

Comparison of point and gridded data sources for use in hydroclimatic modeling of the Khangai Mountain region, Mongolia

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Abstract. The Khangai Mountain region of Mongolia is the source of water for several river systems. These river systems provide critical water supplies to nomadic pastoralists in the region and to downstream population centers. Changing climate conditions, especially warming trends, have been documented in Mongolia with resultant concerns over increasing desertification and impacts to water availability. Previous analyses with station-based data showed statistically significant decreasing streamflow and precipitation trends on the northern side of the Khangai range, but no statistically significant changes were documented on the southern side of the mountains. Observational climate records in Mongolia are sparse; distances between stations are often more than 100 kilometers, and periods of record are short, often less than 30 years. Some data are only available from government data sources. Gridded products are increasingly used with hydrologic models; but in the case of Mongolia, may not be constructed from government data sources, or may only be available at coarse resolutions. A comparison of several commonly available gridded meteorological/climate datasets and government-sourced station data was conducted. Standard statistics such as correlation coefficients and error/bias calculations were used to compare the various datasets to determine the most appropriate datasets for use in hydroclimatic modeling.