of current conservation measures and discussed how the renewal of conservation design development may affect the Kootenay Region of British Columbia. He covered the effectiveness of climate change: A Kootenay Case Study. Exploring how climate change and wildlife ecosystem resilience in the context of a changing climate, he discussed the implications for conservation measures. His talk highlighted the need for adaptive management strategies to ensure the sustainability of conservation efforts in the face of climate change.

**Figure 4:**
This figure shows projected changes in 10-year (Q10), 50-year (Q50) and 100-year (Q100) peak flow return periods for the Fraser River at a location corresponding to the hydrometric gauge at Hope, BC. The research shows that small peak flow events (e.g. 2-year return period) are projected to decrease in magnitude whereas large peak flow events (e.g. those with more than a 100-year return period) are projected to increase. This indicates a shift in flood risk that requires adaptation of flood protection measures. Due to development within the floodplain of the lower Fraser Valley, a population of over 300,000 people and significant residential, commercial, industrial utilities and transportation infrastructure are at risk. The research highlights the importance of flood risk assessment and adaptation planning in the face of changing climate conditions.

**Figure 3:**
This figure shows projected changes in annual maximum precipitation for the Fraser River basin. The top panel shows the anomalies prior to adjustment and seems to exhibit a substantial upward trend. The middle panel shows the homogenized record, which adjusts for changes in observing station history, and the bottom panel shows the original (black) and adjusted (gray) records superimposed on each other. The earlier part of the record has been adjusted, so only one trace is visible. The part of the record from 1997 onwards has not been included this station. The change point is also apparent when this station is compared against a modern station with records from 1983 onwards. The research shows that precipitation records are not as homogenous as previously thought, and adjustments are necessary to ensure the reliability of climate data for decision-making.

**MODELLING CHANGES IN ANNUAL MAXIMUM PRECIPITATION**

The researchers used the VIC model to simulate changes in annual maximum precipitation. They explored three ensemble sizes of 45, 56 and 56, for RCP 2.6, 4.5 and 8.5, respectively. The dashed line indicates the average VIC-results. The models showed that although some regions are sparse in the AHCCD (see the red dots in Figure 1), overall, the model performed well in reproducing the magnitude of storms. The models do well at reproducing the magnitude of storm surges and that the primary contribution to such events in the region are sea surface height anomalies from the Pacific. The second model, the PDF, also did well at reproducing the magnitude of storms. The researchers noted that the results show that about half of the temperature records are affected by such changes, but the results also showed that most temperature records represented genuine meteorological conditions. The researchers found that the data were overall of quite high quality. The researchers also found that the overall methods to adjust the data, removing the estimates of changes due to non-climatic factors, are adequate to protect against the historical design flood. The researchers noted that due to recent analysis by Northwest Hydraulics for the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), flood protection is subject to failure. In addition, recent catastrophic floods throughout the world provide a stark reminder that engineered works can fail, and developing regions are particularly vulnerable.

**NEW DOWNSCALING PACKAGE**

PCIC's latest Science Brief highlights articles on two recent research papers that focus on the development of new downsampling techniques for climate data. The first paper focuses on the development of a new downsampling package that utilizes a probabilistic hybrid modular structure for multisite and multivariable correction/constructed analogues with quantile mapping reordering, or BCCAQ, which is now available as a configurable package capable of running on super computers and laptops alike.

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**SUGGESTED READINGS**