

Kevin Stewart

From: Markus Ritsch [MLRitsch@water-and-earth.com]
Sent: Tuesday, January 04, 2011 1:58 PM
To: Barber, Dan
Cc: Kevin Stewart
Subject: FW: FMC Rainfall Analysis - 1/4" Rain in Less than 30 Min

Dan,

I've summarized the 30-min rainfall per your request, here is what I've found:

Using just the 17 rain stations in the FMC area, we had 349 days in the past 21 years that exceeded 0.236" of rain in a 30-min period, 119 days that exceeded 0.47", 28 days that exceeded 0.74", 13 days that exceeded 0.98", 4 days that exceeded 1.22" and one day that exceeded 1.50".

The largest storm occurred on May 15, 2003 with a 30-minute accumulation of 1.65 inches. We have recorded 1/2-inch rain totals as early as mid April. The large storm of May 15, 2003 was pretty early in the season as the majority of larger storms seem to occur in July.

With some additional effort, we could look at the occurrence of storms by month to see which months may be more likely to have storms exceeding a certain magnitude.

Let me know what you think of the following table and let me know if you need any additional information.

Thanks,
Markus

Year	Storms of 30-Min Duration Exceeding:					
	1/4-inch	1/2-inch	3/4-inch	1-inch	1 1/4-inch	1 1/2-inch
1990	18	14	3	2	1	0
1991	25	9	3	2	1	0
1992	18	2	0	0	0	0
1993	20	4	0	0	0	0
1994	27	8	1	0	0	0
1995	22	4	0	0	0	0
1996	23	8	2	0	0	0
1997	27	9	1	0	0	0

1998	22	9	3	1	0	0
1999	35	16	5	3	0	0
2000	12	2	0	0	0	0
2001	27	7	2	0	0	0
2002	13	3	1	0	0	0
2003	16	6	3	1	1	1
2004	13	8	0	0	0	0
2005	9	3	1	1	1	0
2006	2	1	1	1	0	0
2007	9	4	2	2	0	0
2008	1	0	0	0	0	0
2009	5	0	0	0	0	0
2010	5	2	0	0	0	0
Total Storms	349	119	28	13	4	1

Markus Ritsch, P.E.

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From: Kevin Stewart [mailto:kstewart@udfcd.org]
Sent: Thursday, December 23, 2010 11:56 AM
To: Markus Ritsch
Cc: Dan Barber
Subject: RE: FMC Rainfall Analysis - 1/4" Rain in Less than 30 Min

Please do.

From: Markus Ritsch [mailto:MLRitsch@water-and-earth.com]
Sent: Thursday, December 23, 2010 9:13 AM
To: Kevin Stewart
Subject: FW: FMC Rainfall Analysis - 1/4" Rain in Less than 30 Min

Kevin,

See Dan's email below. Should I process his request?

--Markus

Markus Ritsch, P.E.

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From: Barber, Dan [mailto:dbarber@bouldercounty.org]
Sent: Thursday, December 23, 2010 8:45 AM
To: Markus Ritsch
Subject: FW: FMC Rainfall Analysis - 1/4" Rain in Less than 30 Min

Hi Markus, can you also do this chart for me going back to 1989, on 1/2 inch and 3/4 inch of rain in an hour?

Dan Barber

-----Original Message-----

From: Kevin Stewart [mailto:kstewart@udfcd.org]
Sent: Wednesday, December 22, 2010 4:57 PM
To: Chard, Mike; Barber, Dan; Leach, Merrie; Thomas, Mike; DeLeo, Claire
Cc: Bob Jarrett; Treste' Huse; Bob Glancy
Subject: FW: FMC Rainfall Analysis - 1/4" Rain in Less than 30 Min

I requested this analysis after the discussion we had last Friday with Bob Jarrett concerning possible risks associated with 1/4-inch rains. Thought you all might be interested in the results.

Happy Holidays!

Kevin

*Kevin G. Stewart, P.E., Manager
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From: Markus Ritsch [mailto:MLRitsch@water-and-earth.com]
Sent: Wednesday, December 22, 2010 1:17 PM
To: Kevin Stewart
Cc: Markus Ritsch (mlritsch@water-and-earth.com)
Subject: RE: FMC Rainfall Analysis - 1/4" Rain in Less than 30 Min

Kevin,

It turns out that I do have the 30-min rainfall quantified down to 6 tips (0.236"). Here is what we have:

Using just the 17 rain stations in the FMC area, we had 350 days in the past 21 years that exceeded 0.236" of rain in a 30-min period.

Every year since 1989 has seen at least one day where more than 0.236" has fallen in a 30-min period. The table below shows the occurrences per year.

Let me know if you want to look at anything else.

Thanks,
Markus

	Occurrence of 30-min rain Year accumulation exceeding 0.236"
1989	1
1990	18
1991	25
1992	18
1993	20
1994	27
1995	22
1996	23
1997	27
1998	22
1999	35
2000	12
2001	27
2002	13
2003	16
2004	13
2005	9
2006	2

	Occurrence of 30-min rain Year accumulation exceeding 0.236"
2007	9
2008	1
2009	5
2010	5

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