
MONTANA ELECTRONIC PRECIPITATION MAP

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A new average annual precipitation map (AAP) has been developed for Montana using GIS techniques including universal Kriging and elevation dependent linear regression. The map can be updated with new base periods or used for different parameters. The current map

uses the 1981-2010 AAP base period and universal Kriging. Results were compared to hand-drawn maps to assure appropriate location of isohyets. Stations adjacent to Montana in Idaho, Wyoming, North Dakota, South Dakota, Alberta, and British Columbia were used to assure compatibility along the border and provide the capability to develop a comparable map for drainages flowing into Montana. Isohyetal lines were set at 2-in increments < 20 in AAP and 10-in increments > 20 in. Approximately 1400 stations were used for analysis of which ~ 1100 were in Montana and 300 in areas adjacent to Montana. AAP was estimated at snow courses using correlation between April 1 snow water equivalent and AAP from SNOTEL stations in their area. NWS Climatological stations and NRCS SNOTEL stations provided majority of locations having current AAP. Data from an old NWS storage precipitation gage network, NRCS storage gages, and RAWS stations were also incorporated as well as a few stations from individuals, USGS, USDA Forest Service, and others. To assure that precipitation at elevations above and below the data sites was applied correctly, synthetic points were developed using linear elevation-precipitation relationships from nearby measured sites. Maps will be available through Montana DEQ or Montana NRIS web sites electronically.