

## WEATHER

This semester, we will begin to use programs and software specific to meteorology. The first program we will focus on is the “weather” program.

The weather program is a valuable tool for viewing a variety of text weather data, such as METAR observations, model output, and National Weather Service forecasts. You will find the weather program to be particularly useful in preparing your forecasts.

To start the weather program, type weather at the UNIX prompt (on the Linux side of the dual-boot computers in the map room).

Typing a forward-slash (/) will show us all of the available products we can view using “weather.” Then, to access the data, type a forward-slash, followed by a data type:

/flatmetar

This will bring you to a METAR prompt, where you can type a three-letter airport code to access the data. Here are some examples:

alb l	The latest METAR observation for Albany
pou t	All observations for Poughkeepsie, NY taken today (from 0000 UTC until now)
msn y	All observations for Madison, WI taken yesterday
grr n	Gives the last “n” hours of observations for Grand Rapids, MI, where n is an integer in numbers of hours
gfl 6z-	All observations for Glens Falls, NY including and since 0600 UTC today
oma 12z.y	Omaha, NE METAR observation from 12Z yesterday
abq 12z.14	Albuquerque, NM METAR observation from 12Z on the 14 <sup>th</sup>
@mn 18z.10	All observations from the entire state of Minnesota (MN) from 18Z on the 10 <sup>th</sup> .

You can also access model data very easily. First, type one of:

/nammos

/gfsshort

Then, you can use similar commands to what is listed above (i.e., alb l, nyc 6z) to acquire the MOS data. Here is an example of MOS data from Albany:

```
NAMMOS> alb 12z.y
KALB  NAM MOS GUIDANCE      8/21/2014  1200 UTC
DT /AUG  21/AUG  22                /AUG  23                /AUG  24
HR   18  21  00  03  06  09  12  15  18  21  00  03  06  09  12  15  18  21  00  06  12
N/X                62                67                56                77    58
TMP   73  73  69  66  64  63  62  64  64  64  61  60  59  57  60  68  74  76  71  62  61
DPT   65  65  65  63  61  61  60  61  62  61  61  59  57  56  57  58  58  57  58  55  56
CLD   OV  OV  OV  OV  OV  OV  OV  OV  OV  OV  OV  OV  OV  OV  OV  BK  SC  SC  SC  CL  OV
WDR   17  12  12  11  14  14  14  09  08  07  08  05  01  08  35  05  01  02  07  35  32
WSP   04  04  03  04  03  03  04  05  04  05  03  03  02  01  03  05  05  06  02  02  02
P06           94      78          68          69      47      17      8      14  9  9
P12                100          92          47          18    9
Q06           3      2      2      2      2      1      0      0      0  0  0
Q12                3      3      1          0      0
T06           44/13  17/ 1  8/ 0  5/ 0  15/ 8  5/ 1  0/ 1  2/ 1  11/12  2/ 1
T12                52/13      16/ 0      15/ 8      2/ 1      12/12
CIG    6  5  5  5  4  4  3  3  3  3  4  5  5  4  3  6  8  8  8  8  5
VIS    6  7  6  5  5  5  4  4  5  5  7  7  7  7  7  7  7  7  7  7  5
OBV   HZ  N  HZ  BR  BR  BR  BR  BR  BR  N  N  N  N  BR  N  N  N  N  N  BR
```

The raw gridded model data (EXT) format is shown in an easy to read, tabular format. EXT data is available for any city in the country, but it has to be extrapolated from the gridpoints (some of which are far away from the closest grid points, so the data may not represent the site accurately). NAM and GFS data can be accessed this way:

/extnam218v

/extavn ← The GFS used to be called the “AVN”, or aviation

/extavn1v ← The gridded GFS data, interpolated to nearest grid-point, but in vertical format

```

Station: ALB      Lat: 42.75  Lon: -73.80  Elev: 92  Closest grid pt: 22.2 km.
Initialization Time: 08-08-24 1200 UTC
PARAMETER/TIME  000    006    012    018    024    030    036    042    048    054    060
-----
DAY / HOUR      24/12  24/18  25/00  25/06  25/12  25/18  26/00  26/06  26/12  26/18  27/00
-----
TEMPS
2 M (F)
850 MB (C)      13     15     16     16     14     9      7      6     10     9     10
700 MB (C)      10     9      7      6      6      6      5      3      4      6      6
500 MB (C)      -7     -7     -8     -9     -11    -11    -11    -12    -10    -9     -9
1000-500 THCK  570    573    572    571    567    565    562    559    561    565    566

MOISTURE
2 M DEW POINT (F)
850 MB DP(C)/RH 6/61   6/58  11/71  14/91  9/71   7/87   5/84  -3/53  -9/26  -5/37  -2/41
700 MB DP(C)/RH -27/06 -11/23 3/75   2/76   2/76  -14/22 -21/14 -21/16 -16/21 -15/21 -9/32
500 MB DP(C)/RH -28/18 -21/31 -21/35 -15/60 -15/69 -35/12 -30/20 -30/20 -25/29 -20/40 -19/46
PRCPABLE WTR (IN)
CONV PRECIP (IN)
6HR TOTAL PRECIP      0.00  0.00  0.03  0.01  0.00  0.00  0.00  0.00  0.00  0.00  0.00
12HR TOTAL PRECIP     0.00  0.00  0.03  0.02  0.00  0.00  0.00  0.00  0.00  0.00  0.00

WIND DD/FFF (Kts)
10 M
850 MB           29/011 29/004 26/012 28/021 28/025 30/022 34/025 34/030 35/030 00/022 00/011
700 MB           22/006 28/011 31/016 28/017 26/033 27/031 31/026 33/027 34/030 33/021 34/019
500 MB           24/014 26/017 26/014 25/020 27/028 27/032 29/041 32/049 33/043 32/034 33/029
250 MB           28/008 28/012 26/019 24/039 25/057 26/064 28/056 33/049 35/053 00/028 35/026

PRESS/HEIGHTS
MSL PRESSURE     1019.3 1014.7 1012.0 1010.7 1011.4 1011.1 1013.8 1016.8 1019.6 1018.3 1019.7
850 MB HGT       155    153    151    149    148    148    148    149    151    152    154
700 MB HGT       317    315    313    312    310    308    307    308    310    312    314
500 MB HGT       587    585    583    580    577    575    573    573    577    580    582
250 MB HGT       1089   1089   1086   1082   1074   1068   1065   1064   1071   1077   1082

VERTICAL VEL (uB/S)
850 MB           4      1      2     -18    -38    -17    -23    -34    -21     1    -10
700 MB           13     -10    -12    -3     -30    -16    -13    -18    -20    -7    -12
500 MB           7      -11    -2     12     19     -6      0     -2    -19   -28    -5

CONVECTION PARAMS
LIFT INX SFC
LIFT INX 4LYR
CAPE SFC         9      82    262    27     7      27    14     0     0     0     0
CAPE 4LYR
CIN SFC          3     -24   -22   -82   -23     1     -2     0     0    -4     0
CIN 4LYR
HELICITY (0-3 KM)

```

You can also access the National Weather Service forecasts for specific stations. They are created twice daily. Included are the day one to three temperature forecasts and precipitation probabilities. To access this data, type:

/pfm

The product appears like this:

PFM> aly 1  
FOUS51 KALY 221942  
PFMALY

POINT FORECAST MATRICES  
NATIONAL WEATHER SERVICE ALBANY NY  
342 PM EDT FRI AUG 22 2014

NYZ052-230900-  
ALBANY-ALBANY NY  
42.75N 73.80W ELEV. 318 FT  
342 PM EDT FRI AUG 22 2014

DATE	08/22/14					SAT 08/23/14					SUN 08/24/14					MON						
EDT 3HRLY	17	20	23	02	05	08	11	14	17	20	23	02	05	08	11	14	17	20	23	02	05	08
UTC 3HRLY	21	00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12
MIN/MAX						60					78					58		82		58		
TEMP	65	64	62	61	60	63	72	77	78	70	64	61	58	62	74	81	81	72	65	61	58	62
DEWPT	63	62	62	61	59	60	61	60	59	59	58	56	55	58	61	60	59	59	59	59	58	57
RH	93	93	100	100	96	90	68	56	52	68	81	84	90	87	64	49	47	64	81	93	100	84
WIND DIR	SE	E	E	SE	E	NE	E	E	NE	N	NE	SW	N	NW	N	N	E	N	W	S	W	
WIND SPD	6	4	3	3	2	4	3	3	1	1	1	1	1	2	3	5	2	0	0	1	1	0
CLOUDS	OV	OV	OV	OV	B2	B2	B1	B1	SC	SC	FW	SC	FW	FW	SC	SC	SC	FW	FW	FW	FW	SC
POP 12HR						20					10					10		10		5		
QPF 12HR						0					0					0		0		0		
SNOW 12HR						00-00					00-00					00-00						
RAIN SHWRS	C	S	S																			
OBVIS						PF					PF					PF						
HEAT INDEX															82		81					
MAX HEAT															82		82					

DATE	08/25		TUE 08/26/14		WED 08/27/14		THU 08/28/14		FRI 08/29/14															
EDT 6HRLY	14	20	02	08	14	20	02	08	14	20	02	08	14	20										
UTC 6HRLY	18	00	06	12	18	00	06	12	18	00	06	12	18	00										
MAX/MIN	81		59		84		62		84		62		78		57		74							
TEMP	80	72	62	63	83	75	65	66	83	75	65	65	77	69	60	60	73	66						
DEWPT	60	61	58	59	62	61	60	61	64	61	59	59	58	56	54	54	55	54						
PWIND DIR	SW		SW		SW		SW		W		W		NW		NW		W							
WIND CHAR	LT		LT		LT		LT		LT		LT		LT		LT		LT							
AVG CLOUDS	SC	SC	SC	SC	FW	FW	FW	FW	FW	SC	SC	SC	SC	B1	B1	SC	SC	SC						
POP 12HR	5		5		0		0		5		10		30		30		20							
RAIN SHWRS													C		C		C		C		S		S	
TSTMS													S		S									

You can access any National Weather Service forecast discussion by typing:

/foredis

Remember that the National Weather Service office IDs often are different from the city's ID. A good example of this is Albany. The airport code is ALB, but the National Weather Service is ALY.

Finally, you can access the GFS MOS out to seven days. Type:

/gfsmos  
or  
/gfslong

Then, as before, you can type the city you're looking for, and the time period you want to see the model from:

```
GFSMOS> alb 1
KALB   GFSX  MOS  GUIDANCE    8/22/2014   1200 UTC
FHR    24  36 | 48  60 | 72  84 | 96 108 |120 132 |144 156 |168 180 |192
        SAT 23 | SUN 24 | MON 25 | TUE 26 | WED 27 | THU 28 | FRI 29 | SAT CLIMO
N/X    61  76 | 54  83 | 57  85 | 62  85 | 62  86 | 61  87 | 63  76 | 56 56 78
TMP    63  69 | 60  72 | 63  76 | 66  76 | 67  77 | 65  76 | 66  68 | 60
DPT    60  59 | 58  59 | 60  63 | 63  63 | 62  62 | 61  62 | 62  59 | 55
CLD    OV  PC | CL  CL | CL  CL | CL  CL | CL  CL | CL  PC | PC  OV | CL
WND     5   6 |  3   5 |  3   5 |  3   8 |  4   7 |  5  13 | 11  14 |  9
P12    46  23 |  6   1 |  6   6 |  8   7 | 13  10 | 18  35 | 37  28 | 25 21 24
P24           | 46     |  7     |        | 14     |        | 17     |        | 48     |        | 49     |        | 35
Q12     1   0 |  0   0 |  0   0 |  0   0 |  0   0 |  0   1 |        |        |        |        |
Q24           |  1     |  0     |        |  0     |        |  0     |        |  1     |        |
T12     3  18 |  1  11 |  1   3 |  1   4 |  2   8 |  5  14 | 12   9 |  5
T24           | 19     | 11     |        |  3     |        |  5     |        |  9     |        |  9
```