## Ecological question

Does temperature, a known contributor of avalanche activity, have an effect on Coastal Alaskan Mountain Goat (Oreamnos americanus) mortality in avalanche related incidents?

## Data sources

Over a period of 17 years, 421 individual mountain goats were tracked to determine their presence in avalanche terrain regions, and whether or not an avalanche occurrence caused their death at both an individual and population level. Using the researchers tagging systems and GPS monitoring, they were able to determine each goats approximate age and exact death date. This data was collected by various wildlife researchers from university all across the state of Alaska in a 2024 published data set entitled “Long-term individual-based records of mountain goat mortality and terrain use in relation to avalanches in coastal Alaska during 2005-2022”.

* White, Kevin; Hood, Eran; Wolken, Gabriel et al. (2024). Long-term individual-based records of mountain goat mortality and terrain use in relation to avalanches in coastal Alaska during 2005-2022 [Dataset]. Dryad. <https://doi.org/10.5061/dryad.xsj3tx9ms>

Time series data set obtained from the Alaskan Climate Research Center, an organization under The University of Alaska Fairbanks, collecting temperature, precipitation, snowfall, and snow depth from 1941 to the present. Only mean annual temperature at the Juneau will be used in this correlational study, as this is the region at which the Mountain goats were studied.

* <https://akclimate.org/data/time-series-data/>

## Scripting and statistical methods

I intend on comparing these two data sets by first creating a ratio of the amount of mountain goats dead caused by avalanches over the amount of goats alive. This ratio will then be paired against a ratio of temperature over time in a merged data frame, combining these two data sets with the aspect of time being what connects them together. This will be plotted on a line graph to best create a tend line to analyze the relationship between temperature and goat mortality. Example below. After this I will test these results on an AIC index where I will then hope to see a significant relationship between temperature and mountain goat morality.

A graph with handwritten text

Description automatically generated