

# **AWARENESS WEEK ON CLIMATE CHANGE**

## **CLIMATE CHANGE ADAPTATION MEASURES FOR MAURITIAN AGRICULTURE: STAKEKOLDERS' PERSPECTIVE**

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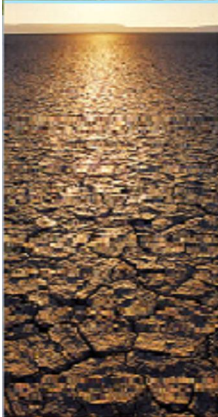


# National dialogue 'Climate change in Mauritius' June 2010

- **Food Agriculture and Natural Resources Policy Analysis Network (FANRPAN) Mauritius Node/Faculty of Agriculture, University of Mauritius**
- **Objectives:**
  - (i) increase awareness about climate change + impact on Mauritian agriculture**
  - (ii) to propose and discuss stakeholders coping and adaptation strategies**

# Overview

- **Overview of agricultural sector**
- **Contributors to Climate Change**
- **Stakeholders' Perceptions**
- **Adaptation Measures**
- **Recommendations/Policy**
- **Conclusions**
- **References**
- **Acknowledgements**



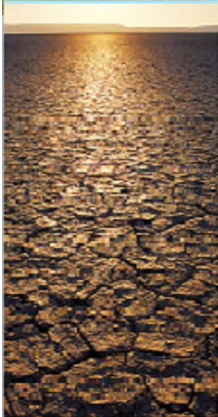
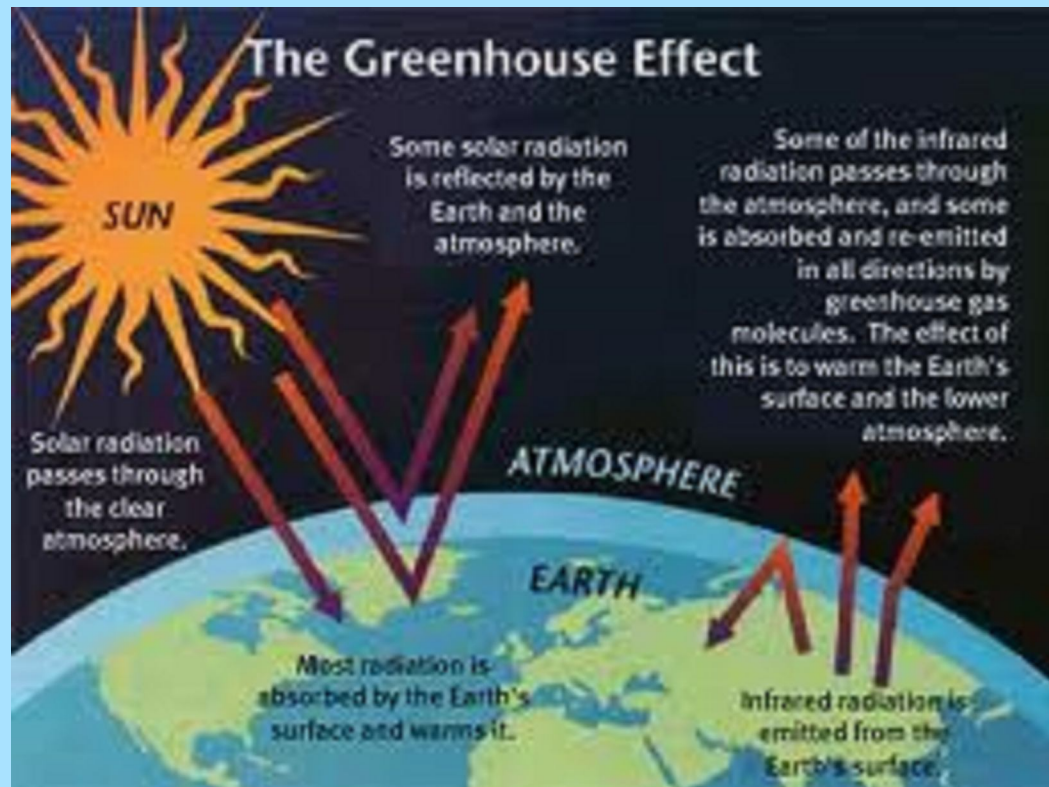


# Overview of the Agricultural Sector

- **Main cultivated crops: Sugarcane, tomato, potato, onion...**
- **Fruit production: Banana, pineapple, watermelon and seasonal fruits such as litchi and mangoes**
- **Livestock: Poultry, deer, cattle, pig...**
- **Local Fish Production + Aquaculture**
- **Agricultural exports: Sugarcane, Tuna, Anthurium, Pineapple, Litchi**

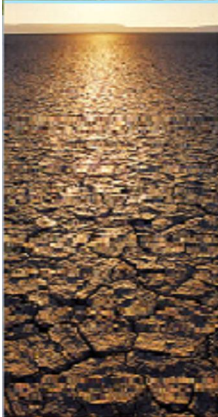
# Contributions to Climate Change

- Greenhouse gases



# Contributions to Climate Change

- Deforestation
- Use of chemical fertilizers
- Industrial processes
- Fuel to generate energy
- Transport

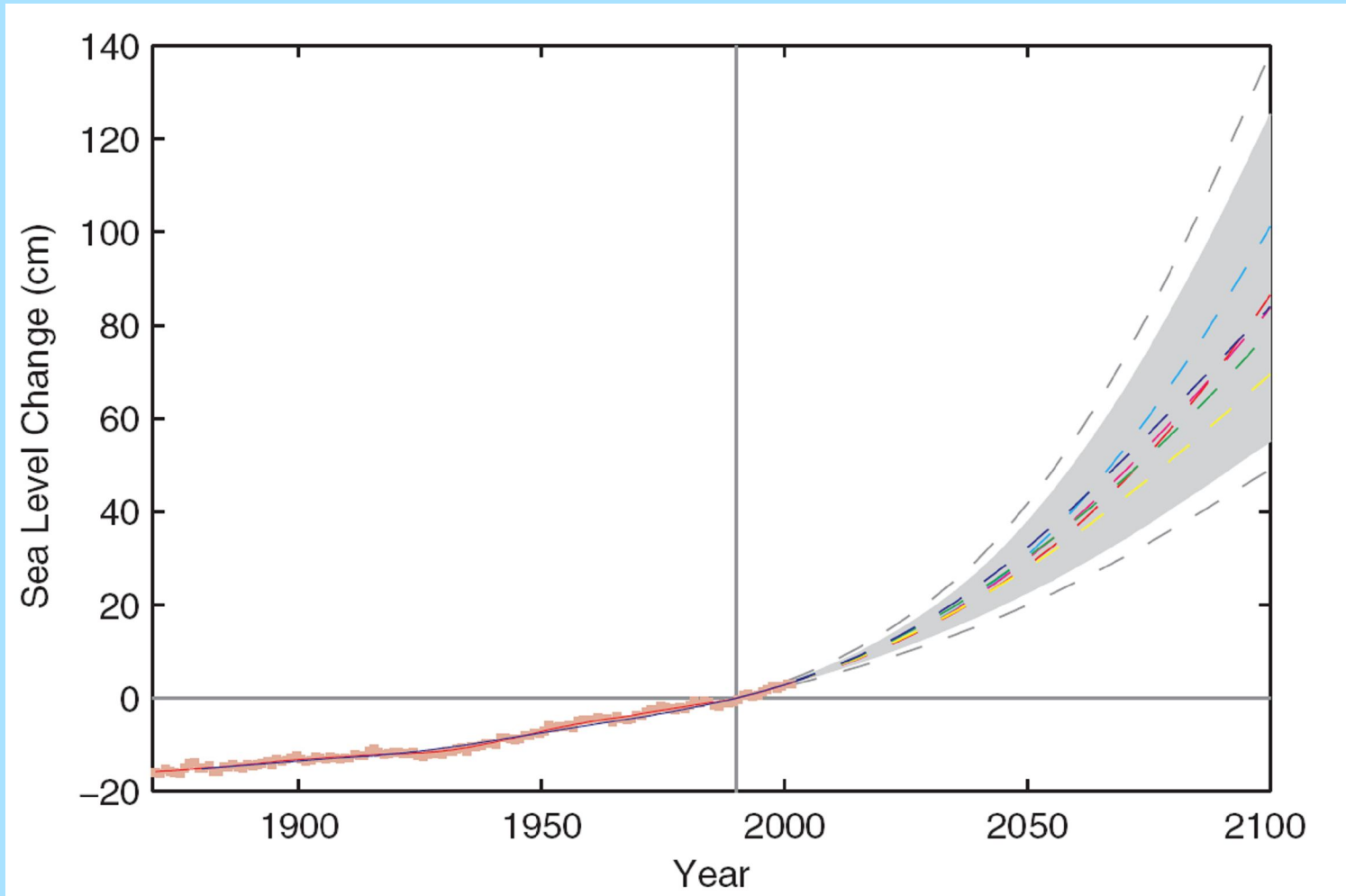


# Climate Change

- **Global warming**
  - thermal expansion of sea water
  - melting of glaciers (sea level rise by 0.1 to 0.5m)
- **Rise in surface temperature**  
(1-3.5°C by 2100)
- **Changing rainfall patterns**



# Global sea level is rising and will very likely continue to rise



Rahmstorf (2007)



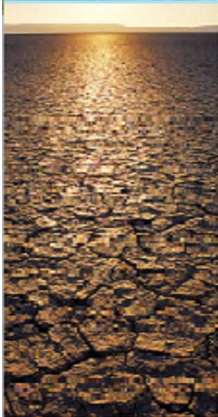


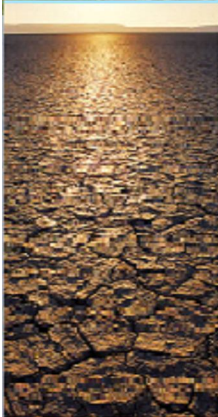
## **OBSERVATIONS IN MAURITIUS (Meteorological services)**

- **Average temperature rising by 0.15°C per decade**
- **Sea level rise of 2.1 mm/year for period 1987-2007 at Port Louis**
- **Long term time analysis shows a decreasing trend in annual Rainfall**

# World Attention to Climate Change

- **The Intergovernmental Panel on Climate Change (IPCC) predicts that during the next decades, billions of people, particularly those in developing countries, will face changes in rainfall patterns (FAO, 2008).**

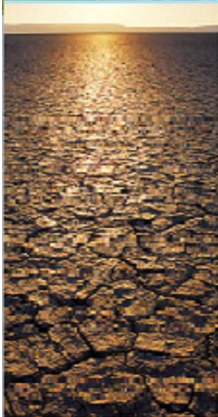




# **STAKEHOLDERS' PERSPECTIVE ON CLIMATE CHANGE IN MAURITIUS**

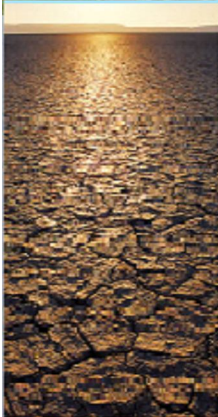
# Changes: Sugarcane

- More weeds in fields
- Emergence of pests and diseases
- Increase in soil erosion
- Leaching of fertilizers
- Water logging in several regions



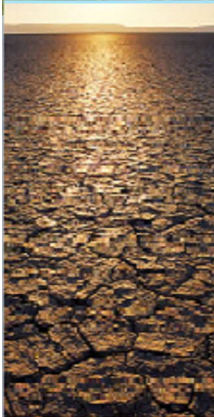
# Changes: Sugarcane

- **Decrease in the yield of sugar**
- **Change in rainfall distribution and pattern impacting on extraction**
- **Some varieties flowering earlier (might be due to climatic or other factors)**



# Changes: Food crops

- A decrease in the yield of certain crops (tomato)
  - (Jonsson, 2010): 8.2% (SR) and 13.3% (LR) decrease in tomato yield (East) due to temperature rise of 1°C and 10% decrease in precipitation
- A decrease in the germination rate of plants followed by a decrease in crop development

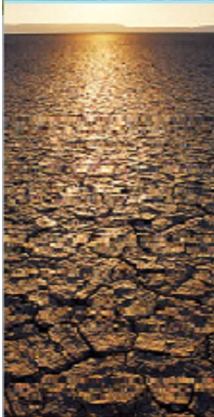


# Changes: Food crops

- **An increase in the incidence of pests and diseases**

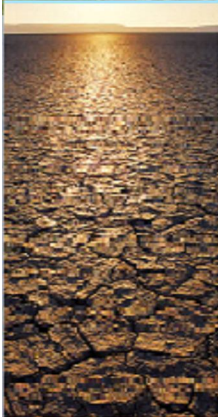


- **An increase in weed population**



# Changes: Food crops

- Occasional heavy rainfall
- Soil erosion
- Loss of soil OM
- Drier soil





# Changes: Livestock

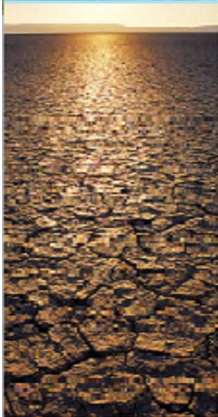


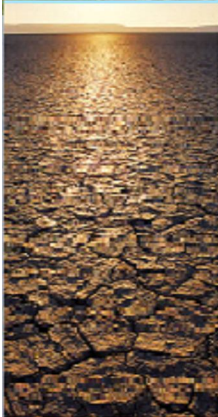
- **Heat stress due to high temperature during summer months**
  - Reduced feed intake
  - Delayed growth and development
  - Reduced production
  - Possibly leading to mortality rate



# Changes Fisheries

- **Less fish catch**
- **Lack of reproductive activity in certain fish species**
- **Need to go off-lagoon for fishing**
- **Rise in sea surface temperature leading to coral death causing loss of habitat**

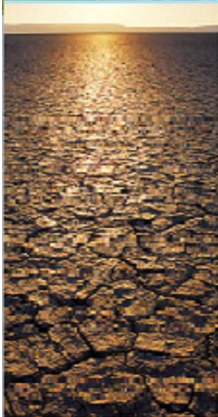




# **ADAPTATION STRATEGIES TO CLIMATE CHANGE BY STAKEHOLDERS**

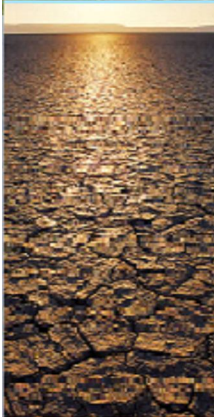
# Adaptation Strategies: Sugarcane

- Use of drains
- Additional application of herbicides
- Trash mulching done to increase cane yield
- Trashing against pests
- Use of *chrysopogon zizanioides* (vetiver) (soil and water conservation)



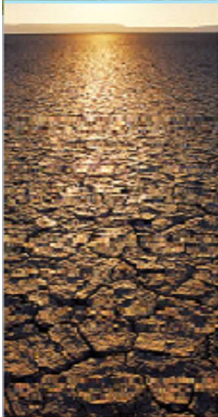
# Adaptation Strategies: Food crops

- Better drainage system in agricultural blocks
- Planting of plants vetiver and *convallaria majalis* 'muguet' to prevent soil erosion
- Use of wind breaks
- Low and natural external inputs (green manure)



# Adaptation Strategies: Food crops

- Introduction of new varieties (tomato varieties 'calora')
- Diversifying cropping systems
- Development of sustainable agricultural practices through the use of protected culture



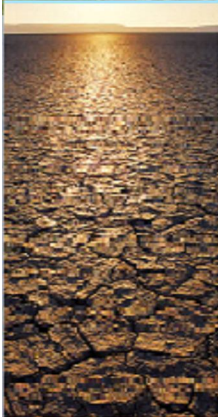
# Adaptation Strategies: Food crops

- Irrigation system in case of dry season for rain-fed areas
- Drip Irrigation



# Adaptation Strategies: Livestock

- **More aeration and ventilation through fans and extractors**
- **Cooling of animals prior to feeding**
- **Better hygiene to prevent diseases and pests**





# Adaptation Strategies: Livestock

- **Shading of houses by trees**
- **Improved fodder nutrition**
- **Better husbandry practices**



# Adaptation: Fisheries

- **Change in time of fishing**
- **Diversifying activities**





## Recommendations to Climate Change Adaptation and Mitigation

- **Integrated approach to CC adaptation**
- **Promotion of clean and sustainable agriculture**
- **Development of improved varieties/breeds for adaptation and mitigation**

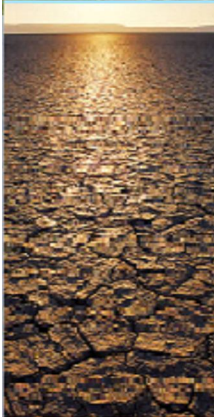


## Recommendations to Climate Change Adaptation and Mitigation

- **Sustainable livestock grazing**
- Improved land management practices (intensive and extensive)
- Improved pasture management
- Integrated agro-forestry systems
- **Sustainable aquaculture systems+ maintaining quality of coral reefs**

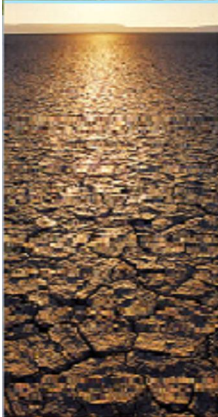
# Conclusion

- **Vulnerability of the Agricultural sector to Climate Change**
- **Policies/instruments**
  - cost-effective**
  - national and prioritised**
  - cater for Food Security, biodiversity conservation, sustainable & productive agricultural systems**
- **Studies on Impact of Climate Change on Agriculture and Fisheries**



## References:

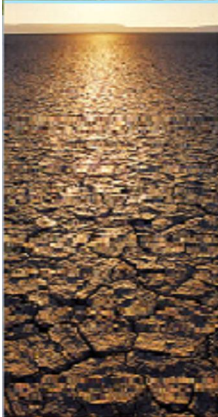
- **Anon (2010). Report on National Dialogue on Climate Change in Mauritius. June 2010, Reduit Mauritius.**
- **Jonsson, M. (2010). Impact of Climate Change on Agriculture in Mauritius: A socio-econometric study on Mauritian Farming.**



# Acknowledgements

- **Faculty of Agriculture, UoM**
- **FANRPAN Local Node and Secretariat**





'Climate change is real. The science is compelling. And the longer we wait, the harder the problem will be to solve'

(Senator, John Kerry)



**Thank you**