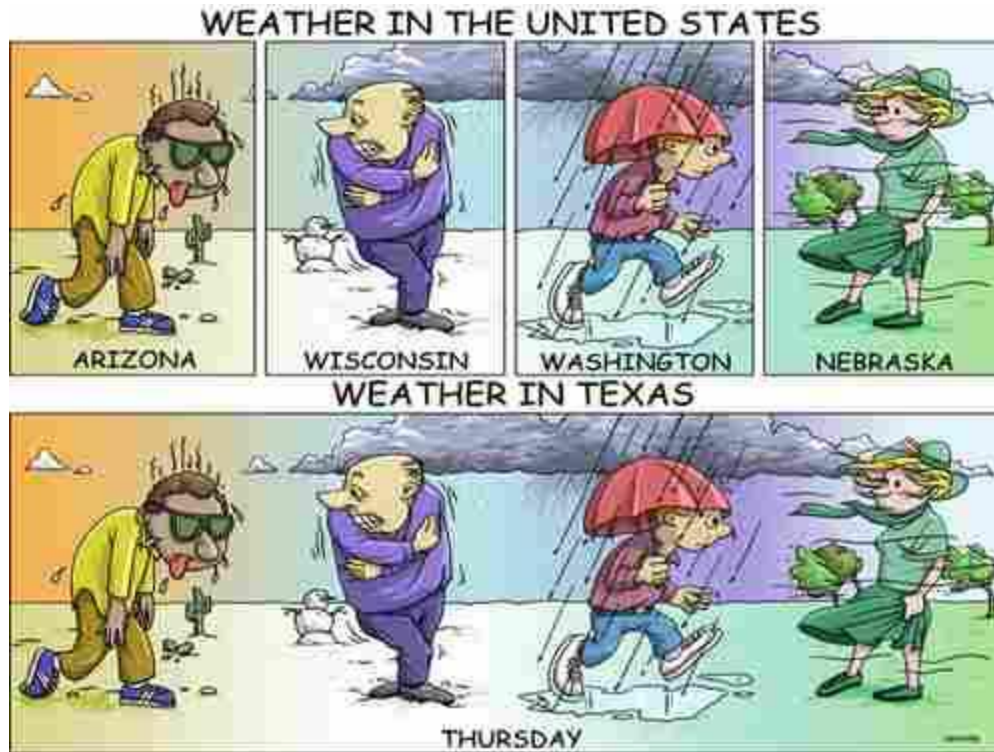


WX Reports – Part 1



Gary White

METARS

- Observations at Airports and Selected Locations
 - Manual or Automatic
 - Generated Hourly or as Needed
 - Part of the NWS Aviation Digital Data Service
 - All Reports Shown Here Can Be Accessed By a PC, iPad, or iPod
 - Graphics Best Seen on PC or iPad Device

METARS (cont.)

Reported in Shorthand (see Grayed Area) – but Textual Decoding Available

<http://aviationweather.gov/>

Aviation Digital Data Service (ADDS)

Output produced by TAFs form (2218 UTC 16 September 2012)
found at <http://aviationweather.gov/adds/tafs/>

METAR text: **KHYI 162153Z 06007KT 3SM -RA FEW011 SCT033 BKN039 20/19 A3001**

Conditions at: KHYI (SAN MARCOS , TX, US) observed 2153 UTC 16 September 2012

Temperature: 20.0°C (68°F)

Dewpoint: 19.0°C (66°F) [RH = 94%]

Pressure (altimeter): 30.01 inches Hg (1016.3 mb)

Winds: from the ENE (60 degrees) at 8 MPH (7 knots; 3.6 m/s)

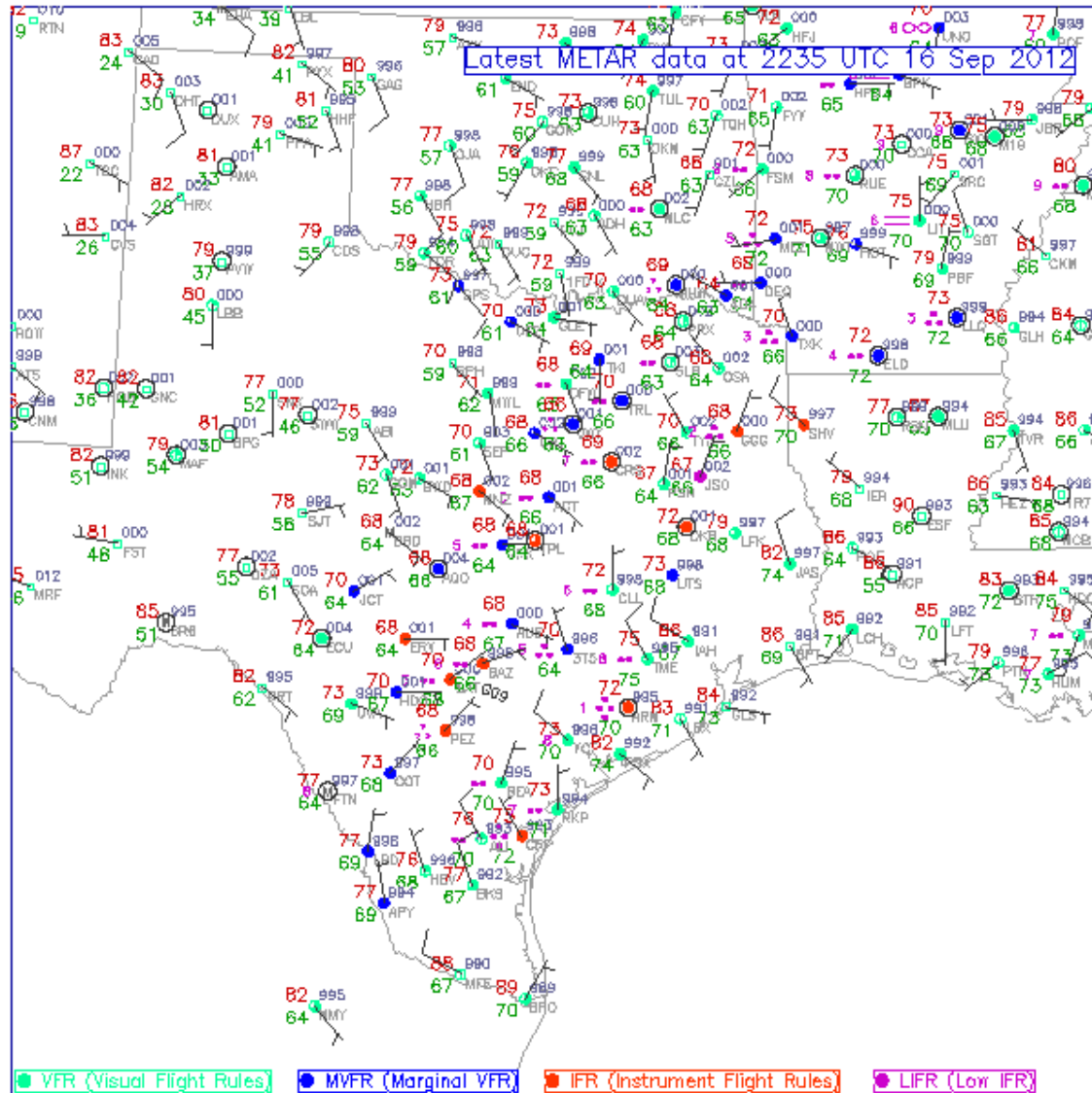
Visibility: 3 miles (5 km)

Ceiling: 3900 feet AGL

Clouds: few clouds at 1100 feet AGL
scattered clouds at 3300 feet AGL
broken clouds at 3900 feet AGL

Weather: -RA (light rain)

METARS (Graphic)



Let's Turn to Forecasting



Terminal Aerodrome Forecasts (TAFs)

Aviation Digital Data Service (ADDS)

Output produced by TAFs form (2308 UTC 16 September 2012)
found at <http://aviationweather.gov/adds/tafs/>

```
KAUS 162044Z 1621/1724 02007KT 2SM RA BR BKN005 BKN035 OVC100  
TEMPO 1621/1623 4SM -RA BR BKN010 BKN025  
FM162300 01005KT 4SM -RA BR BKN010  
FM170300 07003KT 5SM BR BKN015  
FM170700 VRB02KT 2SM BR OVC008  
FM171400 36004KT P6SM SCT020 BKN250
```

Raw Report

Decoded Report – Line 1

Text: KAUS 162044Z 1621/1724 02007KT 2SM RA BR BKN005 BKN035 OVC100

Forecast period: 2100 to 2300 UTC 16 September 2012

Forecast type: FROM: standard forecast or significant change

Winds: from the NNE (20 degrees) at 8 MPH (7 knots; 3.6 m/s)

Visibility: 2.00 miles (3.22 km)

Ceiling: 500 feet AGL

Clouds: broken clouds at 500 feet AGL
broken clouds at 3500 feet AGL
overcast cloud deck at 10000 feet AGL

Weather: RA BR (rain, mist)

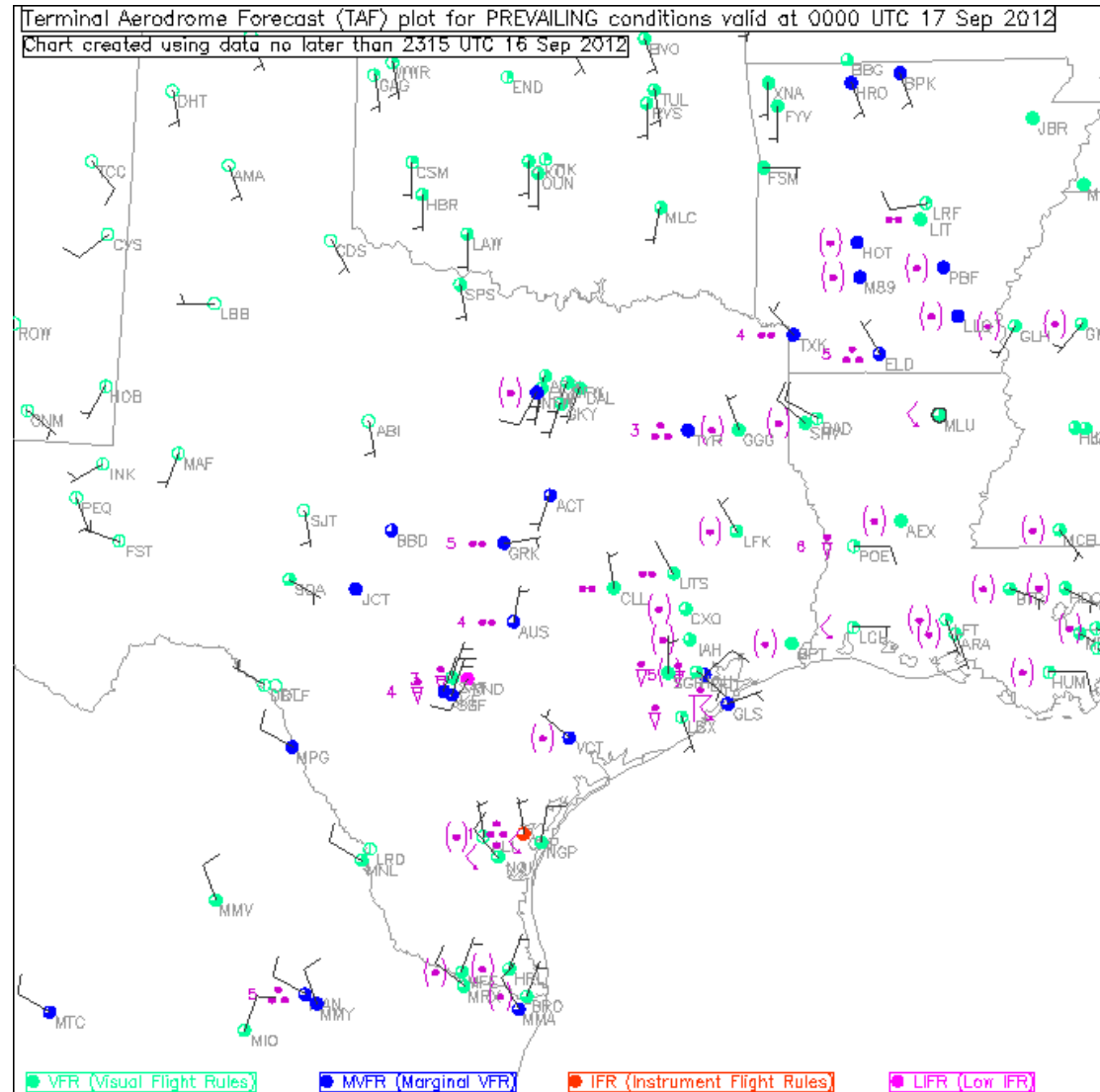
TAFs Provided at 00, 06,12,18Z – Valid for 24 Hours

One of Your Best Estimates for WX at Airport

Uses State of the Art Computer Models

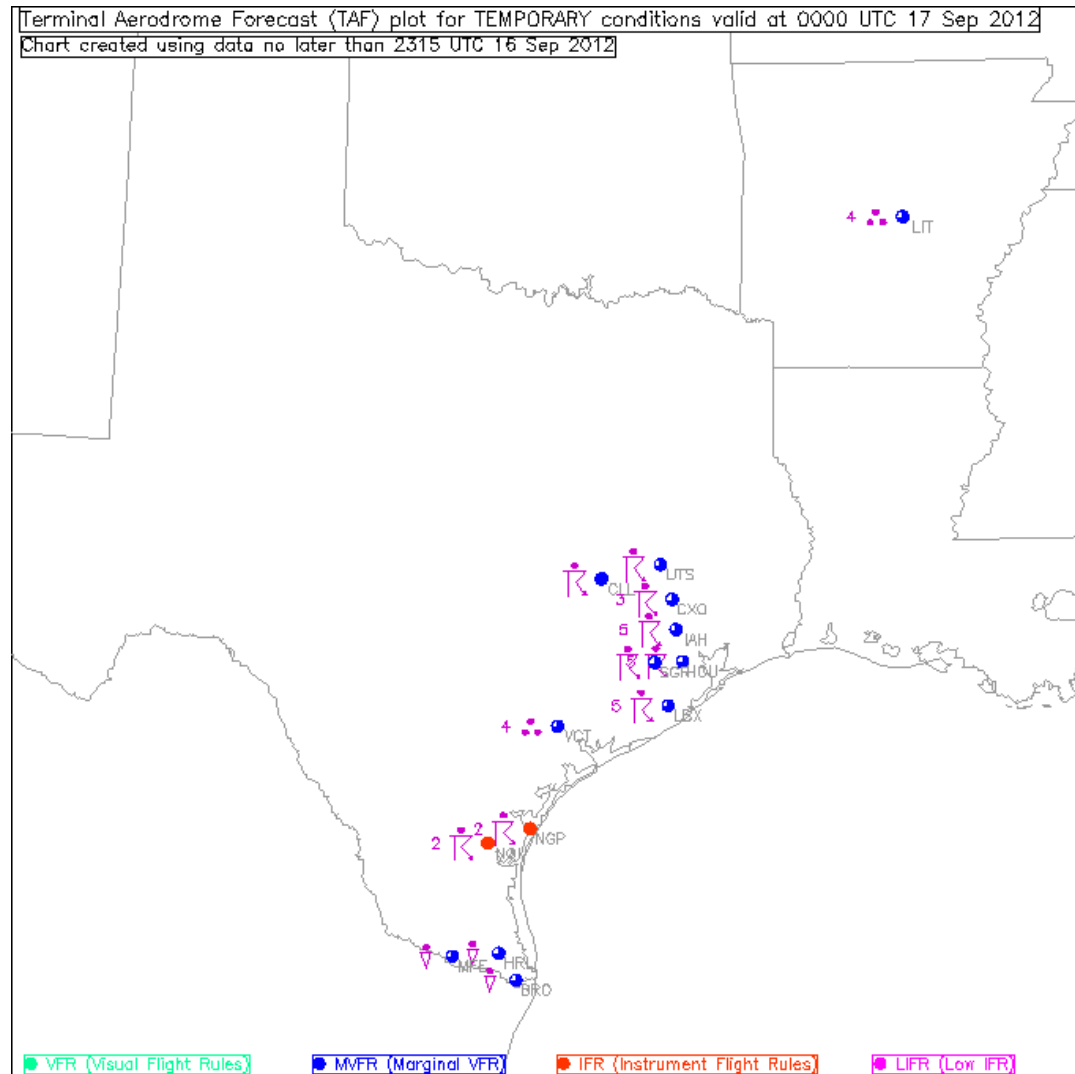
TAFs (graphic)

- Two Types
- Prevailing – Right
- Temporary – Next Page



TAFs (temporary WX graphic)

- Useful To De-Clutter
- Note: These TAFs are Representation of Current Conditions
- While Each TAF is Only Valid for 5 Miles – Putting Them in a Larger Context Can Help



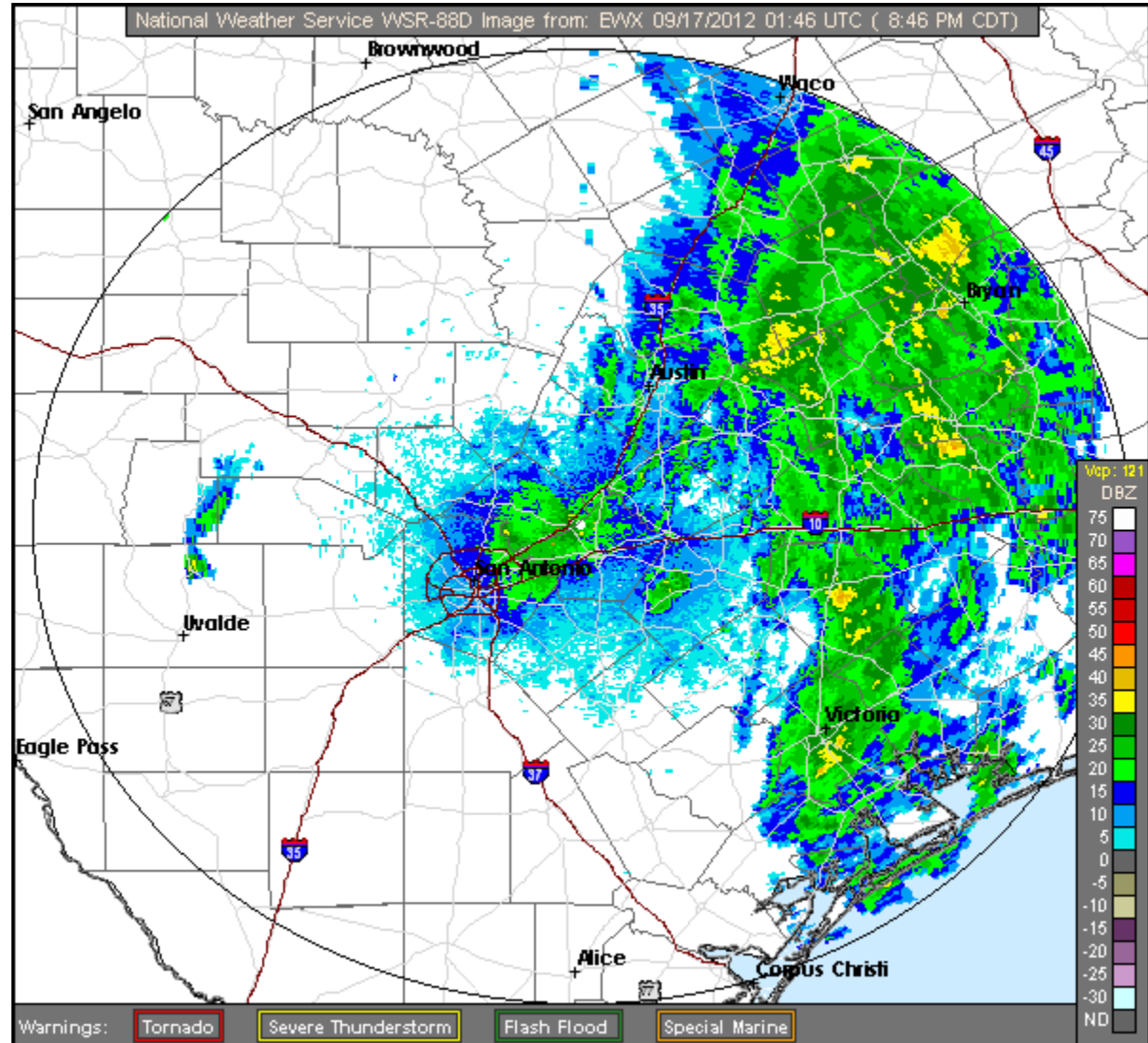
METAR and TAF Factoids

- Ceiling (Cloud Base) is Either Broken (BKN = 5/8-7/8) or Overcast (OVC)
- Winds Are True
- Visibility is Statue Miles (SM)
- For VFR in Controlled Airspace Need 3 SM Visibility and 1,000 Ceiling
- Only Provide Information Within 5 nm of Airport
- CB is the Only Type of Cloud in a TAF – Why?

Radar

- Actual Returns
- Graphic (next page)
- Textual

- Shows Precipitation, Intensity and Movement

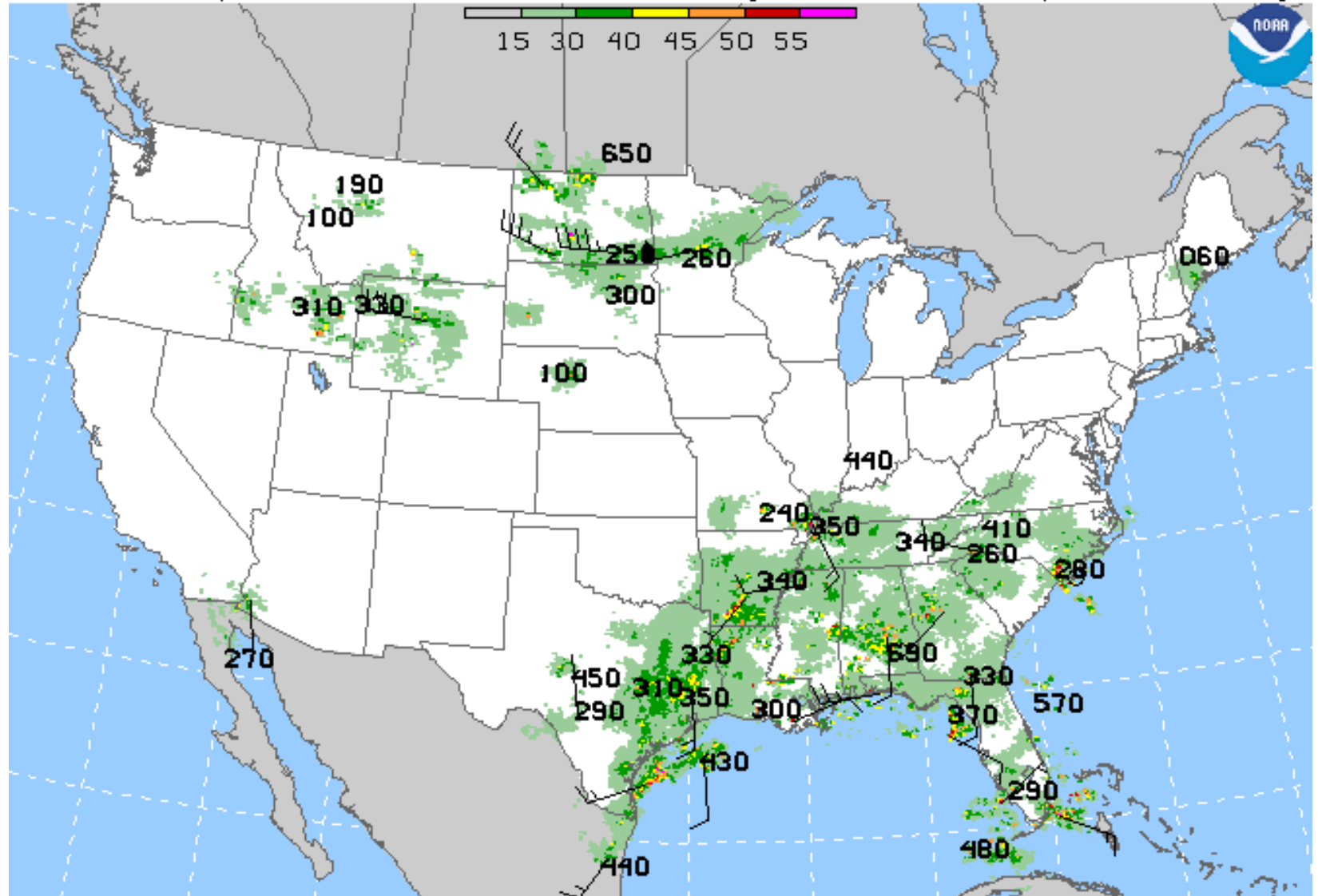


Radar (cont.)

0215 UTC Mon 17 Sep 2012

Radar Coded Message

<http://aviationweather.gov>



Textual Radar (from DUATS)

- **New Braunfels TX [EWX]** radar weather report at 9:35pm CDT (0235Z):
 - An area of echoes, 6/10 coverage containing heavy rain showers. The area is 94 nm wide from 022° at 131 nm to 132° at 125 nm from EWX. Cell movement is from 220° at 12 knots. Automated station.
- **Houston TX [HGX]** radar weather report at 9:35pm CDT (0235Z):
 - A cell containing thunderstorms and intense rain showers. The cell is 4 nm in diameter centered at 203° at 42 nm from HGX.
 - An area of echoes, 3/10 coverage containing thunderstorms and intense rain showers. The cell is 24 nm wide from 143° at 91 nm to 159° at 108 nm from HGX. Cell movement is from 200° at 16 knots.
 - An area of echoes, 4/10 coverage containing very heavy rain showers. The cell is 225 nm wide from 359° at 122 nm to 191° at 122 nm from HGX. Cell movement is from 200° at 16 knots. Automated station.

PIREP Format

Encoding Pilot Weather Reports (PIREPS)

1	XXX	3-letter station identifier	Nearest weather reporting location to the reported phenomenon
2	UA	Routine PIREP, UUA-Urgent PIREP.	
3	/OV	Location	Use 3-letter NAVAID idents only. a. Fix: /OV ABC, /OV ABC 090025. b. Fix: /OV ABC 045020-DEF, /OV ABC-DEF-GHI
4	/TM	Time	4 digits in UTC: /TM 0915.
5	/FL	Altitude/Flight level	3 digits for hundreds of feet. If not known, use UNKN: /FL095, /FL310, /FLUNKN.
6	/TP	Type Aircraft	4 digits maximum. If not known, use UNKN: /TP L329, /TP B727, /TP UNKN.
7	/SK	Sky cover/Cloud layers	Describe as follows: a. Height of cloud base in hundreds of feet. If unknown, use UNKN. b. Cloud cover symbol. c. Height of cloud tops in hundreds of feet.
8	/WX	Weather	Flight visibility reported first: Use standard weather symbols; intensity is not reported: /WX FV02 R H, /WX FV01 TRW.
9	/TA	Air temperature in Celsius (C)	If below zero, prefix with a hyphen: /TA 15, /TA -06.
10	/WV	Wind	Direction in degrees magnetic north and speed in six digits: /WV 270045, WV 280110.
11	/TB	Turbulence	Use standard contractions for intensity and type (use CAT or CHOP when appropriate). Include altitude only if different from /FL, /TB EXTREME, /TB LGT-MDT BLO 090.
12	/IC	Icing	Describe using standard intensity and type contractions. Include altitude only if different than /FL: /IC LGT-MDT RIME, /IC SVR CLR 028-045.
13	/RM	Remarks	Use free from to clarify the report and type hazardous elements first: /RM LLWS -15KT SFC-030 DURC RNWY 22 JFK.

Area Forecast (FA)

- Issued Three Times Daily
- Gives 18 Hour Forecast (Includes 6 Hour Outlook After Forecast Period of Clouds and WX)
- Used for Route Information
- Airports that Don't Have TAF or METARs
- Multiple Sections
 - Product Header
 - Precautionary Statements
 - Synopsis
 - VFR Clouds and WX

Area Forecast (FA) (cont.)

- Header

```
FAUS44 KPCI 170945  
FA4W  
DFWC FA 170945  
SYNOPSIS AND VFR CLDS/WX  
SYNOPSIS VALID UNTIL 180400  
CLDS/WX VALID UNTIL 172200...OTLK VALID 172200-180400  
OK TX AR TN LA MS AL
```

Issued by
Kansas City

Valid beginning
10Z on 17th

Synopsis Ends
04 Z on 18th

6 hour Outlook

Synopsis - 18 hour

CLDS / WX 12 hr

OTLK 6 hr

Ends 22Z
(12 hours)

Area Forecast (FA) (cont.)

- Precautionary Statements
 - Standard Phrase Used

SEE AIRMET SIERRA FOR IFR CONDS AND MTN OBSCN.
TS IMPLY SEV OR GTR TURB SEV ICE LLWS AND IFR CONDS.
NON MSL HGTS DENOTED BY AGL OR CIG.

Area Forecast (FA) (cont.)

- Synopsis
 - Large Trends Based on Current Conditions and Past Trends – Think Big Picture
 - Shows a Beginning (10Z) and End (04Z) of the Valid Period Big Picture

```
SYNOPSIS...CDFNT SWRN KS INTO NWRN TX PNHDL. TROPICAL TROF W  
CNTRL MS THRU SWRN LA INTO WK LOW OVR SWRN LA GLFMEX. 04Z CDFNT  
NWRN AR INTO SERN NM. TROPICAL TROF NERN AL THRU LOW SWRN LA INTO  
NRN GLFMEX.
```

Area Forecast (FA) (cont.)

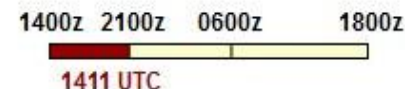
- VFR Clouds and WX
- Broken Up by States and Regions

```
.  
N CNTRL TX  
WRN...OVC030 TOP 060. VIS 3-5SM BR. 14Z SKC. OTLK...VFR.  
ERN...OVC010 LYRD FL200. VIS 3SM BR. 15Z OVC050. OTLK...VFR.  
.  
NERN TX  
OVC010 LYRD FL200. VIS 3SM BR. 15Z OVC020. 18Z OVC030. WDLY SCT  
-SHRA/ISOL -TSRA. CB TOP FL400. OTLK...MVFR CIG SHRA/TSRA.  
.  
SERN TX  
OVC010 LYRD FL250. VIS 3SM WDLY SCT -SHRA/ISOL -TSRA. CB TOP  
FL400. 17Z SCT030 SCT150. OTLK...VFR.  
.  
S CNTRL TX  
CSIL BEND...OVC020 TOP 080. VIS 3SM BR. 15Z SCT030. OTLK...VFR.  
HILL COUNTRY...OVC020 TOP 080. VIS 3SM BR. 14Z OVC040. 15Z  
SCT150. OTLK...VFR.  
RMNDR...BKN CI. 12Z SKC. OTLK...VFR.
```

Winds Aloft (FD)

Low High

FB Winds Map



(Extracted from FBUS31 KWNO 171403)
FD1US1
DATA BASED ON 171200Z
VALID 171800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
BHM	1721	1829+14	1928+09	2124+04	2125-08	2333-18	234733	235344	236056
HSV	1822	1934+14	2032+08	2127+03	2235-09	2229-18	234534	235244	246757
MGM	1730	1928+14	1926+09	2022+04	2010-07	2027-17	223933	224543	245056
MOB	1724	1825+14	1924+09	1923+04	2121-06	2123-16	213432	223943	234455
FSM	3510	9900+12	9900+08	0108+03	3410-09	2817-21	215837	207646	207757
LIT	9900	9900+13	2305+08	2309+03	2318-09	2420-20	204434	206444	219057
LCH	3513	3313+14	3212+09	9900+04	2021-06	2138-17	205232	195743	206256
MSY	1829	2029+15	2128+10	2128+04	2028-06	2231-16	223231	223242	213855
SHV	0410	3206+12	9900+08	1806+03	2127-09	2038-20	185934	197544	198156
JAN	1812	1909+14	2110+08	1913+03	1931-06	2236-17	214333	225143	226156
GAG		1607+16	9900+11	3111+05	3122-13	2727-24	283840	296051	307058
OKC	9900	0209+13	0213+10	0117+04	3421-11	3022-22	302738	313349	272057
TUL	3505	9900+13	3205+08	3613+04	3410-10	2822-22	252838	224148	215457
BNA	1731	2039+13	2137+08	2234+03	2331-08	2332-19	244335	245346	248157
MEM	9900	9900+13	2308+09	2415+03	2228-09	2234-19	213535	226045	228457
TRI		1708+12	2012+07	2221+02	2335-10	2537-19	254635	255746	278558
TYS	1509	2218+13	2224+07	2229+02	2335-09	2439-19	254635	255245	267757
ABI		3610+14	0122+11	0127+06	3322-09	3430-21	344437	346147	346855
AMA		3508	9900+13	9900+06	2922-13	2934-23	304439	306848	319357
BRO	2706	2716+15	2927+09	2926+04	2927-05	2731-20	253635	244444	245053
CLL	3409	3512+12	3307+07	3310+02	9900-11	3208-22	231536	222343	232251
CRP	3109	3022+13	2922+08	3024+04	3033-08	3137-21	283236	263444	263352
DAL	3405	3507+12	9900+08	3610+03	0224-08	0128-22	351537	990046	201454
DRT	9900	3213+17	3224+11	3526+06	3429-08	3441-20	345235	356945	357354
ELP		3012	3413+15	3308+07	3111-07	3125-19	304335	326144	328054
HOU	3111	3311+12	2807+07	2510+02	2322-09	2136-20	204934	205143	214652
INK		2607+22	9900+15	3011+07	3322-09	3230-20	315136	325745	338855
LBB		9900+20	3506+13	3507+06	3123-11	3131-21	324437	316347	329656
LRD	9900	3018+17	3132+10	3324+04	3436-06	3337-20	334735	344845	334054
MRF			3012+15	3115+07	3421-08	3332-19	324235	335545	348154
PSX	3314	3211+12	2913+07	2917+02	2724-09	2726-21	233834	234043	243651
SAT	3308	3216+14	3117+09	3322+04	3333-08	3445-21	344736	333745	302953

- Four Digit Code for Wind and Direction
- No Levels within 1,500' of Station Elevation
 - E.g., Gage, in OK, el 2,223'
- Temperatures Above 24,000' are Negative
 - E.g., MOB @ 30,000' is -32 C
- No Temperatures for 3,000' or within 2,500'
 - E.g., Amarillo, el 3,607'

WX Reports – Looking Ahead

- There are Other Reports and Graphics – These Will Be Discussed in the Next Section
- Also, How to Get WX from Various Services