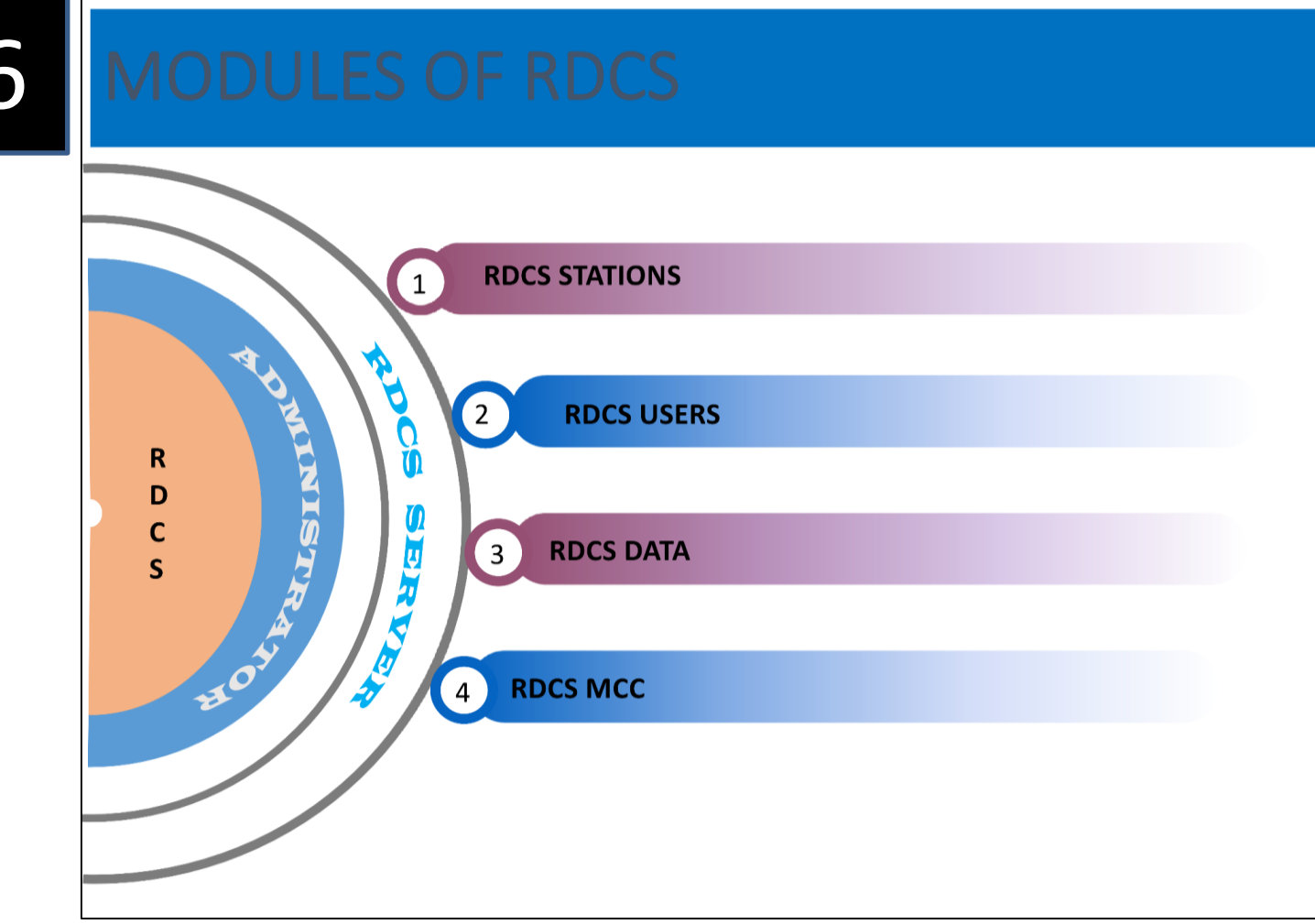
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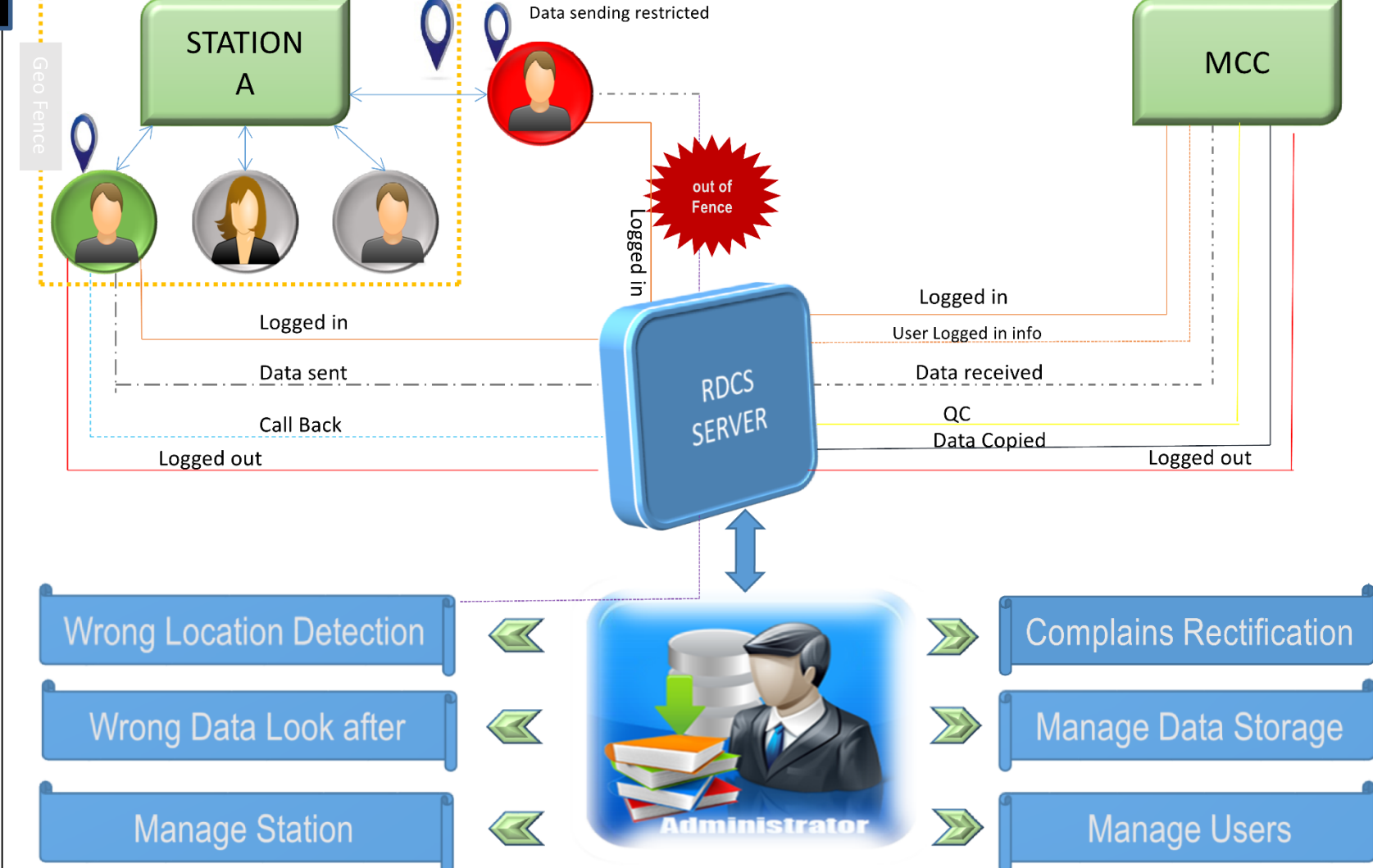
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- Human Resource Development at PMD**
- PMD established Research and Development (R&D) Division at Islamabad during 2004-2006.
- To improve national meteorological services through research and development activities.
 - Human resource development for PMD units
 - Capacity building of PMD in NWP and regional climate modeling
 - Research in climate change, global warming, glacial melting etc.
 - Publication of biennial Pakistan Journal of Meteorology.

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Sr. No.	Staff Categories	Number of Staff
1.	Scientists/ Met. Officers (Directors, Meteorologists, Hydrologists, Seismologists, Engineers etc.)	350
2.	Technicians (Observers, Technical Assistants, Met. Assistants etc.)	1200
3.	Administrative staff	170
4.	Others (balloon makers, peons, watchmen, sweepers etc.)	780
Total		2500

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S.No.	Name of Course	Duration
Regular		
1.	Advance Meteorology Course	52 weeks
2.	Post Graduate Diploma in Meteorology	One year (02 semester)
3.	Basic Forecasting Course (BIP-M)	32 weeks + 20 weeks (O.J.T.)
4.	Preliminary Meteorology Course (BIP-MT)	18 weeks + 08 weeks (O.J.T.)
5.	Initial Meteorology Course (BIP-MT)	14 weeks + 04 weeks (O.J.T.)
6.	Inspector of Observatory Course	08 weeks
On demand basis for Met. Personnel of Pakistan Air Force (PAF)		
7.	Higher Primary Met. Course (for Warrant Officers and Chief Technicians)	08 weeks + 04 weeks (O.J.T.)
8.	Primary Meteorology Course (for Airmen)	14 weeks + 04 weeks (O.J.T.)
On demand basis for Officers of Pakistan Navy		
9.	Familiarization Course (Meteorology Module - Long 'ND' Course)	01 week

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- Training at Local Universities**
- MS (Meteorology) programme at COMSATS Institute of Information Technology (CIIT), Islamabad
- MoU between PMD and CIIT for provision of higher training in Meteorology signed in 2004.
- So far around 30 met personnel of PMD have completed their MS in Meteorology at CIIT.
- PhD (Meteorology) programme has also been started in 2010 and two scientists of PMD have been registered for PhD.
- University of the Punjab, Lahore has also started MSc (Seismology) programme for PMD scientists engaged in seismological services of PMD

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- Human Resource Development and Capacity Building of NMHSs of Neighbouring Countries by PMD**
- Pakistan Meteorological Department (PMD) with support by the Government of Pakistan has been extending its training facilities to the NMHSs of the neighbouring developing and least developed countries for their human resource development and capacity building through WMO Voluntary Cooperation Programme.
- In 2007, ten (10) Met personnel from Syrian Met. Service were imparted 04-months training on Aviation Meteorology. No course fee was charged from the participants or their government.
- Further, three (03) fully-funded special Preliminary Meteorology Courses (BIP-MT) were conducted in 2008, 2009 and 2010 at PMD Training Institute, Karachi. Thirty-two (32) Met. Personnel from NMHSs of Bangladesh, Bhutan, Maldives, Myanmar, Nepal and Sri Lanka have benefited from these courses. Government of Pakistan (through PMD) has provided complete financial support (in lieu of travel and per diem) to the participants of these courses.

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- International Cooperation of PMD**
- Pakistan is one of the founding members of World Meteorological Organization (WMO) and PMD is the focal national organization to deal with WMO since 1950.
 - On various occasions Pakistan has also held various offices at WMO and served as member to the Executive Council of WMO. Presently, Pakistan is Vice-president of WMO Regional Association-II (Asia) since December, 2008.
 - Pakistan is the founding member of South Asian Association for Regional Cooperation (SAARC) and Member of the Governing Board of SAARC Meteorological Research Center (SMRC) since establishment of SMRC at Dhaka, in 1995.
 - PMD is the focal national organization for tsunami early warnings within the framework UNESCO-IOC Indian Ocean Tsunami Warning System (IOTWS).
 - Pakistan joined Group on Earth Observations (GEO) in November, 2007 after approval by the Federal Cabinet and PMD is the focal national organization to deal with GEO.
 - PMD has close liaison with various UN agencies (UNESCAP, UNESCO, UNDP, UN-ISDR etc.) and other international organizations (JICA, KOICA etc.) for development of proposals for disaster risk reduction against hydrometeorological disasters.
 - PMD has good relations with the NMHSs of neighbouring countries