

## **River and Flood Forecasting for the Kenai River**

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The Kenai River at Soldotna drains about 3140 km<sup>2</sup> of the Kenai Mountains of the Chugach Range in southcentral Alaska. Annual estimates of precipitation in this area range from 40 - 50 cm in the Kenai flats to 250 - 300 cm or more in the Kenai Mountains. Significant glacial contributions affect flows in the Snow, Trail, and Skilak Rivers, which are tributaries to the Kenai River. The Alaska Pacific River Forecast Center (APRFC) of the National Weather Service (NWS) implemented a hydrologic model of the the Kenai River Basin as a result of the September 1995 flood. Inputs to the model include hourly and daily precipitation, temperature, and river stage from various point locations on the Kenai Peninsula. The model is used to provide daily forecasts three days out into the future, and to provide flood peak and timing information for NWS flood watch and flood warnings to the public. The model is a lumped, conceptual model which has various components. The most important of these components are the snow model, which is a temperature index model, and the soil moisture accounting model. Recently, an additional component has been added to better capture the response of glacial melt, particularly in the spring and fall months. This paper will focus on the Kenai River from the point of view of real-time hydrologic forecasting. It will detail the sparse data, complex hydrology, and a relatively short historical data record (from which to calibrate the parameters of the hydrologic model). These factors combine to make forecasting a challenging task.

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