SEA LEVEL RISE MODELLING IN SUPPORT OF SOCIOECONOMIC IMPACT ANALYSIS: GRANDE RIVIERE, TRINIDAD AND TOBAGO

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Presentation Outline:

- Sea Level Rise Projections (Potential Threat)
- Grande Riviere (Study Site)
- ICURA Project (Multidisciplinary Methodology)
- Socioeconomic Survey of Grande Riviere (Results)
- Sea Level Rise Model (Methodology and Results)
- Acknowledgements

SEA LEVEL RISE PROJECTIONS

Organization	Projection Stated
Climate Research Unit 2000	0.060m rise by 2100
University of Melbourne, School of Earth Sciences	0.030m-0.300m by 2040 and 0.090m-.880m by 2100
Environmental Protection Agency	0.700m by 2080
Centre for Sponsored Ocean Research, Division of the National Oceanic and Atmospheric Administration	0.040m-1.029m by 2095
Australian Academy of Science	0.090m-0.880m by 2100
National Centre for Atmospheric Research	1.9-2.6 ºC means 0.180m-0.200m rise 2.2-3.5 ºC means 0.190m-0.300m rise
American Geological Institute	6m or more over the next 140 years due to melting of ice sheet

SEA LEVEL RISE PROJECTIONS

IPCC Category	Projection Stated
1	0.4m – 1.4m 2000 - 2015
2	0.5m – 1.7m 2000 - 2020
3	0.6m – 1.9m 2010 - 2030
4	0.6m – 2.4m 2010 - 2060
5	0.8m – 2.9m 2050 - 2080
6	1.0m – 3.7m 2060 - 2090

ICURA PROJECT: GRANDE RIVIERE, TRINIDAD AND TOBAGO

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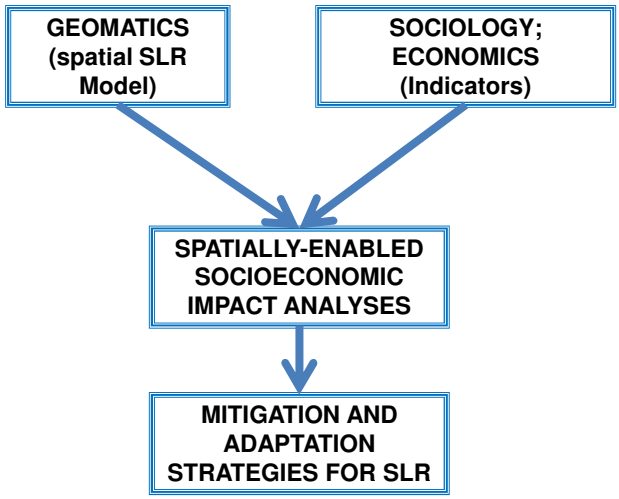
- **Leatherback Turtle Nesting Site**
- **Bird Watching**
- **Tourism**
- **Commercial**
- **Residential**
- **Agriculture**

ICURA PROJECT: MULTIDISCIPLINARY METHODOLOGY



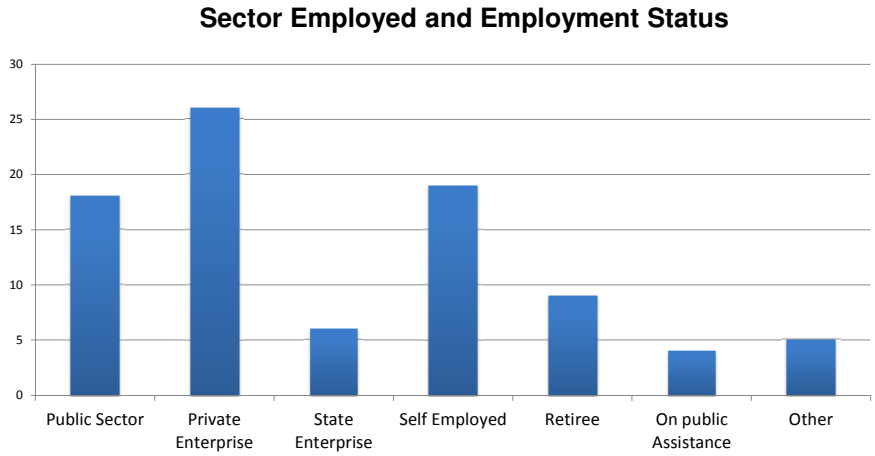
ICURA PROJECT: SOCIOECONOMIC SURVEYS

- **Four surveys were designed to capture information from:**
  - **The Grande Riviere community**
  - **National tourists visiting the community**
  - **International tourists visiting the community**
  - **International tourists visiting Trinidad and Tobago**

Questionnaire Description: Community

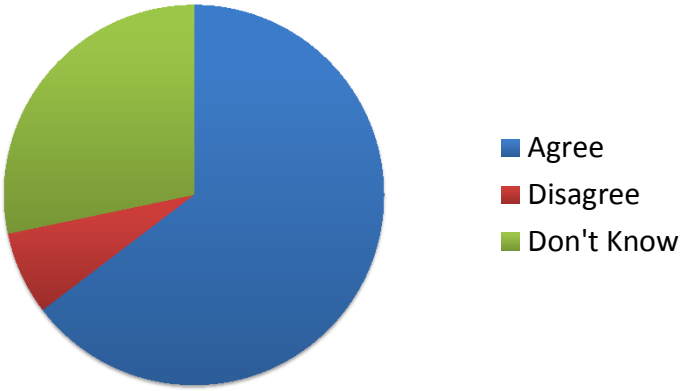
- **Five Sections**
  1. General
  2. Demographic and Socioeconomic
  3. Ecosystem Services
  4. Eco-tourism and the leatherback turtles
  5. Awareness/knowledge of climate change

Preliminary Results: Demographic and Socioeconomic Information



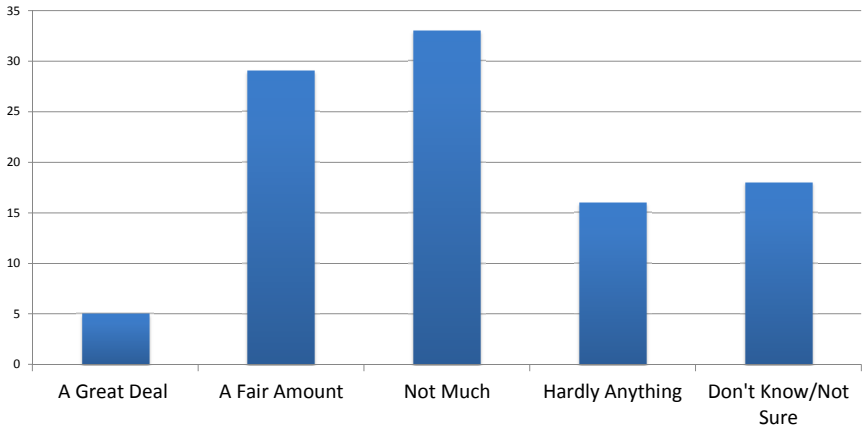
Preliminary Results: SLR

Perception of Sea Level Rise as a Future Challenge to Grande Riviere



Preliminary Results: Awareness/Knowledge of Climate Change

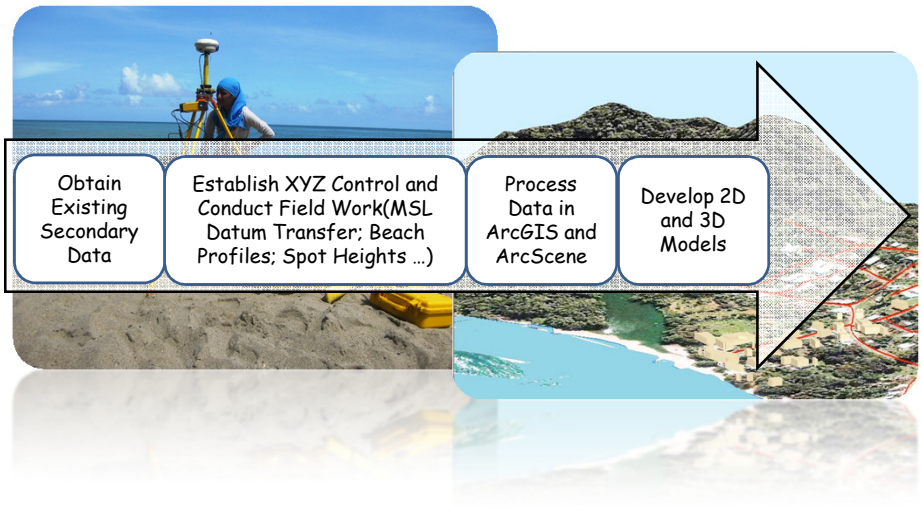
Knowledge of Climate Change



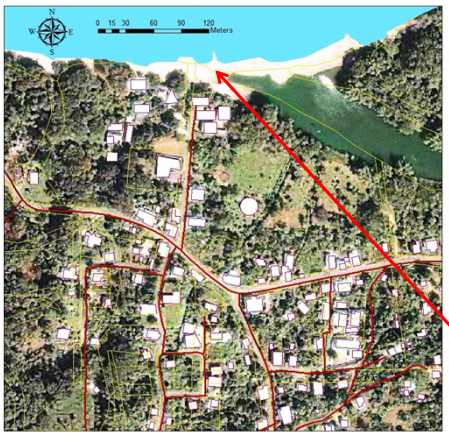
SEA LEVEL RISE MODEL: DATA

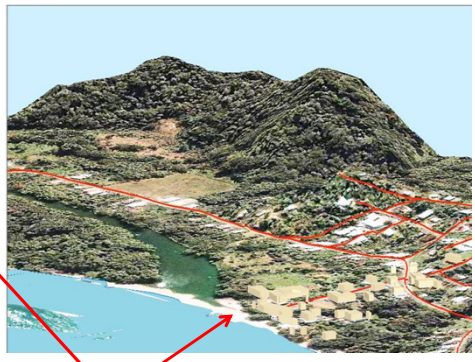
Collected Data	Purpose
Ground Control Points	To establish a reference control within the community, since existing controls were destroyed
Contour data	To get an accurate model of sea level rise and for the generation of 3D model
Topographic Data	To show what would be affected by the rise in sea level (Buildings, Property Boundaries, Roads, River etc.)
Arial Photograph (2007 with Colour)	To provide realistic visualization
Spot heights along the beach	To get a detailed contour shape of the beach
Mean Sea Level	To establish a vertical reference control within the community

SEA LEVEL RISE MODEL: GEOMATICS METHODOLOGY



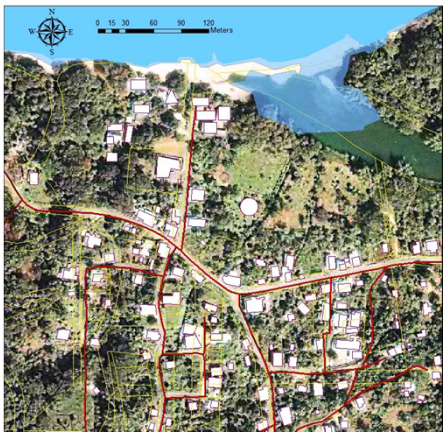
SEA LEVEL RISE MODEL: VISUALIZATION





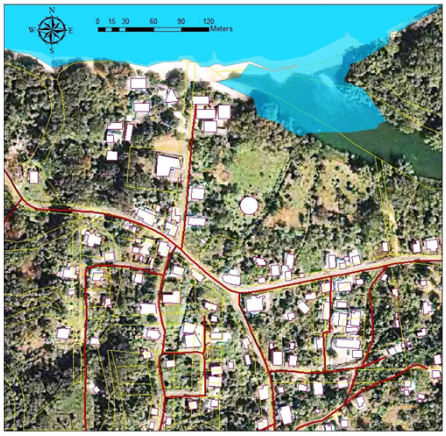
Simulated MSL at Grande Riviere Beach

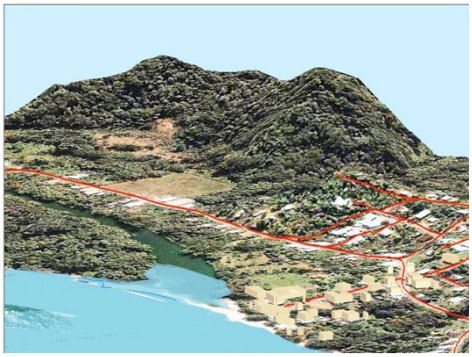
SEA LEVEL RISE MODEL: VISUALIZATION



Simulated 0.4m above MSL at Grande Riviere Beach

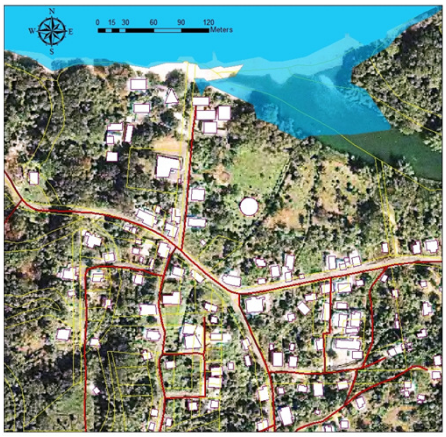
SEA LEVEL RISE MODEL: VISUALIZATION





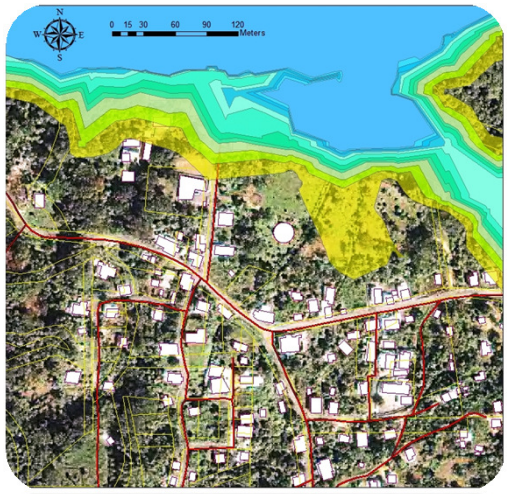
Simulated 0.6m above MSL at Grande Riviere Beach

SEA LEVEL RISE MODEL: VISUALIZATION



Simulated 0.8m above MSL at Grande Riviere Beach

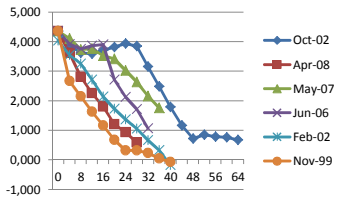
SEA LEVEL RISE MODEL: VISUALIZATION

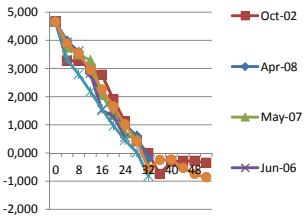


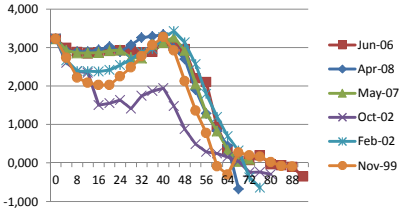
Simulated 0.4m to 3.7m above MSL at Grande Riviere Beach

SEA LEVEL RISE MODEL: RECENT WORK

TEMPORAL BEACH PROFILES FOR BEACH DYNAMICS

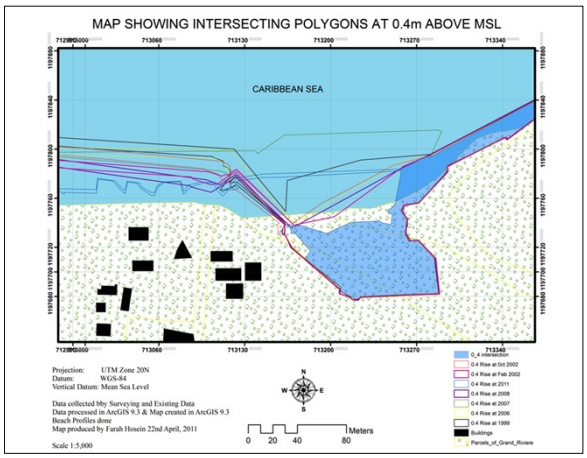






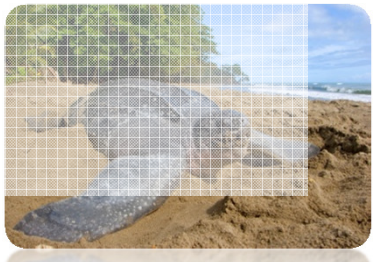
SEA LEVEL RISE MODEL: RECENT WORK

INCREASE IN CERTAINTY OF IMPACT



SEA LEVEL RISE MODEL: IMPACTS

- Even at 0.4m above MSL there is significant impact upon turtle nesting sites
- Secondary impact upon Grande Riviere's socioeconomic wellbeing
- Support for mitigation/adaptation strategies



ACKNOWLEDGEMENTS

The authors acknowledge the assistance of the Department of Geomatics Engineering and Land Management, University of the West Indies for the use of their equipment used in field surveys. Dr. David Neale is also acknowledged for his assistance in obtaining tide gauge data and provision of the tide gauge used at Grande Riviere. Ms. Safiya Alexander, Ms. Sade Grant, Ms. Rachel Rampersadsingh, Ms. Anushka Singh, Ms. Farah Hosein, Mr. Michael Wilson and Mr. Akelo Moore (all undergraduate students at the time of the surveys) are hereby acknowledged for their assistance in completing the field surveys. Finally, financial support from the International Community-University Research Alliance (ICURA) program, sponsored jointly by Canada's Social Sciences and Humanities Research Council (SSHRC) and International Development Research Centre (IDRC), is hereby gratefully acknowledged.

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