Examining the Relationship Between Heavy Precipitation and Acres Burned

- May 1 – August 31 is considered the fire season in Alaska.
- Summertime rain is mostly convective in nature, rather than stratiform.
- Heavy rain is even more likely to be convective and may be associated with lightning.
- Is there any correlation between instances of heavy rain and acres burned?
- No significant correlation (positive or negative) was found between occurrences of $\geq 0.15$ inches of precipitation in 1 hour at a centrally located ASOS station and acres burned in either the Fairbanks or Delta Fire Protection Areas since 2004.
- Next step: Incorporate Remote Automated Weather Stations (RAWS) to analyze changes in precipitation with elevation in relation to fire.
- Additionally, there is no long term trend in days with greater than 0.3” of rainfall at these sites. These days are critical to lowering or resetting the Fine Fuel Moisture Code (FFMC).

Incorporating Lightning

- A future step will be to analyze homogenized lightning data as verification for both short term and long term weather and climate models.
- Additionally, lightning during firebreaks will be examined in relation to other modeled weather parameters.

Other Variables to be Examined

- Real-Time Mesoscale Analysis (RTMA) during periods of rapid fire outbreaks.
- Can we identify certain patterns in modeled weather parameters beyond what is included in the Canadian FWI scale to predict fire outbreaks?
- Can we identify synoptic scale patterns that produce lightning?
- Modeled Lifted Indices (LI) for summer 2020. Little instability is required for convection in Alaska relative to the lower 48. Can we identify a criteria for NWS forecasters to use in a tool when forecasting Lightning Activity Level (LAL)?
- Downscaled 1km resolution Alaska WRF-ERA.

Summary

- No correlation between heavy or likely convective precipitation and fire statistics yet, although the investigation is not complete.
- Precipitation will be examined in relation to fire ignitions and acres burned, as well as other weather parameters including lightning and those included in reanalysis and model data.

References

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- Alaska Climate Science Center.

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