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Why an Index for Winter Seasons?

Other indices of high-impact weather and climate events are used widely (tornadoes, hurricanes, Northeast US winter storms, drought, etc.)

- Put "badness" (or "goodness") of winter in context: •Was this the "worst" winter on record?
- •How does this winter compare to others in the past?
- •How does this winter compare to other locations?

Provide context to identify and diagnose outlier winter seasons (very mild or very severe)

- •Analyzing the Hard Winter of 1880-81
- Monitoring trends

Goals of the AWSSI

- Objectively indexes winter conditions Use as a baseline to scale subjective impacts (such as travel, commerce, schools) •Avoid attempting to quantify subjective, impact-based information
- **Uses widely available data**

 Based on daily temperature and either snow fall and snow depth or precipitation records

 Can create historical database at any site with snow and precipitation data – not just ASOS, but also COOP and other historical observations

Accumulates as season progresses •Show progress of season severity compared to average, other years

Allows comparisons

- •Season to season at one site
- •Site to site, via either full AWSSI, normalized AWSSI, or standardized anomaly of AWSSI
- Applies to multiple users and their needs

An Accumulated Winter Season Severity Index (AWSSI)

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Applications

Compare to El Niño/Southern Oscillation (ENSO), North Atlantic Oscillation (NAO), Arctic Oscillation (AO), other teleconnection patterns for relationships.

•Example: Correlation between AWSSI and both ENSO

•Little/no relationship to the Oceanic Niño Index (ONI). •Weak negative correlation to NAO, possibly indicating negative NAO correlates to higher AWSSI and positive **NAO correlates to lower AWSSI.**



Compare AWSSI to impact-based factors, such as costs of road maintenance, number of "snow days" for schools, etc.

Limitations

Does not directly account for winds (wind chill, blowing) snow), freezing rain, or mixed precipitation

Thresholds were set with impact criteria in mind, but are

Ongoing Enhancements

Index using precipitation data to estimate snowfall and snow depth in the absence of snow measurements is in

•Allows indexing historical sites prior to snow

Run for several more sites, including colder and warmer

•Show progress of season severity compared to average,

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