Problem: *Gage Catch Deficiency from NWS Quad Cities Web Site*

Statement:

Use the gage catch deficiency curves (Figure 4.16 from Handout) to correct the gage measurements (i.e., estimate the "true catch") for the Iowa City station. Find the corrected precipitation for selected days with precipitation in January 2019.

To obtain the weather data for this period, go to the National Weather Service Quad Cities Climate page, select the **1. Product** Preliminary Monthly Climate Data (CF6), the **2. Location** Iowa City, and **3. Timeframe** as Archved Data for January 2019. The precipitation depth (water equivalent in inches) is shown in column 7 (labeled "wtr" --- the "T" stands for a trace, or less than 0.01 inches, which is negligible), and the average daily wind speed (in mph) is shown in column 10 (labeled "avg"). Typically you can determine whether the precipitation was snow by looking at column 8 (but use the water equivalent in your calculation), but these data are often missing. For the calculations, you may assume that the gage is **unshielded**.

For **rain** event on 7 January, compute the following:

a. List the precipitation (in inches) and average wind speed (in mph)
b. Compute the gage catch deficiency (%)
c. Compute the corrected precipitation (in inches) (accounting for the gage catch deficiency)

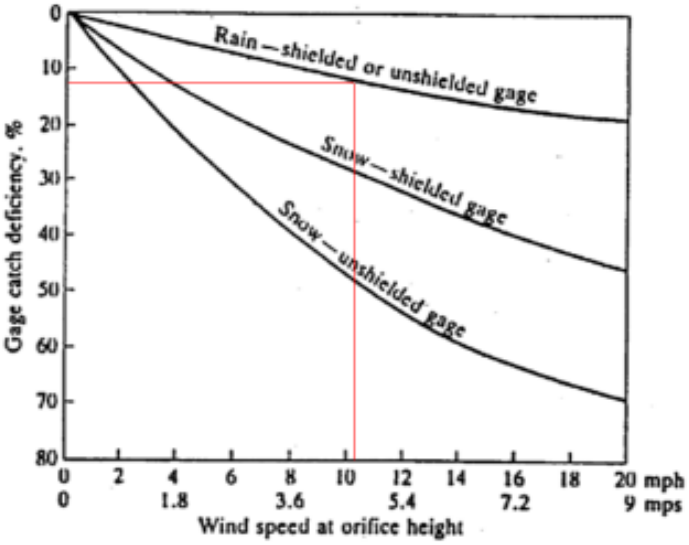
For **snow** event on 22 January, compute the following:

a. List the precipitation (in inches) and average wind speed (in mph)
b. Compute the gage catch deficiency (%)
c. Compute the corrected precipitation (in inches) (accounting for the gage catch deficiency)

Solution:

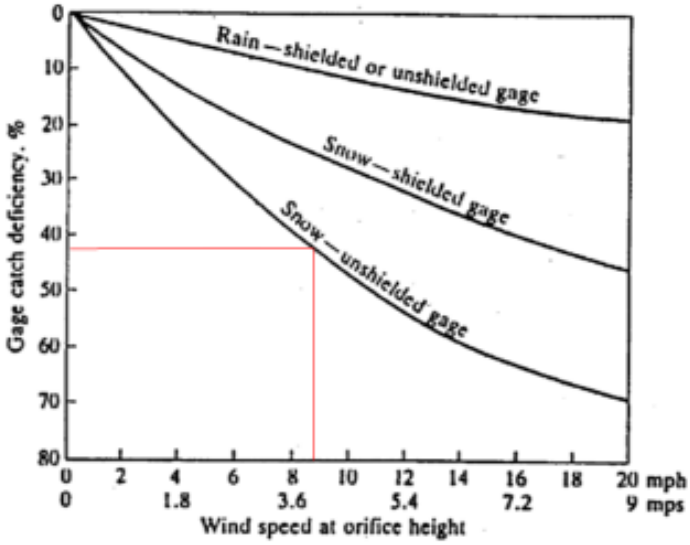
January 7, 2019

Rain:	0.40 inches
Windspeed:	10.2 mph
Catch Deficiency:	12%
Corrected Precip:	0.45 inches



January 22, 2019

Snow:	0.22 inches
Windspeed:	8.7 mph
Catch Deficiency:	42%
Corrected Precip:	0.38 inches



$$Measured = (1 - Deficiency) * Corrected$$

$$Corrected = \frac{Measured}{(1 - Deficiency)}$$

STATION: IOWA CITY IA
MONTH: JANUARY
YEAR: 2019
LATITUDE: 41 37 N
LONGITUDE: 91 33 W

TEMPERATURE IN F:							:PCPN:		SNOW:	WIND			:SUNSHINE:		SKY		:PK WND	
1	2	3	4	5	6A	6B	7	8	9	10	11	12	13	14	15	16	17	18
									12Z	AVG	MX	2MIN						
DY	MAX	MIN	AVG	DEP	HDD	CDD	WTR	SNW	DPTH	SPD	SPD	DIR	MIN	PSBL	S-S	WX	SPD	DR
1	33	21	27	5	38	0	0.00	M	M	8.5	17	340	M	M	10		23	340
2	30	19	25	3	40	0	0.00	M	M	7.5	20	240	M	M	6	18	26	240
3	46	20	33	11	32	0	0.00	M	M	5.5	16	210	M	M	0		22	210
4	50	22	36	14	29	0	0.00	M	M	2.8	10	270	M	M	0		13	280
5	54	28	41	19	24	0	0.00	M	M	3.9	14	260	M	M	0		16	260
6	42	28	35	13	30	0	0.06	M	M	10.2	23	120	M	M	2	1	31	120
7	53	32	43	21	22	0	0.40	M	M	10.2	23	290	M	M	6	1	33	280
8	46	25	36	14	29	0	0.00	M	M	16.0	33	290	M	M	2	12	50	290
9	25	16	21	-1	44	0	0.00	M	M	16.4	30	310	M	M	1		45	300
10	29	16	23	1	42	0	0.00	M	M	5.2	10	150	M	M	0		14	350
11	33	20	27	5	38	0	0.00	M	M	8.1	14	140	M	M	8		18	150
12	31	29	30	8	35	0	0.26	M	M	11.5	20	50	M	M	10	1	27	50
13	33	19	26	4	39	0	T	M	M	8.1	17	30	M	M	10	1	24	30
14	28	16	22	0	43	0	0.00	M	M	6.6	14	260	M	M	9	1	18	260
15	35	27	31	9	34	0	0.00	M	M	8.3	15	280	M	M	10	1	22	300
16	35	28	32	10	33	0	0.00	M	M	6.9	15	340	M	M	10		23	320
17	32	26	29	7	36	0	0.00	M	M	7.2	15	320	M	M	10	18	18	330
18	29	22	26	4	39	0	0.10	M	M	10.4	22	30	M	M	10	1	31	40
19	22	2	12	-10	53	0	0.07	M	M	16.0	25	10	M	M	5	1	35	30
20	15	1	8	-14	57	0	T	M	M	6.4	12	20	M	M	4		17	20
21	17	0	9	-13	56	0	0.00	M	M	11.8	25	120	M	M	3		37	110
22	31	16	24	2	41	0	0.22	M	M	8.7	17	350	M	M	10	16	25	140
23	24	0	12	-10	53	0	0.11	M	M	10.4	20	320	M	M	5	18	26	330
24	22	-2	10	-12	55	0	T	M	M	15.2	30	310	M	M	5	189	43	300
25	8	-14	-3	-25	68	0	T	M	M	6.2	16	300	M	M	4	8	23	300
26	11	-13	-1	-24	66	0	0.02	M	M	4.4	13	140	M	M	6	18	17	140
27	16	-11	3	-20	62	0	M	M	M	8.3	18	130	M	M	6	1	25	140
28	30	2	16	-7	49	0	M	M	M	15.7	30	300	M	M	9	18	43	310
SM	860	395		1187		0	1.24	M		256.4			M		161			
AV	30.7	14.1								9.2	FASTST		M	M	6		MAX(MPH)	
									MISC ---->	# 33	290					# 50	290	