EXTREME WEATHER EVENTS ON THE LAST FRONTIER: METEOROLOGICAL ANALYSES AND SOCIETAL IMPACTS

Lauren Zuromski
Florida State University
Meteorology

NOAA Goal: Mitigation and adaptation efforts supported by sustained, reliable, and timely climate services.

NWS
Richard Thoman

Dr. John Walsh, International Arctic Research Center
Motivation

- NWS lacks assessment of high-impact events
- Goals:
  - Enhance state and local responses
  - Improve forecasts
  - Inform policy makers
Methods for Researching Six High-Impact Alaskan Events

- 6-hrly NCEP/NCAR composites
  - NCEP: National Centers for Atmospheric Predictions
  - NCAR: National Center for Atmospheric Research

- 3-hrly NARR composites
  - NARR: North American Regional Reanalysis

- NCDC’s Storm Events Database
  - NCDC: National Climactic Data Center

- Newspaper articles on microfilm
Nov. 1974 Bering Sea Storm: Nome
Nov. 1974 Bering Sea Storm: Nome

- 970mb
- 70mph winds
- 10ft waves
Nov. 1974 Bering Sea Storm: Nome

- $15M in damage
- All 80 families in King Island lost their homes
- $90K in Red Cross assistance

Photo from the Daily News-Miner, 1974
Nov. 1984 Southeast Coastal Storm: Juneau
Nov. 1984 Southeast Coastal Storm: Juneau

- Deepened by 10mb in 6hrs
- Recorded low of 955mb
- Record-breaking 92mph gusts
Nov. 1984 Southeast Coastal Storm: Juneau

- $2.4M in damage for Juneau
  - Downed trees, broken power lines, destroyed roads, overturned planes, damaged harbors, sunken boats
- $1M in damage for Tenakee Springs
  - 15 of village’s 50 homes destroyed

Photo from the Juneau Empire, 1984
Jan. 1989 Cold Snap: The Interior
Jan. 1989 Cold Snap: The Interior

-76F in Tanana on 1/27
1078.6mb in Northway on 1/31
Warmer than -40F only one day out of a three-week period in Fairbanks
Jan. 1989 Cold Snap: The Interior

- Fuel shortages
- Congealed heating fuel
- Cars unable to start
- Scattered telephone outages
- Frozen water and sewage lines
- Non-delivery of supplies to villages

Photo from the Daily News-Miner, 1989
Jun. 1996 Miller’s Reach Fire
Jun. 1996 Miller’s Reach Fire

- 40mph gusts spread fire on 6/3
- In 4hrs, fire grew 20,000 acres on 6/5
- 37,000 total acres burned
Jun. 1996 Miller’s Reach Fire

- 1,300 firefighters
- 380 houses and buildings destroyed
- $10M in damage
- $58.8M in avoided damage
- 1,300 firefighters

Photo by Anne Raupe from the Anchorage Daily News, 1996
Jan. 2005 Arctic Storm: Kaktovik
Jan. 2005 Arctic Storm: Kaktovik

- 980mb
- -60Fs wind chills
- 35—50mph winds
- 10—20ft snowdrifts
Jan. 2005 Arctic Storm: Kaktovik

- $6.7M disaster
- 600lbs of supplies flown in
  - Food
  - Propane
  - Generators

- Series of 14 storms
- Centers as low as 950mb
- 75in snow above average in Cordova

- Collapsed roofs, crashed cars, power outages
- 70 Alaska National Guard personnel
- $35M–$40M for 24-hr snow removal
- $775K spent on relief efforts

Photo by Carven Scott
Looking Ahead

- More events
  - River floods
  - Ice fog
- Present findings as a webinar for the Alaska Center for Climate Assessment and Policy (ACCAP)
Acknowledgements