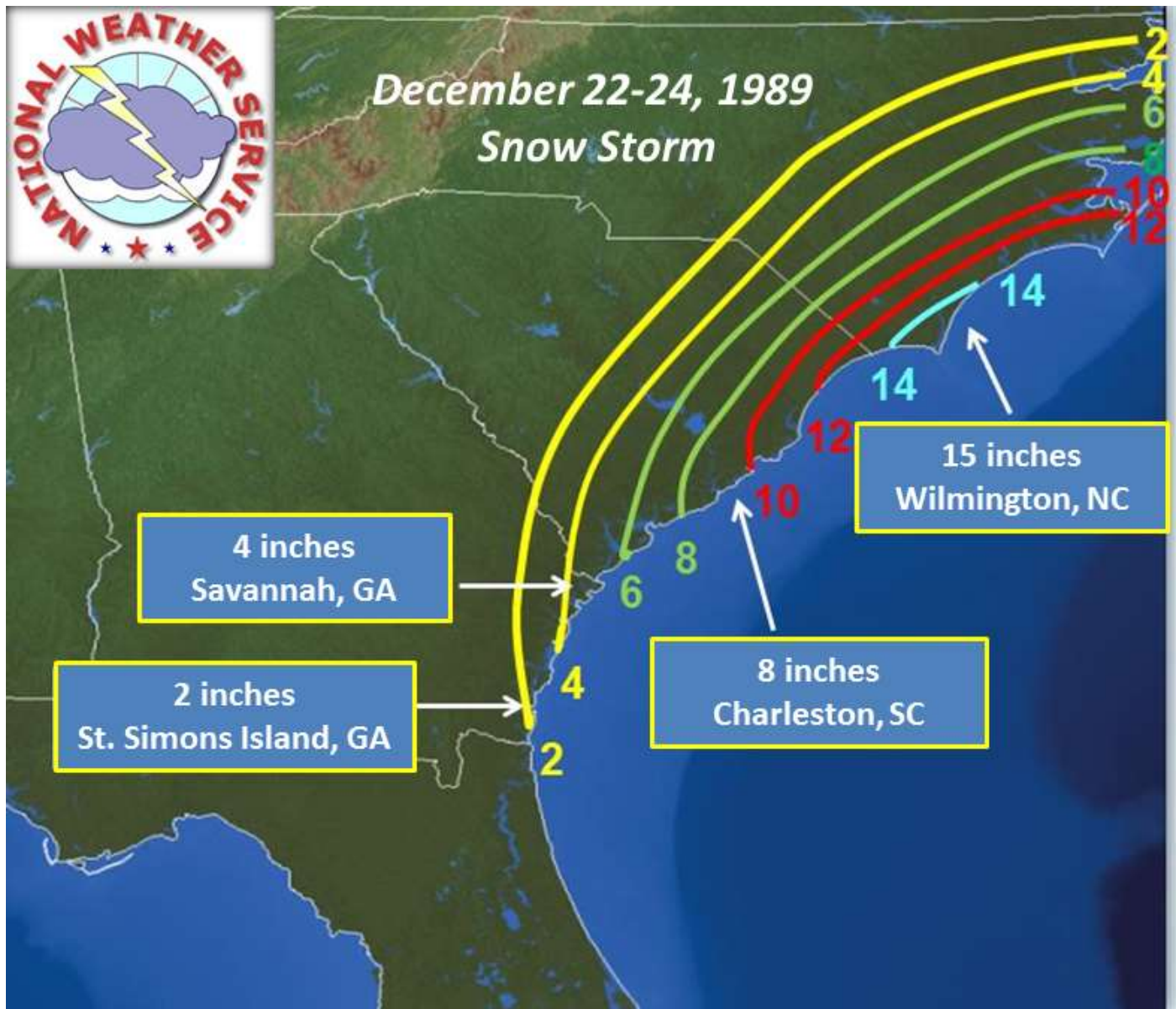


# The December 1989 Southeastern Snow Storm

Between December 22 and December 24, 1989, deepening low pressure pulled a frigid arctic air mass into the southeastern United States. This sequence of events produced a historic snow storm and a rare white Christmas across the region. At Charleston, South Carolina, the storm deposited 8 inches of snow – the greatest snowfall in modern history. At Savannah, Georgia, the storm total accumulation of 3.6 inches tied the greatest snowfall in modern history.



*Snow accumulation map adapted from Czepyha (1990) by Emily Timte and Steven Taylor (WFO CHS).*

The arctic air mass also attained historic proportions. Based on average temperatures, December 23, 1989, was the 2<sup>nd</sup> coldest day on record in Charleston and the 5<sup>th</sup> coldest day since records began in Savannah. Based on high temperatures, December 23 was the coldest day on record in Charleston and the 2<sup>nd</sup> coldest day since records began in Savannah.

CHARLESTON INTL AP (KCHS)  
 Observed Daily Data  
 Month: Dec 1989

Day	MaxT	MinT	AvgT	HDD	CDD	Pcpn	Snow	Snwg
1	65	37	51.0	14	0	0.00	0.0	0
2	68	40	54.0	11	0	0.00	0.0	0
3	51	33	42.0	23	0	0.00	0.0	0
4	52	28	40.0	25	0	0.00	0.0	0
5	64	39	51.5	13	0	0.00	0.0	0
6	72	43	57.5	7	0	0.00	0.0	0
7	64	55	59.5	5	0	0.01	0.0	0
8	57	37	47.0	18	0	1.72	0.0	0
9	38	35	36.5	28	0	0.63	0.0	0
10	52	33	42.5	22	0	T	0.0	0
11	60	37	48.5	16	0	0.00	0.0	0
12	64	40	52.0	13	0	0.46	0.0	0
13	53	34	43.5	21	0	0.02	0.0	0
14	53	30	41.5	23	0	0.00	0.0	0
15	60	30	45.0	20	0	T	0.0	0
16	56	31	43.5	21	0	0.00	0.0	0
17	40	28	34.0	31	0	0.02	0.0	0
18	38	31	34.5	30	0	0.41	0.0	0
19	36	32	34.0	31	0	0.64	0.0	0
20	45	32	38.5	26	0	T	0.0	0
21	52	30	41.0	24	0	0.00	0.0	0
<b>22</b>	<b>34</b>	<b>19</b>	<b>26.5</b>	<b>38</b>	<b>0</b>	<b>0.15</b>	<b>1.5</b>	<b>0</b>
<b>23</b>	<b>20</b>	<b>17</b>	<b>18.5</b>	<b>46</b>	<b>0</b>	<b>0.57</b>	<b>6.0</b>	<b>2</b>
<b>24</b>	<b>33</b>	<b>16</b>	<b>24.5</b>	<b>40</b>	<b>0</b>	<b>0.05</b>	<b>0.5</b>	<b>8</b>
25	41	14	27.5	37	0	0.00	0.0	4
26	52	30	41.0	24	0	0.00	0.0	2
27	53	28	40.5	24	0	0.00	0.0	T
28	64	40	52.0	13	0	0.00	0.0	T
29	66	34	50.0	15	0	0.00	0.0	0
30	71	45	58.0	7	0	0.00	0.0	0
31	68	55	61.5	3	0	0.06	0.0	0
Smry	53.0	33.3	43.1	669	0	4.74	8.0	0.5

*Dec 22-24 was the most consecutive days with temperatures colder than 35F since records began in Charleston in 1938.*

SAVANNAH INTL AP (KSAV)

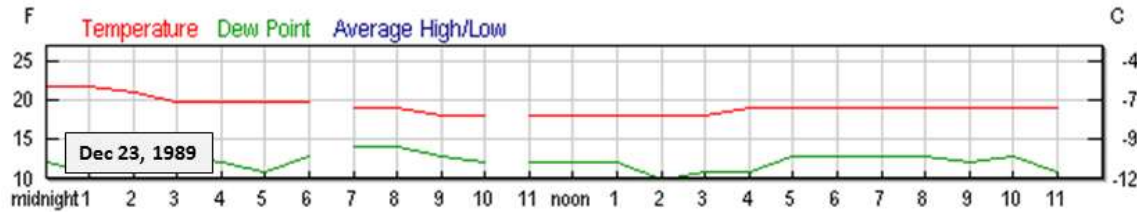
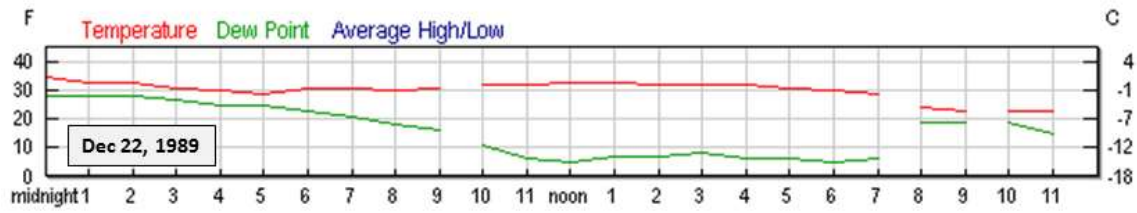
Observed Daily Data

Month: Dec 1989

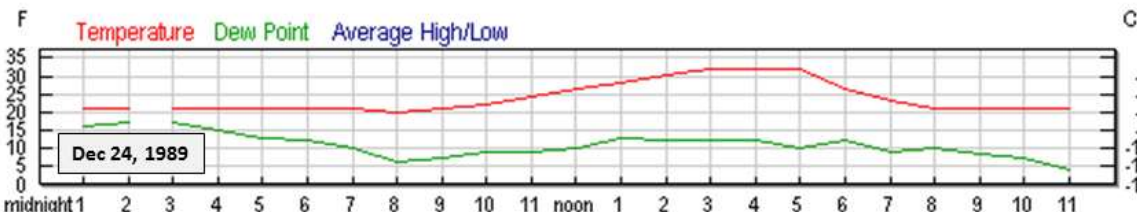
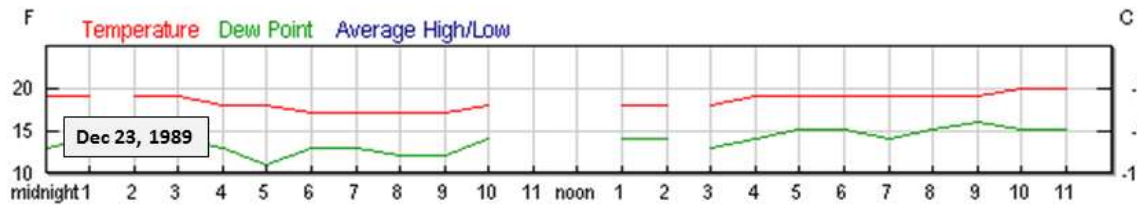
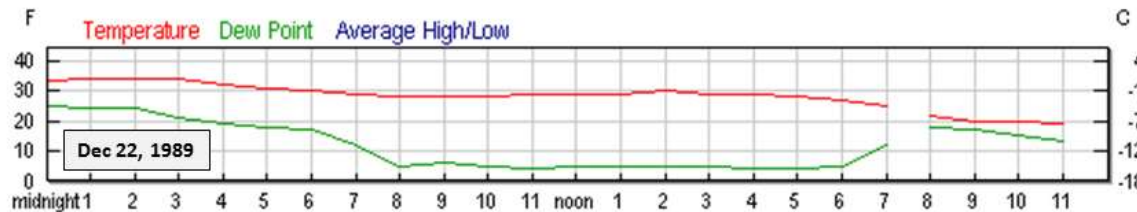
Day	MaxT	MinT	AvgT	HDD	CDD	Pcpn	Snow	Snwg
1	67	33	50.0	15	0	0.00	0.0	0
2	66	36	51.0	14	0	0.00	0.0	0
3	51	33	42.0	23	0	0.00	0.0	0
4	52	26	39.0	26	0	0.00	0.0	0
5	65	36	50.5	14	0	0.00	0.0	0
6	72	41	56.5	8	0	0.00	0.0	0
7	72	55	63.5	1	0	T	0.0	0
8	60	39	49.5	15	0	2.69	0.0	0
9	40	37	38.5	26	0	0.25	0.0	0
10	47	35	41.0	24	0	0.00	0.0	0
11	62	42	52.0	13	0	0.00	0.0	0
12	63	37	50.0	15	0	0.17	0.0	0
13	55	34	44.5	20	0	T	0.0	0
14	55	29	42.0	23	0	0.00	0.0	0
15	63	30	46.5	18	0	T	0.0	0
16	53	33	43.0	22	0	0.06	0.0	0
17	44	28	36.0	29	0	0.08	0.0	0
18	37	32	34.5	30	0	0.39	0.0	0
19	39	33	36.0	29	0	1.02	0.0	0
20	46	35	40.5	24	0	0.00	0.0	0
21	53	33	43.0	22	0	0.00	0.0	0
<b>22</b>	<b>35</b>	<b>22</b>	<b>28.5</b>	<b>36</b>	<b>0</b>	<b>0.03</b>	<b>0.3</b>	<b>0</b>
<b>23</b>	<b>22</b>	<b>18</b>	<b>20.0</b>	<b>45</b>	<b>0</b>	<b>0.32</b>	<b>3.2</b>	<b>1</b>
<b>24</b>	<b>34</b>	<b>16</b>	<b>25.0</b>	<b>40</b>	<b>0</b>	<b>0.01</b>	<b>0.1</b>	<b>4</b>
25	43	17	30.0	35	0	0.00	0.0	2
26	55	30	42.5	22	0	0.00	0.0	1
27	59	27	43.0	22	0	0.00	0.0	0
28	66	37	51.5	13	0	0.00	0.0	0
29	68	31	49.5	15	0	0.00	0.0	0
30	72	39	55.5	9	0	0.00	0.0	0
31	69	50	59.5	5	0	0.18	0.0	0
Smry	54.4	33.0	43.7	653	0	5.20	3.6	0.3

*Dec 22-24 tied the most consecutive days with temperatures 35F or colder since records began in Savannah in 1874.*

### Savannah GA Hourly Temperature Trace (Red)

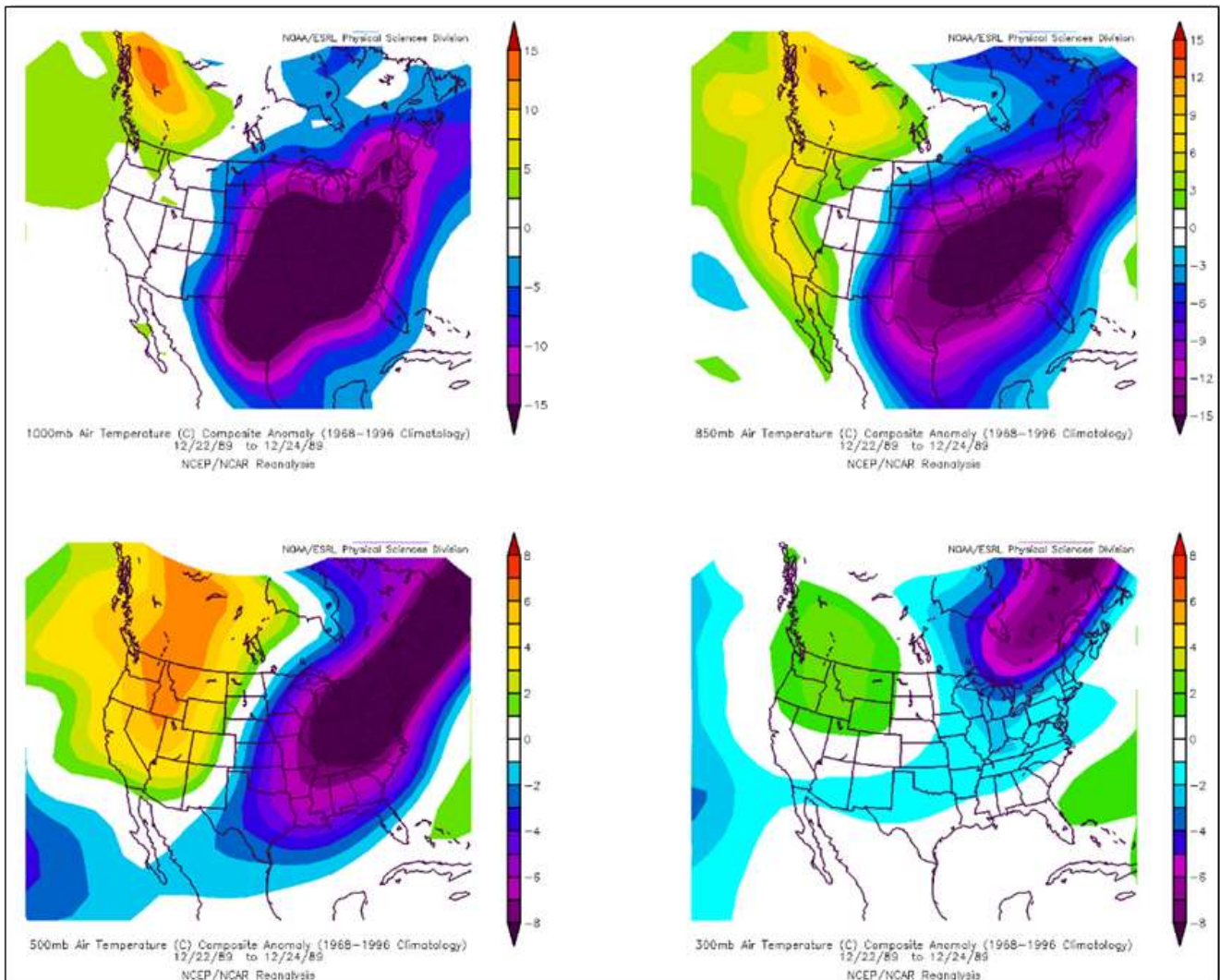


### Charleston SC Hourly Temperature Trace (Red)

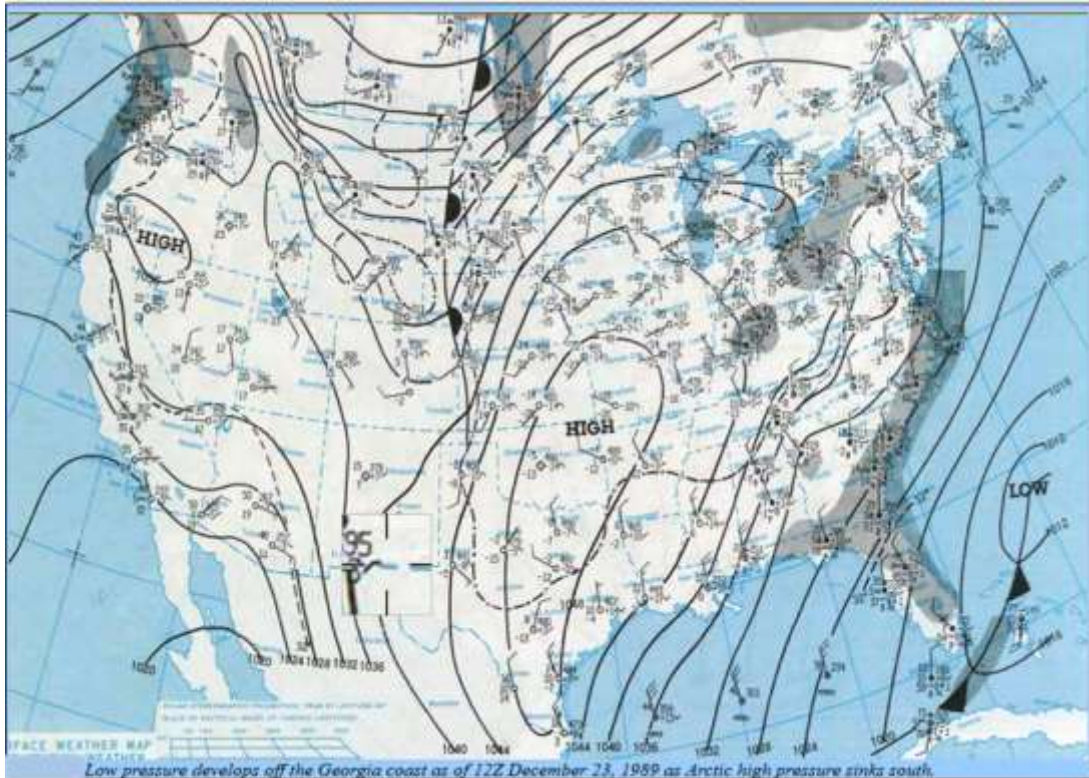


The hourly temperature traces for Savannah GA and Charleston SC portray the impressive longevity of the frigid air which gripped the region during the 1989 snow storm. Temperatures fell to around 20F late on December 22 and did not rise significantly above 20F until late morning December 24.

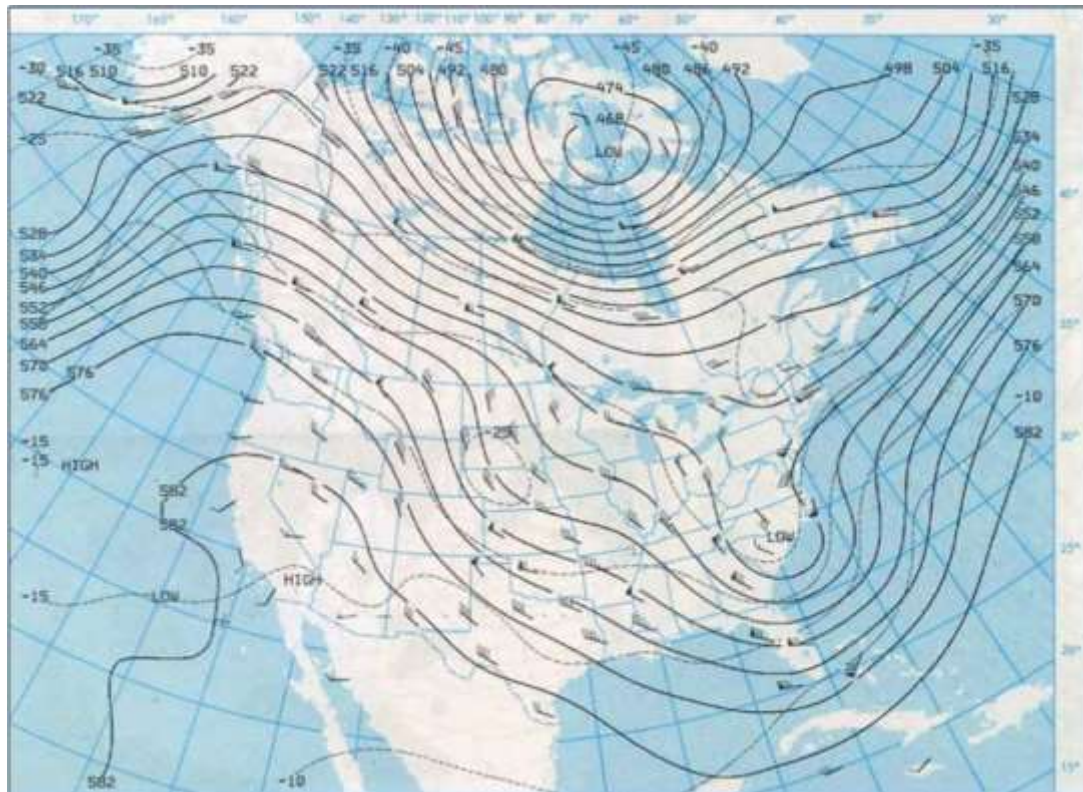




*1000-500 mb temperatures were much colder than normal during the December 22-24 snow storm. Even if snow had not occurred, we would remember this as one of the most impressive cold outbreaks of modern times.*



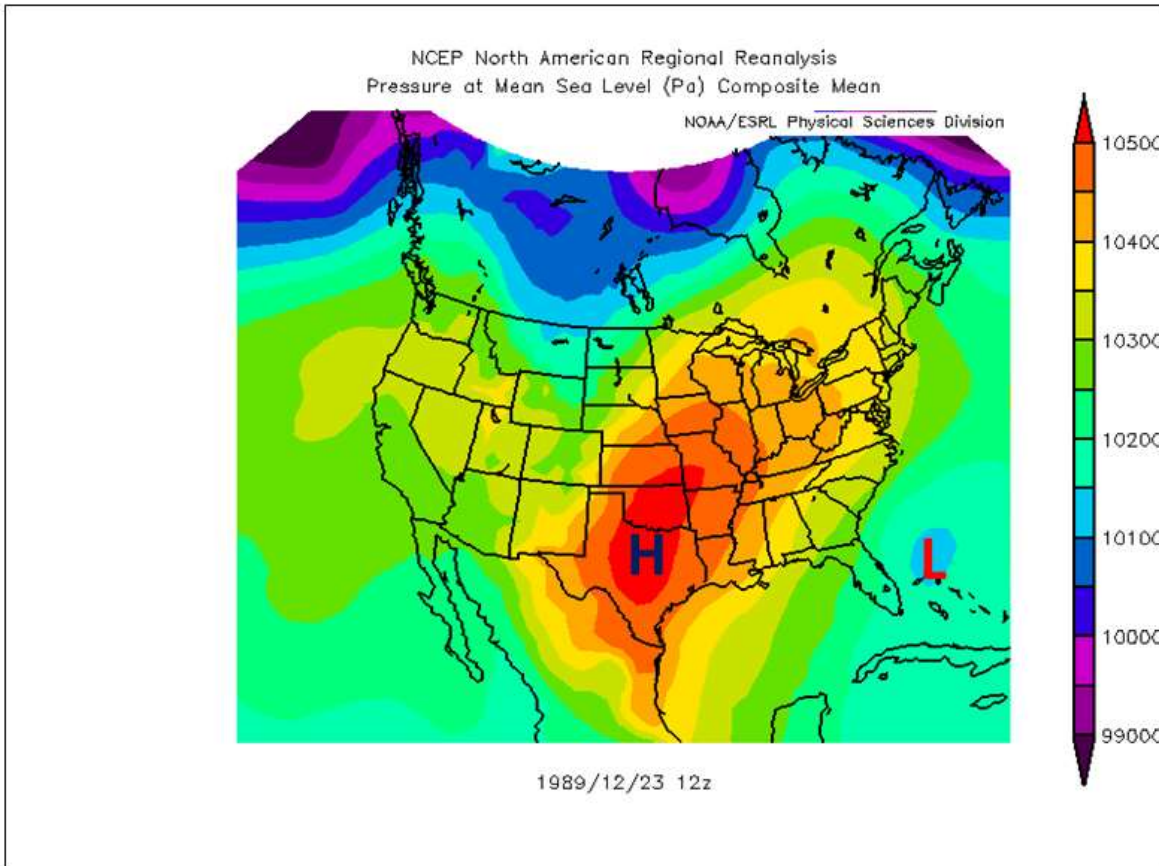
*The December 23, 1989 morning surface weather map depicted a scenario perfect for a southeast coastal snow storm: high pressure pushed incredibly cold air into a wide swath of the continental United States, including the Southeast, and deepening offshore low pressure spread moisture into the region.*



*The December 24, 1989 morning 500 mb map depicted a strong, deep, cold upper wave traversing the Southeast United States. This upper level trough ensured a supply of very cold air through the troposphere and provided the lift which converted moisture to heavy snow.*

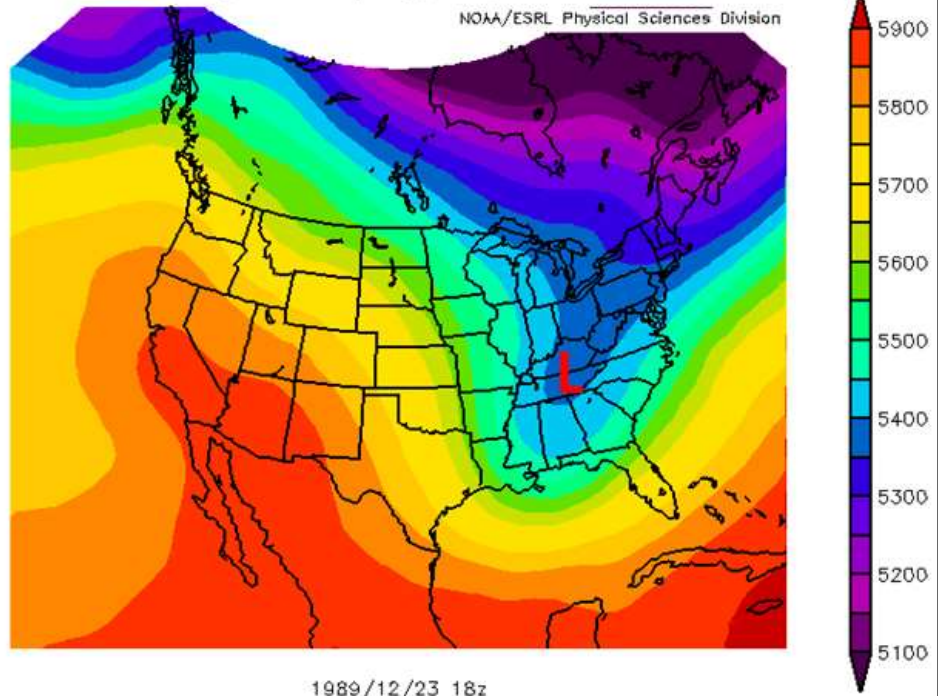


The following figures employ the NCEP North American Reanalysis to document the evolution of the snow storm at the surface and at 500 mb from December 23 through December 24. The system exhibited many of the classic synoptic signatures common to snow storms in the Southeastern United States as identified by Mote et al. (1997).



NCEP North American Regional Reanalysis  
Geopotential Height (m) Composite Mean

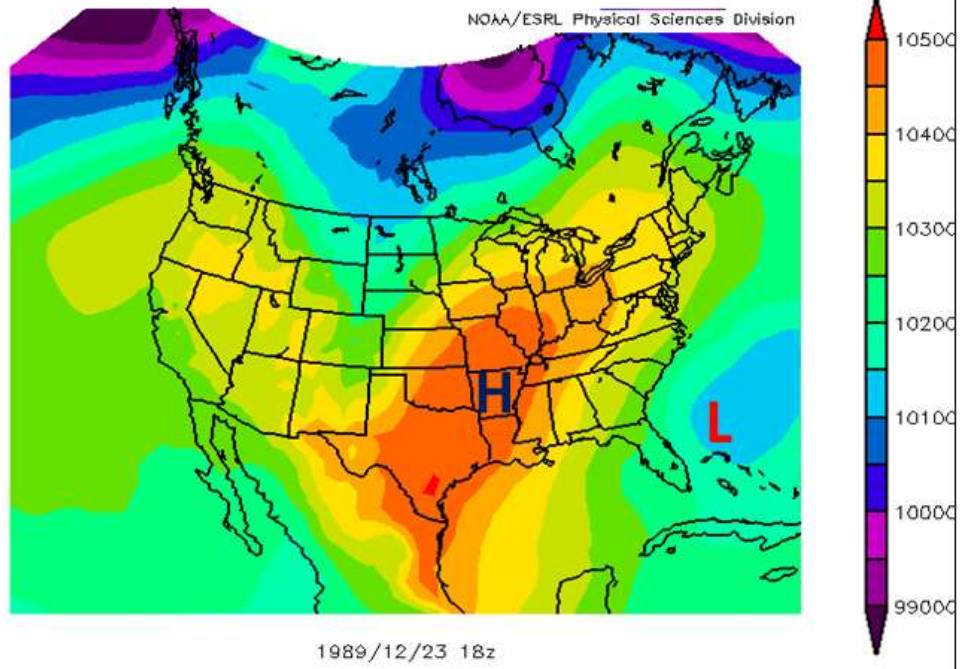
NOAA/ESRL Physical Sciences Division



1989/12/23 18z

NCEP North American Regional Reanalysis  
Pressure at Mean Sea Level (Pa) Composite Mean

NOAA/ESRL Physical Sciences Division

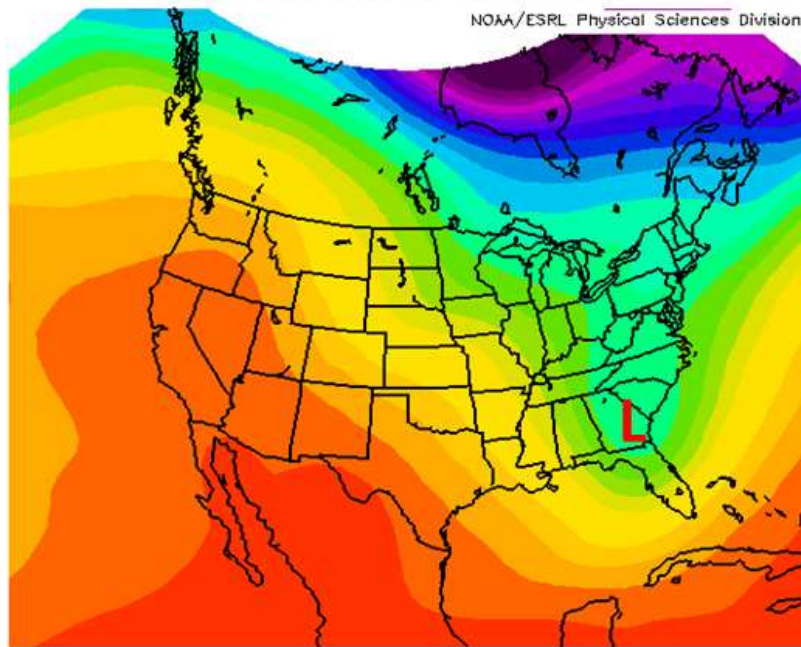


1989/12/23 18z



NCEP North American Regional Reanalysis  
Geopotential Height (m) Composite Mean

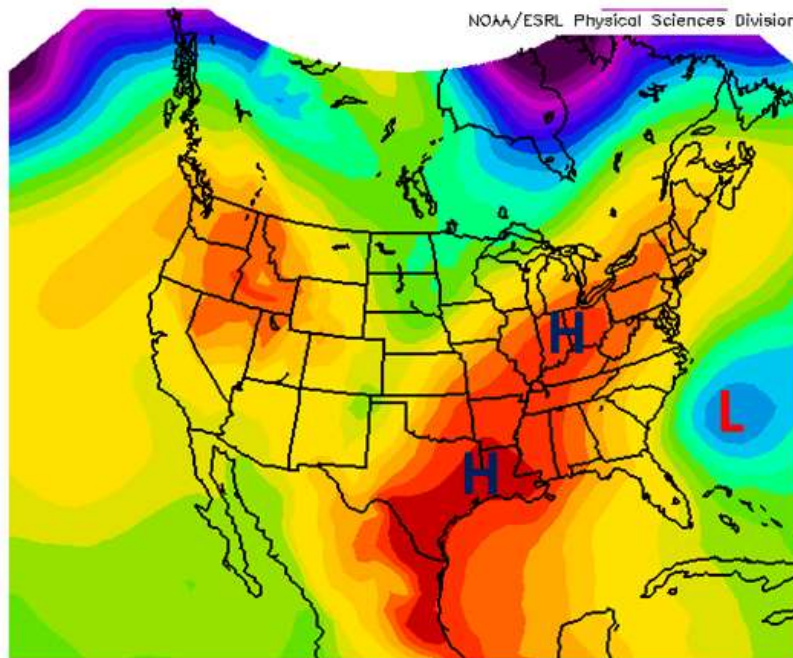
NOAA/ESRL Physical Sciences Division



1989/12/24 06z

NCEP North American Regional Reanalysis  
Pressure at Mean Sea Level (Pa) Composite Mean

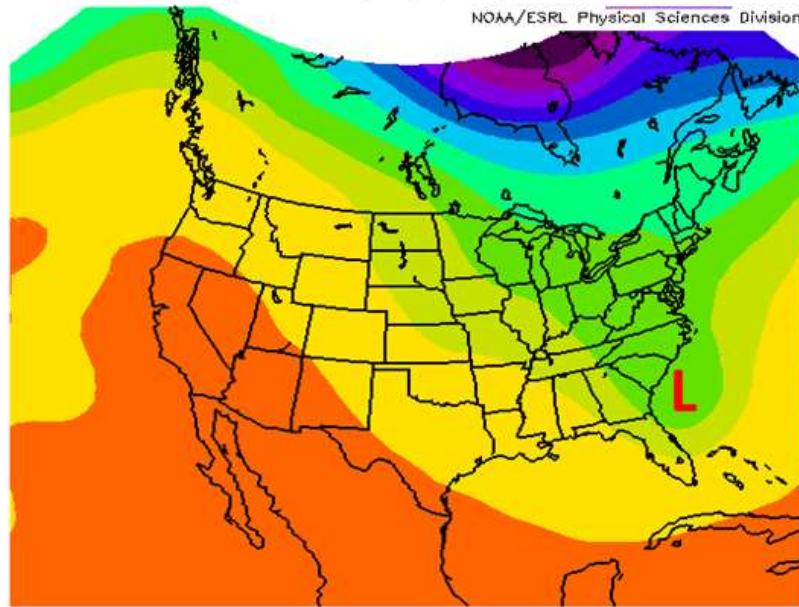
NOAA/ESRL Physical Sciences Division



1989/12/24 06z

NCEP North American Regional Reanalysis  
Geopotential Height (m) Composite Mean

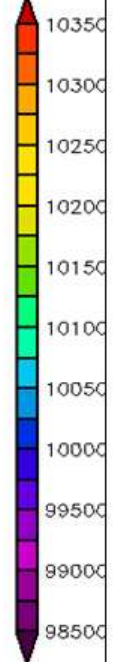
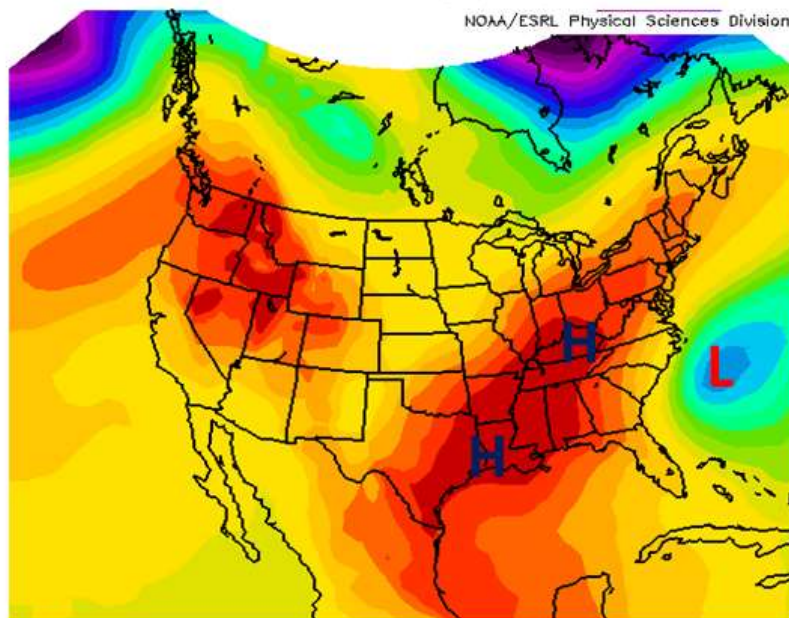
NOAA/ESRL Physical Sciences Division



1989/12/24 12z

NCEP North American Regional Reanalysis  
Pressure at Mean Sea Level (Pa) Composite Mean

NOAA/ESRL Physical Sciences Division

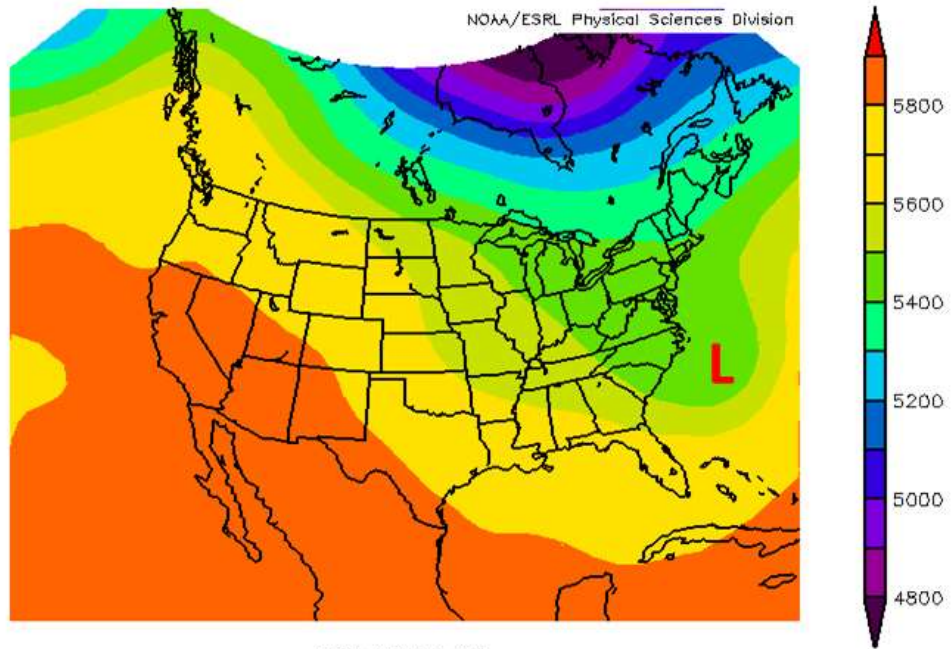


1989/12/24 12z



NCEP North American Regional Reanalysis  
Geopotential Height (m) Composite Mean

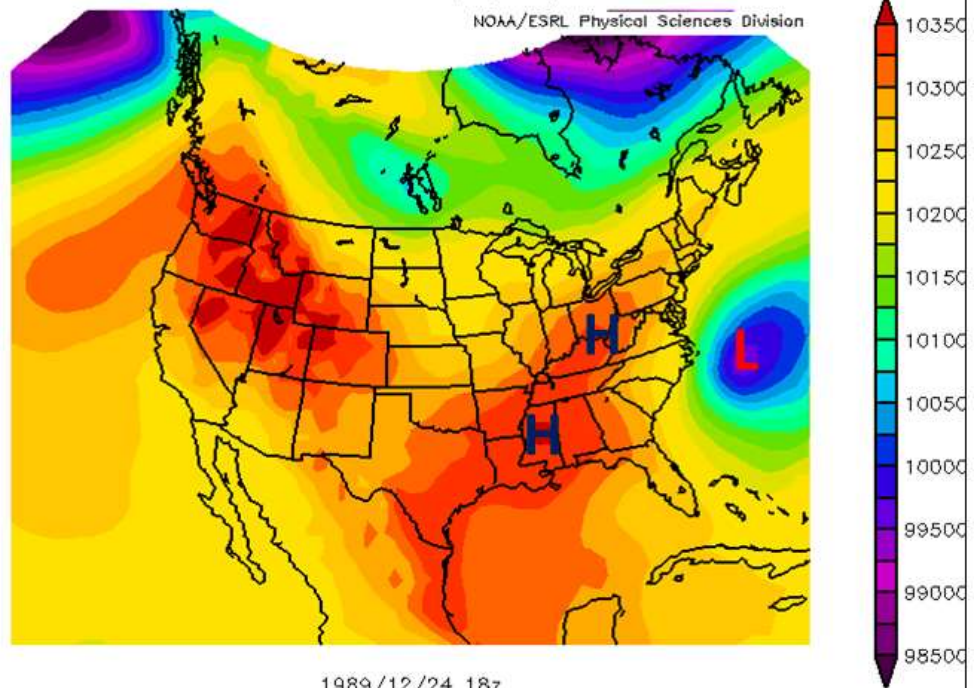
NOAA/ESRL Physical Sciences Division



1989/12/24 18z

NCEP North American Regional Reanalysis  
Pressure at Mean Sea Level (Pa) Composite Mean

NOAA/ESRL Physical Sciences Division

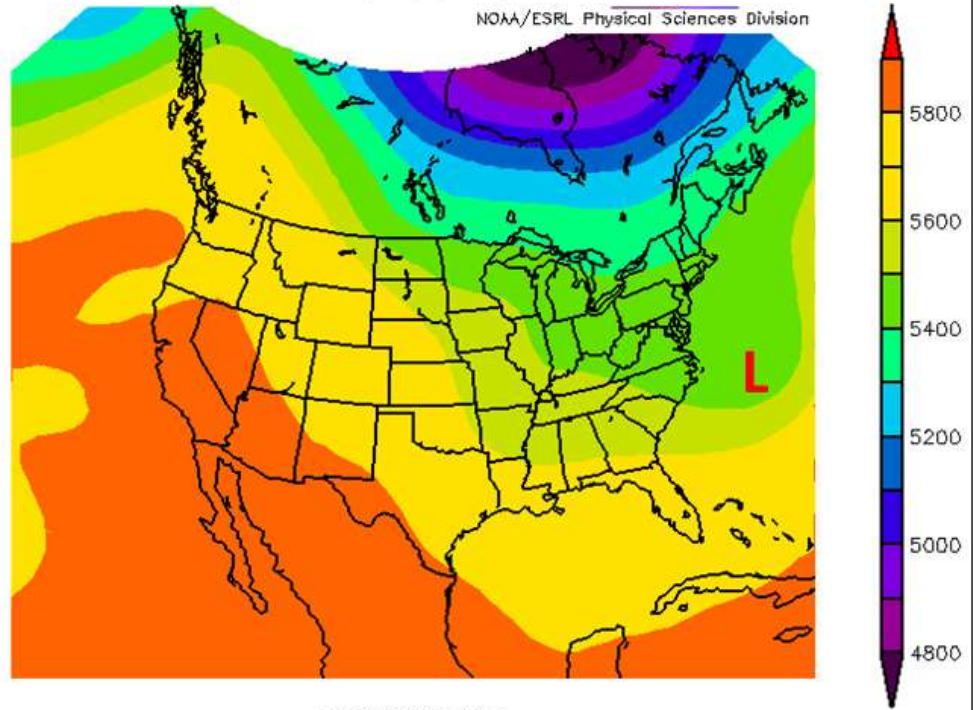


1989/12/24 18z



NCEP North American Regional Reanalysis  
Geopotential Height (m) Composite Mean

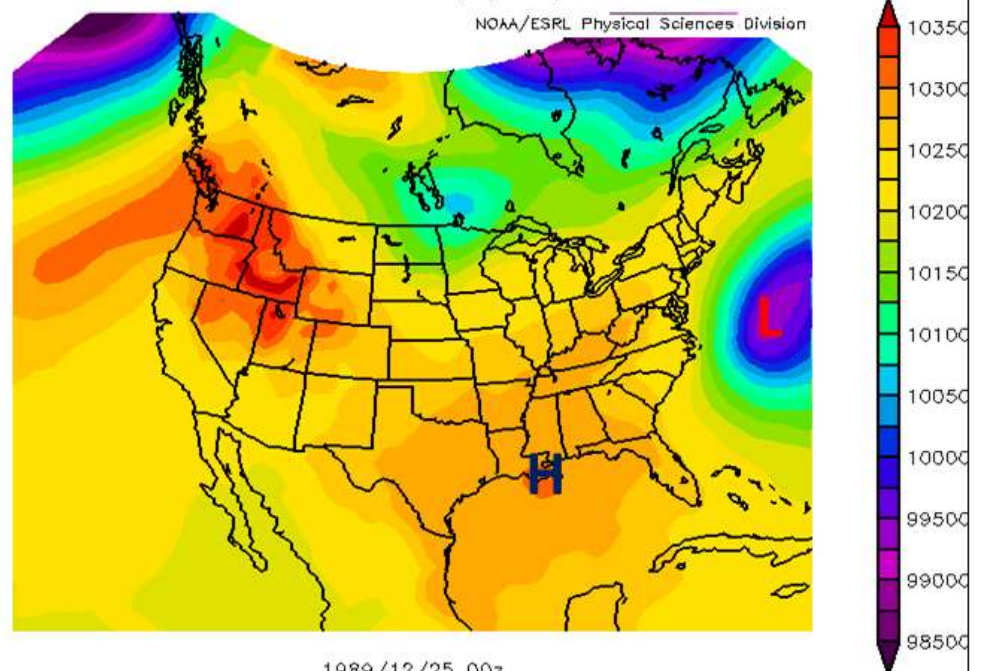
NOAA/ESRL Physical Sciences Division



1989/12/25 00z

NCEP North American Regional Reanalysis  
Pressure at Mean Sea Level (Pa) Composite Mean

NOAA/ESRL Physical Sciences Division



1989/12/25 00z