

## EASTERN REGION TECHNICAL ATTACHMENT

No. 71-6-21

June 21, 1971

A RELATIONSHIP BETWEEN SNOW ACCUMULATION AT ALBANY, N.Y.  
AND SNOW INTENSITY AS DETERMINED FROM VISIBILITY

In NOAA Technical Memorandum NWS ER-41 a relationship is presented between snow accumulation at LaGuardia, N.Y. and snow intensity as determined from visibility. This relationship is summarized as follows:

Snow Intensity	Visibility	Average Hourly Snow Accumulation
Light	$\geq$ 5/8 mile	0.2 inches
Moderate	$\geq$ 5/16 mile	1.2 inches
	< 5/8 mile	
Heavy	< 5/16 mile	1.6 inches

Mr. Elliott Barske, Jr. WSFO Albany, soon after receiving Technical Memorandum NWS-ER-41, applied the results presented to snow storms which occurred at the Albany County Airport during the season 1970-71. Only storms which produced at least one inch snow accumulation and did not occur during periods of above-freezing temperatures were considered. Also, storms in which an appreciable amount of sleet, freezing rain, or rain occurred were not considered. Results for each of 19 qualifying storms are indicated in the attached table.

A summary of results of snow estimation for the 19 storms is as follows:

Total estimated snow accumulation - - - - - 95.2 inches

Total measured snow accumulation - - - - - 98.1 inches

Mean absolute estimation error - - - - - 0.98 inches

Mean algebraic estimation error (bias) - - - - - 0.15 inches

Mean snow/water ratio - - - - - 11.2 to 1



The above statistics indicate that there is little bias in the snow accumulation estimates. Mr. Barske has pointed out that the mean percentage error of estimation (mean absolute estimation error divided by mean measured snow accumulation) is similar for Albany (19%) and LaGuardia (21%).

Results presented here, using independent data at Albany, N.Y., indicate the feasibility of estimating snow accumulation at this location using the relationship developed for LaGuardia, N.Y. It appears that the mean error of estimation is about 20% of measured snow accumulation at both LaGuardia and Albany, with little if any bias in the estimations. Estimates of snow accumulation with this degree of skill can be useful when this information is needed, but are not available from direct measurements.

SCIENTIFIC SERVICES DIVISION  
ERH, 6/21/71

ATTACHMENT



RELATIONSHIP BETWEEN SNOW ACCUMULATION AND SNOW INTENSITY  
AS DETERMINED FROM VISIBILITY  
ALBANY, N.Y. 1970-1971

(ERH Technical Attachment No. 71-6-21)

<u>Date</u>	<u>Snow Intensity</u>			<u>Estimated Snow</u>	<u>Measured Snow</u>	<u>Estimation Error</u>	<u>Water Equivalent</u>
	<u>S-</u>	<u>S</u>	<u>S+</u>				
	<u>Hr Min</u>	<u>Hr Min</u>	<u>Hr Min</u>				
12/8/70	9 16	0	0	1.8	1.3	+0.5	.05
12/9/70	5 03	1 12	0	2.2	2.1	+0.1	.12
12/11- 12/12/70	13 50	1 20	0	4.0	5.2	-1.2	.28
12/12- 12/13/70	24 57	1 47	0	6.8	8.7	-1.9	.50
12/16- 12/17/70	17 00	6 06	1 14	11.4	12.6	-1.2	1.49
12/22/70	10 25	2 40	0	4.8	5.1	-0.3	.41
12/23/70	4 15	0	0	0.9	1.6	-0.7	.16
12/24/70	3 50	2 15	2 15	6.5	5.6	+0.9	.43
1/1/71	5 08	4 10	0	5.2	4.4	+0.8	.46
1/13- 1/14/71	7 08	3 20	0 25	5.3	4.1	+1.2	.41
1/23/71	5 52	0 38	0	1.8	1.5	+0.3	.07
2/4- 2/5/71	3 23	0 45	0	1.4	1.4	0.0	.19
2/7- 2/8/71	3 36	3 31	2 26	8.0	10.9	-2.9	1.05
2/17/71	3 57	0 32	0 48	2.5	2.0	+0.5	.17
3/3- 3/5/71	31 47	4 56	3 30	16.9	14.8	+2.1	1.54
3/6- 3/7/71	5 33	1 10	0	2.2	2.1	+0.1	.16
3/13/71	1 49	2 27	0 46	4.1	2.7	+1.4	.17
3/19- 3/20/71	7 25	4 35	1 10	7.9	9.6	-1.7	.86
4/7/71	7 35	0	0	1.5	2.4	-0.9	.18