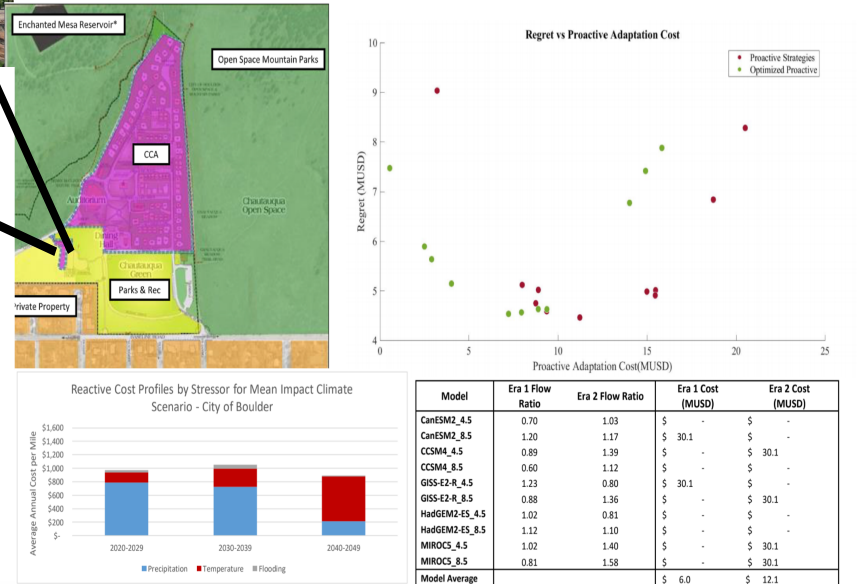
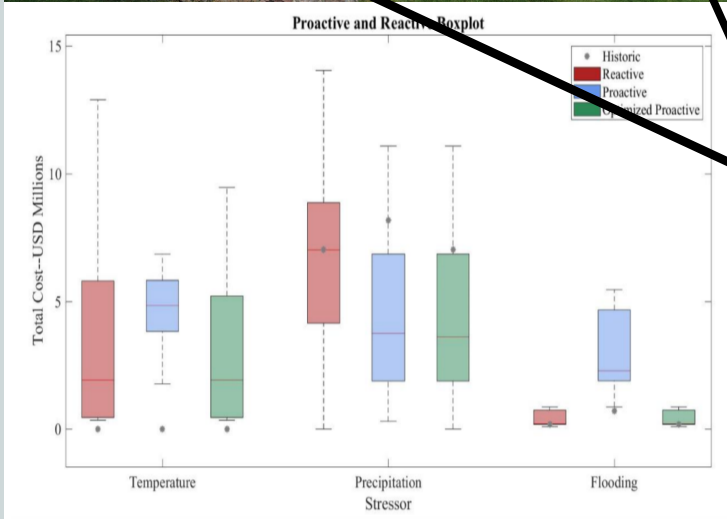
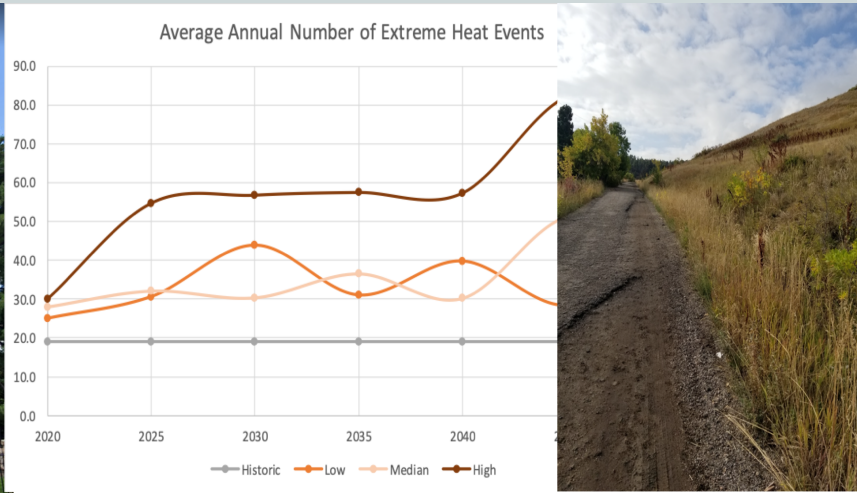


SINGLE-SITE CLIMATE RISK STUDY

Climate financial risk analysis for multiple climate factors



Model	Era 1 Flow Ratio	Era 2 Flow Ratio	Era 1 Cost (MUSD)	Era 2 Cost (MUSD)
CanESM2_4.5	0.70	1.03	\$ -	\$ -
CanESM2_8.5	1.20	1.17	\$ 30.1	\$ -
CCSM4_4.5	0.89	1.39	\$ -	\$ 30.1
CCSM4_8.5	0.60	1.12	\$ -	\$ -
GISS-E2-R_4.5	1.23	0.80	\$ 30.1	\$ -
GISS-E2-R_8.5	0.88	1.36	\$ -	\$ 30.1
HadGEM2-ES_4.5	1.02	0.81	\$ -	\$ -
HadGEM2-ES_8.5	1.12	1.10	\$ -	\$ -
MIROCS_4.5	1.02	1.40	\$ -	\$ 30.1
MIROCS_8.5	0.81	1.58	\$ -	\$ 30.1
Model Average			\$ 6.0	\$ 12.1

About Resilient Analytics

Resilient Analytics answers climate impact questions with the Infrastructure Planning Support System (IPSS). IPSS is a unique, first-of-its-kind system that performs engineering analysis within a broader resiliency perspective. IPSS models infrastructure vulnerability to future climate conditions, considers specific adaptation scenarios, and provides a cost benefit based risk analysis. IPSS draws its data from a range of climate science projections, engineering and materials studies, and environmental research to provide users with decision support that is based in real-world risk scenarios.

Resilient Analytics Project Summaries

Climate change affects geographic locations in different ways. In some places it results in higher temperatures while in others it results in significant precipitation events. This variability translates to different risks being associated with different geographic regions. For a developer, building owner, or project investor, understanding these risks is critical both for financial analysis as well as operational continuity. However, this understanding requires more than a qualitative report of risk. Rather, this understanding requires financial projections that detail the impact associated with each projected environmental change and the timeline on which this change is projected.

Resilient Analytics, Inc is producing risk and financial reporting reports in multiple sectors including manufacturing, agriculture, services, utilities, and hospitality. In each of these studies, analysis is completed on both direct impacts such as flood impacts as well as indirect impacts such as extreme heat reducing worker productivity. As the findings demonstrate, climate change impacts do not stop at direct risks. Rather, climate change impacts both physical assets as well as human assets.

In a representative case study illustrated here, Resilient Analytics, Inc evaluated multiple risk factors for the expansion of a hospitality location. This evaluation included two components; 1) understanding the potential damages that may occur due to projected climate changes, and 2) estimating the associated costs with either repairing these damages or investing in adaptation to mitigate the projected impacts. As illustrated, the risks vary with temperature and precipitation being potentially of greater risk than drought or flood.

From a financial perspective, each of these threats are associated with specific costs and the projected time in which these costs will be incurred. Specifically, this site requires about \$5 million in investment to reduce the threat from temperature increases by 2040. A decision to avoid this investment could result in a doubling of costs through increased repairs and maintenance. These replacement costs, damage costs, and potential business interruption costs are all projected based on underlying climate change projections.

The result of this study was a shift in operational and planning decisions to ensure that the greatest risk factors received additional maintenance funding as well as additional operational analysis for redundancy planning and interruption planning. Ultimately, this change is intended to reduce the impact of the projected changes and to retain the value leveraged from both physical and human assets.

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