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# The Use of Space Based Information in helping Mauritius to mitigate and address its needs related to adaptation to climate change.

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# Mauritius



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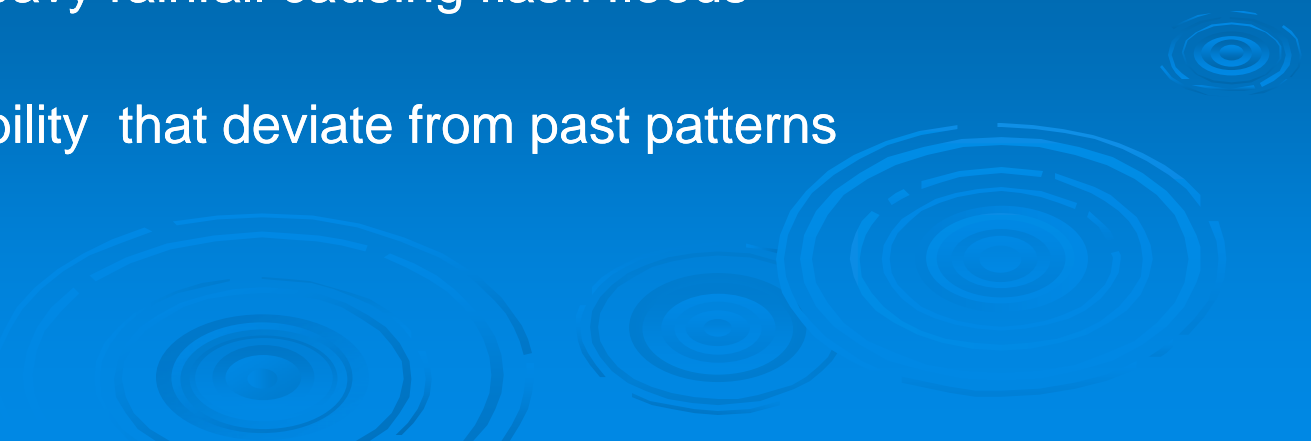
- Republic of Mauritius is a group of islands in the South West of the Indian Ocean, comprising of the main island of Mauritius, Rodrigues, and several islands located at distances greater than 350 km
- The islands of Mauritius and Rodrigues have a total of 1969 km<sup>2</sup>
- Overall population is about 1.3 million; density of 644 persons per km<sup>2</sup>
- 43% of the area is allocated to agriculture, 25% is composed of built up areas, 20% by public roads, the remaining consists of abandoned cane fields, forests, scrub land, grass lands/grazing lands reservoirs, ponds, swamps & rocks
- Mauritius has two seasons namely; summer from November to April and winter from May to October.

# What is Climate Change?

- Climate change, as per the United Nations Framework Convention on Climate Change, (UNFCCC), refers to a change in the state of climate that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. (Source: UNFCCC)



# Climate Change in Mauritius

- The present and future detrimental impacts of climate change on Mauritius are established facts and our meteorological records clearly indicate the following:
    - Increase of average temperatures
    - Rising sea levels
    - Intermittent heavy rainfall causing flash floods
    - Climate variability that deviate from past patterns
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# Impacts of Climate Change on Mauritius & Other Small Island Developing States

- By mid-century, climate change is expected to reduce water resources in many small islands to the point they become insufficient to meet demand during low-rainfall period.
- Increase in global temperature
- Increase Food Insecurity
- Increase in frequency and intensity of natural disasters like cyclone & flooding
- Sea level rise is expected to exacerbate inundation, storm surge and other coastal hazards, thus threatening vital infrastructure, settlement and facilities that support the livelihood of island communities.
- Deterioration in coastal conditions, for e.g. through erosion of beaches and coral bleaching, is expected to affect local resources.

# Some observed impacts of climate change in Mauritius

- Between 1998 & 2007, local mean sea level rose by 2.1mm per year. Over the last 5 years sea level has been rising by around 3.8 mm/year.
- Decreasing trend in annual rainfall of around 8% over Mauritius since the 1950s.
- Average temperature has risen by 0.74°C when compared to the 1961-90 mean.
- An increase in the annual number of hot days and warm nights
- Flash flood in 2008 and 2013 resulting in loss of lives.
  - Mauritius experienced its worst drought in 1999 and 2011. Increase in the frequency of extreme weather events, heavy rains and storms.



# Some observed impacts of climate change in Mauritius



# Some observed impacts of climate change in Mauritius



# Projected impacts/challenges of climate change in Mauritius (i)

- Decreasing trend of 8% in annual rainfall. Utilizable water resources will decrease by up to 13% by 2050.
- Increase in heavy precipitation events with increased risk of flash flood
- More frequent heat waves in summer.
- Increasing frequency of heat spells, giving rise to cardiovascular and pulmonary complications.
- Increase in the number of intense tropical cyclones
- Increase in duration of dry spell
- Increase events of high energy waves (tidal surge) impacting the shores of Mauritius.
- Heat stress will impact on productivity in the poultry and livestock sector

(Source: Mauritius Meteorological Services)

# Projected impacts/challenges of climate change in Mauritius (ii)

- Propagation of vector-borne and infectious diseases as a result of higher temperature and recurrent floods.
- Lengthening of the transmission period of important vector-borne diseases due to rise in temperature.
- Live corals to be reduced by 80-100% in the event of 3.28oC rise in temperature by the year 2100.
- Migratory shifts in tuna aggregations thereby disrupting the local seafood hub activities and other fish based industries and may result in conflict over the stock both at a national and international level.
- Changes in fish stock distribution and fluctuations in abundance of conventionally fished and “new” species may disrupt existing allocation arrangements.
- Impacting on man’s health, such as thermal stress, rise in the incidence of skin cancer due sun exposure, and increase in respiratory diseases, such as asthma
- Drought periods
- Tsunami
- Sea Level Rise

(Source: Mauritius Meteorological Services)

- Mauritius is benefitting from the existing space based information in its contribution to mitigate the efforts we are conducting or to address the needs related to adapt to climate change. But, it needs further assistance in the development of space technology applications to suit the climate change of SIDS, including Mauritius



# Current Adaptation/Mitigation Measures (i)

- Compilation of data , for cadastral and Geographical Information System (**GIS**) through **Aerial Photography and Digital Mapping** by the Land Based Information Unit in the Ministry of Housing of Lands to help stake holders for the following:
  - For land suitability information
  - For future better planning/development of land by Councils
  - For identification of flood prone areas
  - To help other authorities concerning line of action e.g reinforcement of anti malarial works on/near the marshy land
  - To identify affected areas in agriculture e.g cultivations affected by insects

# Current Adaptation/Mitigation Measures (ii)

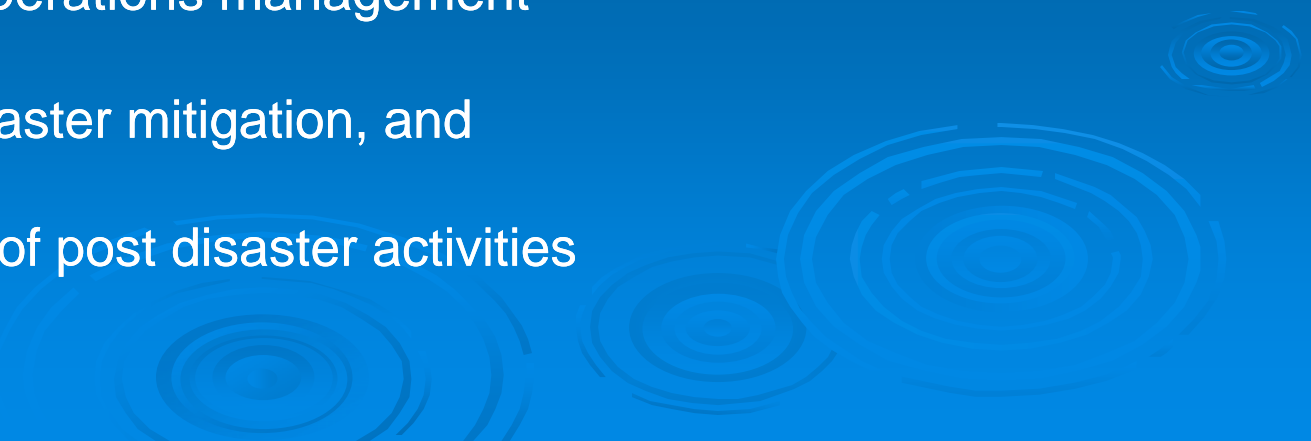
- **A National Climate Change Information Centre (NCCIC)** has been set up at the Ministry of Environment and Sustainable Development to:
  - act as a data centre for climate change related data and information meant for informed decision making
  - provide early warning climate risk information to support climate resilient community-based initiatives
  - raise awareness and future climate projections
- **A High Performance Climate Data Server** has been installed at the University of Mauritius for research and academic purposes.
  - Software for climate data modelling and management has been configured on the server.

# Current Adaptation/Mitigation Measures (iii)


- **Creation of a Climate change Division at Ministry of Environment in March 2010 to:**
  - Develop a climate change mitigation and adaptation framework
  - Coordinate national, regional and international projects in relation to climate change and sea level rise
  - Conduct and report greenhouse gas (GHG) emission inventories
  - Devise and coordinate the implementation of an inter-sectorial climate change monitoring programme and its reporting
  - Identify and coordinate Research & Development priorities associated with climate change and sea level rise
  - Follow up on matters pertaining to climate change in national, regional and any international forum
  - Contribution in Public Outreach Programme.



# Current Adaptation/Mitigation Measures (iv)

- The setting up of a **National Disaster Management Centre**, on a 24 hour basis to:
    - Hazard mapping and risk assessment
    - Information management
    - Forecasting, early warning and information dissemination
    - Preparedness to respond to disasters
    - Emergency operations management
    - Long term disaster mitigation, and
    - Management of post disaster activities
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# Importance of Integrated Space Technology Applications in the use of climate change in Mauritius

- Can provide frameworks for sharing spatial information in a manner that in turn can be more efficient in aiding countries to mitigate or adapt to climate change threats
  - Can provide various types of information necessary to mitigate or adapt to climate change threats
  - Up to date information from G.I.S will further consolidate our warning system for:
    - Cyclone track predictions
    - Wind directions and force
    - Torrential rain alerts
    - Landslides emergency
    - Flood risks
    - Tsunami alert
    - Waves
    - Sea levels
    - Sea temperatures
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# CONCLUSION

- As climate change is a real international threat especially to SIDS countries including Mauritius, the use of space based information is of prime importance to reduce the risks caused by natural disasters. However, this integrated technology application should be compatible to our local standards and specifications so as to meet the current needs of our island.

Thank you.

