Andorra 2014 AIPCR - PIARC

XIV TH INTERNATIONAL
WINTER ROAD CONGRESS
FEBRUARY 4TH TO 7TH 2014

ISSUE: 01. WINTER SERVICE AND CLIMATE CHANGE

SUB-ISSUE: Winter service and climate change

Session: 04/02/2014 (17:15 - 18:45 h)

Poster: 05/02/2014 (09:30 - 12:30 h)

Room: A

Presenter: Mr. Richard Nelson

ricknelson.engr@gmail.com

MR. JOSHUA SEEHERMAN

Organisation:

University of California, Berkeley

Country:

United States

e-mail:

jseeher@yahoo.com

Presentation title:

DONNER PASS IN CALIFORNIA: AN EXAMINATION OF EXTREME WEATHER AND THE POTENTIAL EFFECTS OF CLIMATE CHANGE ON TRAFFIC SAFETY

Other Authors

Skabardonis, Alexander, University of California Berkeley, USA, dromeas@berkeley.edu

Summary:

Over the next several decades, the effects of climate change will evolve and may cause significant changes in weather patterns affecting commerce, travel and operations. Regional governments have taken particular interest in the predicted changes in winter weather, as roadway maintenance, snow removal and incident management constitute a large portion of the budget in many locations. The roadway network of California is an ideal location to observe the effects of climate change, as the state maintains three numbered state highways throughout the winter that receive over 1000cm of snow per year, including one freeway, Interstate 80. Examining the current impact of winter weather and forecasting future weather due to climate change will allow agencies to plan for upcoming winter seasons. With each injury collision costing approximately $129,000 according to the Federal Highway Administration, the difference from a snowy week to a clear week could be millions of dollars. The objective is two-fold: to identify how winter weather is changing on California roadways, and to investigate the hypothesis that a reduced number of snowfall events will lead to fewer crashes and reduced winter maintenance costs. To address these questions, winter seasons over a decade were examined. During each winter season, 20-25% of all days with snow consistently accounted for 50% of the seasonal snow total. However, compared to years of high snowfall, during seasons of lesser amounts the 10 days with the highest snowfall accounted for a higher percentage of the seasonal total. This may imply that as seasonal snowfall decreases in California, the number of severe snowfalls will not decrease as substantially. Concurrently, crash rates confirmed the costs of severe snowfalls, as rates increased dramatically when examining only days with snowfall. Overall crash rates were 1.6 during the winter season, but were as much as five times higher during days of heavy snow (>12cm). Furthermore, during days with heavy snowfall, crashes represented 44% of the total calls to the local police within the 80km study area, versus 37% for the overall three-month winter study period. These findings suggest that climate change may decrease crash-related costs during the winter season.