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Regional meeting of the Megacities Alliance for Water and Climate (MAWAC)

Karachi

Presenter: Mr. Ghulam Hussain Dars, Assistant Professor, USPCAS-W, Mehran UET, Jamshoro



Sequence

- Introduction
- Water Resources situation
- Challenges
- Way Forward.

Introduction

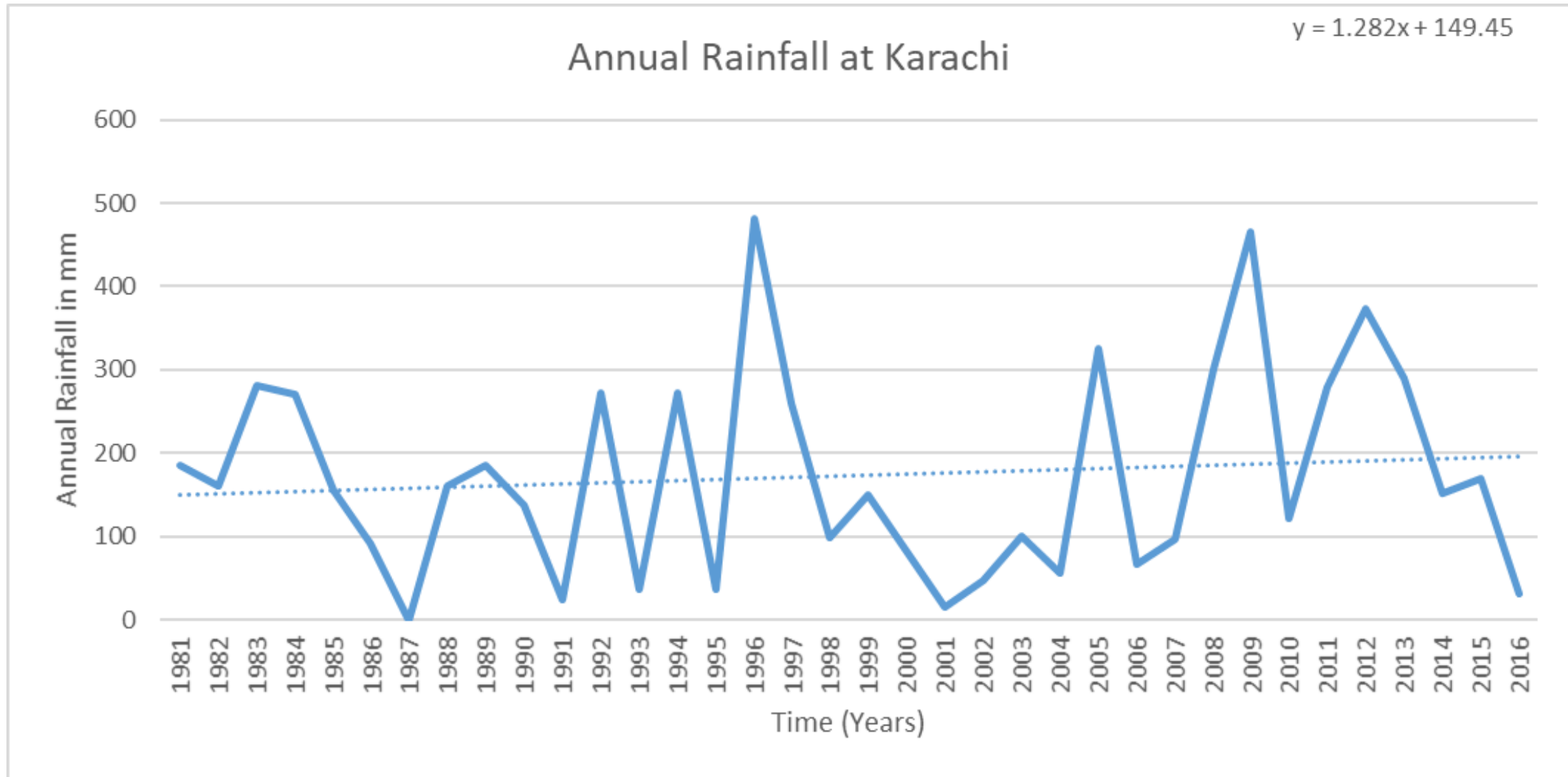
- The city of Karachi is located on the coast of Arabian Sea in the south of Pakistan.
- The total area of Karachi is approximately 3530 km².
- It is among the most populous metropolitan cities of the world.
- Population – 14.9 million (Census, 2017).
- The population of Karachi is increasing rapidly
 - i. Migration of rural population to the urban areas for better livelihood opportunities
 - ii. Climate change – extreme events (floods and droughts).
 - iii. An increase in the number of housing schemes in the outskirts of the city.
- Karachi is the Industrial and financial center of Pakistan.
- Contribution to the GDP is 12-15%.

Climate

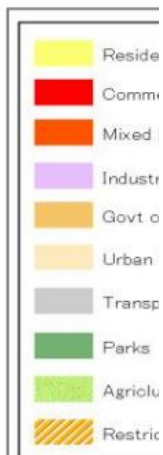
- Located on the coastline, Karachi is classified as a region with temperate climate having warm summer, mild winter and high humidity ranging from 58 per cent in December (the driest month) to 85 per cent in August (the wettest month).
- Karachi has an average annual rainfall of 174.1 mm and it is highly unpredictable.
- Minimum monthly Rainfall – 0.3 mm
- Maximum monthly Rainfall – 97 mm
- Minimum monthly Temperature – 9.9 °C
- Maximum monthly Temperature – 38.7 °C

- Most of the rainfall occurs at the end of monsoon season. August receives the highest rainfall with an average value of 59.2 mm per year.
- Karachi also experiences thunder storms in May and October.

Climate



Landuse



Land Use Categories	Area (ha)	Area (%)
Residential	32,600	41%
Commercial	1,100	1.4 %
Mixed Land Use	1,700	2.1%
Industrial	8,800	11%
Govt. offices	8,800	11%
Urban Facility	2,600	3.3%
Infrastructure	20,400	25.6%
Parks	1,800	2.3%
Restricted Area	1,800	2.3%
Total	79,600	100%

Sources of Water to Karachi

1. Lake Keenjher

- It is the largest source of water supply to Karachi.
- 1200 cusecs (0.865 MAF) from KG (Keenjher Gujjo) Canal to Gharo and then to Karachi through lifts.

2. Hub Dam

- It is the second largest source of water supply to Karachi.
- Capacity of Karachi WS canal is 210 cusecs.

Key Challenges

- Water Governance (Poor condition of water distribution system, inequitable distribution of water, access to sewerage facilities, illegal connections, low-tariffs, tanker mafias, billing and collection efficiency).
- Poor Water Quality
- Local and regional climate change scenarios (Water stress and Sea water intrusion)
- Lack of financial resources in the infrastructure (upgrading of treatment plants, rehabilitation of supply and discharge networks etc.)
- A loss of donor support and interest in facilitating the reform process.
- Internal incapacity to manage the modification process.
- Political Will Power

Way Forward

- Strong donor support and technical assistance in implementing the reform process.
- An internal commitment to institutional and governance reforms.
- Strong and effective storm water management plan is needed.
- Local governments
- Expedite the work on KC-4 project.
- Improve billing and collection efficiency of KWSB.
- Environmental Legislation defining the procedure for detection of surface water bodies contamination and procedures for risk assessment.
- Adaptation to climate change (Recycling and re-use of wastewater, Small/Check dams for water storage, ecosystems to retard the flows, Installation of desalination plants).
- Need for research and capacity building.
- Public Private Partnership.
- Revival of Haleji Lake and Hadero Lakes

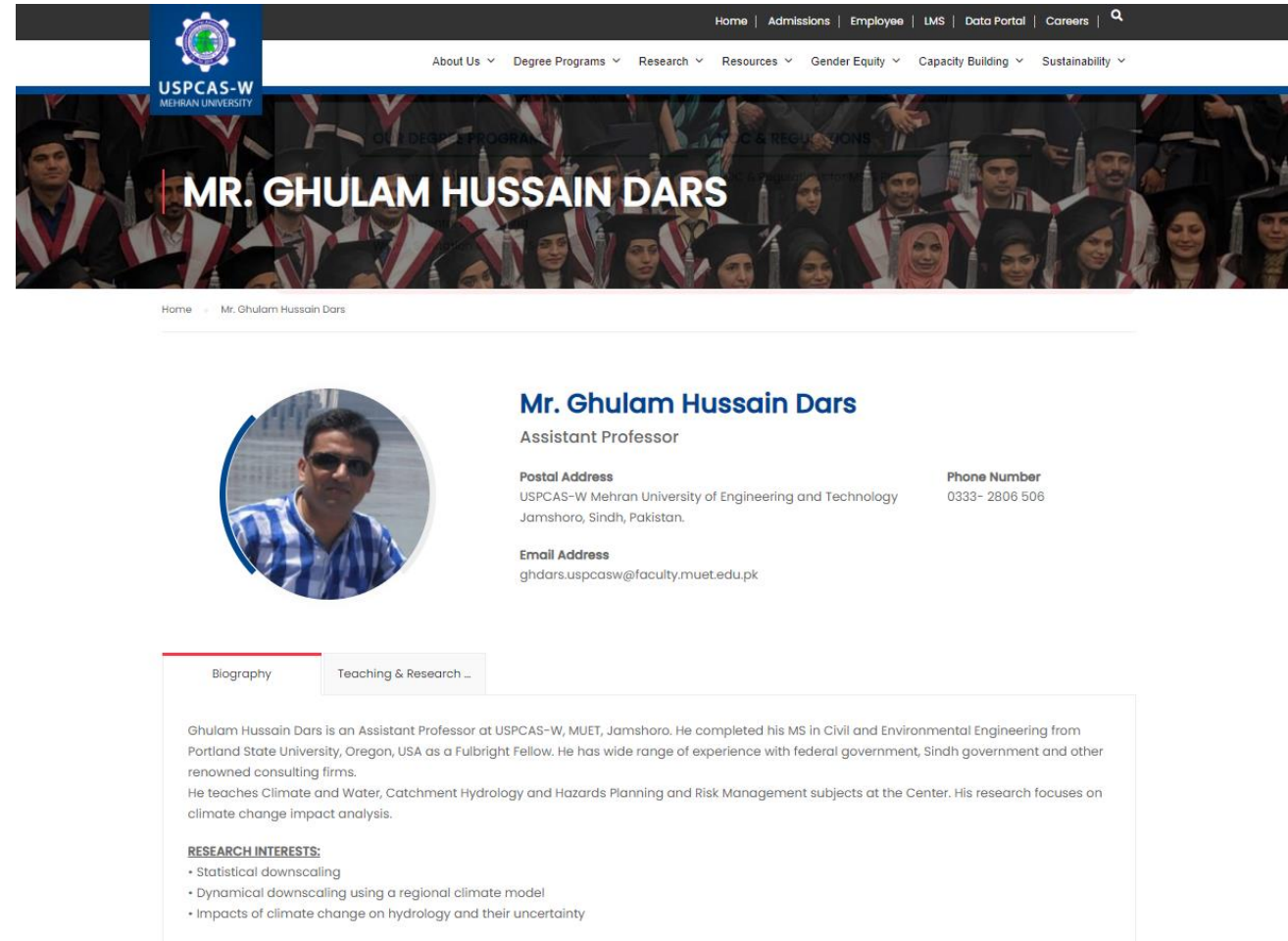


Thank you

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Biography | Teaching & Research ...

Ghulam Hussain Dars is an Assistant Professor at USPCAS-W, MUET, Jamshoro. He completed his MS in Civil and Environmental Engineering from Portland State University, Oregon, USA as a Fulbright Fellow. He has wide range of experience with federal government, Sindh government and other renowned consulting firms. He teaches Climate and Water, Catchment Hydrology and Hazards Planning and Risk Management subjects at the Center. His research focuses on climate change impact analysis.

RESEARCH INTERESTS:

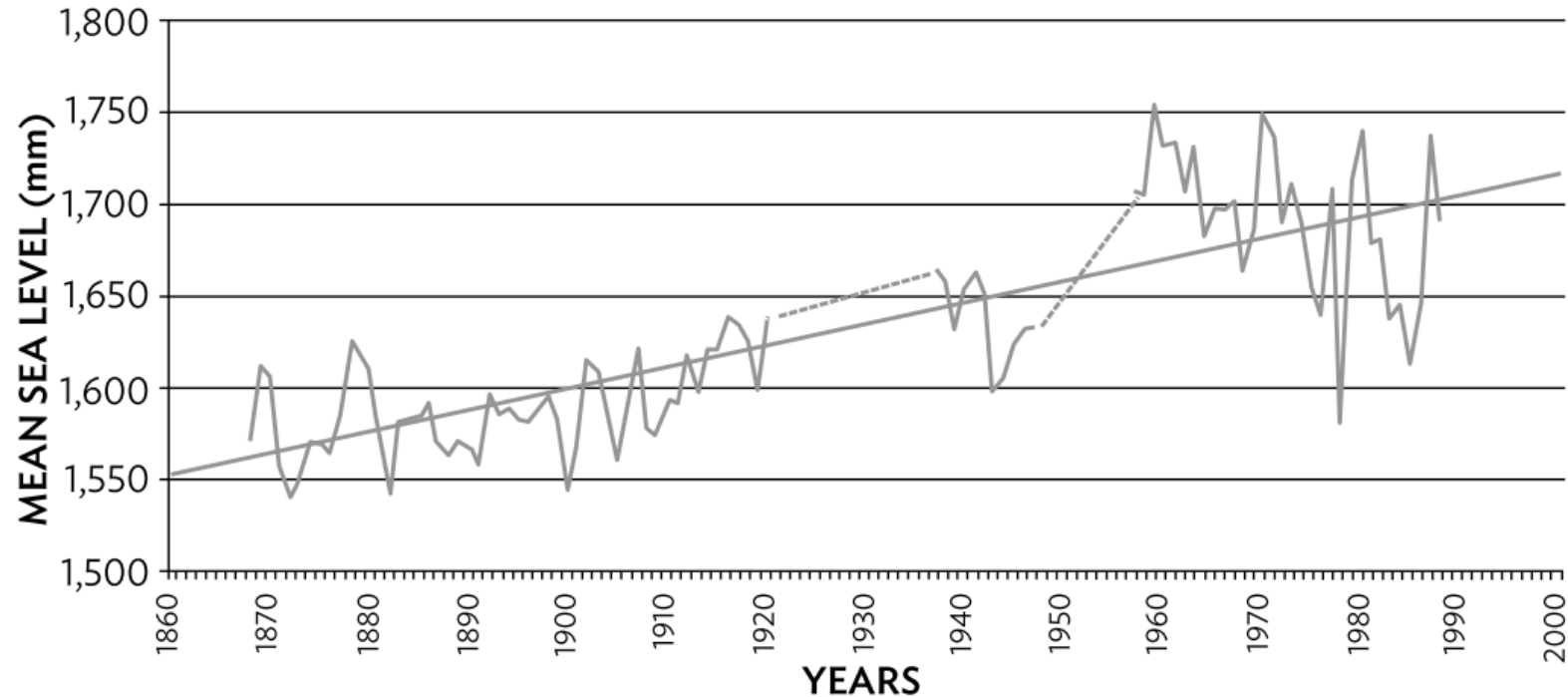
- Statistical downscaling
- Dynamical downscaling using a regional climate model
- Impacts of climate change on hydrology and their uncertainty



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Sea Level Rise

Figure 6: Mean Sea Level Rise Recorded along Karachi Coast, Pakistan, 1850–2000



mm = millimeter.

Source: M. M. Rabbani et al. 2008. The Impact of Sea Level Rise on Pakistan's Coastal Zones - In a Climate Change Scenario. 2nd International Maritime Conference at Bahria University, Karachi.