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Extension Agronomy

eUpdate

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These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Steve Watson, 785-532-7105 swatson@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Rainfall return rates: Historic recent precipitation amounts in south central Kansas

In the Sept. 9 issue of the Agronomy eUpdate we reported on the flooding rains that occurred in a 24-hour period ending 8 a.m. Sept. 9, 2016 at the [Haysville Mesonet station](#). Even more rain fell after that time. Just how common are the kind of heavy rainfall events such as occurred last week in south central Kansas?

The Hydrometeorological Design Studies Center, a branch of the National Oceanic and Atmospheric Administration (NOAA), has produced a document that answers that question. NOAA Atlas 14, addresses the frequency of rainfall events on time-scales ranging from 5 minutes to 60 days. Other parameters, just as the probable maximum precipitation are also available.

The 24-hour total of 7.77 inches reported from the Haysville Mesonet station falls in the 100-year return rates, while the 2-day total of 9.78 inches has a 200-year return frequency. Even with a dry start to the week, the 7-day total of 10.86 falls as a 100-year event. The 30-day total of 16.92 inches has a 100-year return frequency as well. The table below shows the recurrence intervals, with the recent events highlighted:

**POINT PRECIPITATION FREQUENCY ESTIMATES for HAYSVILLE, KS
WITH 90% CONFIDENCE INTERVALS AND SUPPLEMENTARY INFORMATION
NOAA Atlas 14, Volume 8, Version 2**

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
60-min	1.38	1.58	1.94	2.24	2.68	3.03	3.39	3.77	4.29	4.69
	(1.19)	(1.37)	(1.67)	(1.92)	(2.23)	(2.46)	(2.66)	(2.84)	(3.11)	(3.32)
2-hr	1.61	1.86	2.28	2.65	3.27	3.74	4.28	4.88	5.69	6.31
	1.68	1.94	2.39	2.79	3.38	3.86	4.37	4.91	5.67	6.28
3-hr	1.96	2.26	2.79	3.27	4.12	4.76	5.50	6.34	7.50	8.38
	1.86	2.15	2.67	3.15	3.86	4.46	5.11	5.8	6.79	7.59
6-hr	2.15	2.50	3.11	3.68	4.71	5.50	6.43	7.48	8.97	10.1
	2.18	2.53	3.17	3.77	4.67	5.43	6.25	7.14	8.41	9.45
	(1.91)	(2.22)	(2.77)	(3.27)	(3.97)	(4.49)	(5.00)	(5.50)	(6.24)	(6.79)

	2.51)	2.92)	3.67)	4.37)	5.67)	6.65)	7.82)	9.16)	11.0)	12.5)
12-hr	2.52	2.95	3.7	4.38	5.39	6.22	7.11	8.06	9.4	10.5
	(2.22)	(2.60)	(3.25)	(3.82)	(4.59)	(5.17)	(5.72)	(6.23)	(7.00)	(7.59)
	2.88)	3.38)	4.25)	5.05)	6.47)	7.55)	8.81)	10.2)	12.2)	13.7)
24-hr	2.9	3.39	4.24	4.98	6.05	6.92	7.83	8.78	10.1	11.1
	(2.56)	(3.00)	(3.74)	(4.37)	(5.17)	(5.77)	(6.32)	(6.82)	(7.57)	(8.13)
	3.29)	3.86)	4.83)	5.70)	7.18)	8.30)	9.60)	11.0)	13.0)	14.5)
2-day	3.32	3.87	4.8	5.6	6.74	7.66	8.61	9.6	11	12
	(2.95)	(3.44)	(4.25)	(4.94)	(5.78)	(6.42)	(6.99)	(7.50)	(8.25)	(8.82)
	3.74)	4.37)	5.43)	6.36)	7.92)	9.11)	10.5)	12.0)	14.0)	15.6)
7-day	4.54	5.24	6.39	7.36	8.71	9.77	10.8	11.9	13.4	14.5
	(4.08)	(4.71)	(5.73)	(6.56)	(7.53)	(8.26)	(8.88)	(9.41)	(10.2)	(10.8)
	5.05)	5.84)	7.14)	8.26)	10.1)	11.4)	13.0)	14.6)	16.8)	18.5)
30-day	8.33	9.4	11.1	12.5	14.3	15.7	17	18.3	19.9	21.1
	(7.58)	(8.54)	(10.1)	(11.3)	(12.5)	(13.4)	(14.1)	(14.6)	(15.4)	(15.9)
	9.13)	10.3)	12.2)	13.8)	16.2)	18.0)	19.9)	22.0)	24.6)	26.6)

The full atlas, with access to other locations, can be found online at
<http://www.nws.noaa.gov/oh/hdsc/index.html>

Additional precipitation maps for Kansas can be found on the Kansas Climate website at:
<http://climate.k-state.edu/>

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