
Risk Analysis of Infrastructure Networks in Response to Extreme Weather including the Effects of Climate Change

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Abstract

In recent years, a variety of extreme weather events, including droughts, rain induced landslides, river floods, winter storms, wildfire, and hurricanes, have threatened and damaged many different regions across Europe and worldwide. These events can have a devastating impact on critical infrastructure systems. In response to this the European Union has funded a research project focused on **Risk Analysis of Infrastructure Networks in Response to Extreme Weather (RAIN)**. The RAIN vision is to develop a systematic risk management framework that explicitly considers the impacts of extreme weather events on critical infrastructure and develops a series of mitigation tools to enhance the security of the pan-European infrastructure network. The project quantifies the complex interactions between weather events and infrastructure systems. The outputs of RAIN aid decision making in the long term, securing new robust infrastructure development and protection of existing infrastructure against changing climates and increasingly more unpredictable weather patterns. This is achieved through developing an operational analysis framework that considers the impact of individual hazards on specific infrastructure systems and the coupled interdependencies of critical infrastructure through robust risk and uncertainty modelling. The framework considers cascading hazards, cascading effects and time dependent vulnerability in developing practical software tools and guidelines that provide support to European infrastructure managers in the event of an extreme weather event occurring to minimise the impact of extreme events by developing mitigation and response strategies. This paper will present the RAIN project.

Keywords: Risk Analysis, Infrastructure Networks, Extreme Weather

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