Future Projections of Precipitation for Alaska Infrastructure

NCHRP project led by Scenarios Network for Alaska and Arctic Planning, International Arctic Research Center,

University of Alaska, Fairbanks, with Neptune and Company, Inc. April 2021

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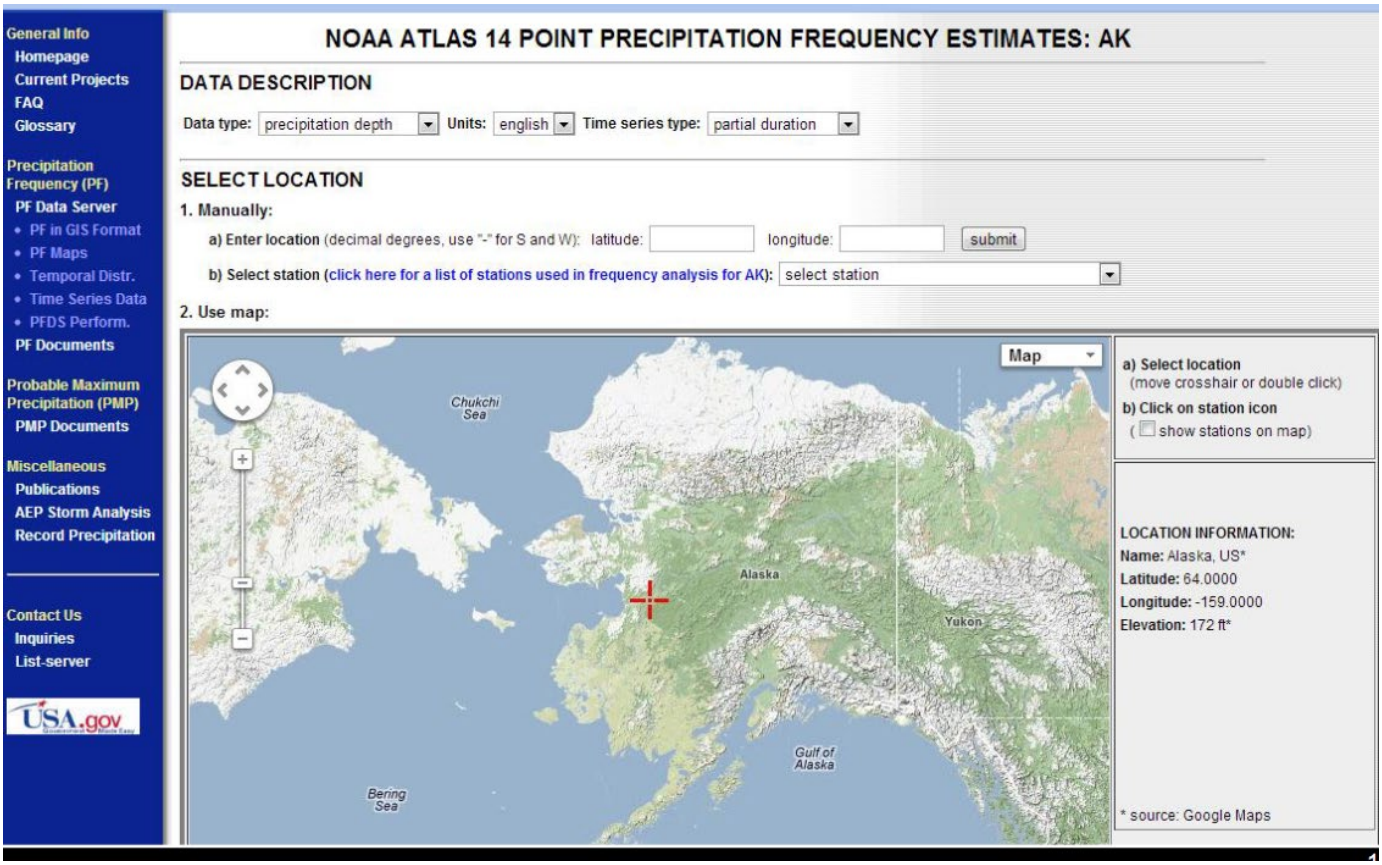
The goal of this project was to use best available climate change models and data to create more accurate projections of the severity and frequency of extreme precipitation events in Alaska. Results from this study allows DOT&PF to customize infrastructure design to better handle the projected future precipitation levels.

The benefits include:

- Bring methods for engineering and design in-line to comply with Federal Highway Administration recommendations
- Improve cost efficiency and reduce long-term risk of structural failure



In addition, all data can be accessed directly for more technical uses via an online data portal at http://ckan.snap.uaf.edu/dataset/annual-maximum-precipitation-projections-for-alaska.

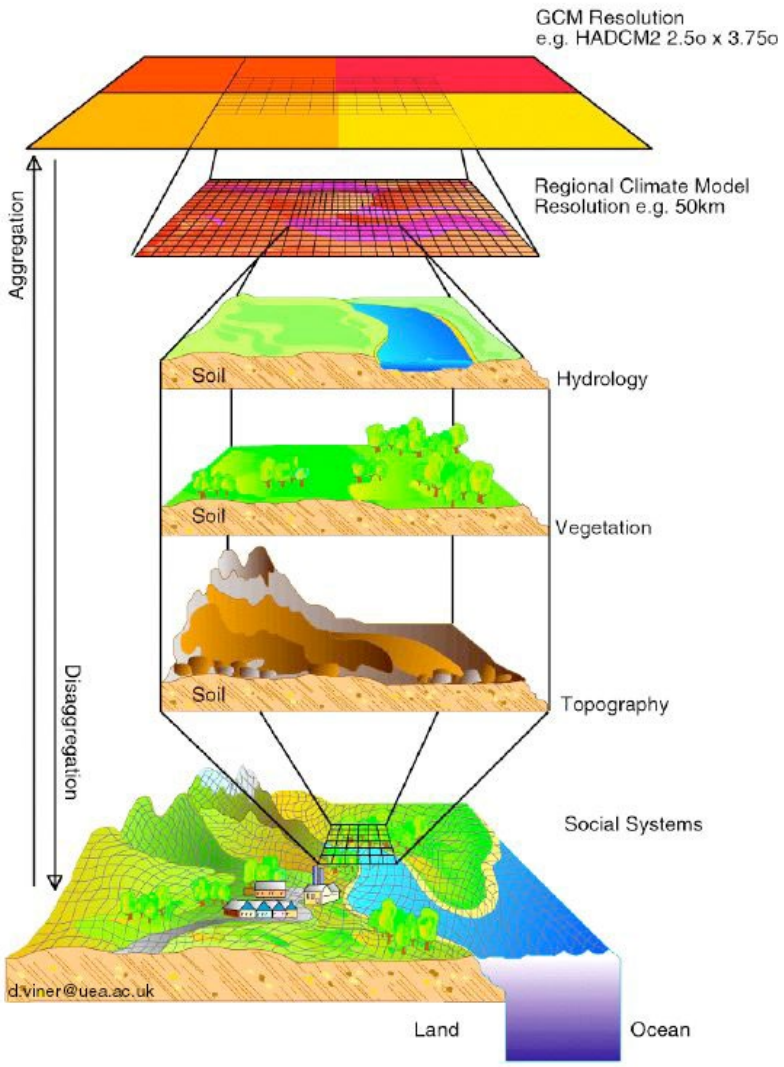
- The online tool is designed for engineers, but is accessible to anyone
- It offers an opportunity to explore projections for your own community or area

- This tool and other SNAP tools can be introduced to others in your community or workplace

The new online interface provides results:

- In precipitation intervals from 1 to 1000 years
- Durations from 5 minutes to 60 days
- Mean values with confidence ranges for each combination of precipitation duration and return interval

Many processes were needed to capture all the information and make it useful. Downscaling specifically took historical macro data and applied regional factors to further drill down to calibrate the model for local impacts



and predictions.

Figure 1: Data Downscaling http://consulclima.co.uk/img/downscaling.jpg

A project overview can be found at https://uaf-snap.org/project/future-projections-of-precipitation-foralaska-infrastructure/.

From this introductory page, the results are readily linked to a user-friendly interface at https://snap.uaf.edu/tools/future-alaska-precip which minimizes the complexities of multiple projections of future conditions and simplifies data access to end users.