

CoCoRaHS Condition Monitoring Scale Bar Analysis

Condition Scale Bar <small>More information on the scale bar</small> Clear Scale Bar						
Severely Dry	Moderately Dry	Mildly Dry	Near Normal	Mildly Wet	Moderately Wet	Severely Wet
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

One question potential users of condition monitoring reports often ask is how well observations match with objective drought indices. To help answer this question, Rebecca Ward, Extension Climatologist with the State Climate Office of North Carolina, completed an assessment to compare CoCoRaHS observer’s scale bar selections with two objective drought indices, the Standardized Precipitation Index (SPI) and the Standardized Precipitation-Evapotranspiration Index (SPEI).

The analysis was completed for the study period, October 1, 2016 to October 10, 2017 (data through 9am EDT on the ending date). SPI and SPEI were obtained for the grid points closest to each station for timescales of 1, 2, 3, 6, 9, and 12 months.

- All instances where a reporter did not select a scale bar value were removed (31 reports).
- In total, there are 2,231 reports from 288 observers.
- Of these observers,
 - 106 submitted one report only
 - 46 submitted only two reports
 - 23 submitted only 3 reports
 - 82 observers submitted 6 or more reports

Guidance for observers instructs them to submit weekly. The remaining 82 observers were subset to those who had submitted at least 27 reports (or for approximately half of the weeks within the study period) *and* who had an average reporting interval between 5 and 9 days (7 days ±2). This resulted in a list of 17 observers, (5 in SC and 12 in NC). Combined, these 17 observers account for 36% of all submitted reports for the study period.

Condition Monitoring Scale Bar Correlations with the Standardized Precipitation Index & Standardized Precipitation-Evapotranspiration Index								
	All 288 Observers				Subset of 17 “Consistent” Observers			
	SPI-CM		SPEI-CM		SPI-CM		SPEI-CM	
Duration	Pearson	Spearman	Pearson	Spearman	Pearson	Spearman	Pearson	Spearman
1	0.52	0.53	0.56	0.55	0.44	0.47	0.48	0.48
2	0.44	0.44	0.46	0.45	0.39	0.38	0.40	0.39
3	0.38	0.38	0.39	0.37	0.37	0.35	0.37	0.35
6	0.33	0.31	0.33	0.32	0.28	0.25	0.28	0.25
9	0.39	0.37	0.39	0.37	0.34	0.30	0.34	0.31
12	0.29	0.29	0.29	0.29	0.30	0.28	0.30	0.29

For the whole set of observers, correlations are slightly higher than those for the smaller set of “consistent” observers. Overall, observer scale bar selections correlate more strongly with shorter-term drought index durations, though there are cases for individual observers where this is not the case (see case study observer pages below). Additionally, while SPI and SPEI are similarly correlated with condition monitoring scale bar selections, SPEI has a slightly higher correlation, which may indicate the role of temperature in observers’ reporting.