

POTENTIAL IMPACTS OF GLOBAL CLIMATE CHANGE ON MONTANA'S RIVERS^{APR}

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The earth's climate is predicted to change due to a buildup of greenhouse gasses. The heat trapping property of these gasses is well documented and undisputed. At the global scale, sea ice extents are declining, carbon dioxide levels and average temperatures are increasing. Additionally, sea levels and the number of frost-free days are increasing. The earth is undeniably warming, yet predicting the extent of change, particularly in the environmentally diverse northern Rockies ecosystem, is challenging and remains debated. The general trends however, indicate that temperatures are rising across this region, while precipitation is decreasing. For example, in Helena Montana annual mean temperature has increased 1.3 °F, while precipitation has decreased up to 20 percent in some parts of the state. Temperature trends remain less ambiguous than either temporal or spatial variations in

expected precipitation. Projections made by the Intergovernmental Panel on Climate Change (IPCC) and results from the United Kingdom Hadley Centre's climate model (HadCM2) predict temperatures could rise by a range of 1-8 °F in spring and summer and by a range of 2-10 °F in fall and winter by 2001 within the region. Under this scenario, within Montana, growing seasons and forest and rangeland productivity will likely increase and snow pack will decrease thereby decreasing stream flows. This situation could alter floral and faunal composition of an area depending on length and severity of climate change.