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ROLES: MSc. Systems Science Candidate
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DISCIPLINES: Statistics, Systems Analysis, Economic modeling, Interdisciplinary analysis

KEYWORDS: Sea level rise, storm surge, environmental impacts, community adaptation, statistical modeling using R, system dynamics using STELLA, Charlottetown, community sustainability



RESEARCH INTERESTS:

There is no doubt that global climate is changing. One of the most vital and visible impacts of this manifestation is changing the sea level rise which is followed by coastal erosion. However, there are concerns that not enough research has been done so far to predict the damages results from storm surges and its impacts on sustainability of the environmental and socioeconomic dimensions of Charlottetown, P.E.I., Canada. This research models the stochastic processes that explain coastal sea level, maximum water level, and storm surge of the Charlottetown. In this research the storm surge is formed based on a marginal univariate probability density function which is using R as a software package and water level is modeled based on conditional probability density function given storm surge data. The resulting bivariate distribution models the stochastic process of maximum water level impacts in Charlottetown. By using the Stella software as a simulator for systems dynamics we will examine the impacts on sustainability of the environmental and socioeconomic dimensions of Charlottetown. Also, the EasyFit Standard statistical package is used for fitting the best distribution of the data. This system dynamics model of this research involves social and cultural, manufactured, services, and environmental investment assets to study the sustainability of the city due to more often coastal erosion.

BIOGRAPHY:

Shima comes to Ottawa with a Mathematics background (Honors B.Sc. Azad University of Iran,) and another M.Sc. in IT-Management (University Technology of Malaysia). Shima is currently working towards her M. Sc. in Systems Science at the University of Ottawa. Her research is System dynamics modeling of the impacts of sea level rise and storm surge under the supervision of Professor Daniel Lane, Professor Philippe J. Crabbé and Adjunct Professor Richard Moll as part of C-Change- ICURA project.