

Appendix C
Short List Storm Analysis Data Used for PMP Development



SUSITNA-WATANA HYDRO

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Report 14-07-REP – Appendix C v1.0

Susitna-Watana Hydroelectric Project Site-Specific Probable Maximum Precipitation Study Appendix C – Short List Storm Analyses

AEA11-022



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APPENDIX C:

SHORT STORM LIST STORM ANALYSES

Storm files were made for 13 SPAS DAD zones which comprised the short storm list (Table C.1). Applied Weather Associates (AWA) analyzed each of these storms to determine the storm representative SST for in-place maximization using the updated SST climatologies. Each storm was then transpositioned and adjusted using the OTF process as description in Section 7 and 8 of the report. The data used to analyze and develop the adjusted DAD table for each of these storms is included in this appendix so that a user is able to understand how each of the storms was adjusted and allow for the process to replicated/reproduced if required.

Table C.1. Alaska Short Storm List

Name	ST	Lat	Lon	Year	Mon	Day	Total Rainfall	Precipitation Source
DENALI NP	AK	63.038	-150.471	1955	8	22	13.75	SPAS 1272 Zone 1
MT SPURR	AK	61.346	-152.329	1958	7	25	6.62	SPAS 1273 Zone 1
LITTLE SUSITNA	AK	61.854	-149.229	1959	8	18	13.05	SPAS 1271 Zone 1
DENALI NP	AK	62.846	-150.513	1967	8	2	12.45	SPAS 1270 Zone 2
FAIRBANKS	AK	65.521	-147.329	1967	8	2	12.45	SPAS 1270 Zone 1
SUTTON	AK	61.904	-148.863	1971	8	5	11.39	SPAS 1269 Zone 1
BLACK RAPIDS	AK	63.471	-145.479	1971	8	5	12.17	SPAS 1269 Zone 2
MT GEIST	AK	63.638	-146.971	1980	7	24	5.26	SPAS 1268 Zone 2
DENALI NP	AK	62.954	-150.079	1980	7	24	7.33	SPAS 1268 Zone 1
DENALI NP	AK	62.829	-151.138	1986	10	8	11.01	SPAS 1267 Zone 1
SEWARD	AK	60.113	-149.513	1986	10	8	20.80	SPAS 1267 Zone 2
BLACK RAPIDS	AK	63.465	-145.685	2006	8	17	16.12	SPAS 1303 Zone 1
OLD TYONEK	AK	61.260	-151.860	2012	9	15	15.91	SPAS 1256 Zone 1

Denali NP, AK, SPAS 1272 Zone 1
August 22, 1955

Storm Name: SPAS 1272 Denali NP, DAD Zone 1		Storm Adjustment for Susitna-Watana	
Storm Date: 8/21-29/1955			
AWA Analysis Date: 2/19/2013			
Temporal Transposition Date 15-Aug			
	Lat Long		
Storm center location	63.04 N 150.47 W	Moisture Inflow Direction: SSW @ 700 miles	
Storm Rep SST location	53.00 N 152.00 W	Basin Elevation 3,650 feet	
Transposition SST location	NA NA	Storm Elevation 7,500 feet	
Basin location	62.84 N 147.37 W	Storm Duration 24 hours	
		Effective Barrier Height 1,483 feet	

The storm representative SST is	54.0 F	with total precipitable water above sea level of	1.02	inches.
The in-place maximum SST is	57.0 F	with total precipitable water above sea level of	1.19	inches.
The transpositioned maximum SST is	NA	with total precipitable water above sea level of	4.44	inches.
The in-place storm elevation is	7,500	which subtracts 0.67	inches of precipitable water at	54.0 F
The in-place storm elevation is	7,500	which subtracts 0.76	inches of precipitable water at	57.0 F
The transposition storm elevation at	3,650	which subtracts xx	inches of precipitable water at	NA
The moisture inflow barrier height is	1,483	which subtracts xx	inches of precipitable water at	NA

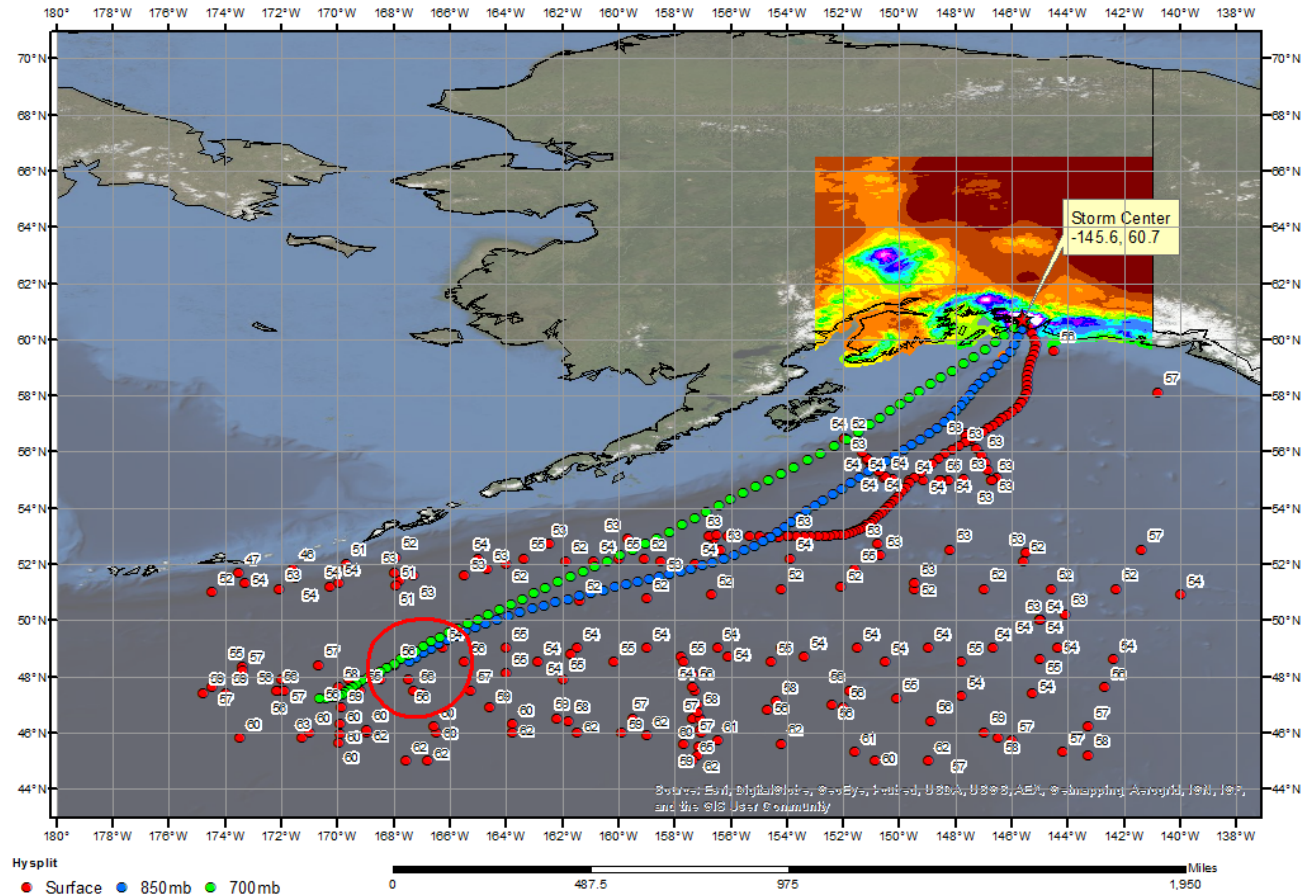
The in-place maximization factor is	1.23	Notes: Storm representative SST value was based on SST values for August 21-22, 1955 along HYSPLIT trajectory data. Values were selected in region where temperature did not vary more than a 1-degree over a large area.
The transposition/elevation factor is	#VALUE!	
The barrier adjustment factor is	#VALUE!	
The total adjustment factor is	#VALUE!	

Observed Storm Depth-Area-Duration										
	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours
10 sq miles	1.3	2.2	2.8	3.6	6.1	7.9	9.7	12.2	13.1	13.4
100 sq miles	1.3	2.1	2.8	3.5	6.0	7.7	9.5	12.1	12.9	13.1
200 sq miles	1.2	2.0	2.7	3.4	5.8	7.4	9.2	11.7	12.4	12.7
500 sq miles	1.2	1.9	2.6	3.2	5.5	7.1	8.7	11.1	11.8	12.1
1000 sq miles	1.1	1.8	2.4	3.1	5.2	6.7	7.9	10.4	11.2	11.4
2000 sq miles	1.0	1.7	2.3	2.8	4.7	6.2	7.5	9.5	10.3	10.5
5000 sq miles	0.9	1.5	1.9	2.4	4.0	4.8	6.0	7.1	7.9	8.7
10000 sq miles	0.8	1.2	1.7	2.0	3.4	4.2	5.1	5.8	6.7	7.2
20000 sq miles	0.6	0.9	1.3	1.5	2.6	3.4	4.1	4.8	5.4	5.7

Adjusted Storm Depth-Area-Duration										
	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

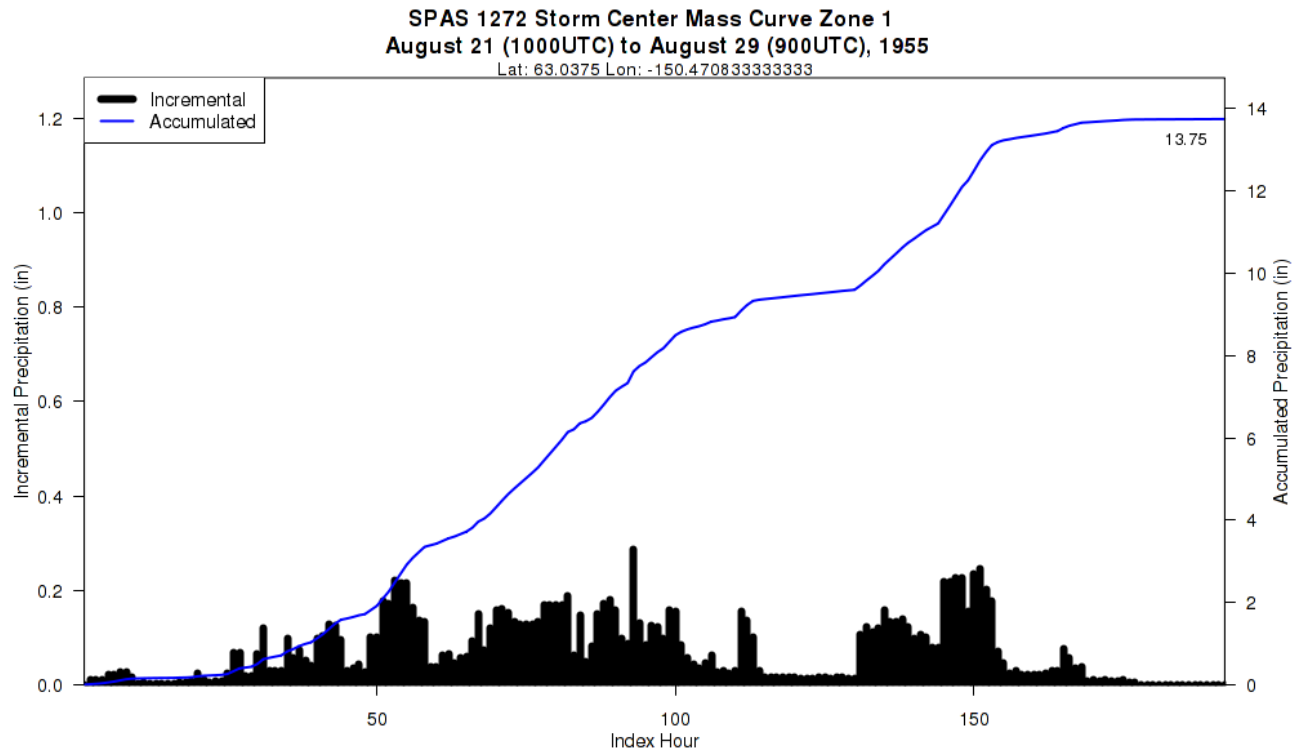
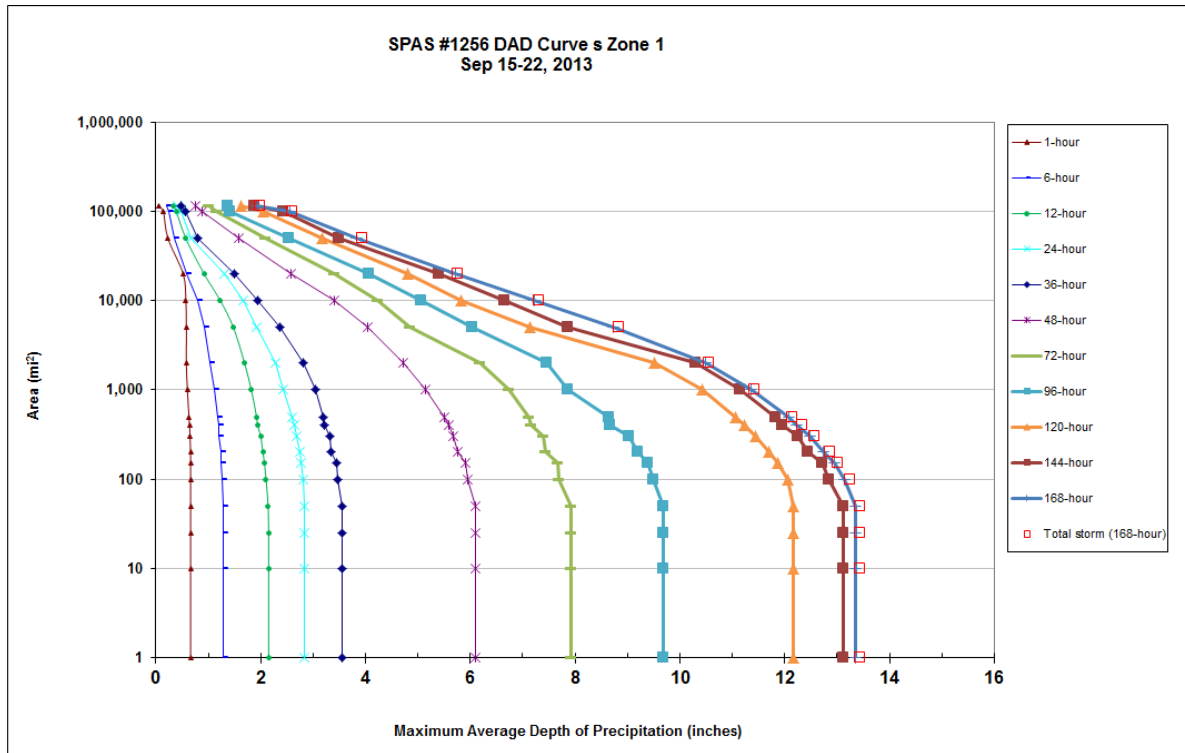
Storm or Storm Center Name	SPAS 1272 Denali NP, DAD Zone 1		
Storm Date(s)	8/21-29/1955		
Storm Type	Atmospheric River		
Storm Location	63.04 N	150.47 W	
Storm Center Elevation	7500		
Precipitation Total & Duration	13.75 inches in 168 hours -DAD Zone 1		
Storm Representative SST	54.0 F		
Storm Representative SST Location	53.00 N	152.00 W	15-Aug
In-place Maximum SST	57.0 F		
Moisture Inflow Vector	SSW @ 700		
In-place Maximization Factor	1.23		
Temporal Transposition (Date)	15-Aug		
Transposition SST Location	NA	NA	
Transposition Maximum SST	NA		
Transposition Adjustment Factor	#VALUE!		
Average Basin Elevation	3,650		
Highest Elevation in Basin	13,131		
Inflow Barrier Height	1,483		
Elevation Adjustment Factor	#VALUE!		
Total Adjustment Factor	#VALUE!		

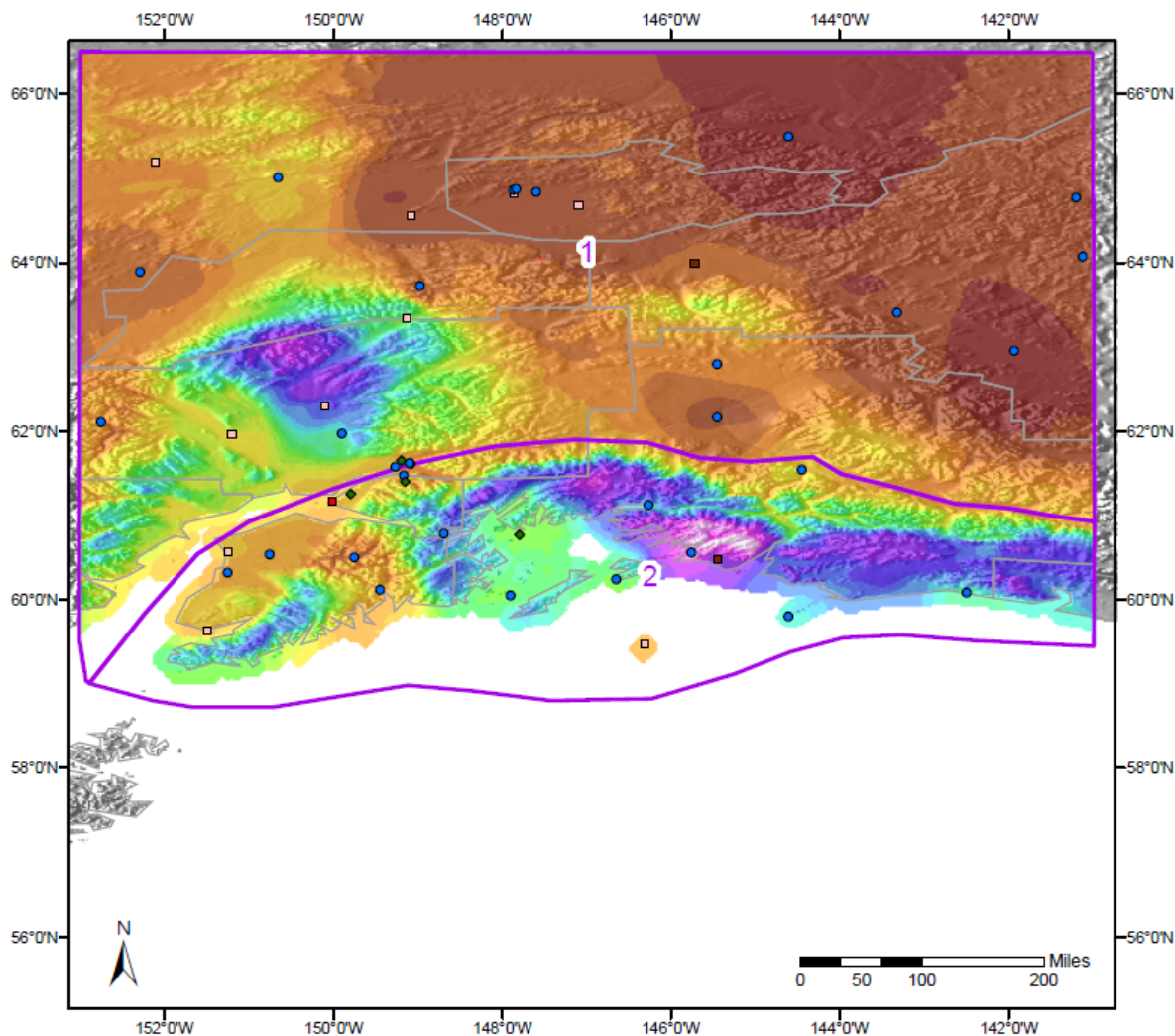
SPAS 1272 Cordova, AK Storm Analysis
August 21 - 29, 1955



Storm 1272 - Aug. 21 (1000 UTC) - Aug. 28 (0900 UTC), 1955
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

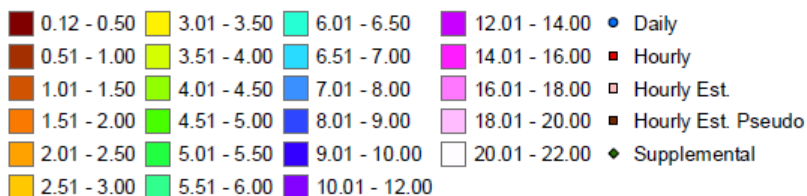
Area (mi ²)	Duration (hours)										
	1	6	12	24	36	48	72	96	120	144	168
0.2	0.71	1.32	2.18	2.94	3.63	6.27	8.14	9.92	12.48	13.42	13.67
1	0.66	1.29	2.15	2.83	3.55	6.09	7.92	9.68	12.16	13.12	13.35
10	0.66	1.29	2.15	2.83	3.55	6.09	7.92	9.68	12.16	13.12	13.35
25	0.66	1.29	2.15	2.83	3.55	6.09	7.92	9.68	12.16	13.12	13.35
50	0.66	1.29	2.14	2.83	3.55	6.09	7.92	9.68	12.16	13.12	13.35
100	0.66	1.27	2.1	2.82	3.46	5.95	7.7	9.5	12.06	12.85	13.14
150	0.66	1.25	2.07	2.78	3.44	5.9	7.67	9.39	11.86	12.71	12.94
200	0.66	1.24	2.04	2.74	3.35	5.76	7.44	9.19	11.7	12.44	12.73
300	0.65	1.21	2	2.69	3.32	5.68	7.39	9.02	11.45	12.25	12.49
400	0.64	1.19	1.94	2.65	3.22	5.6	7.15	8.66	11.23	11.95	12.22
500	0.63	1.18	1.92	2.61	3.2	5.51	7.11	8.65	11.07	11.83	12.07
1,000	0.6	1.11	1.82	2.43	3.05	5.15	6.74	7.86	10.42	11.15	11.36
2,000	0.58	1.04	1.69	2.29	2.82	4.73	6.18	7.45	9.51	10.29	10.48
5,000	0.58	0.92	1.48	1.93	2.37	4.04	4.84	6.03	7.14	7.85	8.72
10,000	0.57	0.79	1.23	1.66	1.95	3.4	4.23	5.05	5.82	6.65	7.22
20,000	0.52	0.59	0.92	1.3	1.5	2.57	3.41	4.07	4.8	5.4	5.71
50,000	0.23	0.35	0.57	0.68	0.8	1.59	2.1	2.54	3.17	3.49	3.82
100,000	0.14	0.24	0.39	0.49	0.56	0.89	1.15	1.41	2.04	2.44	2.56
116,206	0.05	0.21	0.34	0.42	0.49	0.75	1	1.37	1.62	1.87	1.95





Total Storm (192-hour) Precipitation (inches)
August 21-28, 1955
SPAS #1272

Precipitation (inches)

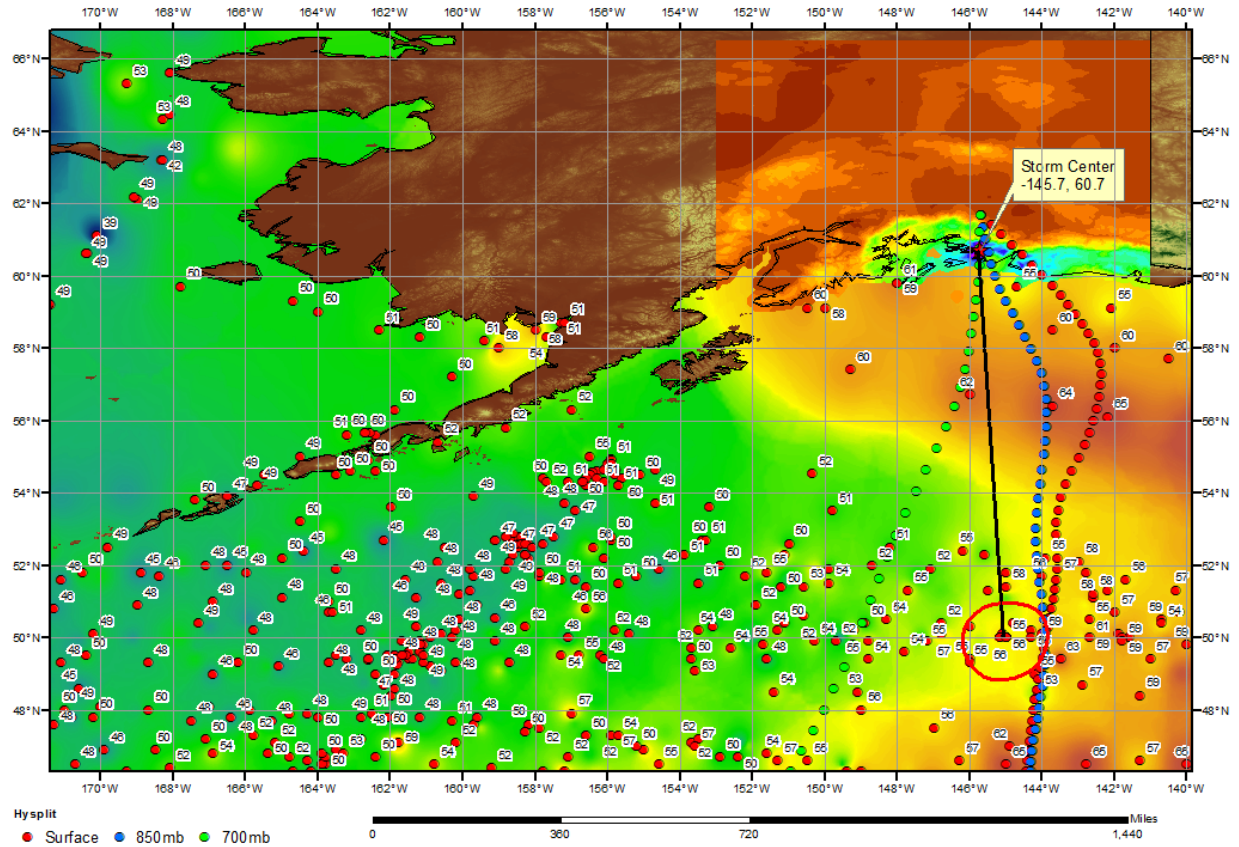


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Mt. Spurr, AK, SPAS 1273 Zone 1
July 25, 1958

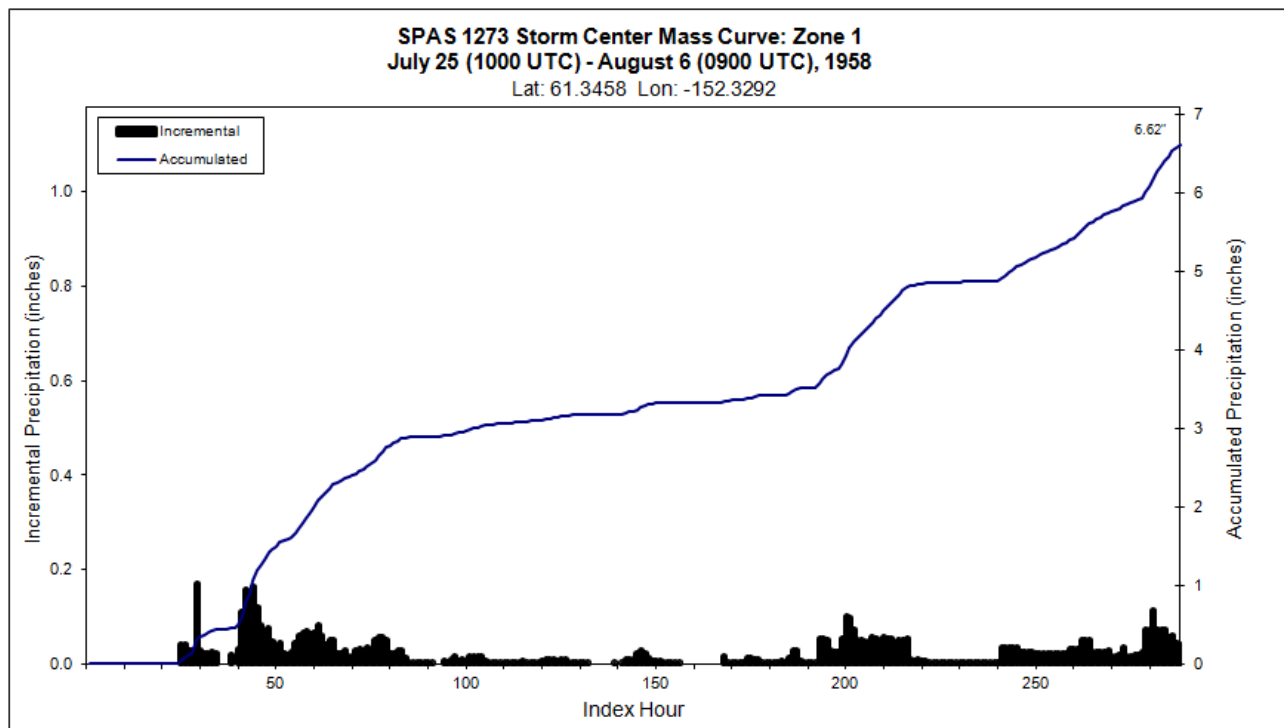
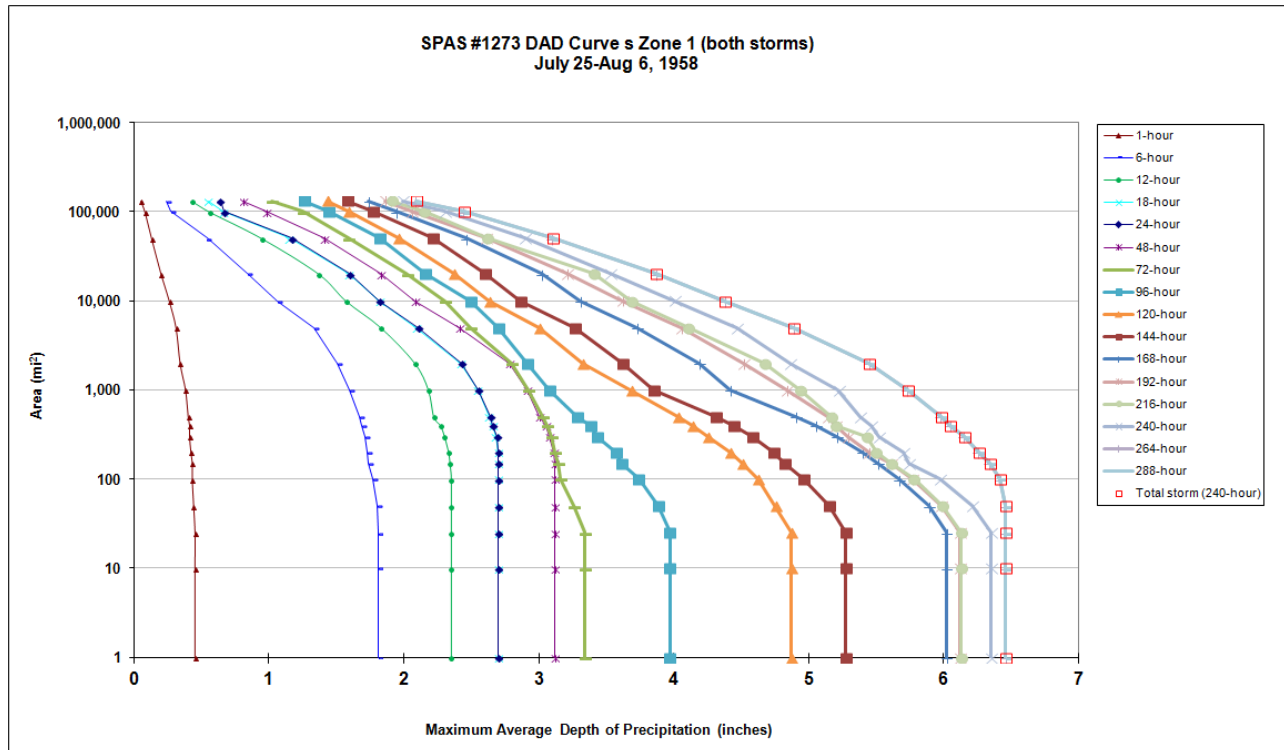
Storm Name:		SPAS 1273-AK Storm 1 and 2, Zone 1		Storm Adjustment for Susitna-Watana			
Storm Date:		July 25 - August 5, 1958					
AWA Analysis Date:		3/4/2014					
Temporal Transposition Date		15-Aug					
		Lat	Long				
Storm Center Location		61.35 N	152.33 W				
Storm Rep SST Location		50.00 N	145.00 W				
Transposition SST Location		NA	NA				
Basin Location		*	*				

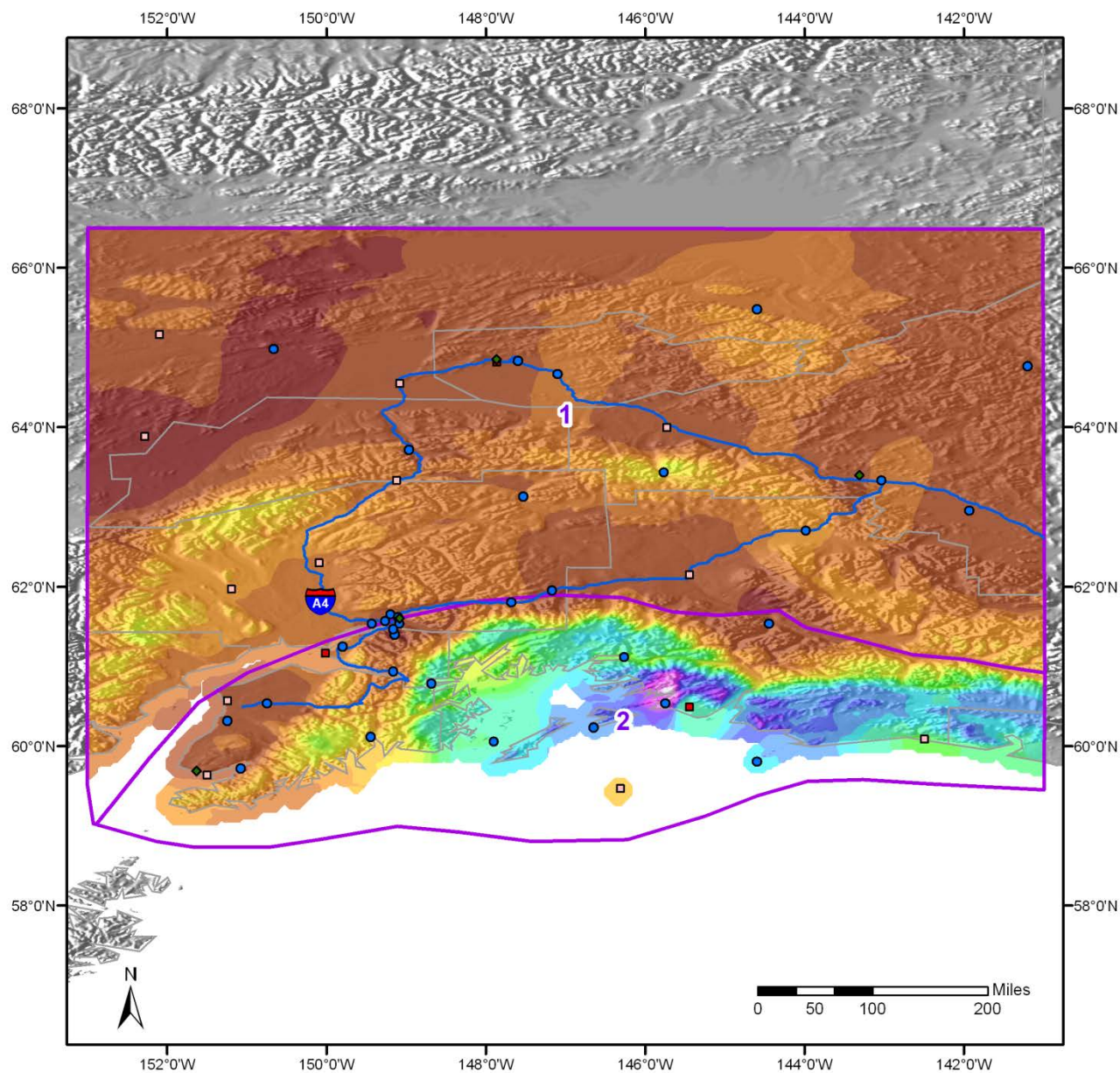
SPAS 1273 South-central AK Storm Analysis
July 26 - August 2, 1958



Storm 1273 - Jul. 25 (1000 UTC) - Aug. 6 (0900 UTC), 1958
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

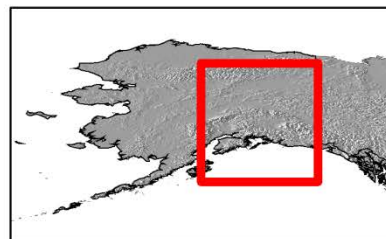
Area (mi ²)	Duration (hours)																Total
	1	6	12	18	24	48	72	96	120	144	168	192	216	240	264	288	
0.2	0.45	1.84	2.41	2.81	2.81	3.23	3.44	4.07	5.02	5.4	6.18	6.28	6.29	6.52	6.62	6.62	6.62
1	0.45	1.81	2.35	2.7	2.7	3.12	3.34	3.97	4.87	5.27	6.02	6.12	6.13	6.35	6.46	6.46	6.46
10	0.45	1.81	2.35	2.7	2.7	3.12	3.34	3.97	4.87	5.27	6.02	6.12	6.13	6.35	6.46	6.46	6.46
25	0.45	1.81	2.35	2.7	2.7	3.12	3.34	3.97	4.87	5.27	6.02	6.12	6.13	6.35	6.46	6.46	6.46
50	0.44	1.8	2.35	2.7	2.7	3.12	3.26	3.88	4.75	5.15	5.89	5.98	5.99	6.21	6.46	6.46	6.46
100	0.43	1.77	2.35	2.7	2.7	3.12	3.16	3.74	4.62	4.96	5.67	5.77	5.78	5.97	6.35	6.42	6.42
150	0.43	1.74	2.34	2.7	2.7	3.12	3.14	3.61	4.51	4.82	5.51	5.61	5.61	5.74	6.3	6.34	6.34
200	0.42	1.73	2.33	2.7	2.7	3.11	3.12	3.57	4.42	4.74	5.4	5.45	5.5	5.7	6.21	6.26	6.26
300	0.41	1.71	2.3	2.68	2.69	3.08	3.09	3.43	4.25	4.58	5.21	5.29	5.43	5.52	6.04	6.15	6.15
400	0.41	1.69	2.27	2.66	2.66	3.05	3.06	3.38	4.14	4.44	5.05	5.2	5.2	5.46	6.03	6.05	6.05
500	0.4	1.67	2.22	2.63	2.64	3	3.03	3.28	4.03	4.31	4.9	5.14	5.17	5.38	5.88	5.98	5.98
1,000	0.38	1.6	2.18	2.55	2.55	2.91	2.92	3.08	3.68	3.85	4.42	4.84	4.94	5.22	5.68	5.73	5.73
2,000	0.34	1.51	2.08	2.42	2.43	2.78	2.8	2.91	3.32	3.62	4.19	4.52	4.67	4.86	5.35	5.45	5.45
5,000	0.31	1.33	1.83	2.09	2.11	2.41	2.49	2.7	3	3.27	3.73	4.06	4.11	4.47	4.89	4.89	4.89
10,000	0.26	1.06	1.57	1.82	1.82	2.08	2.3	2.49	2.63	2.86	3.31	3.62	3.69	4.01	4.37	4.38	4.38
20,000	0.2	0.84	1.37	1.59	1.6	1.83	2.02	2.16	2.37	2.6	3.02	3.21	3.41	3.53	3.82	3.87	3.87
50,000	0.13	0.54	0.95	1.15	1.17	1.41	1.59	1.82	1.96	2.21	2.46	2.61	2.62	2.9	2.98	3.1	3.10
100,000	0.08	0.27	0.56	0.66	0.67	0.98	1.25	1.44	1.59	1.77	1.94	2.06	2.15	2.3	2.38	2.44	2.44
132,242	0.05	0.24	0.43	0.55	0.64	0.81	1.02	1.26	1.43	1.58	1.74	1.86	1.91	1.99	2.09	2.09	2.09





Total 288-hours Precipitation (inches)
SPAS #1273
July 25 1000 UTC - August 6 0900 UTC, 1958

Precipitation (inches)



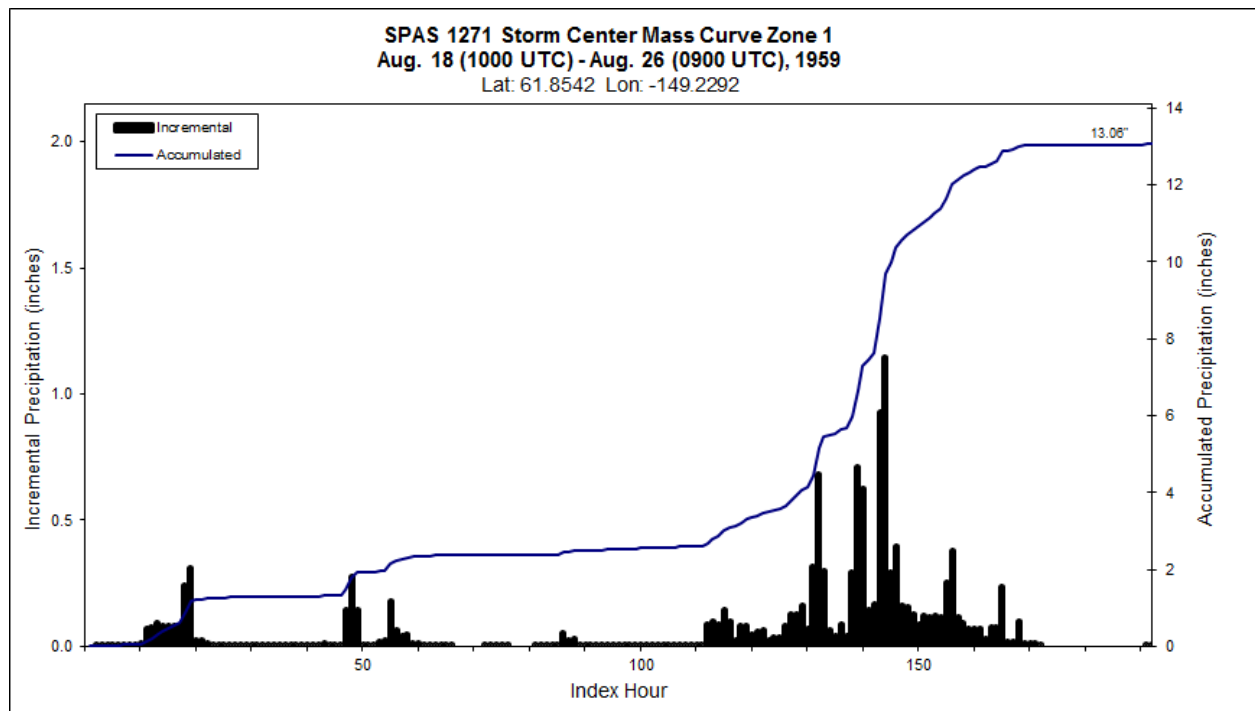
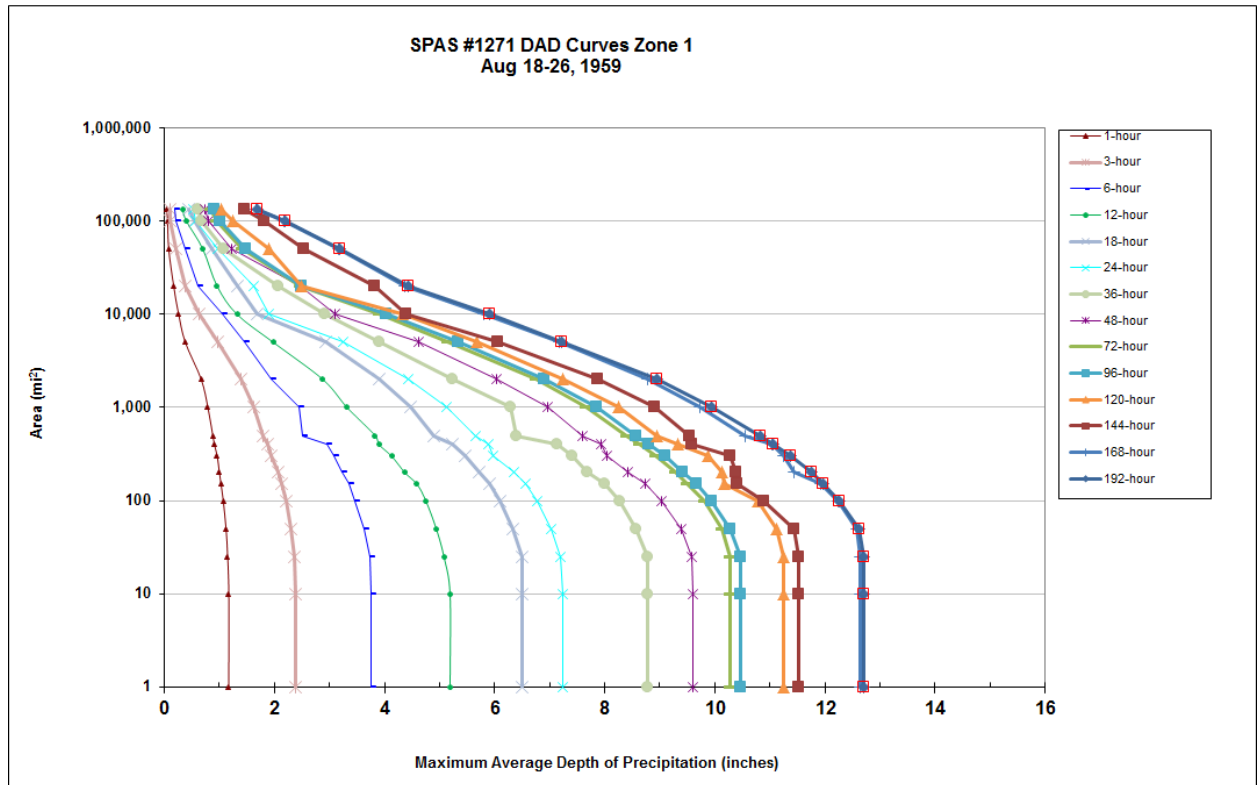
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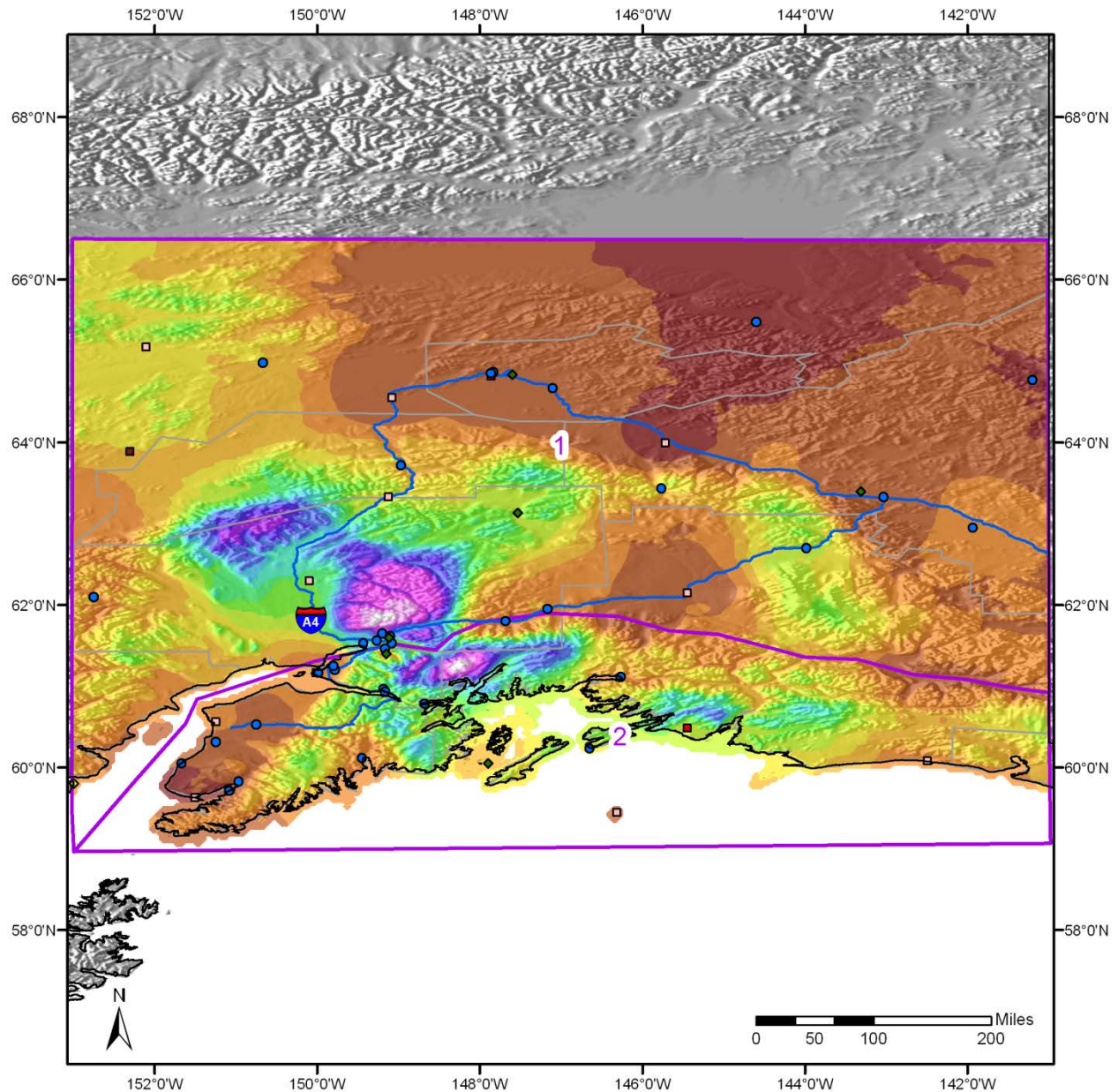
Little Susitna, AK, SPAS 1271 Zone 1
August 18, 1959

Storm Name:	Little Susitna-SPAS 1271 Zone 1		Storm Adjustment for Susitna-Watana										
Storm Date:	8/18-26/1959												
AWA Analysis Date:	3/28/2013												
Temporal Transposition Date	15-Aug												
	Lat	Long											
Storm center location	61.85 N	149.23 W											
Storm Rep SST location	52.00 N	154.00 W											
Transposition SST location	NA	NA											
Basin location	42.76 N	74.12 W											
			Moisture Inflow Direction:	SSW @ 700		miles							
			Basin Elevation	NA		feet							
			Storm Elevation	5,150		feet							
			Storm Duration	24		hours							
			Effective Barrier Height	NA		feet							
The storm representative SST is			52.0 F	with total precipitable water above sea level of				0.92		inches.			
The in-place maximum SST is			56.0 F	with total precipitable water above sea level of				1.13		inches.			
The transpositioned maximum SST is			NA	with total precipitable water above sea level of				4.44		inches.			
The in-place storm elevation is			5,150	which subtracts		0.48	inches of precipitable water at		52.0 F				
The in-place storm elevation is			5,150	which subtracts		0.56	inches of precipitable water at		56.0 F				
The transposition storm elevation at			NA	which subtracts		xx	inches of precipitable water at		NA				
The moisture inflow barrier height is			NA	which subtracts		xx	inches of precipitable water at		NA				
The in-place maximization factor is			1.30										
The transposition/ elevation factor is			#VALUE!										
The barrier adjustment factor is			#VALUE!										
The total adjustment factor is			#VALUE!										
Notes: Storm representative SST value was based on SST values for August 21-22, 1959 along the HYSPLIT trajectory data. Values were selected in region where temperature did not vary more than a 1-degree over a large area and had temperature recordings throughout the period.													
Observed Storm Depth-Area-Duration													
	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours		
10 sq miles	3.8	5.2	7.2	8.8	9.6	10.3	10.5	11.3	11.5	12.7	12.7		
100 sq miles	3.5	4.8	6.8	8.3	9.0	9.8	10.0	10.8	10.9	12.2	12.3		
200 sq miles	3.2	4.4	6.4	7.7	8.4	9.3	9.4	10.1	10.4	11.4	11.8		
500 sq miles	2.5	3.8	5.7	6.4	7.6	8.4	8.6	9.0	9.6	10.6	10.8		
1000 sq miles	2.5	3.3	5.1	6.3	7.0	7.7	7.9	8.3	8.9	9.7	9.9		
2000 sq miles	2.0	2.9	4.4	5.2	6.0	6.8	6.9	7.2	7.9	8.8	8.9		
5000 sq miles	1.5	2.0	3.3	3.9	4.6	5.2	5.3	5.7	6.1	7.2	7.2		
10000 sq miles	1.1	1.3	1.9	2.9	3.1	3.9	4.0	4.3	4.4	5.8	5.9		
20000 sq miles	0.6	1.0	1.6	2.1	2.5	2.5	2.5	2.5	3.8	4.4	4.4		
Adjusted Storm Depth-Area-Duration													
	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours		
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
Storm or Storm Center Name	Little Susitna-SPAS 1271 Zone 1												
Storm Date(s)	8/18-26/1959												
Storm Type	Series of Low Pressure Systems and Associated Storms												
Storm Location	61.85 N 149.23 W												
Storm Center Elevation	5150												
Precipitation Total & Duration	13.06 inches in 192 hours												
Storm Representative SST	52.0 F				15-Aug		15-Sep						
Storm Representative SST Location	52.00 N 154.00 W				56		55.5						
In-place Maximum SST	56.0 F												
Moisture Inflow Vector	SSW @ 700												
In-place Maximization Factor	1.30												
Temporal Transposition (Date)	15-Aug												
Transposition SST Location	NA NA												
Transposition Maximum SST	NA												
Transposition Adjustment Factor	#VALUE!												
Average Basin Elevation	NA												
Highest Elevation in Basin	NA												
Inflow Barrier Height	NA												
Elevation Adjustment Factor	#VALUE!												
Total Adjustment Factor	#VALUE!												

Map of the North Pacific showing the storm track of Typhoon Kaituma. The map includes latitude and longitude coordinates from 44°N to 70°N and 176°W to 134°W. A color-coded intensity scale is shown in the top right, ranging from 0 to 150 knots. The storm's path is marked by a series of colored dots: red for surface, blue for 850mb, and green for 700mb. A box labeled "Storm Center -149.2, 61.9" indicates the peak intensity. A scale bar at the bottom shows distances in miles (0, 495, 990, 1,980).

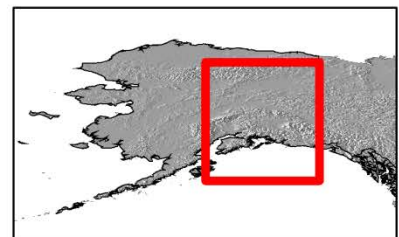
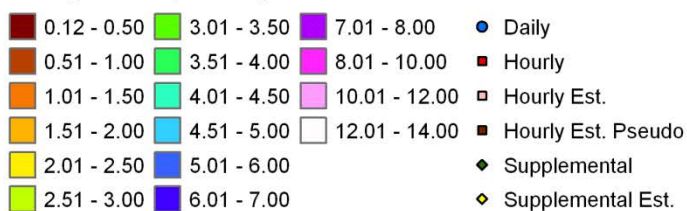
	Duration (hours)														
Area (mi ²)	1	3	6	12	18	24	36	48	72	96	120	144	168	192	Total
0.2	1.19	2.44	3.84	5.33	6.7	7.41	9.04	9.86	10.59	10.74	11.58	11.86	13.03	13.06	13.06
1	1.17	2.38	3.76	5.19	6.51	7.23	8.78	9.61	10.29	10.47	11.25	11.53	12.65	12.71	12.71
10	1.17	2.38	3.76	5.19	6.51	7.23	8.78	9.61	10.29	10.47	11.25	11.53	12.65	12.71	12.71
25	1.15	2.37	3.73	5.08	6.51	7.2	8.78	9.59	10.29	10.47	11.25	11.53	12.65	12.71	12.71
50	1.12	2.31	3.63	4.94	6.34	7.03	8.57	9.4	10.14	10.28	11.13	11.44	12.59	12.62	12.62
100	1.07	2.21	3.47	4.75	6.11	6.78	8.27	9.03	9.81	9.95	10.79	10.9	12.24	12.27	12.27
150	1.03	2.13	3.35	4.59	5.92	6.56	7.99	8.74	9.5	9.67	10.17	10.4	11.92	11.96	11.96
200	1	2.06	3.23	4.37	5.73	6.35	7.69	8.42	9.29	9.41	10.14	10.38	11.43	11.76	11.76
300	0.96	1.95	3.08	4.13	5.46	5.98	7.4	8.04	8.93	9.1	9.88	10.27	11.26	11.38	11.38
400	0.91	1.87	2.95	3.9	5.23	5.88	7.14	7.93	8.64	8.81	9.32	9.59	11.04	11.07	11.07
500	0.88	1.8	2.51	3.83	4.9	5.65	6.4	7.6	8.4	8.56	8.95	9.55	10.55	10.82	10.82
1,000	0.79	1.63	2.45	3.32	4.48	5.13	6.29	6.97	7.66	7.85	8.26	8.91	9.73	9.94	9.94
2,000	0.67	1.39	1.95	2.88	3.9	4.44	5.23	6.04	6.75	6.91	7.24	7.87	8.79	8.94	8.94
5,000	0.38	0.97	1.46	1.98	2.93	3.26	3.9	4.62	5.15	5.34	5.68	6.06	7.18	7.21	7.21
10,000	0.26	0.64	1.05	1.32	1.69	1.89	2.91	3.1	3.9	4.03	4.32	4.39	5.8	5.9	5.90
20,000	0.17	0.37	0.62	0.96	1.32	1.62	2.06	2.47	2.47	2.48	2.48	3.83	4.37	4.44	4.44
50,000	0.08	0.22	0.38	0.7	0.87	0.97	1.08	1.22	1.42	1.48	1.89	2.54	3.17	3.18	3.18
100,000	0.06	0.11	0.22	0.4	0.54	0.57	0.68	0.81	0.94	1.01	1.24	1.81	2.17	2.19	2.19
132,207	0.04	0.1	0.19	0.33	0.44	0.52	0.61	0.74	0.85	0.91	1.04	1.45	1.67	1.69	1.69





Total 192-hour Precipitation (inches)
08/18/1959 - 08/25/1959
SPAS #1271

Precipitation (inches)

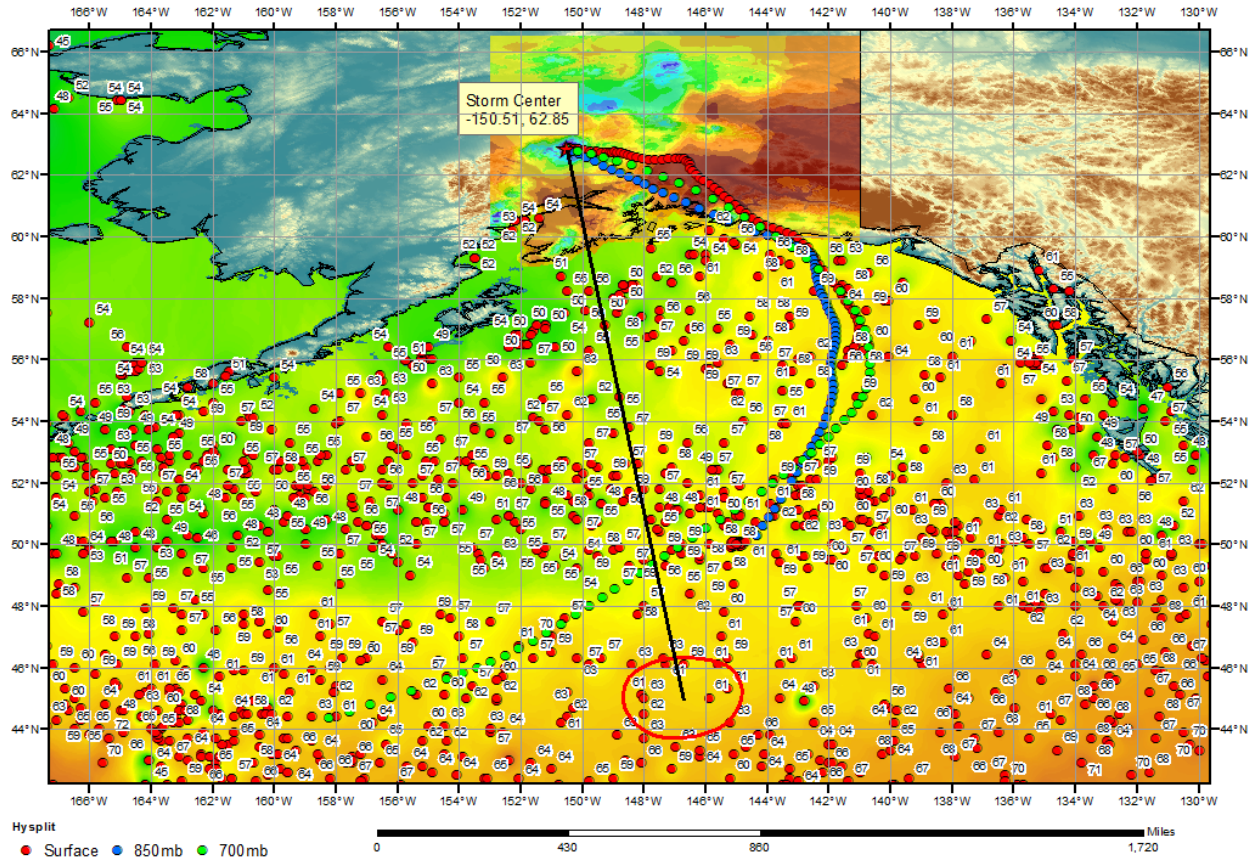


METSTAT, Inc. 03/28/2013

Denali NP, AK, SPAS 1270 Zone 2
August 2, 1967

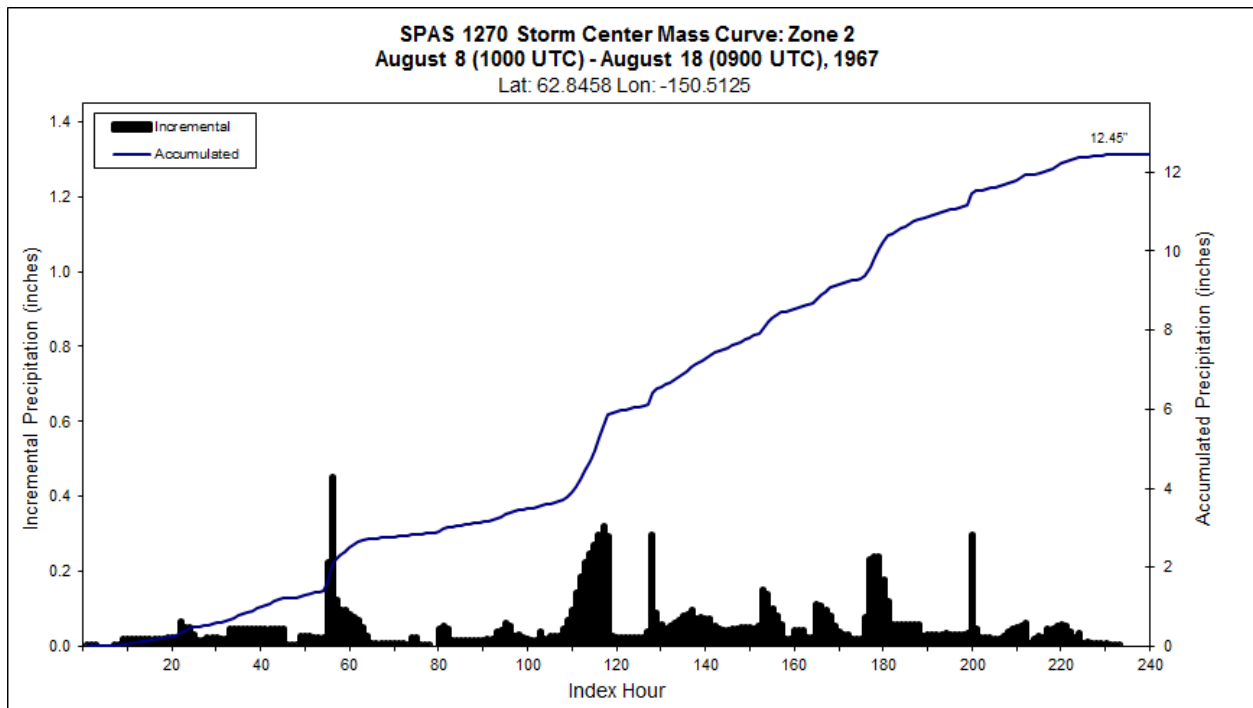
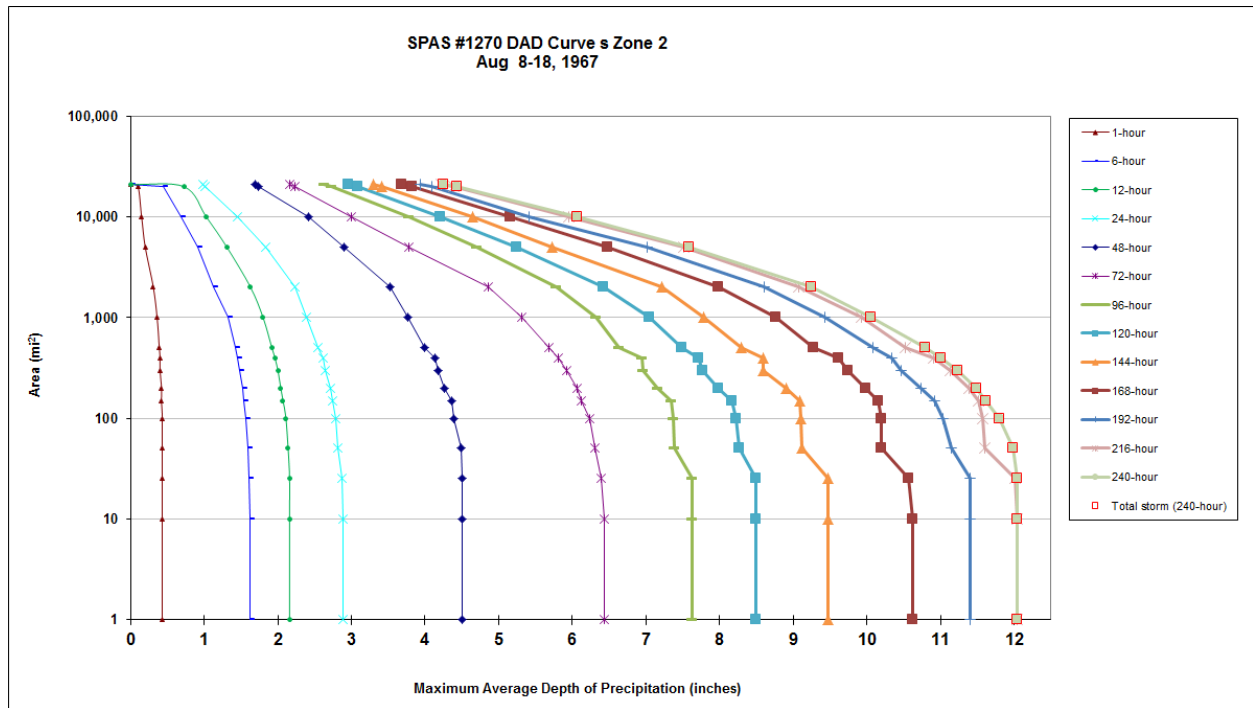
Storm Name: SPAS 1270-Fairbanks-DAD Zone 2		Storm Adjustment for Susitna-Watana										
Storm Date: 8/2-17/1967												
AWA Analysis Date: 2/4/2013												
Temporal Transposition Date 15-Aug												
	Lat 62.84 N	Long 150.51 W										
Storm center location	62.84 N	149.00 W										
Storm Rep SST location	45.00 N	149.00 W										
Transposition SST location	NA	NA										
Basin location	62.84 N	147.37 W										
Moisture Inflow Direction: SSE @ 910 miles												
Basin Elevation 3,650 feet												
Storm Elevation 5,080 feet												
Storm Duration 24 hours												
Effective Barrier Height 1,483 feet												
The storm representative SST is	61.0 F	with total precipitable water above sea level of	1.45 inches.									
The in-place maximum SST is	62.5 F	with total precipitable water above sea level of	1.56 inches.									
The transposition maximum SST is	NA	with total precipitable water above sea level of	4.44 inches.									
The in-place storm elevation is	5,080	which subtracts 0.66	inches of precipitable water at 61.0 F									
The in-place storm elevation is	5,080	which subtracts 0.70	inches of precipitable water at 62.5 F									
The transposition storm elevation at	3,650	which subtracts xx	inches of precipitable water at NA									
The moisture inflow barrier height is	1,483	which subtracts xx	inches of precipitable water at NA									
The in-place maximization factor is 1.09		Notes: Storm representative SST value was based on SST values for August 7-12, 1967 along the surface HYSPLIT trajectory data. Values were selected in region where temperature did not vary more than a 1-degree over a large area and had temperature recordings throughout the period.										
The transposition/elevation factor is #VALUE!												
The barrier adjustment factor is #VALUE!												
The total adjustment factor is #VALUE!												
Observed Storm Depth-Area-Duration												
	6 Hours	12 Hours	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours	216 Hours	240 Hours
10 sq miles	1.6	2.2	2.9	4.5	6.4	7.6	8.5	9.5	10.6	11.4	12.0	12.1
100 sq miles	1.6	2.1	2.8	4.4	6.2	7.4	8.2	9.1	10.2	11.0	11.6	11.8
200 sq miles	1.5	2.0	2.7	4.3	6.1	7.2	8.0	8.9	10.0	10.7	11.4	11.5
500 sq miles	1.4	1.9	2.5	4.0	5.7	6.6	7.5	8.3	9.3	10.1	10.5	10.8
1000 sq miles	1.3	1.8	2.4	3.8	5.3	6.3	7.0	7.8	8.8	9.4	9.9	10.1
2000 sq miles	1.1	1.6	2.2	3.5	4.9	5.8	6.4	7.2	8.0	8.6	9.1	9.3
5000 sq miles	0.9	1.3	1.8	2.9	3.8	4.7	5.2	5.7	6.5	7.0	7.5	7.6
10000 sq miles	0.7	1.0	1.5	2.4	3.0	3.8	4.2	4.6	5.2	5.4	6.0	6.1
20000 sq miles	0.5	0.7	1.0	1.7	2.2	2.7	3.1	3.4	3.8	4.1	4.4	4.4
Adjusted Storm Depth-Area-Duration												
	6 Hours	12 Hours	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours	216 Hours	240 Hours
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Storm or Storm Center Name SPAS 1270-Fairbanks-DAD Zone 2												
Storm Date(s) 8/2-17/1967												
Storm Type Storms and Atmospheric River Episodes												
Storm Location 62.84 N 150.51 W												
Storm Center Elevation 5080												
Precipitation Total & Duration 6.4 inches in 72 hours												
Storm Representative SST 61.0 F												
Storm Representative SST Location 45.00 N 149.00 W		15-Aug										
In-place Maximum SST 62.5 F		62.5										
Moisture Inflow Vector SSE @ 910												
In-place Maximization Factor 1.09												
Temporal Transposition (Date) 15-Aug												
Transposition SST Location NA NA												
Transposition Maximum SST NA												
Transposition Adjustment Factor #VALUE!												
Average Basin Elevation 3,650												
Highest Elevation in Basin 13,131												
Inflow Barrier Height 1,483												
Elevation Adjustment Factor #VALUE!												
Total Adjustment Factor #VALUE!												

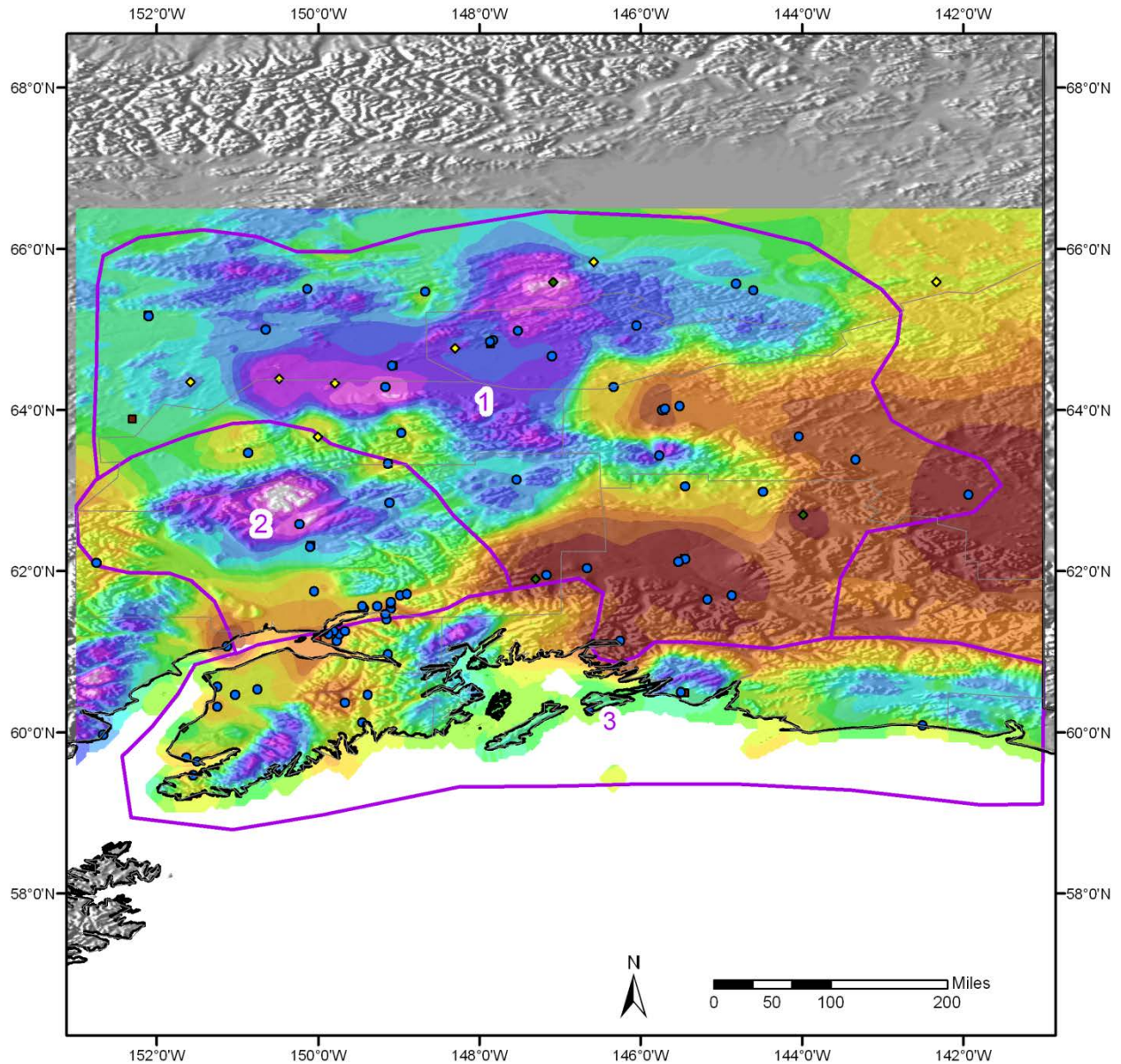
SPAS 1270 Fairbanks, AK Storm Analysis
August 11 - 16, 1967



Storm 1270 - Aug. 8 (1000 UTC) - Aug. 18 (0900 UTC), 1967
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

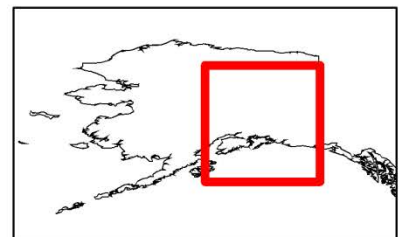
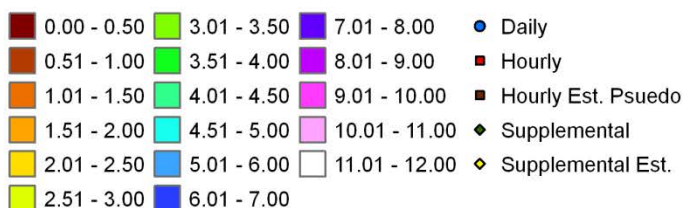
Area (mi ²)	Duration (hours)												
	1	6	12	24	48	72	96	120	144	168	192	216	240
0.2	0.45	1.66	2.24	2.95	4.67	6.59	7.91	8.78	9.74	10.91	11.75	12.36	12.45
1	0.43	1.62	2.16	2.89	4.5	6.43	7.63	8.49	9.47	10.63	11.4	12.04	12.05
10	0.43	1.62	2.16	2.89	4.5	6.43	7.63	8.49	9.47	10.63	11.4	12.04	12.05
25	0.43	1.61	2.16	2.87	4.5	6.4	7.63	8.49	9.47	10.57	11.4	12.01	12.05
50	0.43	1.6	2.14	2.82	4.49	6.31	7.39	8.27	9.12	10.2	11.15	11.61	11.98
100	0.43	1.56	2.11	2.79	4.39	6.23	7.37	8.22	9.11	10.2	11.04	11.58	11.8
150	0.42	1.54	2.07	2.75	4.37	6.13	7.35	8.17	9.09	10.15	10.92	11.52	11.62
200	0.42	1.52	2.04	2.71	4.27	6.07	7.16	7.99	8.9	9.99	10.74	11.39	11.49
300	0.4	1.48	2	2.65	4.18	5.92	6.96	7.77	8.59	9.75	10.47	11.13	11.23
400	0.4	1.45	1.96	2.61	4.13	5.81	6.94	7.72	8.59	9.61	10.34	10.91	11.00
500	0.39	1.43	1.92	2.54	4	5.69	6.64	7.49	8.29	9.27	10.08	10.52	10.8
1,000	0.36	1.33	1.8	2.39	3.77	5.31	6.32	7.04	7.78	8.77	9.43	9.93	10.06
2,000	0.31	1.13	1.63	2.24	3.53	4.86	5.78	6.42	7.21	7.99	8.61	9.08	9.25
5,000	0.2	0.92	1.31	1.84	2.9	3.78	4.71	5.24	5.72	6.48	7.02	7.51	7.59
10,000	0.15	0.69	1.03	1.45	2.42	3	3.78	4.2	4.64	5.16	5.42	5.95	6.07
20,000	0.1	0.45	0.73	1.01	1.74	2.23	2.73	3.08	3.41	3.83	4.09	4.39	4.43
21,152	0	0	0	0.98	1.69	2.16	2.63	2.96	3.3	3.68	3.94	4.22	4.25





Total Storm (240-hr) Precipitation (inches)
August 8-17, 1967 - "The Great Fairbanks Flood"
SPAS #1270

Precipitation (inches)

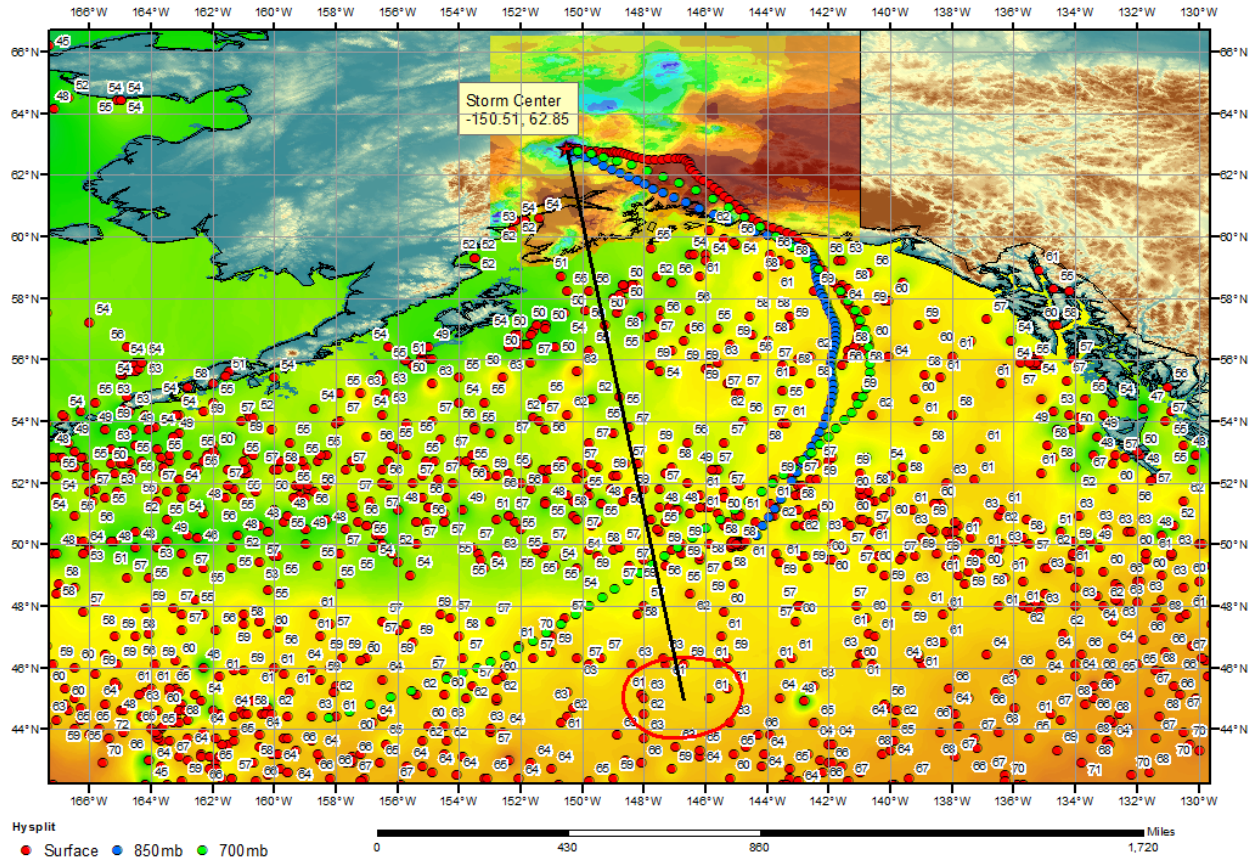


METSTAT, Inc. 02/04/2013

Fairbanks, AK, SPAS 1270 Zone 1
August 2, 1967

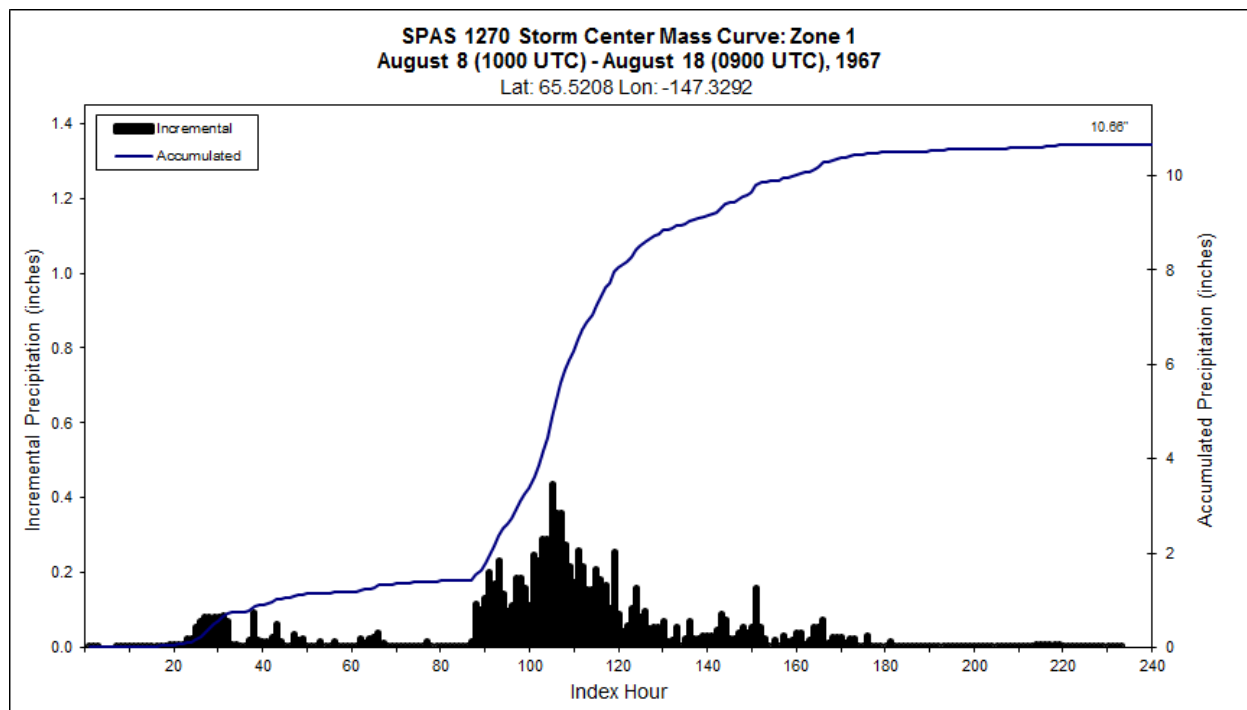
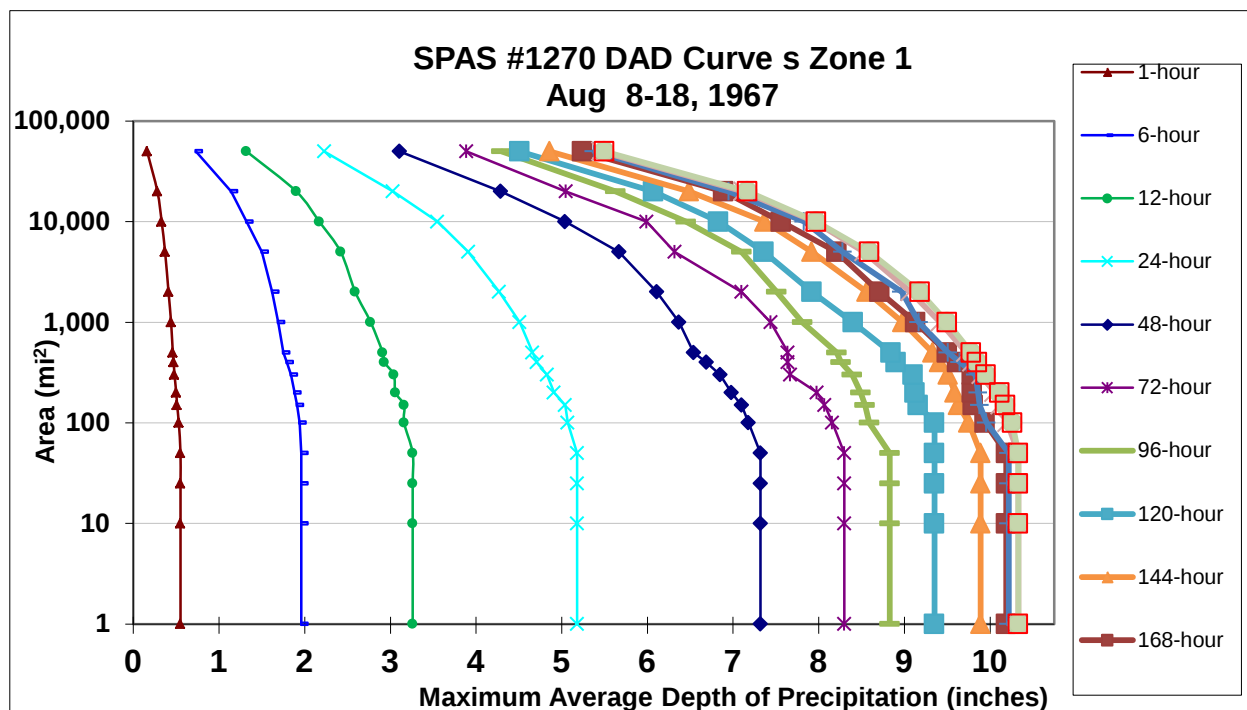
Storm Name: SPAS 1270-Fairbanks-DAD Zone 1		Storm Adjustment for Alaska										
Storm Date: 8/2-17/1967												
AWA Analysis Date: 2/4/2013												
Temporal Transposition Date 15-Aug												
	Lat Long											
Storm center location	65.52 N 147.33 W	Moisture Inflow Direction: S @ 1,420 miles										
Storm Rep SST location	45.00 N 149.00 W	Basin Elevation 3,650 feet										
Transposition SST location	34.45 N 71.97 W	Storm Elevation 7,600 feet										
Basin location	62.84 N 147.37 W	Storm Duration 24 hours										
		Effective Barrier Height 1,483 feet										
The storm representative SST is 61.0 F		with total precipitable water above sea level of 1.45 inches.										
The in-place maximum SST is 62.5 F		with total precipitable water above sea level of 1.56 inches.										
The transpositioned maximum SST is 83.0 F		with total precipitable water above sea level of 4.06 inches.										
The in-place storm elevation is 7,600		which subtracts 0.80 inches of precipitable water at 61.0 F										
The in-place storm elevation is 7,600		which subtracts 0.83 inches of precipitable water at 62.5 F										
The transposition storm elevation at 3,650		which subtracts xx inches of precipitable water at 83.0 F										
The moisture inflow barrier height is 1,483		which subtracts xx inches of precipitable water at 83.0 F										
The in-place maximization factor is 1.12		Notes: Storm representative SST value was based on SST values for August 7-12, 1967 along the surface HYSPLIT trajectory data. Values were selected in region where temperature did not vary more than a 1-degree over a large area and had temperature recordings throughout the period.										
The transposition/elevation factor is #VALUE!												
The barrier adjustment factor is #VALUE!												
The total adjustment factor is #VALUE!												
Observed Storm Depth-Area-Duration												
	6 Hours	12 Hours	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours	216 Hours	240 Hours
10 sq miles	2.0	3.3	5.2	7.3	8.3	8.8	9.4	9.9	10.2	10.2	10.3	10.3
100 sq miles	1.9	3.2	5.1	7.2	8.2	8.6	9.4	9.8	9.9	10.0	10.2	10.3
200 sq miles	1.9	3.1	4.9	7.0	8.0	8.5	9.1	9.6	9.8	9.9	10.1	10.1
500 sq miles	1.8	2.9	4.7	6.5	7.6	8.2	8.8	9.3	9.5	9.5	9.7	9.8
1000 sq miles	1.7	2.8	4.5	6.4	7.4	7.8	8.4	9.0	9.1	9.2	9.4	9.5
2000 sq miles	1.6	2.6	4.3	6.1	7.1	7.5	7.9	8.6	8.7	9.0	9.1	9.2
5000 sq miles	1.5	2.4	3.9	5.7	6.3	7.1	7.4	7.9	8.2	8.3	8.5	8.6
10000 sq miles	1.3	2.2	3.6	5.0	6.0	6.5	6.8	7.4	7.6	7.8	8.0	8.0
20000 sq miles	1.1	1.9	3.0	4.3	5.1	5.6	6.1	6.5	6.9	7.0	7.1	7.2
Adjusted Storm Depth-Area-Duration												
	6 Hours	12 Hours	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours	216 Hours	240 Hours
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Storm or Storm Center Name SPAS 1270-Fairbanks-DAD Zone 1												
Storm Date(s) 8/2-17/1967												
Storm Type Storms and Atmospheric River Episodes												
Storm Location 65.52 N 147.33 W												
Storm Center Elevation 7600												
Precipitation Total & Duration 6.4 inches in 72 hours												
Storm Representative SST 61.0 F												
Storm Representative SST Location 45.00 N 149.00 W 15-Aug												
In-place Maximum SST 62.5 F 62.73												
Moisture Inflow Vector SSE @ 910												
In-place Maximization Factor 1.12												
Temporal Transposition (Date) 15-Aug												
Transposition SST Location 34.45 N 71.97 W												
Transposition Maximum SST 83.0 F												
Transposition Adjustment Factor #VALUE!												
Average Basin Elevation 3,650												
Highest Elevation in Basin 13,131												
Inflow Barrier Height 1,483												
Elevation Adjustment Factor #VALUE!												
Total Adjustment Factor #VALUE!												

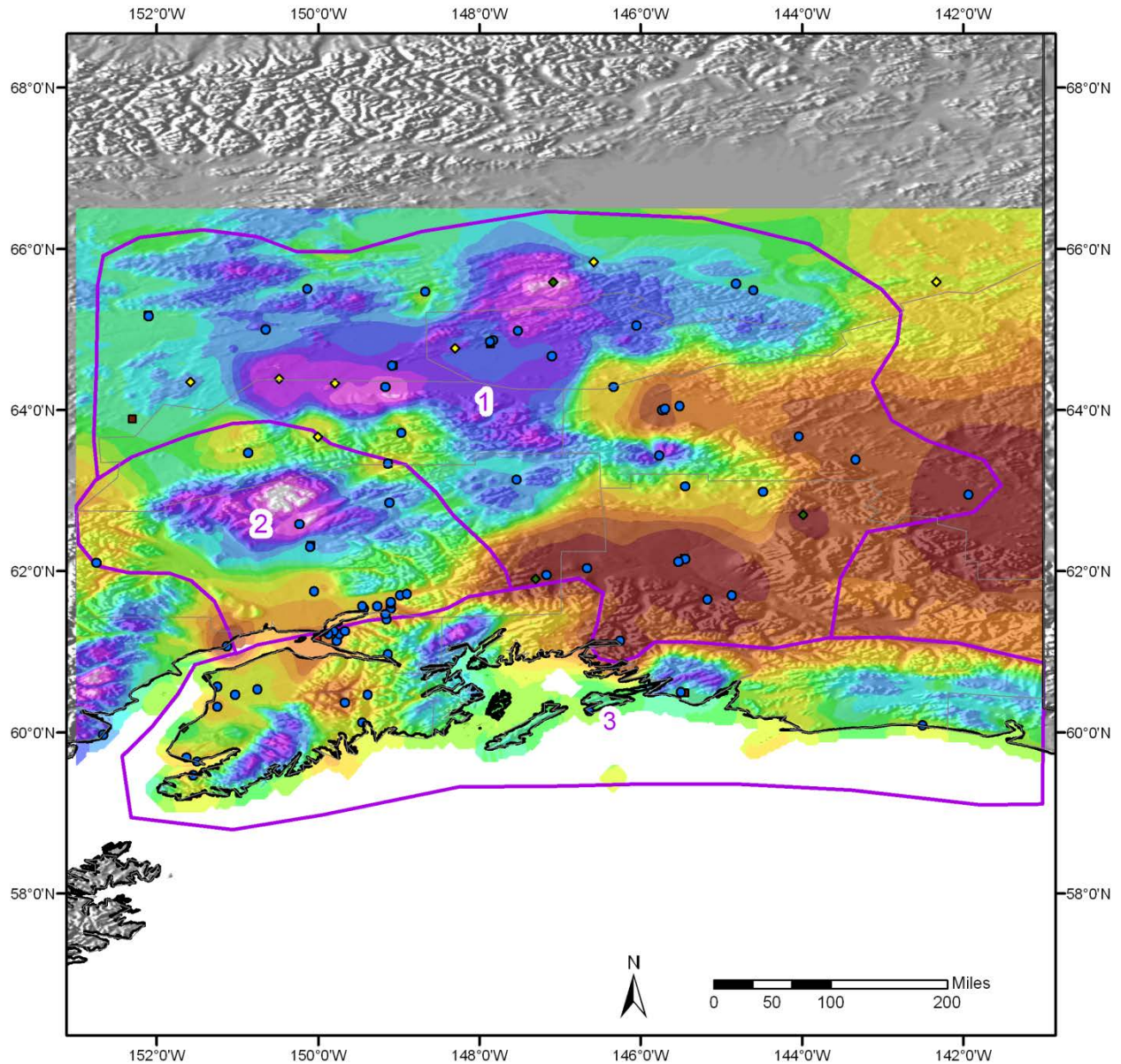
SPAS 1270 Fairbanks, AK Storm Analysis
August 11 - 16, 1967



Storm 1270 - Aug. 8 (1000 UTC) - Aug. 18 (0900 UTC), 1967
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

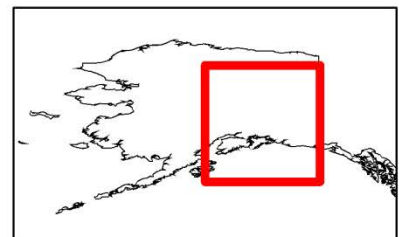
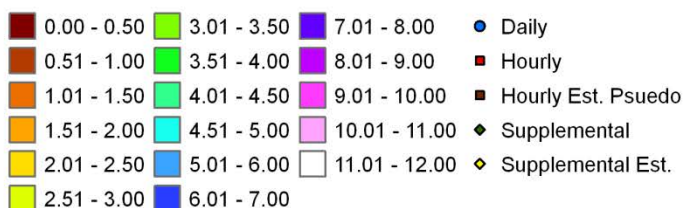
Area (mi ²)	Duration (hours)													
	1	6	12	24	48	72	96	120	144	168	192	216	240	Total
0.3	0.58	2.04	3.37	5.36	7.54	8.55	9.1	9.71	10.21	10.5	10.56	10.65	10.66	10.66
1	0.55	1.96	3.26	5.18	7.32	8.3	8.83	9.35	9.89	10.19	10.22	10.33	10.33	10.33
10	0.55	1.96	3.26	5.18	7.32	8.3	8.83	9.35	9.89	10.19	10.22	10.33	10.33	10.33
25	0.55	1.96	3.26	5.18	7.32	8.3	8.83	9.35	9.89	10.19	10.22	10.33	10.33	10.33
50	0.55	1.96	3.26	5.18	7.32	8.3	8.83	9.35	9.89	10.19	10.22	10.33	10.33	10.33
100	0.53	1.94	3.16	5.07	7.18	8.16	8.59	9.35	9.75	9.94	9.96	10.2	10.26	10.26
150	0.51	1.91	3.16	5.04	7.1	8.07	8.54	9.16	9.63	9.8	9.88	10.12	10.18	10.18
200	0.5	1.88	3.06	4.91	6.98	7.98	8.49	9.12	9.59	9.79	9.86	10.05	10.11	10.11
300	0.48	1.84	3.04	4.83	6.85	7.67	8.39	9.1	9.51	9.79	9.83	9.9	9.95	9.95
400	0.47	1.79	2.93	4.71	6.69	7.64	8.26	8.9	9.41	9.62	9.65	9.79	9.85	9.85
500	0.46	1.75	2.91	4.66	6.54	7.64	8.21	8.84	9.33	9.5	9.51	9.72	9.78	9.78
1,000	0.44	1.69	2.77	4.51	6.37	7.44	7.81	8.4	8.98	9.13	9.17	9.42	9.5	9.50
2,000	0.41	1.62	2.59	4.27	6.11	7.1	7.51	7.92	8.56	8.71	8.97	9.07	9.18	9.18
5,000	0.37	1.5	2.42	3.91	5.67	6.32	7.1	7.36	7.92	8.21	8.28	8.53	8.59	8.59
10,000	0.33	1.32	2.17	3.55	5.04	5.99	6.45	6.83	7.37	7.56	7.83	7.95	7.97	7.97
20,000	0.28	1.14	1.9	3.03	4.29	5.05	5.63	6.07	6.49	6.89	6.95	7.12	7.17	7.17
50,000	0.16	0.73	1.32	2.23	3.11	3.89	4.3	4.51	4.86	5.24	5.38	5.46	5.5	5.50





Total Storm (240-hr) Precipitation (inches)
August 8-17, 1967 - "The Great Fairbanks Flood"
SPAS #1270

Precipitation (inches)

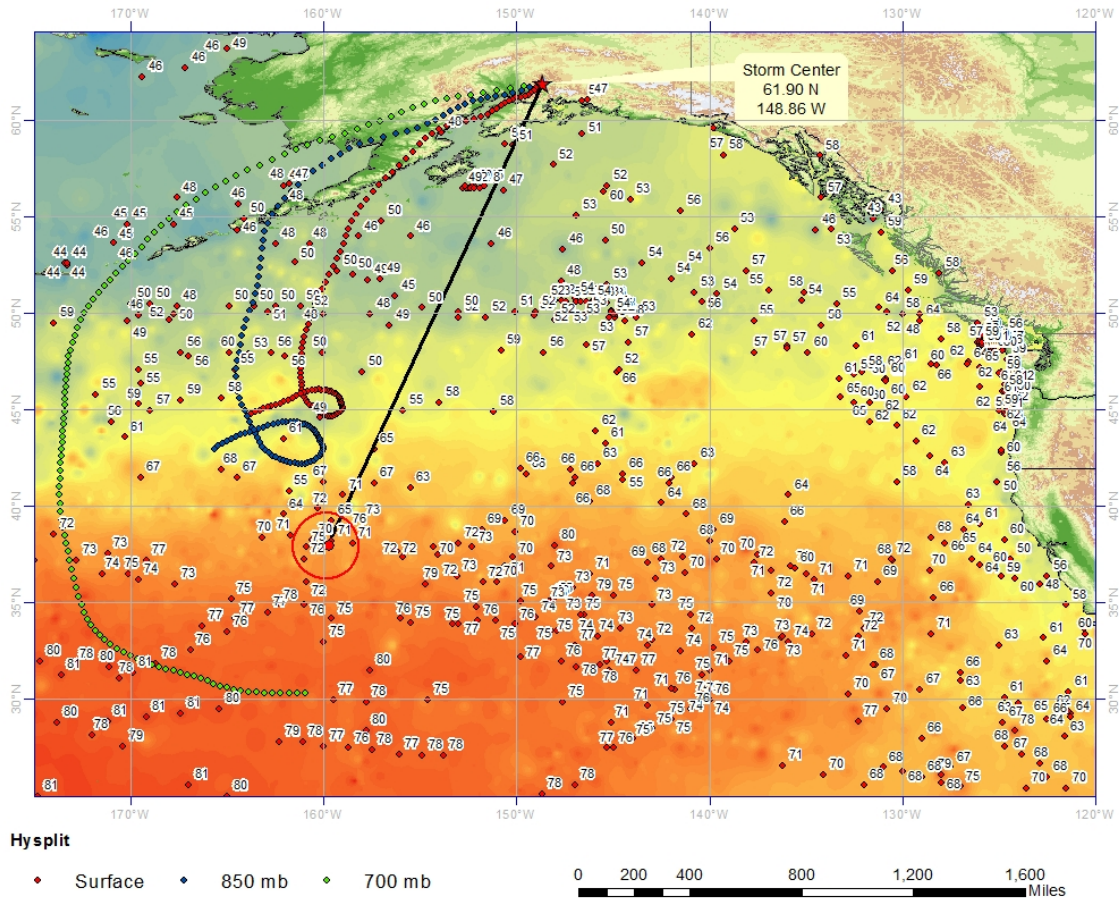


METSTAT, Inc. 02/04/2013

Sutton, AK, SPAS 1269 Zone 1
August 5, 1971

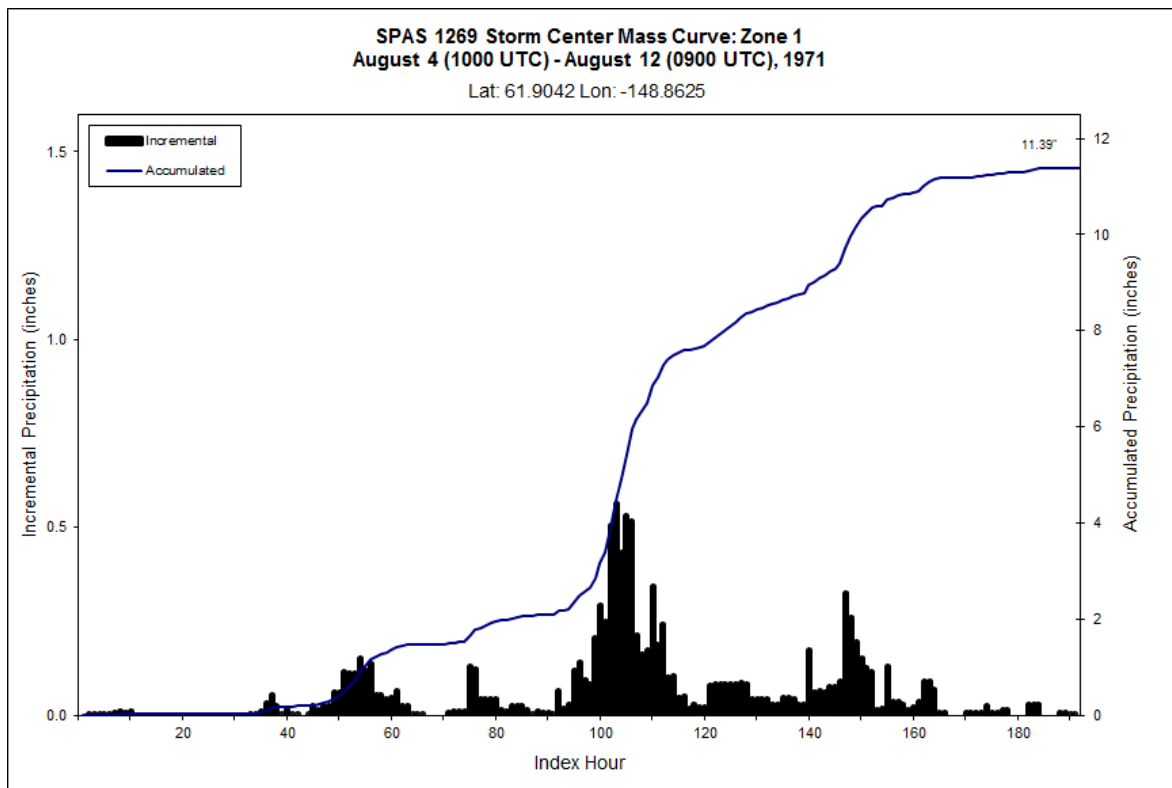
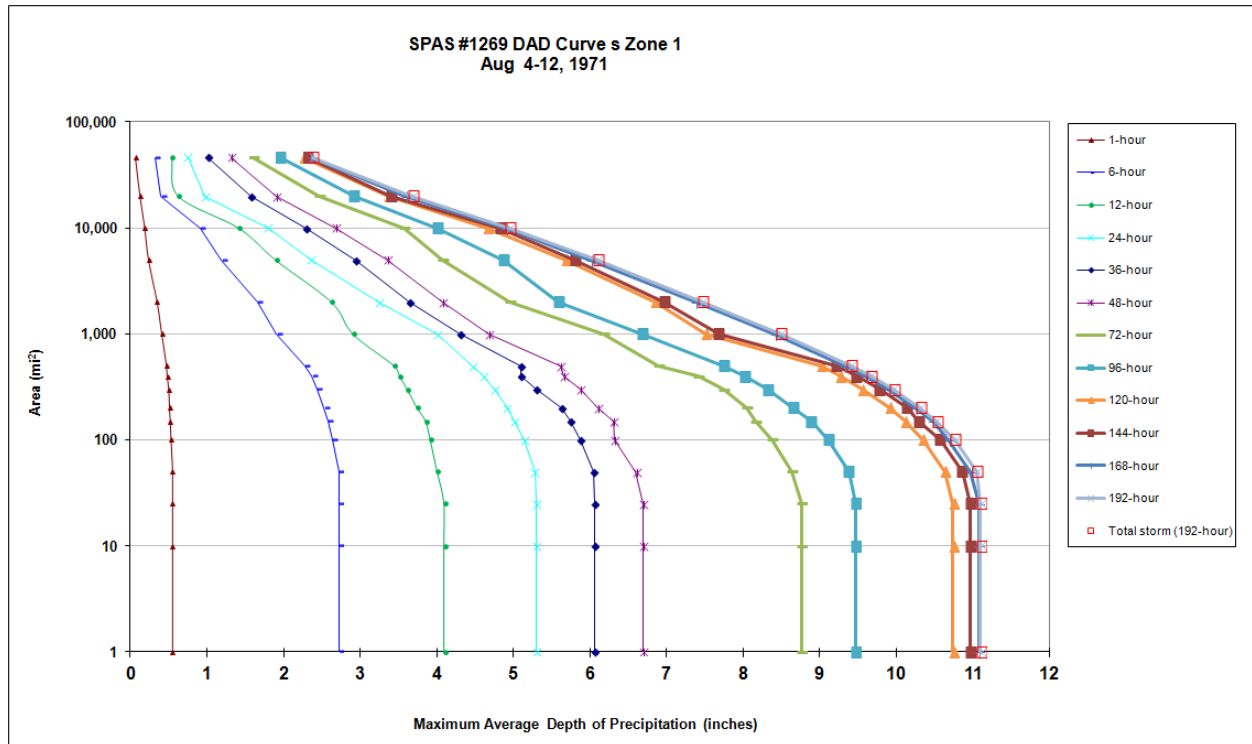
Storm Name: SPAS 1269, DAD Zone 1		Storm Adjustment for Susitna-Watana										
Storm Date: 8/5-11/1971												
AWA Analysis Date: 3/14/2014												
Temporal Transposition Date: 15-Aug												
Storm center location	Lat: 61.90 N Long: 148.86 W	Moisture Inflow Direction:	SSW @ 1715 miles									
Storm Rep SST location	38.00 N 159.70 W	Basin Elevation	3,654 feet									
Transposition SST location	NA NA	Storm Elevation	6,385 feet									
Basin location	42.76 N 74.12 W	Storm Duration	192 hours									
		Effective Barrier Height	1,200 feet									
The storm representative SST is 71.0 F		with total precipitable water above sea level of 2.36 inches.										
The in-place maximum SST is 74.0 F		with total precipitable water above sea level of 2.73 inches.										
The transpositioned maximum SST is NA		with total precipitable water above sea level of 4.44 inches.										
The in-place storm elevation is 6,385		which subtracts 1.15 inches of precipitable water at 71.0 F										
The in-place storm elevation is 6,385		which subtracts 1.28 inches of precipitable water at 74.0 F										
The transposition storm elevation at 3,654		which subtracts XXX inches of precipitable water at NA										
The moisture inflow barrier height is 1,200		which subtracts XXX inches of precipitable water at NA										
The in-place maximization factor is 1.20		Notes: Storm Rep SST taken from a region between 35-40N and 160 to 164W where temperatures remained within a few degrees from the 4th through the 6th.										
The transposition/elevation factor is 1.00												
The barrier adjustment factor is #VALUE!												
The total adjustment factor is #VALUE!												
Observed Storm Depth-Area-Duration												
	1 Hours	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours
1 sq miles	0.6	2.7	4.1	5.3	6.1	6.7	8.8	9.5	10.7	11.0	11.1	11.1
10 sq miles	0.6	2.7	4.1	5.3	6.1	6.7	8.8	9.5	10.7	11.0	11.1	11.1
100 sq miles	0.5	2.6	3.9	5.1	5.9	6.3	8.4	9.1	10.4	10.6	10.7	10.8
200 sq miles	0.5	2.5	3.8	4.9	5.6	6.1	8.0	8.7	9.9	10.1	10.3	10.3
500 sq miles	0.5	2.3	3.5	4.5	5.1	5.6	6.9	7.8	9.0	9.2	9.3	9.4
1000 sq miles	0.4	1.9	2.9	4.0	4.3	4.7	6.2	6.7	7.5	7.7	8.4	8.5
2000 sq miles	0.4	1.7	2.6	3.2	3.7	4.1	5.0	5.6	6.9	7.0	7.4	7.5
5000 sq miles	0.2	1.2	1.9	2.4	2.9	3.4	4.1	4.9	5.7	5.8	6.0	6.1
10000 sq miles	0.2	0.9	1.4	1.8	2.3	2.7	3.6	4.0	4.7	4.8	4.9	5.0
20000 sq miles	0.1	0.4	0.6	1.0	1.6	1.9	2.5	2.9	3.4	3.4	3.6	3.7
Adjusted Storm Depth-Area-Duration												
	1 Hours	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours
1 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Storm or Storm Center Name SPAS 1269, DAD Zone 1												
Storm Date(s) 8/5-11/1971												
Storm Type Synoptic												
Storm Location 61.90 N 148.86 W												
Storm Center Elevation 6385												
Precipitation Total & Duration (10 sq mi) 11.1 inches in 192 hours												
Storm Representative SST 71.0 F												
Storm Representative SST Location 38.00 N 159.70 W Aug												
In-place Maximum SST 74.0 F 74												
Moisture Inflow Vector SSW @ 1715												
In-place Maximization Factor 1.20												
Temporal Transposition (Date) 15-Aug												
Transposition SST Location NA NA												
Transposition Maximum SST NA												
Transposition Adjustment Factor 1.00												
Average Basin Elevation 3,654												
Highest Elevation in Basin 13,131												
Inflow Barrier Height 1,200												
Elevation Adjustment Factor #VALUE!												
Total Adjustment Factor #VALUE!												

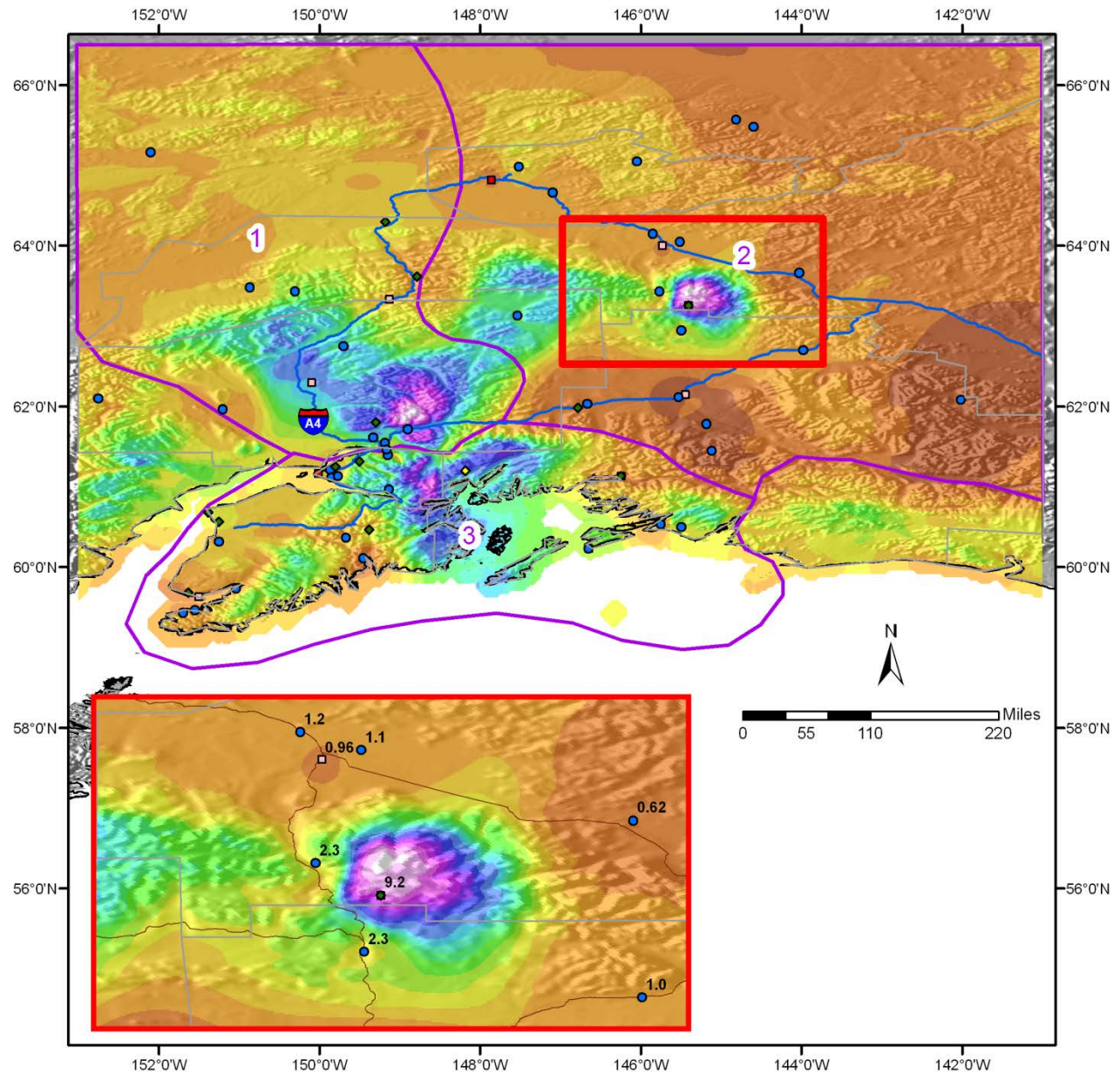
SPAS 1269
August 4, 1971



Storm 1269 - Aug. 4 (1000 UTC) - Aug. 11 (0900 UTC), 1971
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

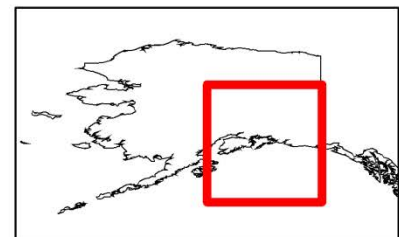
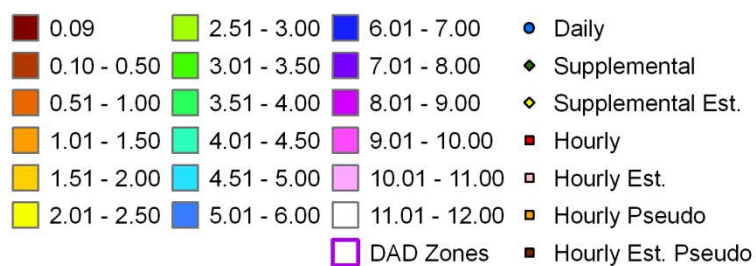
	Duration (hours)												
Area (mi ²)	1	6	12	24	36	48	72	96	120	144	168	192	Total
0.2	0.56	2.8	4.19	5.44	6.23	6.87	8.99	9.7	10.97	11.24	11.35	11.39	11.39
1	0.55	2.72	4.1	5.3	6.06	6.7	8.76	9.47	10.74	10.97	11.08	11.10	11.10
10	0.55	2.72	4.1	5.3	6.06	6.7	8.76	9.47	10.74	10.97	11.08	11.10	11.10
25	0.55	2.72	4.1	5.3	6.06	6.7	8.76	9.47	10.74	10.97	11.08	11.10	11.10
50	0.55	2.72	4.01	5.28	6.04	6.6	8.63	9.38	10.63	10.86	10.97	11.05	11.05
100	0.53	2.64	3.92	5.14	5.88	6.32	8.38	9.11	10.35	10.57	10.68	10.76	10.76
150	0.52	2.58	3.86	5.01	5.75	6.31	8.16	8.89	10.11	10.29	10.47	10.52	10.52
200	0.51	2.53	3.75	4.92	5.63	6.1	8.04	8.65	9.91	10.14	10.25	10.31	10.31
300	0.5	2.44	3.62	4.75	5.3	5.87	7.74	8.32	9.56	9.78	9.89	9.96	9.96
400	0.48	2.37	3.52	4.61	5.1	5.66	7.41	8.02	9.27	9.48	9.59	9.67	9.67
500	0.47	2.28	3.45	4.47	5.1	5.62	6.9	7.75	9.02	9.22	9.32	9.41	9.41
1,000	0.41	1.91	2.91	4.01	4.3	4.68	6.18	6.68	7.51	7.68	8.41	8.49	8.49
2,000	0.35	1.66	2.63	3.24	3.65	4.08	4.96	5.59	6.85	6.97	7.38	7.47	7.47
5,000	0.24	1.19	1.9	2.36	2.94	3.36	4.07	4.87	5.69	5.8	6.01	6.10	6.10
10,000	0.19	0.91	1.42	1.8	2.29	2.68	3.57	4.01	4.66	4.83	4.9	4.95	4.95
20,000	0.13	0.4	0.63	0.97	1.58	1.9	2.46	2.92	3.37	3.4	3.59	3.68	3.68
46,397	0.07	0.32	0.54	0.75	1.02	1.32	1.61	1.96	2.27	2.32	2.36	2.38	2.38





Total Storm Precipitation (inches)
August 4-11, 1971 (192-hours)
SPAS #1269

Precipitation (inches)

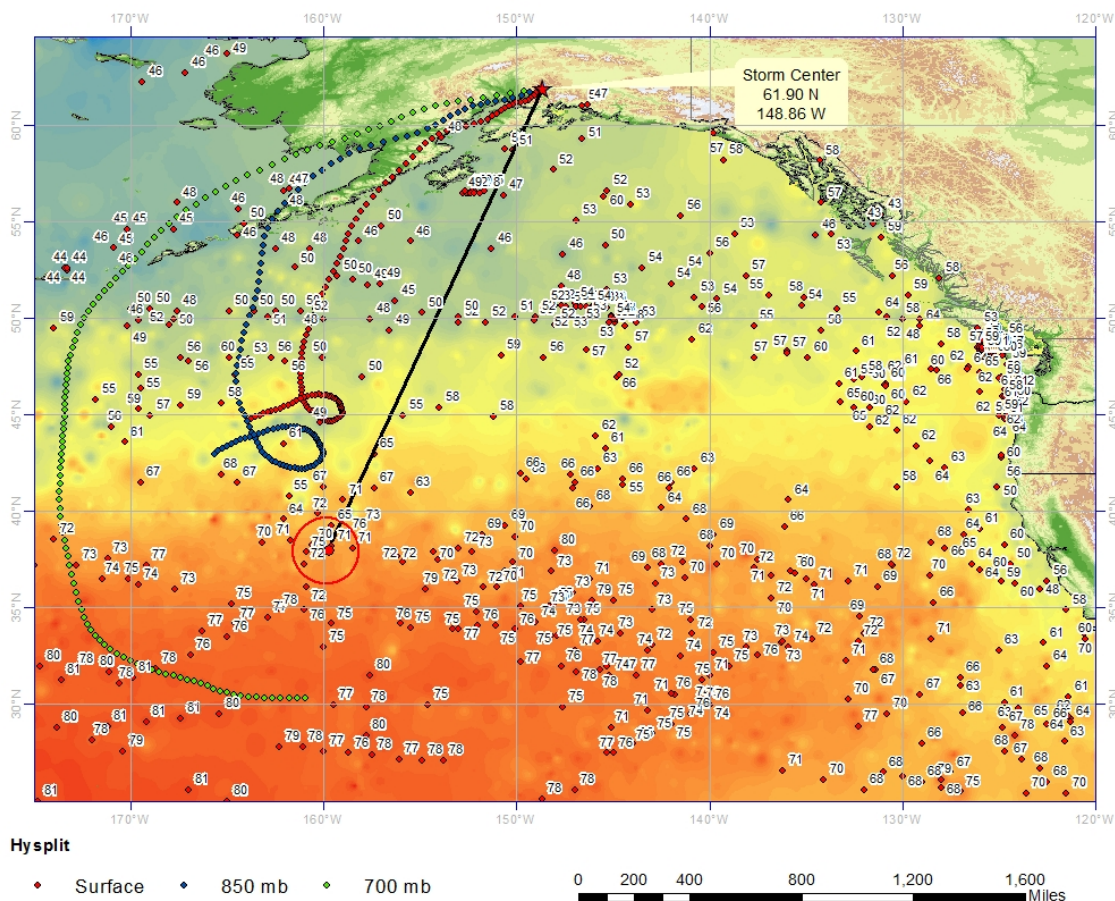


MetStat, Inc. 05/28/2013

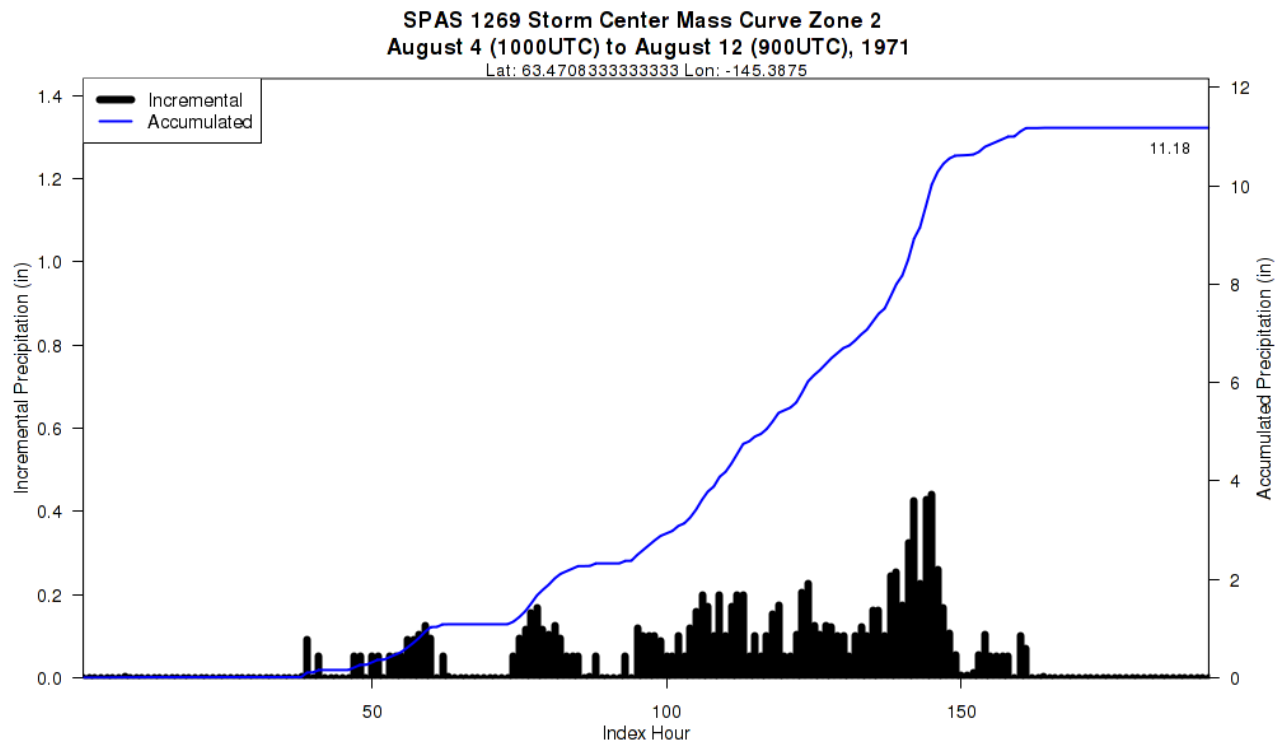
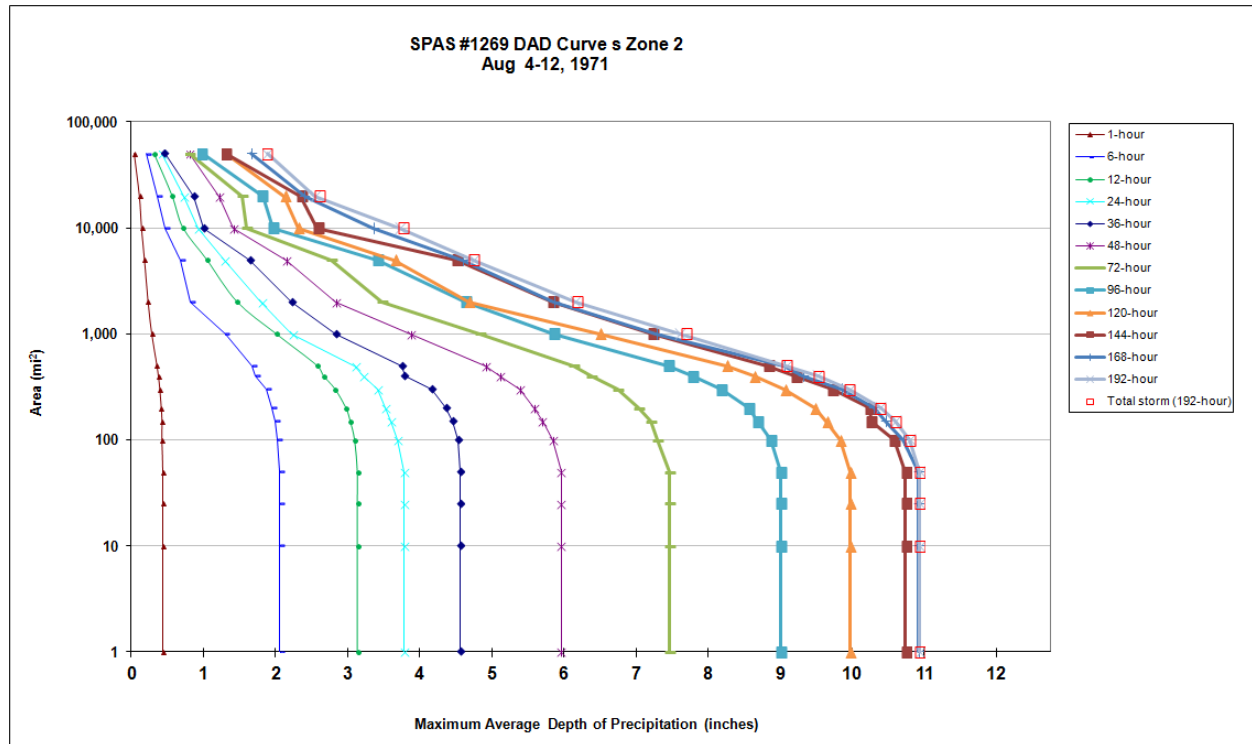
Black Rapids, AK SPAS 1269 Zone 2 August 5, 1971

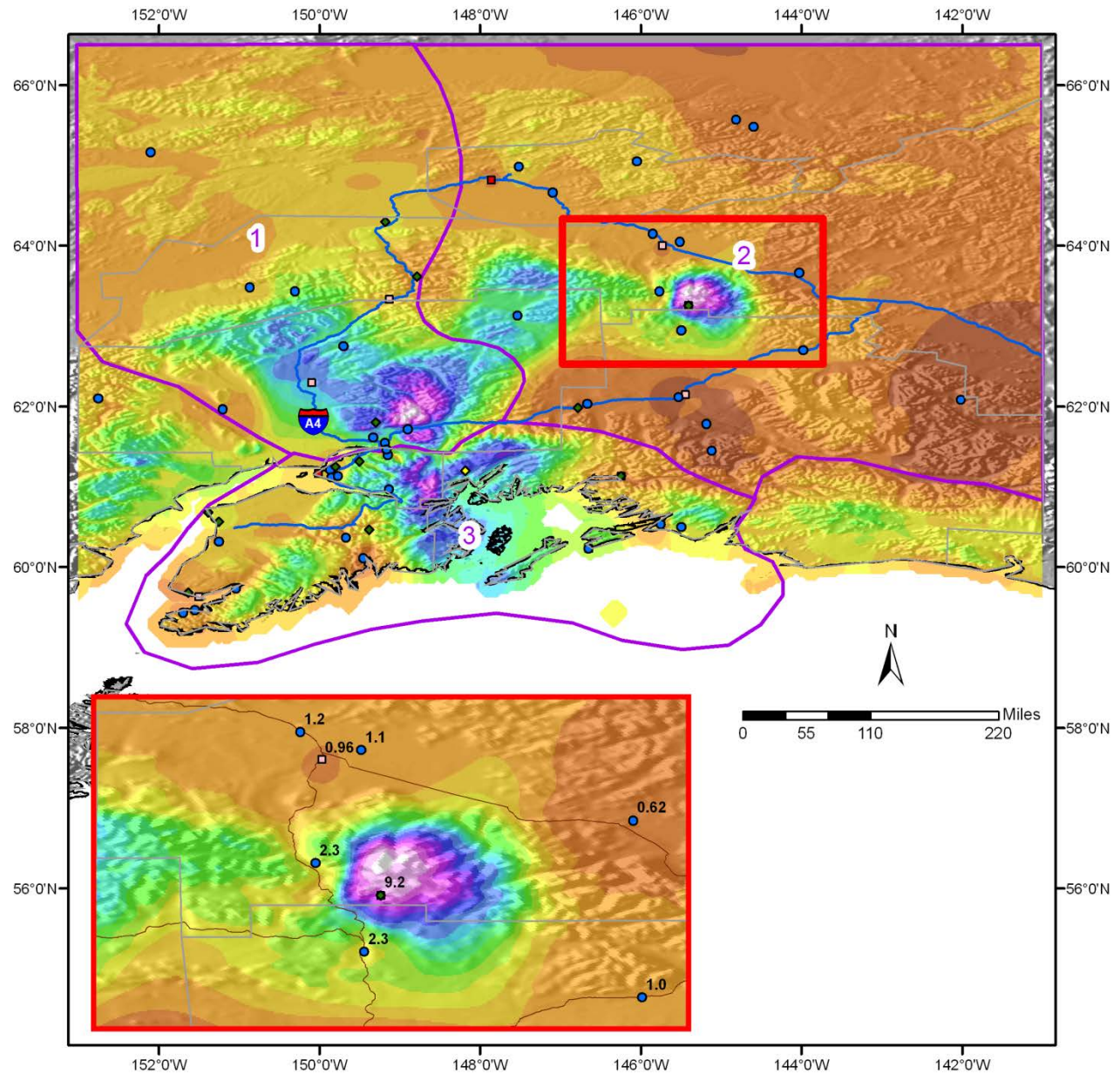
Storm Name: SPAS 1269, DAD Zone 2		Storm Adjustment for Susitna-Watana																																				
Storm Date: 8/5-11/1971																																						
AWA Analysis Date: 3/14/2014																																						
Temporal Transposition Date: 15-Aug																																						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Storm center location</td> <td style="width: 25%;">63.47 N</td> <td style="width: 25%;">145.48 W</td> </tr> <tr> <td>Storm Rep SST location</td> <td>38.00 N</td> <td>159.70 W</td> </tr> <tr> <td>Transposition SST location</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>Basin location</td> <td>42.76 N</td> <td>74.12 W</td> </tr> </table>		Storm center location	63.47 N	145.48 W	Storm Rep SST location	38.00 N	159.70 W	Transposition SST location	NA	NA	Basin location	42.76 N	74.12 W	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Moisture Inflow Direction:</td> <td style="width: 50%;">SSW @ 1675 miles</td> </tr> <tr> <td>Basin Elevation</td> <td>3,654 feet</td> </tr> <tr> <td>Storm Elevation</td> <td>6,235 feet</td> </tr> <tr> <td>Storm Duration</td> <td>192 hours</td> </tr> <tr> <td>Effective Barrier Height</td> <td>1,200 feet</td> </tr> </table>		Moisture Inflow Direction:	SSW @ 1675 miles	Basin Elevation	3,654 feet	Storm Elevation	6,235 feet	Storm Duration	192 hours	Effective Barrier Height	1,200 feet													
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<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">The storm representative SST is</td> <td style="width: 10%;">71.0 F</td> <td style="width: 40%;">with total precipitable water above sea level of</td> <td style="width: 10%;">2.36</td> <td style="width: 10%;">inches.</td> </tr> <tr> <td>The in-place maximum SST is</td> <td>74.0 F</td> <td>with total precipitable water above sea level of</td> <td>2.73</td> <td>inches.</td> </tr> <tr> <td>The transpositioned maximum SST is</td> <td>NA</td> <td>with total precipitable water above sea level of</td> <td>4.44</td> <td>inches.</td> </tr> <tr> <td>The in-place storm elevation is</td> <td>6,235</td> <td>which subtracts</td> <td>1.13</td> <td>inches of precipitable water at 71.0 F</td> </tr> <tr> <td>The in-place storm elevation is</td> <td>6,235</td> <td>which subtracts</td> <td>1.26</td> <td>inches of precipitable water at 74.0 F</td> </tr> <tr> <td>The transposition storm elevation at</td> <td>3,654</td> <td>which subtracts</td> <td>X.XX</td> <td>inches of precipitable water at NA</td> </tr> <tr> <td>The moisture inflow barrier height is</td> <td>1,200</td> <td>which subtracts</td> <td>X.XX</td> <td>inches of precipitable water at NA</td> </tr> </table>				The storm representative SST is	71.0 F	with total precipitable water above sea level of	2.36	inches.	The in-place maximum SST is	74.0 F	with total precipitable water above sea level of	2.73	inches.	The transpositioned maximum SST is	NA	with total precipitable water above sea level of	4.44	inches.	The in-place storm elevation is	6,235	which subtracts	1.13	inches of precipitable water at 71.0 F	The in-place storm elevation is	6,235	which subtracts	1.26	inches of precipitable water at 74.0 F	The transposition storm elevation at	3,654	which subtracts	X.XX	inches of precipitable water at NA	The moisture inflow barrier height is	1,200	which subtracts	X.XX	inches of precipitable water at NA
The storm representative SST is	71.0 F	with total precipitable water above sea level of	2.36	inches.																																		
The in-place maximum SST is	74.0 F	with total precipitable water above sea level of	2.73	inches.																																		
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The moisture inflow barrier height is	1,200	which subtracts	X.XX	inches of precipitable water at NA																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> The in-place maximization factor is 1.20 The transposition/elevation factor is 1.00 The barrier adjustment factor is #VALUE! The total adjustment factor is #VALUE! </td> <td style="width: 50%; vertical-align: top;"> Notes: Storm Rep SST taken from a region between 35-40N and 160 to 164W where temperatures remained within a few degrees from the 4th through the 6th. </td> </tr> </table>				The in-place maximization factor is 1.20 The transposition/elevation factor is 1.00 The barrier adjustment factor is #VALUE! The total adjustment factor is #VALUE!	Notes: Storm Rep SST taken from a region between 35-40N and 160 to 164W where temperatures remained within a few degrees from the 4th through the 6th.																																	
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Observed Storm Depth-Area-Duration																																						
	1 Hours	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours																										
1 sq miles	0.4	2.1	3.1	4.6	6.0	7.5	9.0	10.0	10.7	10.9	10.9	10.9																										
10 sq miles	0.4	2.1	3.1	4.6	6.0	7.5	9.0	10.0	10.7	10.9	10.9	10.9																										
100 sq miles	0.4	2.0	3.1	4.5	5.8	7.3	8.9	9.8	10.6	10.7	10.8	10.8																										
200 sq miles	0.4	2.0	3.0	4.4	5.6	7.0	8.6	9.5	10.2	10.3	10.4	10.4																										
500 sq miles	0.4	1.7	2.6	3.8	4.9	6.1	7.5	8.3	8.8	9.1	9.1	9.1																										
1000 sq miles	0.3	1.3	2.0	2.8	3.9	4.8	5.9	6.5	7.2	7.3	7.6	7.7																										
2000 sq miles	0.2	0.8	1.5	2.2	2.8	3.5	4.6	4.7	5.8	5.9	6.2	6.2																										
5000 sq miles	0.2	0.7	1.1	1.6	2.2	2.8	3.4	3.7	4.5	4.6	4.7	4.7																										
10000 sq miles	0.1	0.5	0.7	1.0	1.4	1.6	2.0	2.3	2.6	3.4	3.7	3.8																										
20000 sq miles	0.1	0.4	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.4	2.5	2.6																										
Adjusted Storm Depth-Area-Duration																																						
	1 Hours	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours																										
1 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																										
Storm or Storm Center Name: SPAS 1269, DAD Zone 2																																						
Storm Date(s): 8/5-11/1971																																						
Storm Type: Synoptic																																						
Storm Location: 63.47 N 145.48 W																																						
Storm Center Elevation: 6235																																						
Precipitation Total & Duration (10 sq mi): 11.4 inches in 192 hours																																						
Storm Representative SST: 71.0 F																																						
Storm Representative SST Location: 38.00 N 159.70 W Aug																																						
In-place Maximum SST: 74.0 F 74																																						
Moisture Inflow Vector: SSW @ 1675																																						
In-place Maximization Factor: 1.20																																						
Temporal Transposition (Date): 15-Aug																																						
Transposition SST Location: NA NA																																						
Transposition Maximum SST: NA																																						
Transposition Adjustment Factor: 1.00																																						
Average Basin Elevation: 3,654																																						
Highest Elevation in Basin: 13,131																																						
Inflow Barrier Height: 1,200																																						
Elevation Adjustment Factor: #VALUE!																																						
Total Adjustment Factor: #VALUE!																																						

SPAS 1269
August 4, 1971



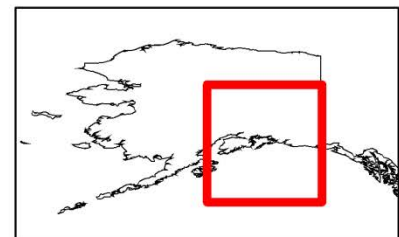
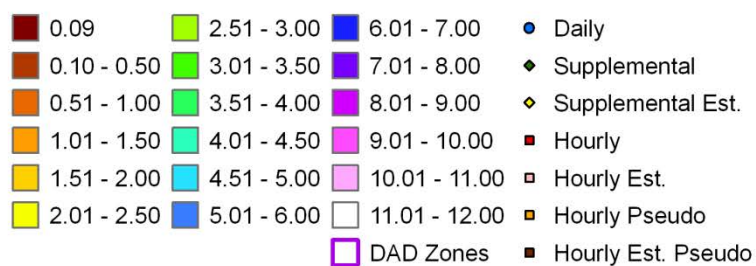
Storm 1269 - Aug. 4 (1000 UTC) - Aug. 11 (0900 UTC), 1971															
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)															
Area (mi ²)	Duration (hours)														
	1	6	12	18	24	36	48	72	96	120	144	168	192	Total	
0.20	0.44	2.11	3.21	3.86	3.86	4.69	6.11	7.64	9.23	10.21	11.02	11.17	11.18	11.18	
1	0.43	2.06	3.14	3.78	3.78	4.56	5.96	7.47	9.01	9.97	10.74	10.92	10.93	10.93	
10	0.43	2.06	3.14	3.78	3.78	4.56	5.96	7.47	9.01	9.97	10.74	10.92	10.93	10.93	
25	0.43	2.06	3.14	3.78	3.78	4.56	5.96	7.47	9.01	9.97	10.74	10.92	10.93	10.93	
50	0.43	2.06	3.14	3.78	3.78	4.56	5.96	7.47	9.01	9.97	10.74	10.92	10.93	10.93	
100	0.42	2.03	3.10	3.69	3.69	4.53	5.84	7.29	8.87	9.83	10.58	10.70	10.79	10.79	
150	0.42	2.00	3.04	3.6	3.60	4.45	5.70	7.20	8.69	9.64	10.26	10.46	10.60	10.60	
200	0.41	1.95	2.98	3.52	3.52	4.36	5.58	7.04	8.57	9.48	10.24	10.30	10.39	10.39	
300	0.39	1.87	2.83	3.41	3.41	4.16	5.39	6.75	8.18	9.06	9.72	9.85	9.95	9.95	
400	0.37	1.72	2.67	3.21	3.21	3.79	5.11	6.38	7.78	8.64	9.21	9.32	9.52	9.52	
500	0.35	1.68	2.58	3.1	3.10	3.75	4.91	6.14	7.45	8.26	8.83	9.05	9.08	9.09	
1,000	0.28	1.30	2.01	2.23	2.23	2.83	3.87	4.83	5.86	6.50	7.23	7.28	7.61	7.69	
2,000	0.23	0.82	1.47	1.8	1.80	2.23	2.83	3.48	4.64	4.68	5.84	5.86	6.16	6.18	
5,000	0.18	0.68	1.05	1.29	1.29	1.64	2.15	2.78	3.41	3.65	4.51	4.59	4.74	4.74	
10,000	0.14	0.47	0.72	0.92	0.92	1.00	1.42	1.59	1.97	2.31	2.58	3.35	3.72	3.77	
20,000	0.11	0.36	0.57	0.72	0.72	0.87	1.21	1.53	1.82	2.12	2.35	2.40	2.54	2.61	
50,000	0.04	0.21	0.32	0.42	0.42	0.46	0.81	0.81	0.98	1.31	1.31	1.66	1.88	1.88	





Total Storm Precipitation (inches)
August 4-11, 1971 (192-hours)
SPAS #1269

Precipitation (inches)



MetStat, Inc. 05/28/2013

Mt. Geist, AK, SPAS 1268 Zone 2
July 24, 1980

Storm Name: SPAS 1268-AK Zone 2		Storm Adjustment for Susitna-Watana	
Storm Date: July 24-31, 1980			
AWA Analysis Date: 3/14/2014			
Temporal Transposition Date: 15-Aug			
Storm Center Location	63.64 N 146.97 W	Moisture Inflow Direction	SSW @ 530 miles
Storm Rep SST Location	56.00 N 148.54 W	Basin Average Elevation	NA feet
Transposition SST Location	NA NA	Storm Center Elevation	8,215 feet
Basin Location	* *	Storm Analysis Duration	24 hours
		Effective Barrier Height	NA feet

The storm representative SST is	56.0 F	with total precipitable water above sea level of	1.13	inches.
The in-place maximum SST is	58.0 F	with total precipitable water above sea level of	1.25	inches.
The transposition maximum SST is	NA	with total precipitable water above sea level of	3.22	inches.
The in-place storm elevation is	8,215	feet which subtracts	0.77	inches of precipitable water at 56.0 F
The in-place storm elevation is	8,215	feet which subtracts	0.84	inches of precipitable water at 58.0 F
The transposition storm elevation at	NA	feet which subtracts	NA	inches of precipitable water at NA
The moisture inflow barrier height is	NA	feet which subtracts	NA	inches of precipitable water at NA

The in-place maximization factor is	1.14
The transposition factor is	#VALUE!
The elevation/barrier adjustment factor is	#VALUE!
The total adjustment factor is	#VALUE!

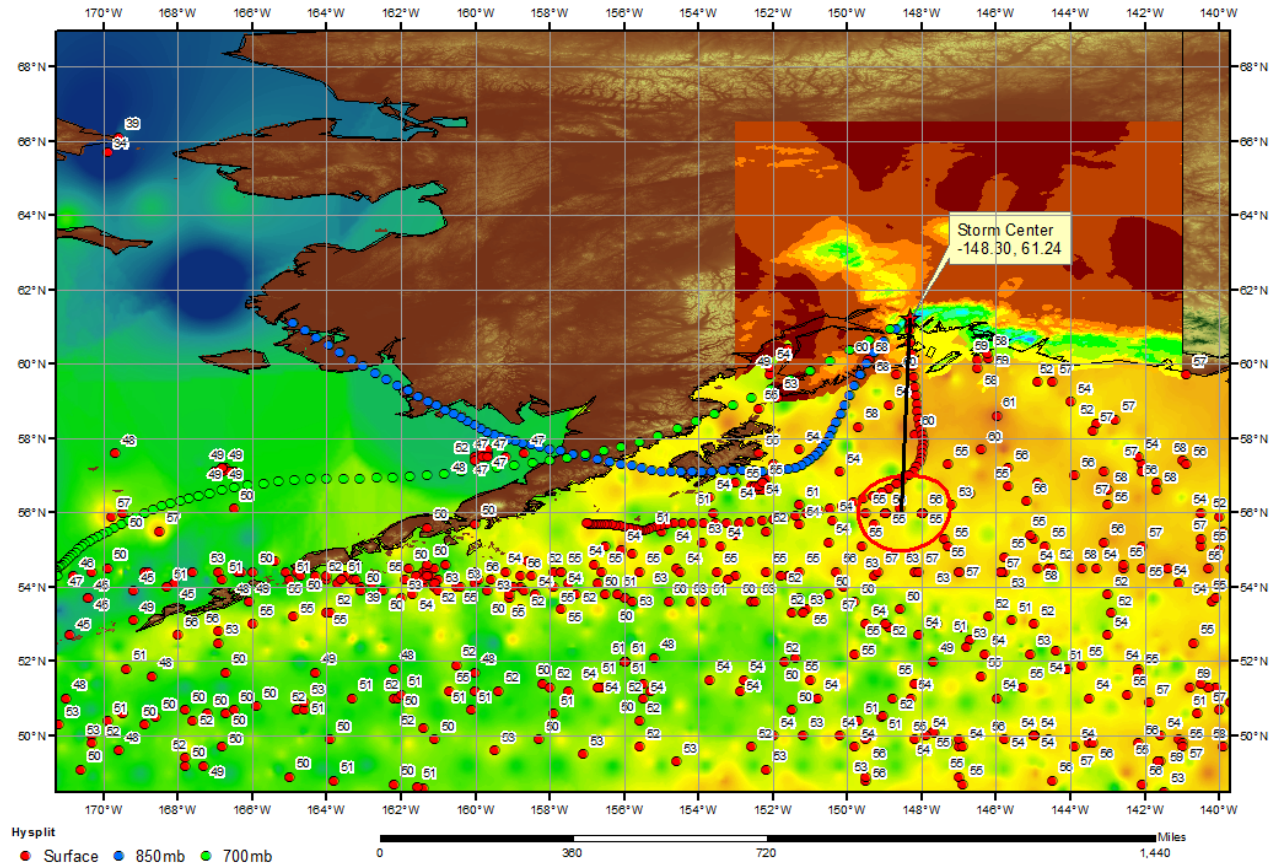
Notes: Storm representative SST value was based on SST values for July 25-27 along the surface HYSPLIT trajectory data. Values were selected in region where temperature did not vary more than a 1-degree over a large area and was as closest to the storm center.

Observed Storm Depth-Area-Duration													
	1 Hours	6 Hours	12 Hours	18 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours
1 sq miles	0.3	0.7	1.0	1.4	1.6	2.0	2.4	3.4	3.8	4.3	4.9	5.1	5.1
10 sq miles	0.3	0.7	1.0	1.4	1.6	2.0	2.4	3.4	3.8	4.3	4.9	5.1	5.1
100 sq miles	0.3	0.7	1.0	1.4	1.6	2.0	2.3	3.3	3.8	4.3	4.8	5.0	5.0
200 sq miles	0.3	0.7	1.0	1.3	1.5	2.0	2.3	3.2	3.6	4.2	4.7	4.8	4.9
500 sq miles	0.3	0.6	0.9	1.2	1.4	1.9	2.2	3.0	3.4	3.9	4.4	4.6	4.6
1000 sq miles	0.3	0.5	0.8	1.1	1.3	1.7	2.1	2.7	3.1	3.6	3.8	4.1	4.2
2000 sq miles	0.2	0.5	0.7	0.9	1.1	1.6	1.8	2.3	2.7	3.1	3.4	3.7	3.7
5000 sq miles	0.2	0.4	0.5	0.7	0.9	1.3	1.5	1.8	2.1	2.6	2.8	2.9	3.0
10000 sq miles	0.1	0.2	0.4	0.5	0.7	1.0	1.2	1.3	1.7	2.1	2.3	2.4	2.5
20000 sq miles	0.1	0.2	0.3	0.4	0.5	0.7	0.8	1.1	1.3	1.6	1.7	1.9	1.9

Adjusted Storm Depth-Area-Duration													
	1 Hours	6 Hours	12 Hours	18 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours
1 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

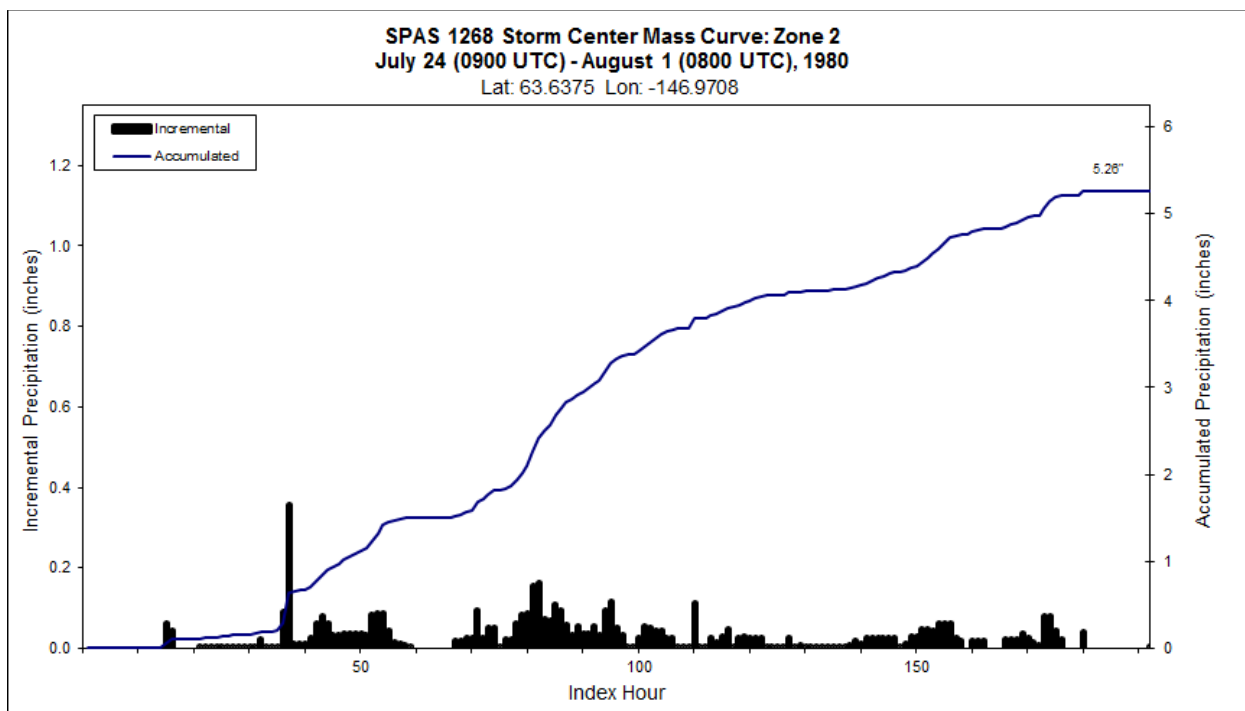
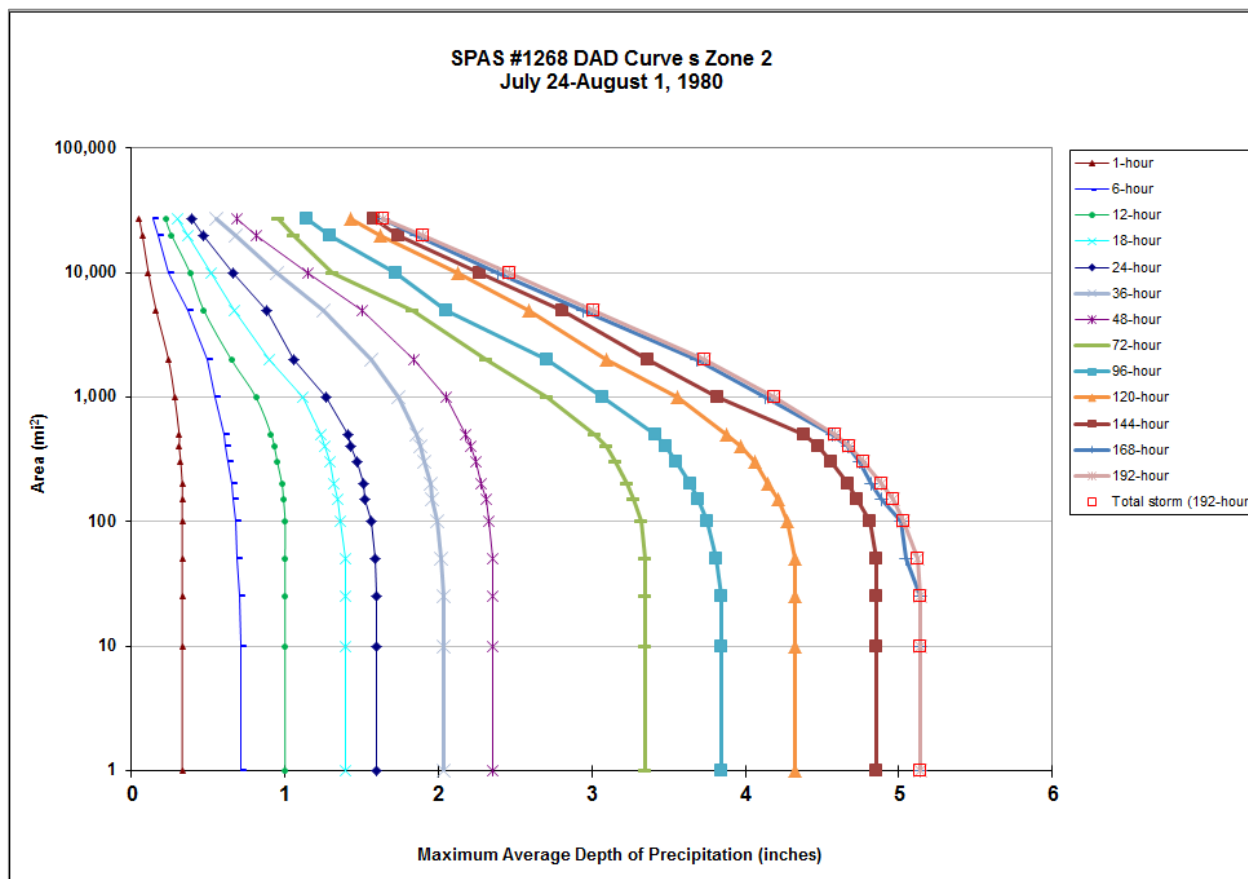
Storm or Storm Center Name	SPAS 1268-AK Zone 2			
Storm Date(s)	July 24-31, 1980			
Storm Type	Synoptic			
Storm Location	63.64 N	146.97 W		
Storm Center Elevation	8,215			
Precipitation Total & Duration (10 sq mi)	5.26 inches at 192 hours			
Storm Representative SST	56.0 F			
Storm Representative SST Location	56.00 N	148.54 W	July	Aug
Maximum SST	58.0 F			
Moisture Inflow Vector	SSW @ 530			
In-place Maximization Factor	1.14			
Temporal Transposition (Date)	15-Aug			
Transposition SST Location	NA	NA		
Transposition Maximum SST	NA			
Transposition Adjustment Factor	#VALUE!			
Average Basin Elevation	NA			
Highest Elevation in Basin	NA			
Inflow Barrier Height	NA			
Elevation Adjustment Factor	#VALUE!			
Total Adjustment Factor	#VALUE!			

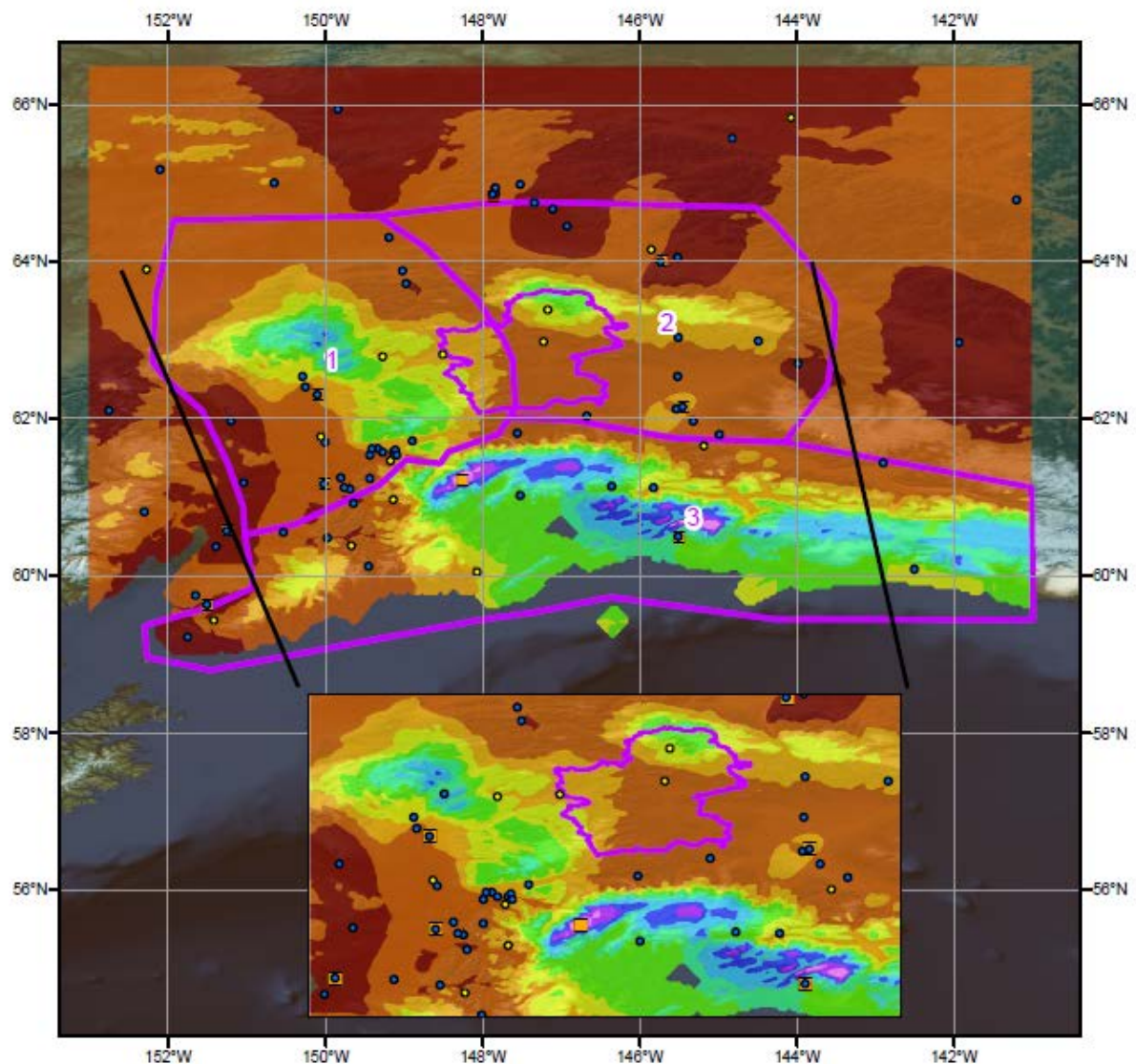
SPAS 1268 Gate AK Storm Analysis
July 25 - 27, 1980



Storm 1268 - Jul. 24 (0900 UTC) - Aug. 1 (0800 UTC), 1980
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

Area (mi ²)	Duration (hours)												
	1	6	12	18	24	36	48	72	96	120	144	168	192
0.2	0.36	0.71	1.05	1.42	1.63	2.08	2.41	3.48	3.92	4.47	5.02	5.25	5.26
1	0.33	0.71	1	1.39	1.6	2.03	2.35	3.35	3.84	4.32	4.85	5.14	5.14
10	0.33	0.71	1	1.39	1.6	2.03	2.35	3.35	3.84	4.32	4.85	5.14	5.14
25	0.33	0.7	1	1.39	1.6	2.03	2.35	3.35	3.84	4.32	4.85	5.14	5.14
50	0.33	0.69	1	1.39	1.59	2.02	2.35	3.35	3.81	4.32	4.85	5.05	5.12
100	0.33	0.68	1	1.36	1.56	1.99	2.33	3.32	3.75	4.27	4.81	5.01	5.03
150	0.33	0.66	0.99	1.34	1.52	1.96	2.31	3.27	3.69	4.21	4.73	4.89	4.96
200	0.33	0.65	0.98	1.32	1.51	1.95	2.28	3.23	3.64	4.15	4.67	4.82	4.89
300	0.32	0.63	0.95	1.29	1.47	1.91	2.24	3.15	3.55	4.06	4.56	4.74	4.77
400	0.31	0.61	0.93	1.26	1.43	1.88	2.21	3.09	3.48	3.97	4.47	4.67	4.68
500	0.31	0.6	0.91	1.23	1.41	1.86	2.18	3.02	3.41	3.88	4.38	4.57	4.58
1,000	0.28	0.54	0.81	1.12	1.27	1.74	2.05	2.71	3.07	3.56	3.82	4.13	4.19
2,000	0.24	0.49	0.65	0.9	1.06	1.56	1.84	2.31	2.71	3.09	3.36	3.68	3.73
5,000	0.16	0.37	0.47	0.67	0.88	1.25	1.5	1.83	2.05	2.59	2.81	2.94	3.01
10,000	0.11	0.24	0.38	0.52	0.66	0.95	1.15	1.31	1.72	2.13	2.27	2.39	2.46
20,000	0.07	0.17	0.26	0.37	0.47	0.68	0.81	1.06	1.29	1.62	1.74	1.86	1.9
26,863	0.05	0.14	0.22	0.3	0.39	0.55	0.69	0.96	1.14	1.43	1.58	1.64	1.64

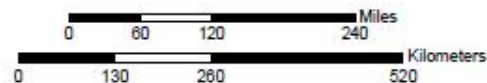




Total Storm (192-hr) Precipitation (inches)
July 24-31, 1980
SPAS 1268

Gauges

- Daily
- Hourly
- Hourly Pseudo
- Supplemental



Precipitation (inches)

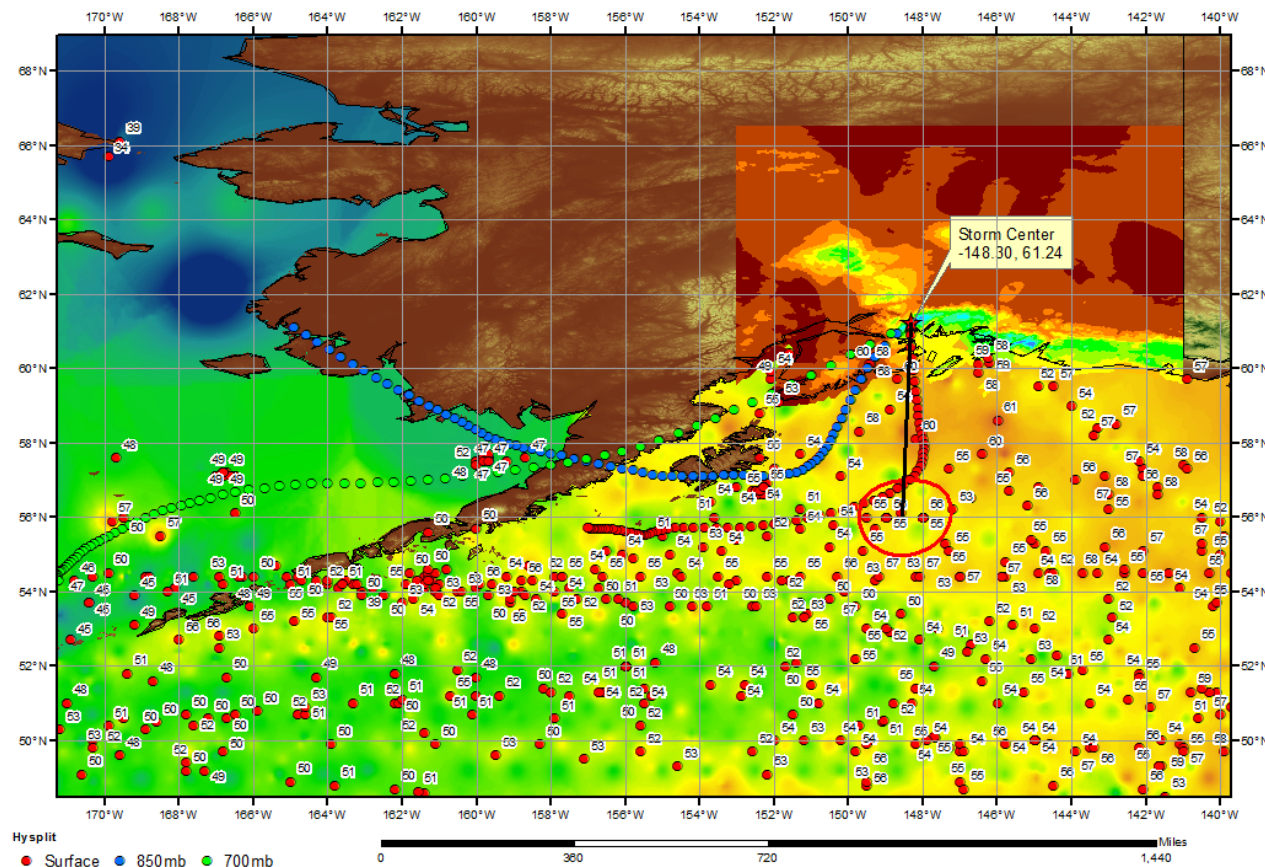


4/30/2013

Denali NP, SPAS 1268 Zone 1
July 24, 1980

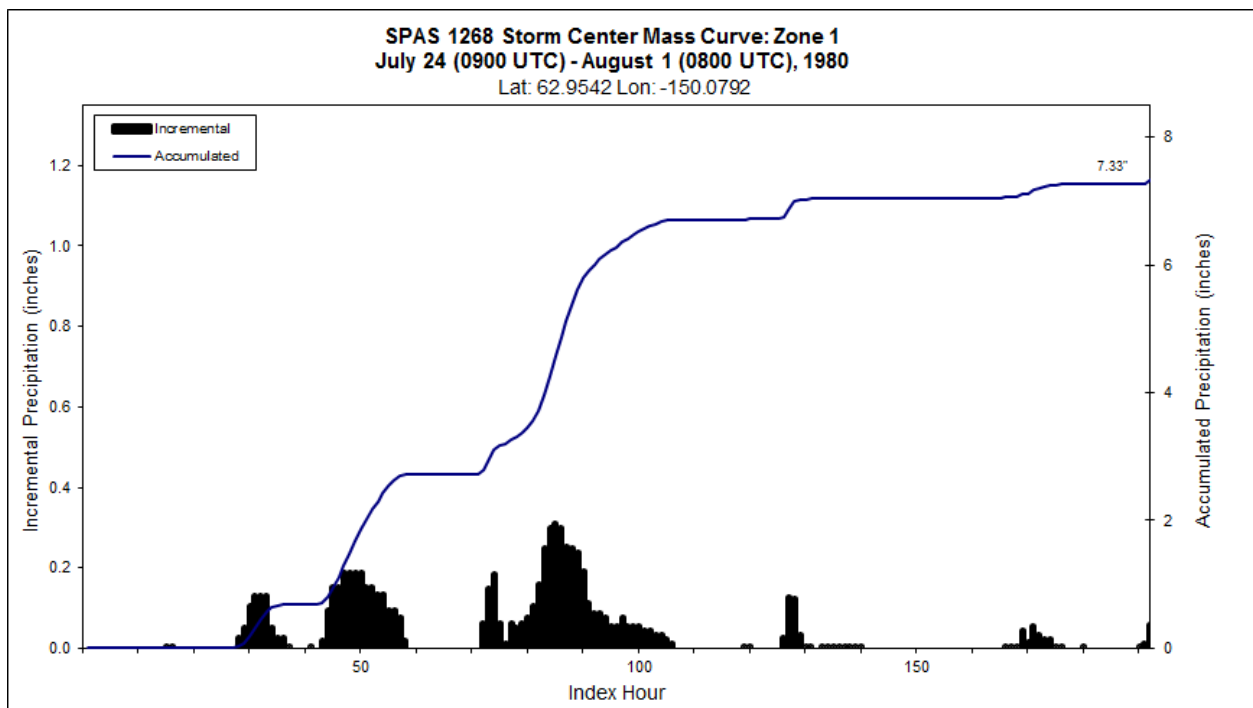
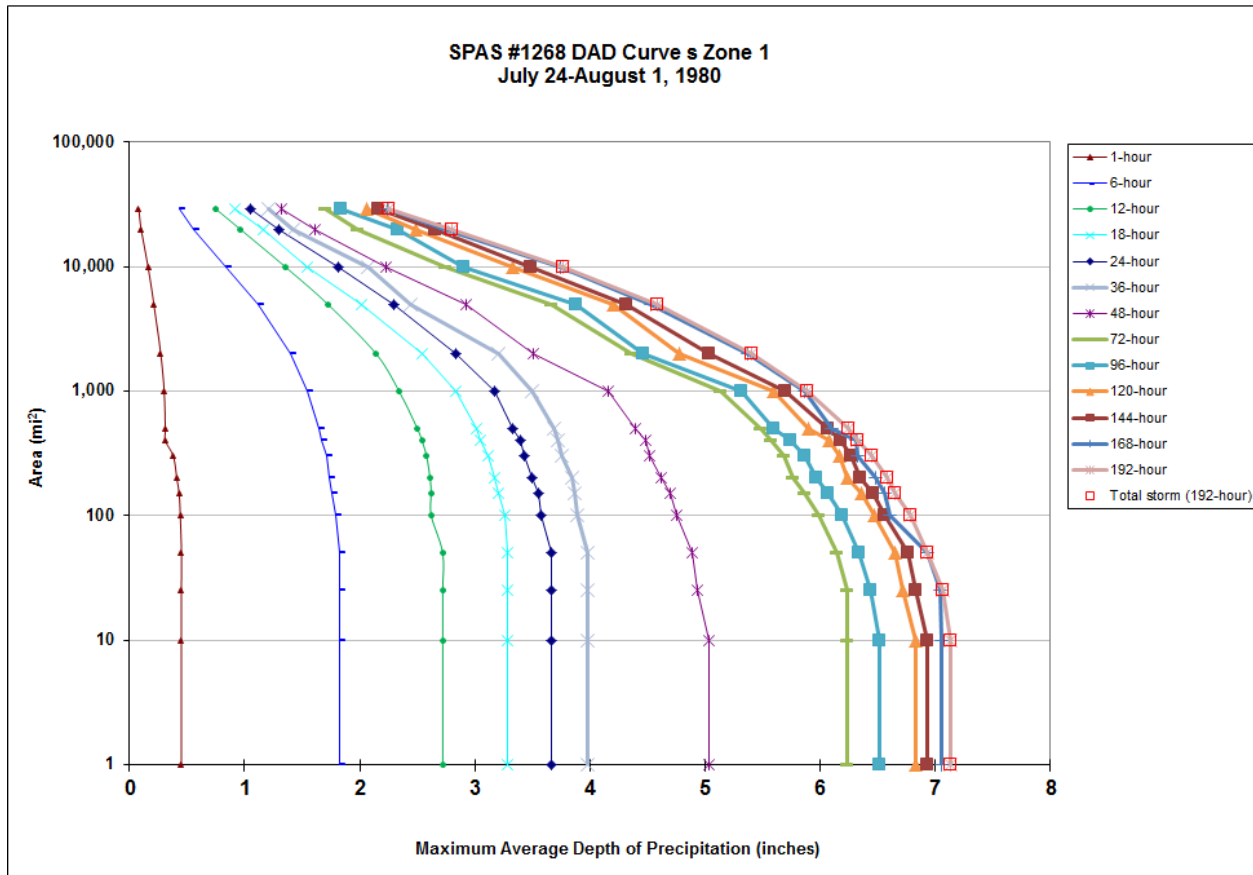
Storm Name: SPAS 1268-AK Zone 1			Storm Adjustment for Susitna-Watana																																																																						
Storm Date: July 24-31, 1980																																																																									
AWA Analysis Date: 3/14/2014																																																																									
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10 sq miles	0.5	1.8	2.7	3.3	3.7	4.0	5.0	6.2	6.5	6.8	6.9	7.1	7.1																																																												
100 sq miles	0.4	1.8	2.6	3.3	3.6	3.9	4.8	6.0	6.2	6.5	6.6	6.6	6.8																																																												
200 sq miles	0.4	1.7	2.6	3.2	3.5	3.9	4.6	5.8	6.0	6.2	6.4	6.5	6.6																																																												
500 sq miles	0.3	1.6	2.5	3.0	3.3	3.7	4.4	5.5	5.6	5.9	6.1	6.1	6.3																																																												
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10000 sq miles	0.2	0.8	1.4	1.6	1.8	2.1	2.2	2.8	2.9	3.3	3.5	3.7	3.8																																																												
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	1 Hours	6 Hours	12 Hours	18 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	144 Hours	168 Hours	192 Hours																																																												
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10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																																																												
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!																																																												
<table border="1"> <tr> <td>Storm or Storm Center Name</td> <td colspan="2">SPAS 1268-AK Zone 1</td> </tr> <tr> <td>Storm Date(s)</td> <td colspan="2">July 24-31, 1980</td> </tr> <tr> <td>Storm Type</td> <td colspan="2">Synoptic</td> </tr> <tr> <td>Storm Location</td> <td>62.95 N</td> <td>150.08 W</td> </tr> <tr> <td>Storm Center Elevation</td> <td colspan="2">4,750</td> </tr> <tr> <td>Precipitation Total & Duration (10 sq mi)</td> <td colspan="2">7.33 inches at 192 hours</td> </tr> <tr> <td>Storm Representative SST</td> <td colspan="2">56.0 F</td> </tr> <tr> <td>Storm Representative SST Location</td> <td>56.00 N</td> <td>148.54 W</td> </tr> <tr> <td>Maximum SST</td> <td>58.0 F</td> <td>56 58</td> </tr> <tr> <td>Moisture Inflow Vector</td> <td colspan="2">SSE @ 485</td> </tr> <tr> <td>In-place Maximization Factor</td> <td colspan="2">1.13</td> </tr> <tr> <td>Temporal Transposition (Date)</td> <td colspan="2">15-Aug</td> </tr> <tr> <td>Transposition SST Location</td> <td>NA</td> <td>NA</td> </tr> <tr> <td>Transposition Maximum SST</td> <td colspan="2">NA</td> </tr> <tr> <td>Transposition Adjustment Factor</td> <td colspan="2">#VALUE!</td> </tr> <tr> <td>Average Basin Elevation</td> <td colspan="2">NA</td> </tr> <tr> <td>Highest Elevation in Basin</td> <td colspan="2">NA</td> </tr> <tr> <td>Inflow Barrier Height</td> <td colspan="2">NA</td> </tr> <tr> <td>Elevation Adjustment Factor</td> <td colspan="2">#VALUE!</td> </tr> <tr> <td>Total Adjustment Factor</td> <td colspan="2">#VALUE!</td> </tr> </table>														Storm or Storm Center Name	SPAS 1268-AK Zone 1		Storm Date(s)	July 24-31, 1980		Storm Type	Synoptic		Storm Location	62.95 N	150.08 W	Storm Center Elevation	4,750		Precipitation Total & Duration (10 sq mi)	7.33 inches at 192 hours		Storm Representative SST	56.0 F		Storm Representative SST Location	56.00 N	148.54 W	Maximum SST	58.0 F	56 58	Moisture Inflow Vector	SSE @ 485		In-place Maximization Factor	1.13		Temporal Transposition (Date)	15-Aug		Transposition SST Location	NA	NA	Transposition Maximum SST	NA		Transposition Adjustment Factor	#VALUE!		Average Basin Elevation	NA		Highest Elevation in Basin	NA		Inflow Barrier Height	NA		Elevation Adjustment Factor	#VALUE!		Total Adjustment Factor	#VALUE!	
Storm or Storm Center Name	SPAS 1268-AK Zone 1																																																																								
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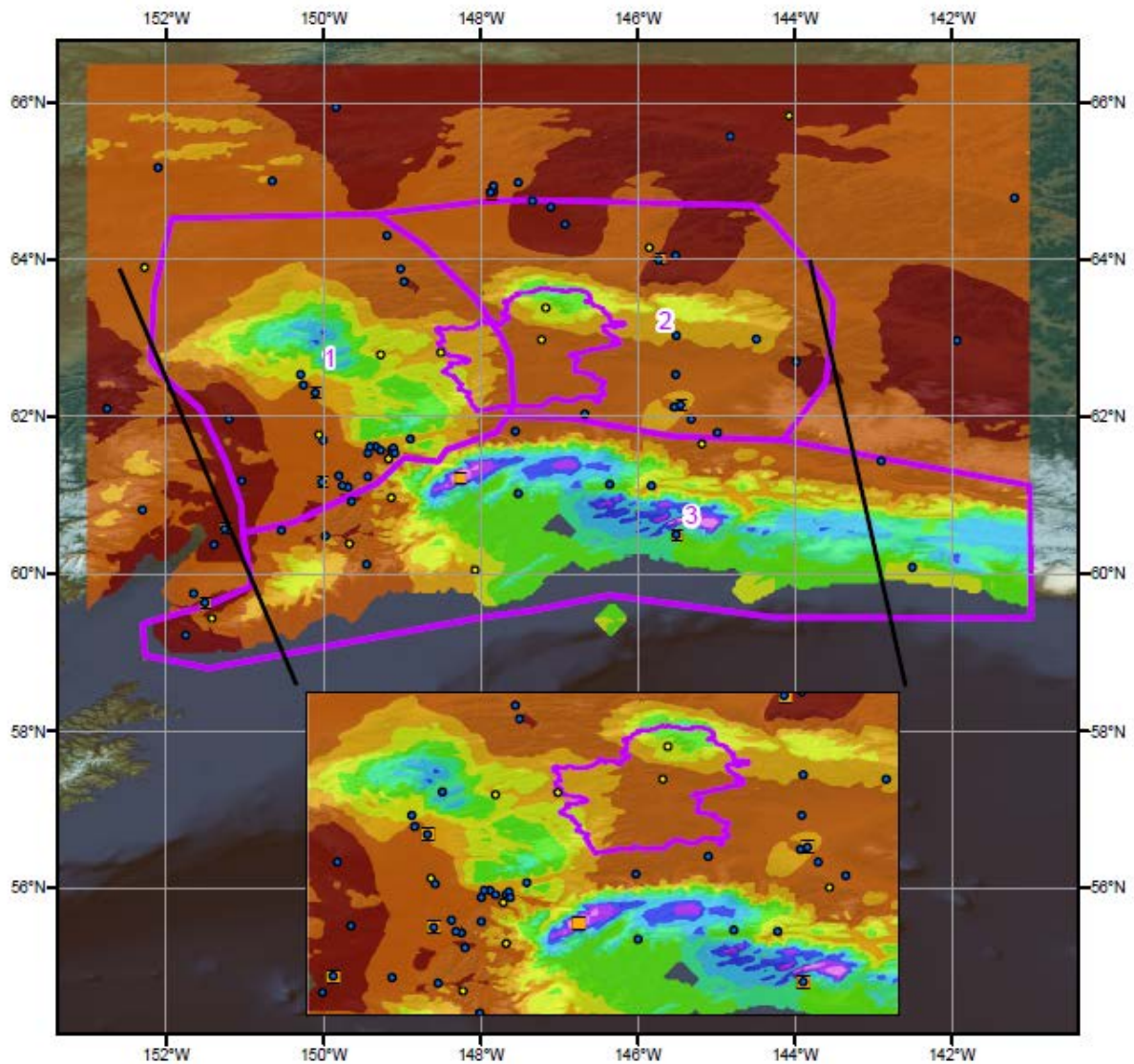
SPAS 1268 Gate AK Storm Analysis
July 25 - 27, 1980



Storm 1268 - Jul. 24 (0900 UTC) - Aug. 1 (0800 UTC), 1980
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

Area (mi ²)	Duration (hours)												
	1	6	12	18	24	36	48	72	96	120	144	168	192
0.2	0.49	1.85	2.8	3.37	3.74	4.08	5.2	6.49	6.71	7.04	7.17	7.33	7.33
1	0.45	1.82	2.72	3.28	3.66	3.98	5.03	6.23	6.51	6.83	6.93	7.05	7.13
10	0.45	1.82	2.72	3.28	3.66	3.98	5.03	6.23	6.51	6.83	6.93	7.05	7.13
25	0.45	1.82	2.72	3.28	3.66	3.98	4.93	6.23	6.44	6.72	6.83	7.04	7.06
50	0.45	1.82	2.72	3.28	3.66	3.98	4.89	6.14	6.34	6.65	6.76	6.93	6.93
100	0.44	1.79	2.62	3.26	3.58	3.89	4.75	5.99	6.19	6.47	6.56	6.61	6.78
150	0.43	1.76	2.62	3.21	3.55	3.87	4.7	5.87	6.07	6.36	6.46	6.56	6.65
200	0.41	1.74	2.61	3.17	3.5	3.85	4.62	5.76	5.97	6.24	6.35	6.48	6.58
300	0.38	1.71	2.58	3.11	3.43	3.75	4.52	5.68	5.86	6.17	6.27	6.33	6.45
400	0.31	1.67	2.54	3.05	3.4	3.72	4.48	5.57	5.74	6.08	6.18	6.31	6.33
500	0.31	1.64	2.5	3.01	3.33	3.69	4.39	5.48	5.6	5.9	6.07	6.1	6.25
1,000	0.3	1.55	2.34	2.83	3.17	3.5	4.16	5.14	5.31	5.6	5.7	5.86	5.89
2,000	0.27	1.4	2.14	2.54	2.83	3.2	3.51	4.36	4.46	4.78	5.03	5.37	5.4
5,000	0.21	1.12	1.72	2.02	2.3	2.44	2.93	3.67	3.88	4.2	4.32	4.53	4.58
10,000	0.16	0.84	1.35	1.55	1.81	2.07	2.23	2.75	2.9	3.33	3.49	3.74	3.77
20,000	0.1	0.56	0.96	1.16	1.3	1.42	1.61	1.98	2.33	2.49	2.66	2.75	2.8
28,940	0.08	0.43	0.75	0.92	1.05	1.21	1.32	1.7	1.84	2.06	2.16	2.24	2.25

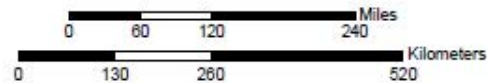




Total Storm (192-hr) Precipitation (inches)
July 24-31, 1980
SPAS 1268

Gauges

- Daily
- Hourly
- Hourly Pseudo
- Supplemental



Precipitation (inches)



4/30/2013

Denali NP, AWA, SPAS 1267 Zone 1
October 8, 1986

Storm Name: Seward, AK SPAS 1267-DAD Zone 1		Storm Adjustment for Susitna-Watana	
Storm Date: 10/8-12/1986			
AWA Analysis Date: 3/4/2014			
Temporal Transposition Date 25-Sep			
Storm center location	Lat 62.93 N Long 151.14 W	Moisture Inflow Direction:	SSE @ 1620 miles
Storm Rep SST location	40.80 N 137.70 W	Basin Elevation	3,650 feet
Transposition SST location	NA NA	Storm Elevation	5,850 feet
Basin location	62.84 N 147.37 W	Storm Duration	24hr feet

The storm representative SST is	66.0 F	with total precipitable water above sea level of	1.86	inches.
The in-place maximum SST is	68.5 F	with total precipitable water above sea level of	2.10	inches.
The transpositioned maximum SST is	NA	with total precipitable water above sea level of	4.08	inches.
The in-place storm elevation is	5,850	which subtracts 0.725	inches of precipitable water at	66.0 F
The in-place storm elevation is	5,850	which subtracts 0.795	inches of precipitable water at	68.5 F
The transposition basin elevation at	3,650	which subtracts xx	inches of precipitable water at	NA
The inflow barrier/basin elevation height is	1,483	which subtracts xx	inches of precipitable water at	NA

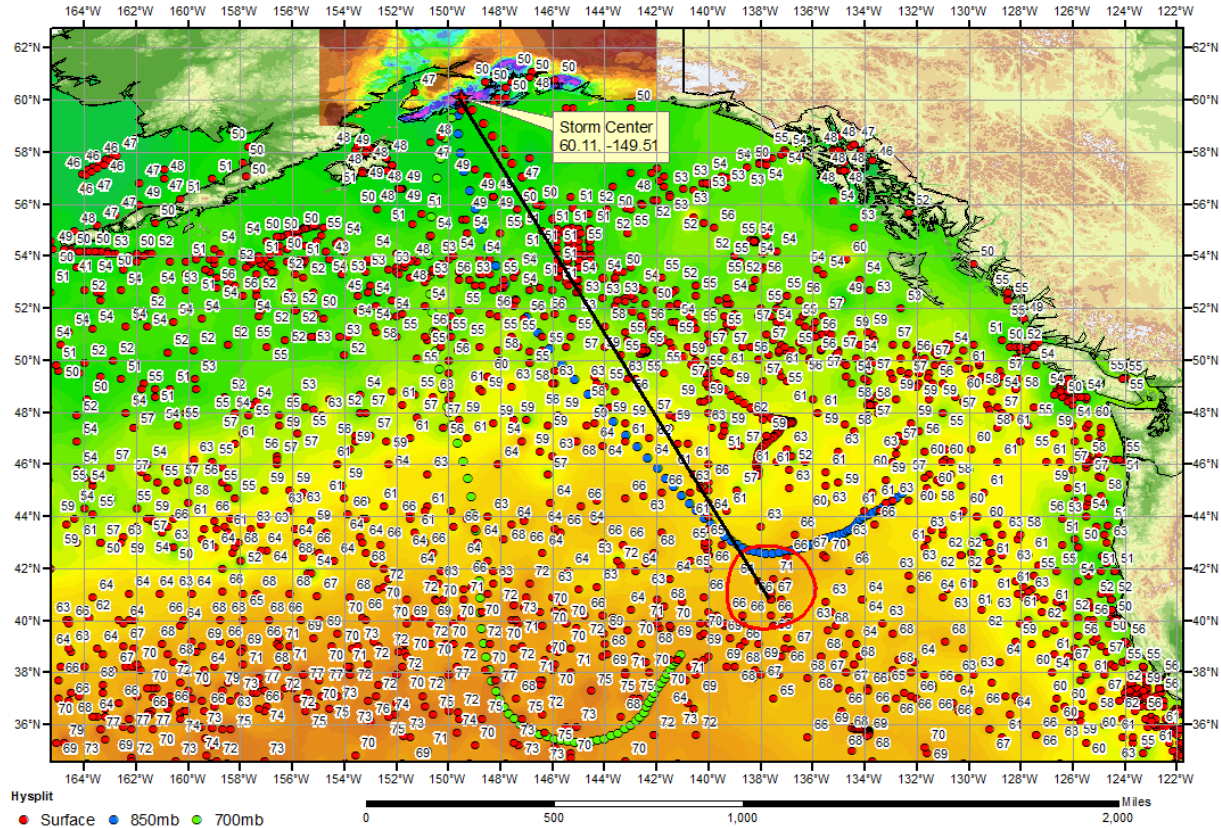
The in-place storm maximization factor is	1.15	Notes: DAD values taken from SPAS 1267 Zone 2. Used SST values on October 8-9 along with HYSPLIT backward trajectory. Values were selected in region where temperature did not vary more than a degree over a large area.
The transposition/elevation to basin factor is	#VALUE!	
The barrier adjustment factor is	#VALUE!	
The total adjustment factor is	#VALUE!	

Observed Storm Depth-Area-Duration									
	1 Hours	6 Hours	12 Hours	18 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours
1 sq miles	0.5	2.6	4.9	6.6	7.5	9.1	10.2	10.7	10.7
10 sq miles	0.5	2.5	4.8	6.4	7.4	9.1	10.2	10.7	10.7
100 sq miles	0.4	2.3	4.2	5.8	7.0	9.1	10.2	10.7	10.7
200 sq miles	0.4	2.1	4.1	5.6	6.9	8.9	10.0	10.5	10.5
500 sq miles	0.4	2.1	4.0	5.4	6.6	8.5	9.8	9.8	10.2
1000 sq miles	0.4	2.0	3.8	5.2	6.4	8.4	9.5	9.8	9.9
2000 sq miles	0.3	1.9	3.5	4.9	6.1	8.0	9.1	9.5	9.5
5000 sq miles	0.3	1.7	3.3	4.5	5.6	7.3	8.2	8.4	8.7
10000 sq miles	0.3	1.6	2.9	4.1	5.1	6.6	7.3	7.4	7.8
20000 sq miles	0.2	1.3	2.4	3.3	4.2	5.5	6.1	6.2	6.5

Adjusted Storm Depth-Area-Duration									
	1 Hours	6 Hours	12 Hours	18 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours
1 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

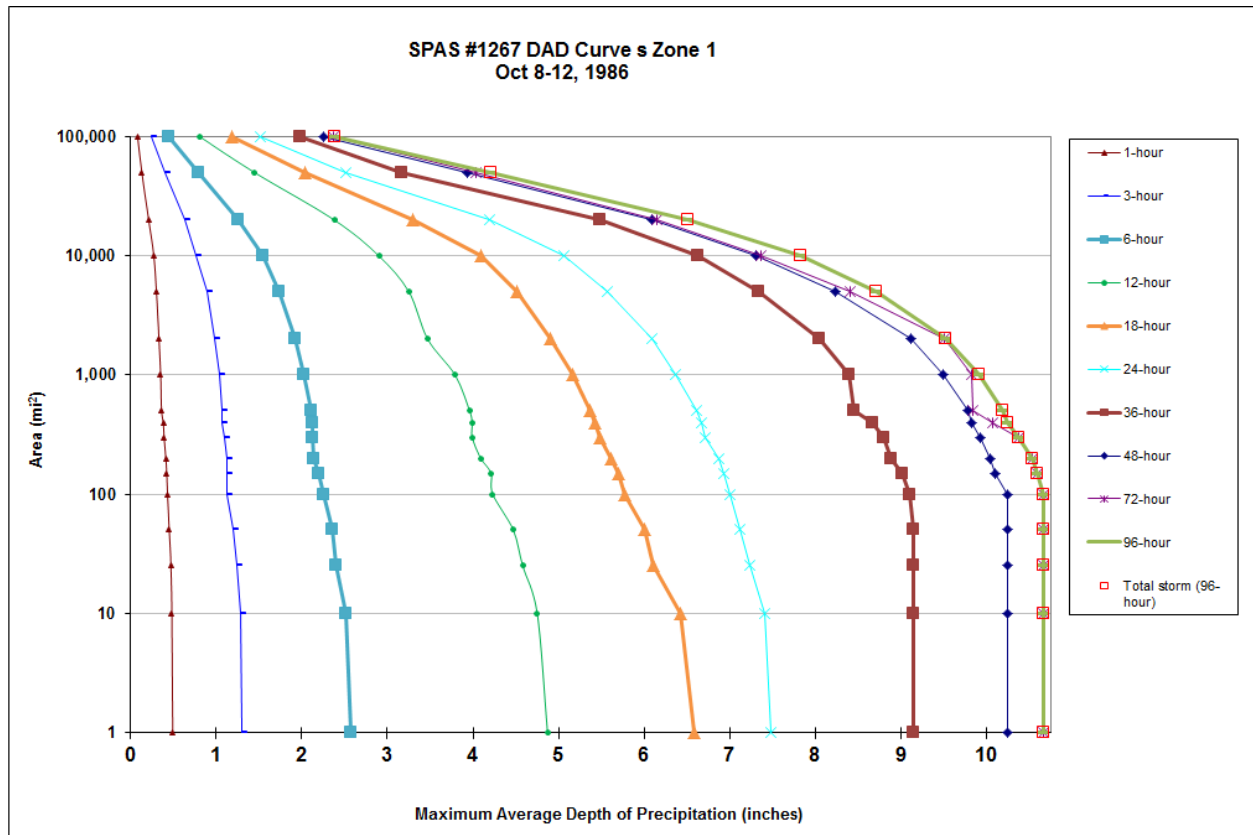
Storm or Storm Center Name	Seward, AK SPAS 1267-DAD Zone 1	
Storm Date(s)	10/8-12/1986	
Storm Type	Atmospheric River	
Storm Location	62.93 N	151.14 W
Storm Center Elevation	5,850	
Precipitation Total & Duration	11.01 Inches 96-hours	
Storm Representative SST	66.0 F	24hr
Storm Representative SST Location	40.80 N	137.70 W
Maximum SST	68.5 F	Sep 69.0 Oct 67.0
Moisture Inflow Vector	SSE @ 1620 Miles	
In-place Maximization Factor	1.15	
Temporal Transposition (Date)	25-Sep	
Transposition Dewpoint Location	NA	NA
Transposition Maximum SST	NA	
Transposition Adjustment Factor	#VALUE!	
Average Basin Elevation	3,650	
Highest Elevation in Basin	13,131	
Inflow Barrier Height	1,483	
Elevation Adjustment Factor	#VALUE!	
Total Adjustment Factor	#VALUE!	

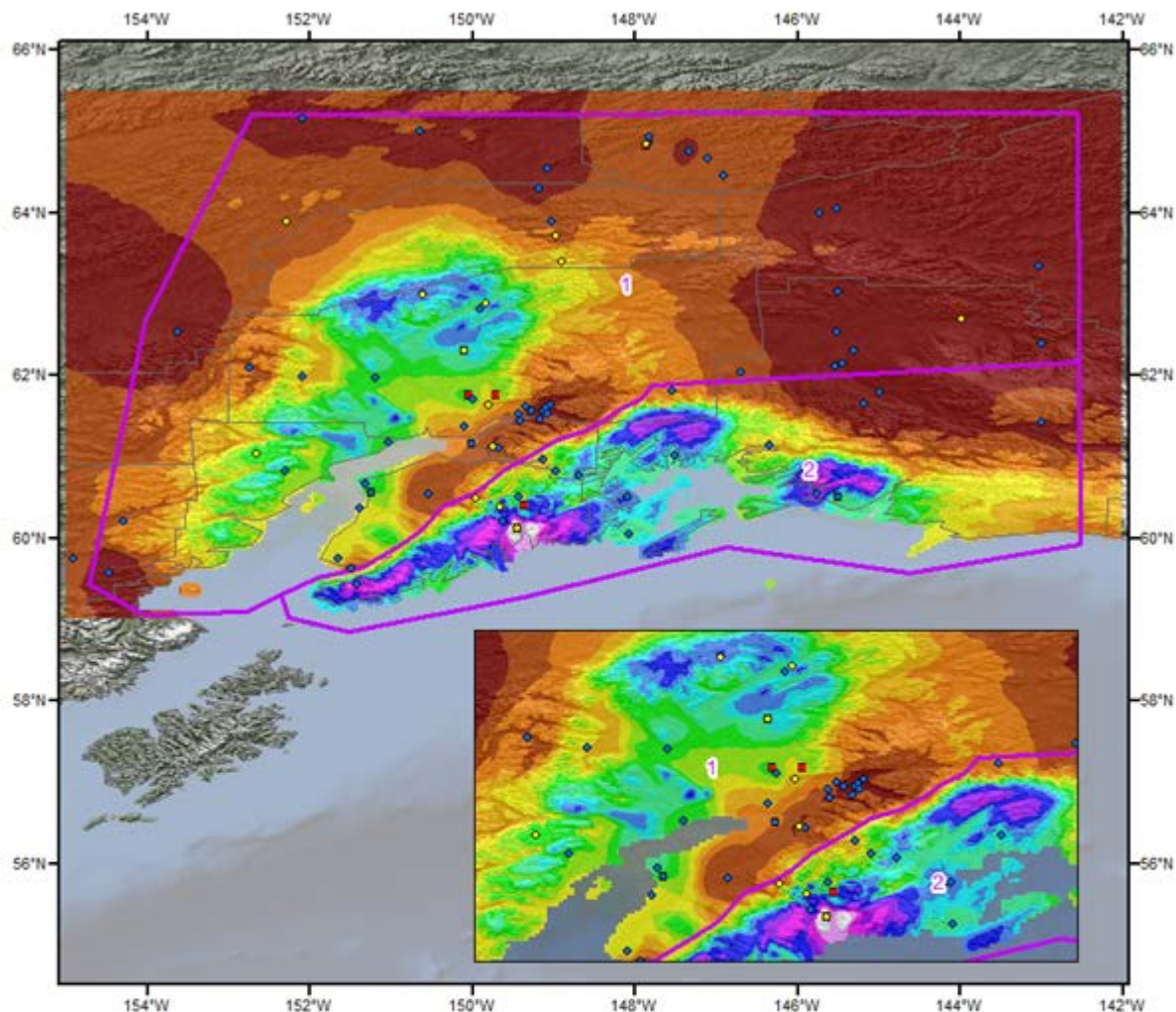
SPAS 1267 Alaska Storm Analysis
October 7-11, 1986



Storm 1267 - Oct. 8 (1000 UTC) - Oct. 12 (0900 UTC), 1986
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

Area (mi ²)	Duration (hours)										
	1	3	6	12	18	24	36	48	72	96	Total
0.2	0.5	1.33	2.63	5	6.74	7.72	9.47	10.59	11.01	11.01	11.01
1	0.49	1.3	2.58	4.87	6.59	7.48	9.14	10.24	10.66	10.66	10.66
10	0.48	1.28	2.51	4.75	6.43	7.41	9.14	10.24	10.66	10.66	10.66
25	0.47	1.24	2.4	4.58	6.1	7.23	9.14	10.24	10.66	10.66	10.66
50	0.45	1.2	2.35	4.47	6.01	7.12	9.14	10.24	10.66	10.66	10.66
100	0.43	1.13	2.26	4.23	5.78	7	9.11	10.24	10.66	10.66	10.66
150	0.42	1.12	2.2	4.21	5.7	6.93	9.01	10.1	10.6	10.6	10.60
200	0.41	1.12	2.14	4.09	5.61	6.87	8.89	10.04	10.53	10.53	10.53
300	0.39	1.09	2.13	3.99	5.48	6.72	8.8	9.93	10.38	10.38	10.38
400	0.38	1.07	2.12	3.99	5.42	6.67	8.67	9.83	10.07	10.25	10.25
500	0.36	1.06	2.11	3.96	5.37	6.61	8.45	9.78	9.84	10.19	10.19
1,000	0.35	1.04	2.02	3.79	5.16	6.36	8.39	9.5	9.83	9.92	9.92
2,000	0.33	0.98	1.92	3.47	4.91	6.09	8.04	9.12	9.51	9.52	9.52
5,000	0.3	0.9	1.73	3.25	4.51	5.57	7.34	8.23	8.41	8.71	8.71
10,000	0.27	0.76	1.55	2.9	4.09	5.06	6.62	7.31	7.37	7.83	7.83
20,000	0.21	0.64	1.26	2.38	3.29	4.19	5.49	6.09	6.15	6.51	6.51
50,000	0.13	0.4	0.79	1.45	2.04	2.52	3.16	3.93	4.03	4.21	4.21
100,000	0.08	0.24	0.45	0.81	1.18	1.51	1.98	2.25	2.37	2.39	2.39
100,631	0.08	0.24	0.45	0.81	1.18	1.5	1.97	2.24	2.37	2.38	2.38

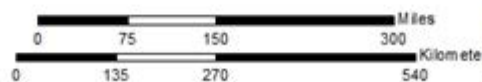




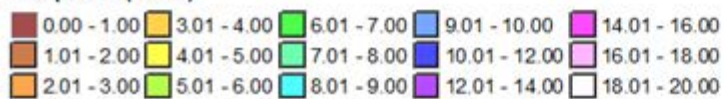
Total Storm (96-hr) Precipitation (inches)
October 8-11, 1986
SPAS 1267

Gauges

- ◆ Daily
- Hourly
- Hourly Pseudo
- ◆ Supplemental



Precipitation (inches)



2/26/2013

Black Rapids, AK, SPAS 1303 Zone 1 August 17, 2006

Storm Name: SPAS 1303 Zone 1		Storm Adjustment for Susitna-Watana	
Storm Date: 8/17-22/2006			
AWA Analysis Date: 3/4/2014			
Temporal Transposition Date	15-Aug		
	Lat	Long	
Storm center location	63.47 N	145.69 W	
Storm Rep SST location	50.00 N	145.00 W	
Transposition SST location	NA	NA	
Basin location	NA	NA	
		Moisture Inflow Direction:	S @ 930 miles
		Basin Elevation	3,650 feet
		Storm Elevation	5,400 feet
		Storm Duration	132 hours
		Effective Barrier Height	1,483 feet

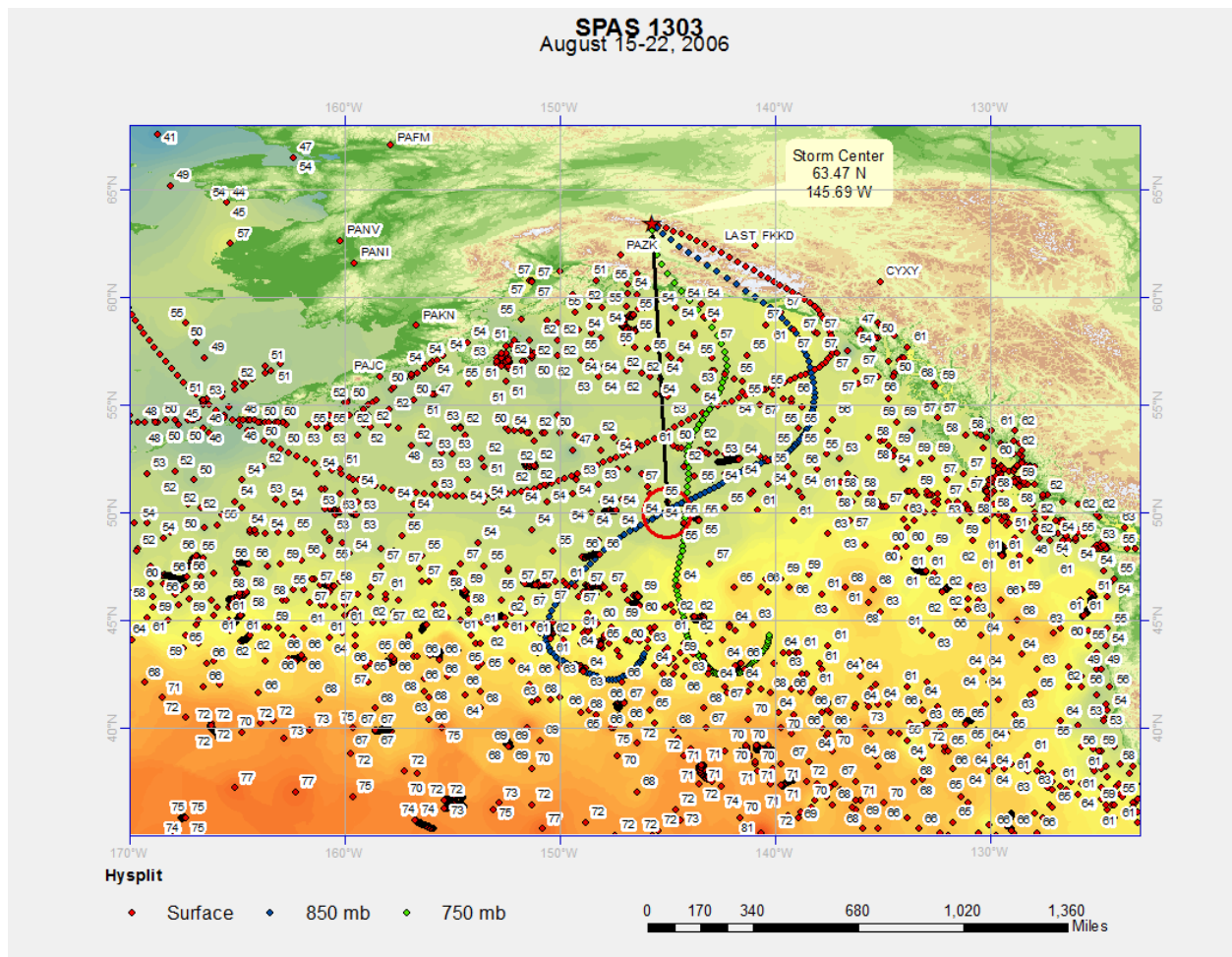
The storm representative SST is	55.0 F	with total precipitable water above sea level of	1.07	inches.
The in-place maximum SST is	59.0 F	with total precipitable water above sea level of	1.31	inches.
The transposition maximum SST is	NA	with total precipitable water above sea level of	4.44	inches.
The in-place storm elevation is	5,400	which subtracts	0.56	inches of precipitable water at 55.0 F
The in-place storm elevation is	5,400	which subtracts	0.67	inches of precipitable water at 59.0 F
The transposition storm elevation at	3,650	which subtracts	xx	inches of precipitable water at NA
The moisture inflow barrier height is	3,650	which subtracts	xx	inches of precipitable water at NA

The in-place maximization factor is	1.25
The transposition/elevation factor is	1.00
The barrier adjustment factor is	#VALUE!
The total adjustment factor is	#VALUE!

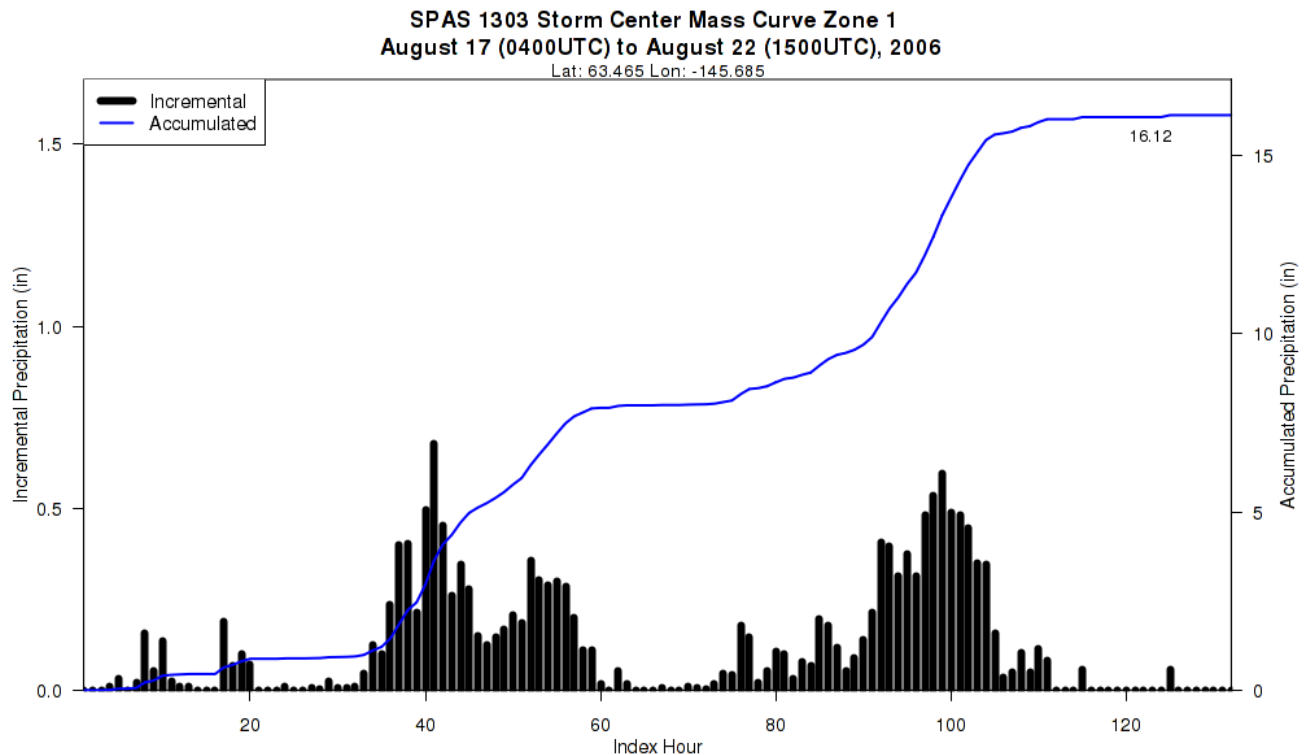
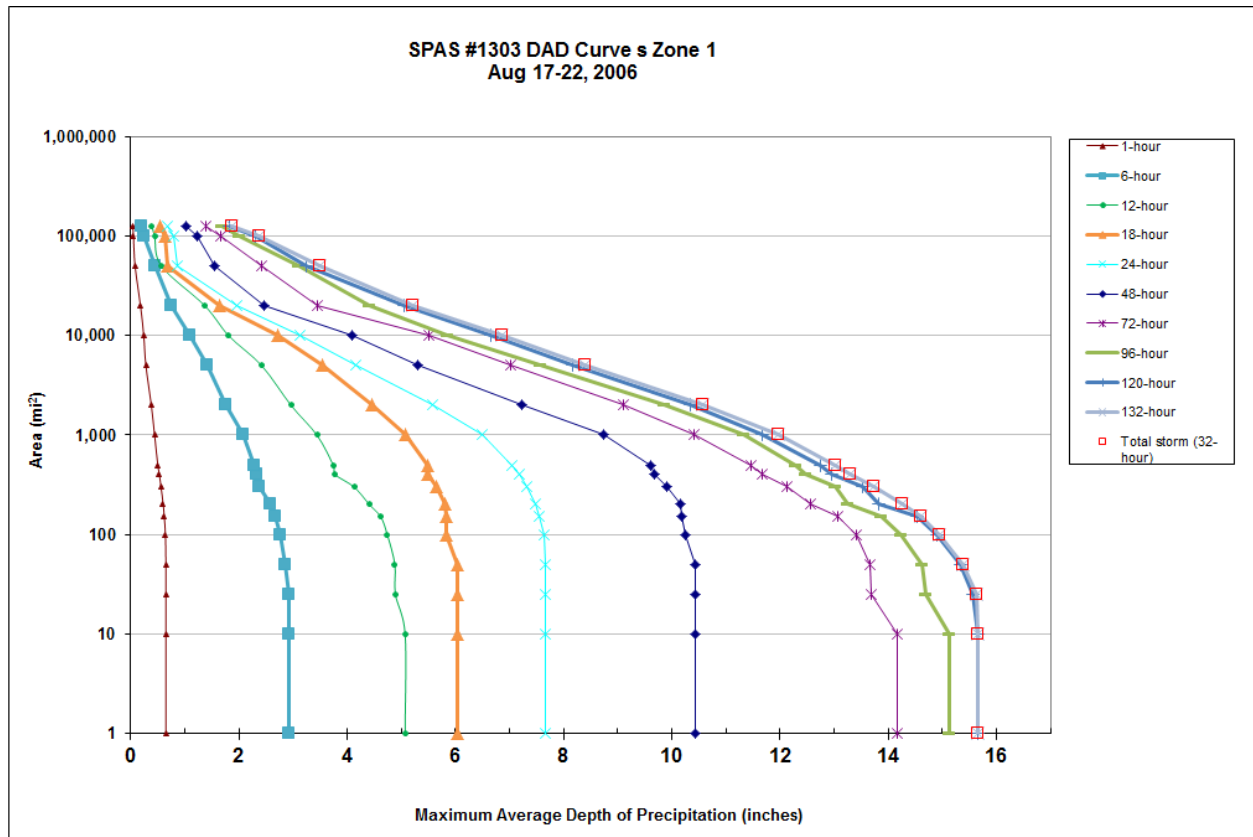
Observed Storm Depth-Area-Duration										
	1 Hour	6 Hours	12 Hours	18 Hours	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	132 Hours
1 sq miles	0.7	2.9	5.1	6.0	7.7	10.4	14.2	15.1	15.7	15.7
10 sq miles	0.7	2.9	5.1	6.0	7.7	10.4	14.2	15.1	15.7	15.7
100 sq miles	0.6	2.8	4.7	5.8	7.6	10.2	13.4	14.2	14.9	15.0
200 sq miles	0.6	2.6	4.4	5.8	7.5	10.2	12.6	13.2	13.8	14.3
500 sq miles	0.5	2.3	3.7	5.5	7.1	9.6	11.5	12.3	12.7	13.0
1000 sq miles	0.4	2.1	3.4	5.1	6.5	8.7	10.4	11.3	11.7	12.0
2000 sq miles	0.4	1.8	3.0	4.5	5.6	7.2	9.1	9.9	10.4	10.6
5000 sq miles	0.3	1.4	2.4	3.6	4.2	5.3	7.0	7.6	8.2	8.4
10000 sq miles	0.2	1.1	1.8	2.7	3.1	4.1	5.5	5.9	6.7	6.9
20000 sq miles	0.2	0.7	1.4	1.6	2.0	2.5	3.4	4.4	5.06	5.2
50000 sq miles	0.1	0.5	0.6	0.7	0.9	1.6	2.4	3.1	3.25	3.5
100000 sq miles	0.1	0.3	0.4	0.6	0.8	1.2	1.7	2.0	2.3	2.4

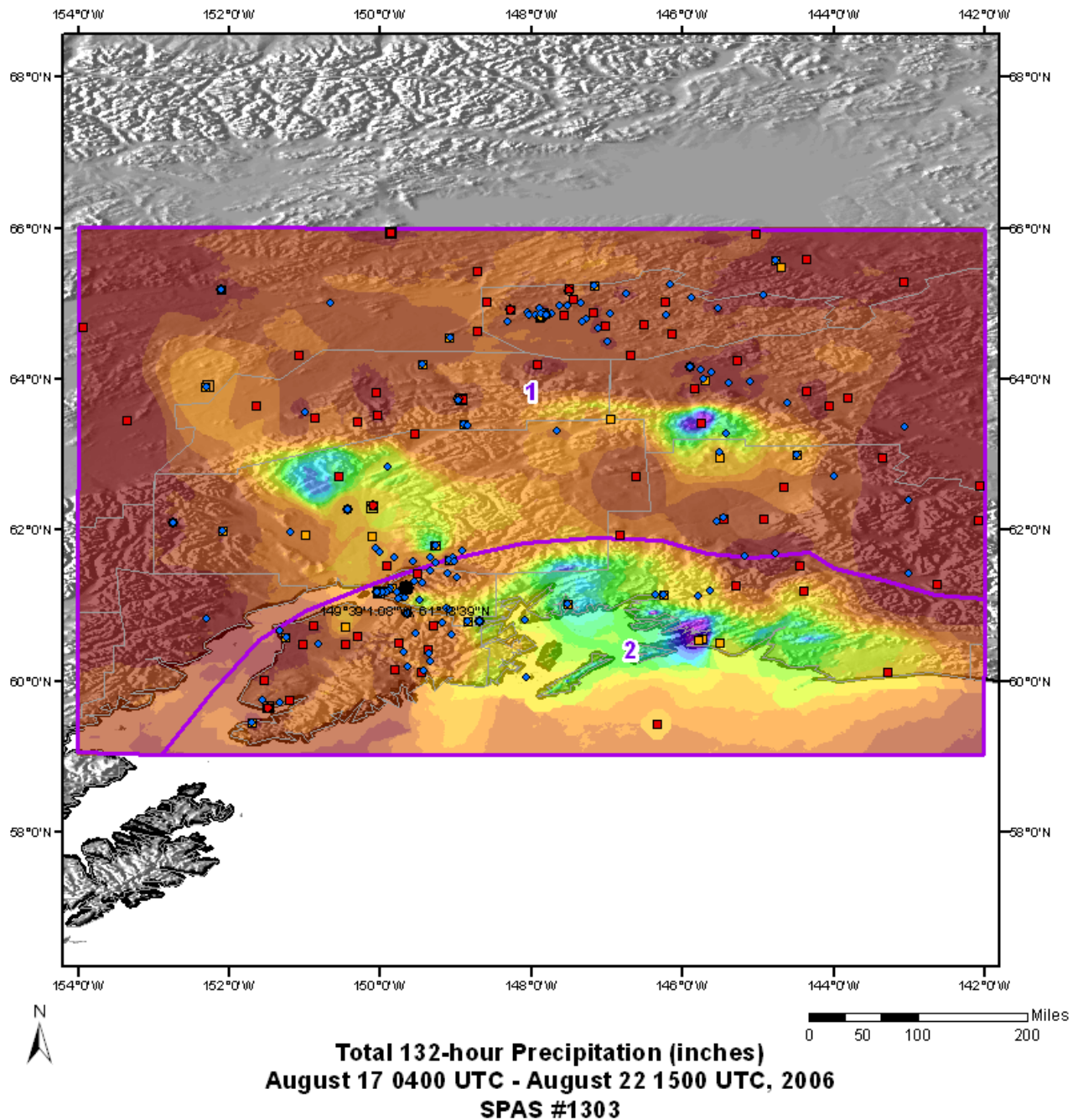
Adjusted Storm Depth-Area-Duration										
	1 Hour	6 Hours	12 Hours	18 Hours	24 Hours	48 Hours	72 Hours	96 Hours	120 Hours	132 Hours
1 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
50000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!

Storm or Storm Center Name	SPAS 1303 Zone 1		
Storm Date(s)	8/17-22/2006		
Storm Type	Synoptic		
Storm Location	63.47 N	145.69 W	
Storm Center Elevation	5400		
Precipitation Total & Duration (10 sq mi)	16.12 inches in 132 hours		
Storm Representative SST	55.0 F		
Storm Representative SST Location	50.00 N	145.00 W	Aug
In-place Maximum SST	59.0 F		
Moisture Inflow Vector	S @ 930		
In-place Maximization Factor	1.25		
Temporal Transposition (Date)	15-Aug		
Transposition SST Location	NA	NA	Jul
Transposition Maximum SST	NA		
Transposition Adjustment Factor	1.00		
Average Basin Elevation	3,650		
Highest Elevation in Basin	13,131		
Inflow Barrier Height	1,483		
Elevation Adjustment Factor	#VALUE!		
Total Adjustment Factor	#VALUE!		

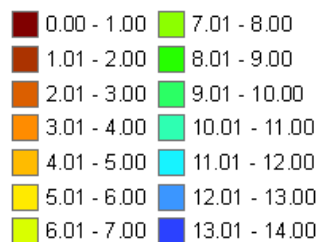


Storm 1303 - Aug. 17 (0400 UTC) - Aug. 22 (1500 UTC), 2006											
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)											
Area (mi ²)	Duration (hours)										
	1	6	12	18	24	48	72	96	120	132	Total
0.2	0.69	3.03	5.18	6.18	7.93	10.75	14.59	15.56	16.08	16.12	16.12
1	0.65	2.93	5.07	6.04	7.67	10.44	14.16	15.13	15.66	15.66	15.66
10	0.65	2.93	5.07	6.04	7.67	10.44	14.16	15.13	15.66	15.66	15.66
25	0.65	2.92	4.89	6.04	7.67	10.44	13.69	14.7	15.56	15.63	15.63
50	0.65	2.86	4.88	6.03	7.67	10.44	13.66	14.63	15.33	15.39	15.39
100	0.64	2.76	4.74	5.84	7.64	10.24	13.42	14.23	14.89	14.95	14.95
150	0.62	2.68	4.62	5.84	7.56	10.19	13.07	13.87	14.54	14.59	14.59
200	0.6	2.59	4.41	5.8	7.48	10.15	12.57	13.24	13.82	14.25	14.25
300	0.56	2.38	4.13	5.66	7.33	9.9	12.12	13.02	13.52	13.73	13.73
400	0.53	2.33	3.78	5.5	7.19	9.67	11.67	12.47	12.95	13.29	13.29
500	0.5	2.28	3.74	5.48	7.05	9.6	11.46	12.29	12.74	13.02	13.02
1,000	0.44	2.07	3.44	5.08	6.5	8.74	10.42	11.32	11.68	11.96	11.96
2,000	0.38	1.75	2.96	4.45	5.57	7.24	9.1	9.87	10.35	10.57	10.57
5,000	0.28	1.41	2.42	3.55	4.17	5.31	7.03	7.58	8.17	8.4	8.40
10,000	0.24	1.1	1.81	2.71	3.12	4.09	5.51	5.86	6.66	6.86	6.86
20,000	0.18	0.74	1.37	1.64	1.97	2.47	3.44	4.42	5.06	5.22	5.22
50,000	0.08	0.45	0.57	0.67	0.87	1.55	2.42	3.1	3.25	3.49	3.49
100,000	0.05	0.25	0.44	0.64	0.79	1.22	1.67	2.01	2.3	2.37	2.37
126,338	0.04	0.2	0.39	0.55	0.67	1.03	1.38	1.68	1.83	1.88	1.88

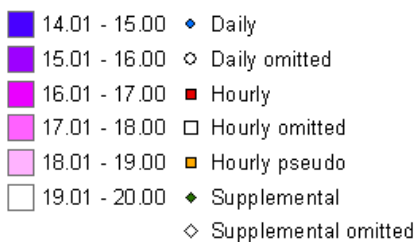




Precipitation (inches)



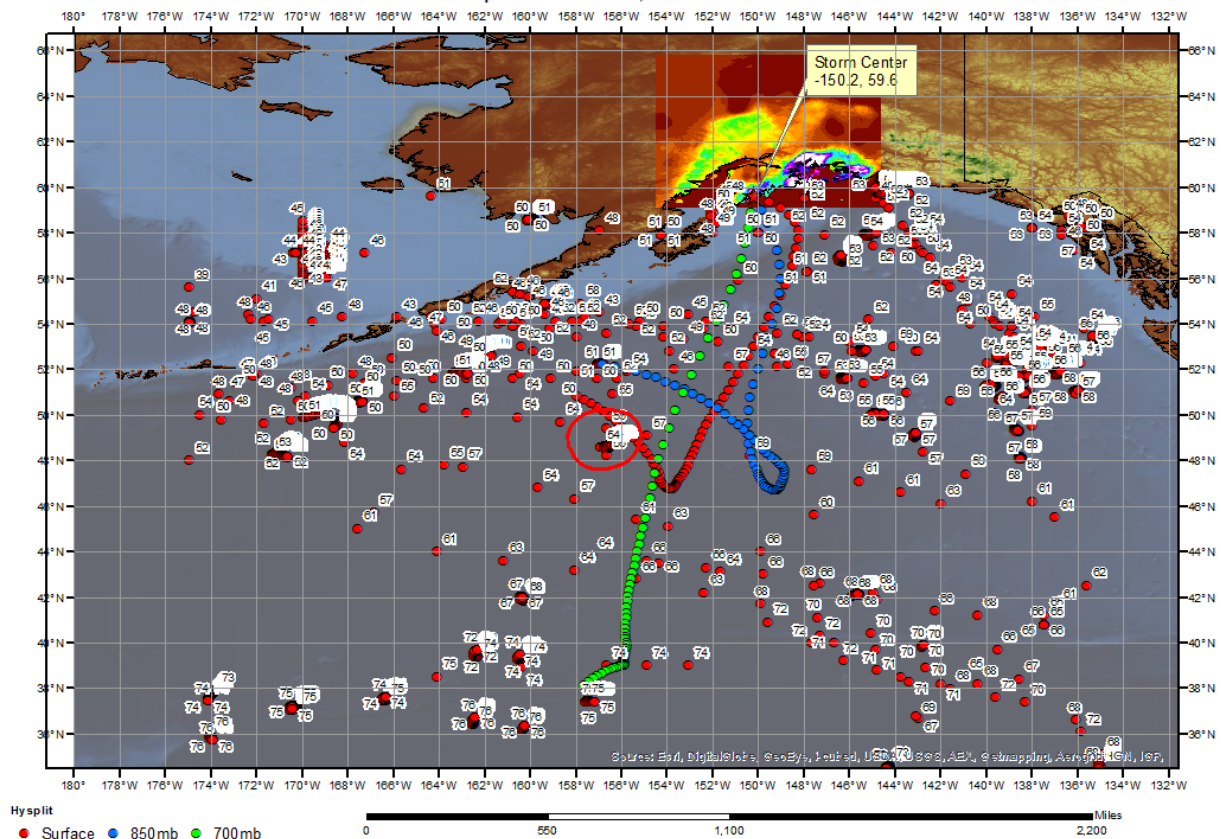
Stations



Old Tyonek, AK, SPAS 1256 Zone 1
September 15, 2012

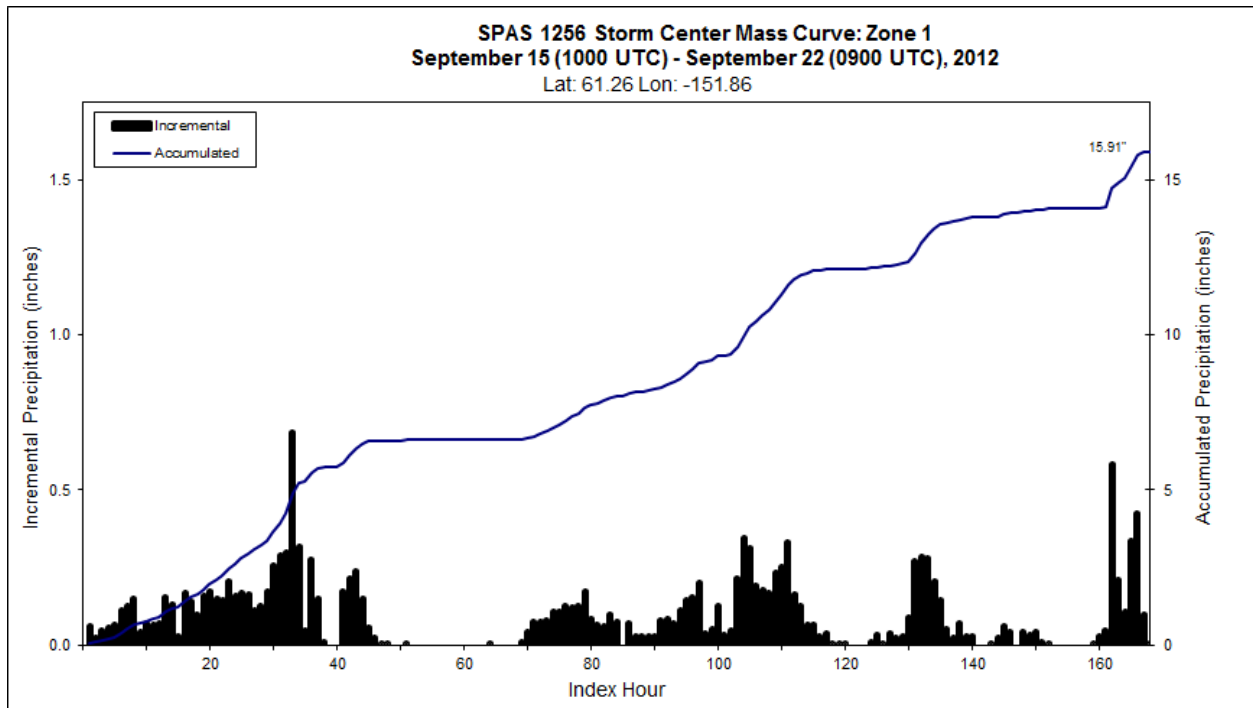
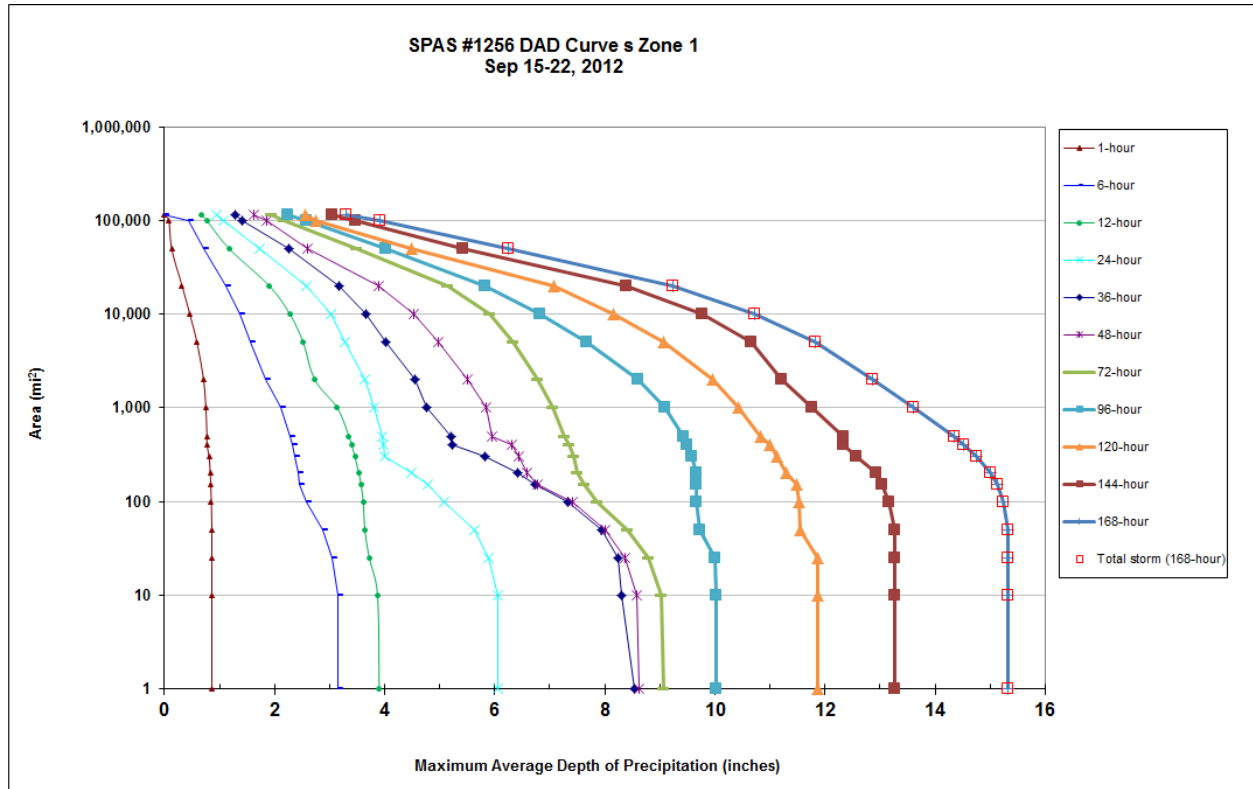
Storm Name: SPAS 1256 Old Tyonek, AK DAD		Storm Adjustment for Susitna-Watana								
Storm Date: 9/15-22/2012										
AWA Analysis Date: 1/22/2013										
Temporal Transposition Date 15-Sep										
Storm center location	Lat 61.26 N Long 151.86 W	Moisture Inflow Direction: SSW @ 870 miles								
Storm Rep SST location	49.00 N 157.00 W	Basin Elevation 1,100 feet								
Transposition SST location	NA NA	Storm Elevation 2,730 feet								
Basin location	42.76 N 74.12 W	Storm Duration 24 hours								
		Effective Barrier Height 1,200 feet								
The storm representative SST is 54.0 F		with total precipitable water above sea level of 1.02 inches.								
The in-place maximum SST is 57.0 F		with total precipitable water above sea level of 1.19 inches.								
The transpositioned maximum SST is NA		with total precipitable water above sea level of 4.44 inches.								
The in-place storm elevation is 2,730		which subtracts 0.18 inches of precipitable water at 54.0 F								
The in-place storm elevation is 2,730		which subtracts 0.20 inches of precipitable water at 57.0 F								
The transposition storm elevation at 1,100		which subtracts xx inches of precipitable water at NA								
The moisture inflow barrier height is 1,200		which subtracts xx inches of precipitable water at NA								
The in-place maximization factor is 1.18		Notes: Storm representative SST value was based on SST values for September 13-14, 2012 along the surface HYSPLIT trajectory data. The HYSPLIT trajectory also represents the second period of precipitation fall. Values were selected in region where temperature did not vary more than a 1-degree over a large area and had temperature recordings throughout the period.								
The transposition/elevation factor is #VALUE!										
The barrier adjustment factor is #VALUE!										
The total adjustment factor is #VALUE!										
Observed Storm Depth-Area-Duration										
	1 Hour	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	168 Hours
10 sq miles	0.9	3.2	3.9	6.1	8.3	8.6	9.0	10.0	11.9	15.3
100 sq miles	0.9	2.6	3.6	5.1	7.3	7.4	7.9	9.7	11.5	15.3
200 sq miles	0.8	2.4	3.5	4.5	6.4	6.6	7.5	9.7	11.3	15.0
500 sq miles	0.8	2.3	3.4	4.0	5.2	6.0	7.3	9.4	10.8	14.3
1000 sq miles	0.8	2.1	3.1	3.8	4.8	5.9	7.1	9.1	10.4	13.6
2000 sq miles	0.7	1.8	2.7	3.6	4.6	5.5	6.8	8.6	10.0	12.9
5000 sq miles	0.6	1.6	2.5	3.3	4.0	5.0	6.3	7.7	9.1	11.8
10000 sq miles	0.5	1.4	2.3	3.0	3.7	4.5	5.9	6.8	8.2	10.7
20000 sq miles	0.3	1.1	1.9	2.6	3.2	3.9	5.1	5.8	7.1	9.2
Adjusted Storm Depth-Area-Duration										
	1 Hour	6 Hours	12 Hours	24 Hours	36 Hours	48 Hours	72 Hours	96 Hours	120 Hours	168 Hours
10 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
100 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
200 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
500 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
1000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
2000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
5000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
10000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
20000 sq miles	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!
Storm or Storm Center Name		SPAS 1256 Old Tyonek, AK DAD Zone 1								
Storm Date(s)		9/15-22/2012								
Storm Type		Atmospheric River								
Storm Location		61.26 N 151.86 W								
Storm Center Elevation		2,730								
Precipitation Total & Duration		15.91 inches in 168 hours								
Storm Representative SST		54.0 F				15-Aug		15-Sep		
Storm Representative SST Location		49.00 N 157.00 W				56.5		57.0		
In-place Maximum SST		57.0 F								
Moisture Inflow Vector		SSW @ 870								
In-place Maximization Factor		1.18								
Temporal Transposition (Date)		15-Sep								
Transposition SST Location		NA NA								
Transposition Maximum SST		NA								
Transposition Adjustment Factor		#VALUE!								
Average Basin Elevation		1,100								
Highest Elevation in Basin		5,333								
Inflow Barrier Height		1,200								
Elevation Adjustment Factor		#VALUE!								
Total Adjustment Factor		#VALUE!								

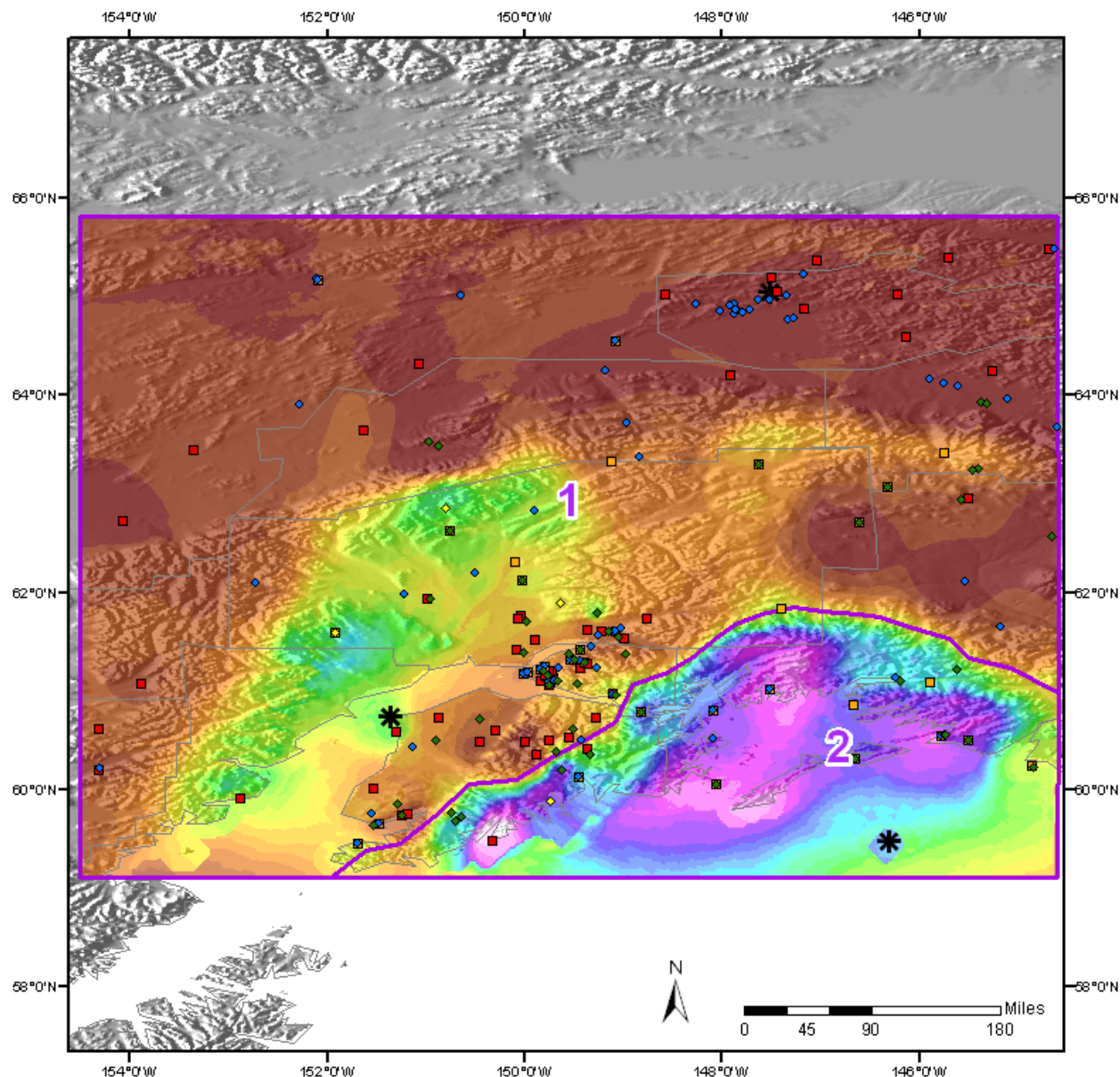
SPAS 1256 Denai, AK Storm Analysis
September 15-21, 2012



Storm 1256 - Sep. 15 (1000 UTC) - Sep. 22 (0900 UTC), 2013
MAXIMUM AVERAGE DEPTH OF PRECIPITATION (INCHES)

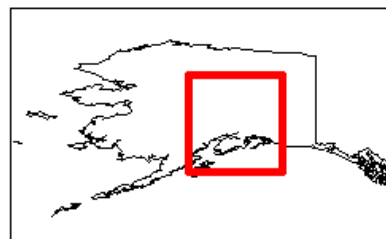
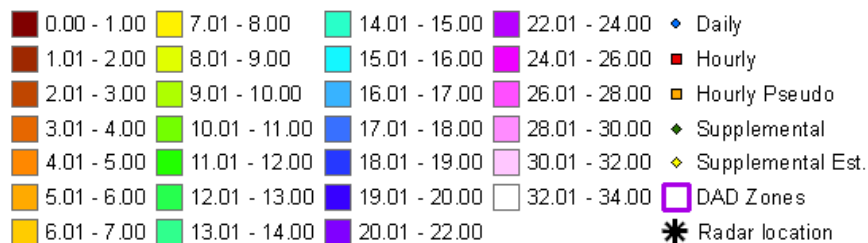
Area (mi ²)	Duration (hours)											
	1	6	12	24	36	48	72	96	120	144	168	Total
0.2	0.88	3.26	3.98	6.23	8.76	8.86	9.3	10.52	12.34	13.83	15.91	15.91
1	0.86	3.16	3.9	6.06	8.53	8.63	9.06	10.03	11.87	13.27	15.32	15.32
10	0.86	3.16	3.87	6.06	8.31	8.59	9.03	10.03	11.87	13.27	15.32	15.32
25	0.86	3.04	3.72	5.88	8.25	8.36	8.79	10.01	11.86	13.27	15.32	15.32
50	0.86	2.88	3.64	5.63	7.94	8.01	8.42	9.73	11.55	13.27	15.32	15.32
100	0.85	2.58	3.61	5.09	7.34	7.41	7.86	9.66	11.52	13.16	15.25	15.25
150	0.84	2.45	3.57	4.79	6.74	6.78	7.63	9.66	11.49	13.04	15.13	15.13
200	0.83	2.42	3.53	4.49	6.41	6.58	7.5	9.66	11.29	12.92	15	15.00
300	0.81	2.37	3.46	4	5.83	6.44	7.43	9.58	11.13	12.57	14.76	14.76
400	0.77	2.32	3.4	3.98	5.23	6.31	7.36	9.5	10.99	12.33	14.52	14.52
500	0.77	2.29	3.35	3.96	5.21	5.95	7.27	9.43	10.83	12.33	14.34	14.34
1,000	0.75	2.12	3.14	3.8	4.76	5.85	7.05	9.08	10.43	11.77	13.61	13.61
2,000	0.71	1.83	2.73	3.64	4.55	5.5	6.78	8.61	9.95	11.22	12.86	12.86
5,000	0.59	1.57	2.52	3.28	4.03	4.98	6.34	7.66	9.07	10.66	11.83	11.83
10,000	0.46	1.38	2.28	3.03	3.66	4.52	5.91	6.82	8.16	9.77	10.72	10.72
20,000	0.32	1.12	1.91	2.58	3.18	3.9	5.14	5.82	7.07	8.38	9.24	9.24
50,000	0.13	0.72	1.18	1.73	2.27	2.6	3.49	4.02	4.49	5.42	6.24	6.24
100,000	0.08	0.43	0.77	1.08	1.42	1.86	2.17	2.58	2.74	3.47	3.92	3.92
116,206	0	0	0.67	0.94	1.29	1.63	1.94	2.24	2.55	3.04	3.29	3.29





Total 168-hour Storm Precipitation (inches)
Sept. 15, 2012 1000 Z - Sept. 22, 2012 0900 Z
SPAS #1256

Precipitation (inches)



NETS TAT, Inc. 01/22/2013

