ICNet Members' New England Research & Project Survey

Research/Project Focus	System Dynamics in Modeling Climate-Pavement systems
Research/Project Description	Use of system dynamics to model climate-pavement systems, and simulation to evaluate the effects of different scenarios; understand "hidden" loops and factors that have significant effects in the long term, and determine "nonlinearity" in critical responses such as costs and emissions
Primary Category*	Pavement
Geographic Location	The World
Funding	None
Contact	Rajib Mallick, WPI: rajib@wpi.edu
Infrastructure sectors effected, subject area	Multiple
For modeled climate or sea level rise projections, AOGCM or other sources used	Roads
Other Information, data, models, used	"Coastal flooding in the Northeastern United States due to climate change" (Kirshen, et al, 2010)

Time periods analyzed	20 – 100 years
Status /Date submitted to ICNet	In Progress. One preliminary model has been developed and is being refined. Submitted: 08/2013
Brief key findings to date	Preliminary results show that the long term effects of changes in air temperature, rainfall, sea water level rise and number of hurricanes on pavement performance are significant, and that costs are expected to increase very significantly (>160% in 100 years) and non-linearly, in the future.
Key publications/reports?	One paper submitted for consideration for presentation and publication at the 93rd Annual TRB meeting, 2014; " Use of System Dynamics to Understand the Long Term Impact of Climate Change on Pavement Performance and Maintenance Cost
Other information (e.g., web links to technical reports).	http://forio.com/simulate/rajib/icnet-4

*** Categories: Roads, bridges, and culverts; Pavement and/or soils; Hydrology (study of data/floods); Environmental/water resources (stormwater, drinking water); Transportation assets (network); Climate model output**