

Weather

Boston Virtual ARTCC Ground School

December 3, 2018



SIMULATION USE ONLY

These materials are provided for discussion and use in online flight simulation on VATSIM. They are not suitable for real-world flight.

Objectives

- The “Weather” ground school is designed for to members learn more about the types of weather that affect our simulation, how to ensure that your weather is as accurate as possible, and weather minima for various types of flight

Tonight’s session will:

- Educate members on the availability and effectiveness of add-on software
- Provide an overview of the abbreviations and codes used in METARs and TAFs
- Provide an overview of other weather planning tools available



Experiencing the Weather

In case you haven't heard...

Default “real-world weather” settings leave a LOT to be desired!

There are several add-ons that do a very good job of bringing you closer to reality (for FSX-based sims). From good to best they are:

- **Payware: REX** (Real Environment Extreme). Excellent textures, accurate weather, but strange and abrupt transitions from one type to the next.
- **Freeware: FSRealWeatherLite**. Uses FSX default textures, but accurately follows real world weather patterns.
- **Payware: Active Sky**. The Cadillac of payware weather packages (if you could get a Cadillac for \$50). Does gradual transitions very well. BVA recommended. This is arguably the best and most cost-effective add-on package available.
- **Good combination: Active Sky weather with REX textures.**



Default Weather



ActiveSky Weather



ActiveSky Weather



ActiveSky Weather



METARs and TAFs

- METAR: current hourly or 'special' weather reports from weather observation stations
 - Can be heard on AWOS and ASOS by radio and telephone
 - Often available in ATIS information
- Specific, coded format (that can be decoded)
- Only applies to the immediate airport area (not regional)
- No one knows how to pronounce it ('May-tar' or 'Mee-tar', heard both ways)
- Terminal Aerodrome Forecast (TAF) uses similar codes but is the forecast for a 5 mile radius around the airport; usually valid for 24 hours



METARs

KBOS 150054Z 29006KT 5SM FEW010 SCT035 BKN070 21/09 A2993 RMK A02 P0050 \$

Let's decode!

- **KBOS** – ICAO code for airport or weather station
- **150054Z** – 2 digit day of the month and 4-digit time in UTC/Zulu
- **29006KT** – 3 digit direction (true) the wind is coming FROM (important!) and 2 digit wind speed in knots (hint: if it's 99 – don't fly!)
- **Sky Cover** – This can incorporate up to 3 entries to represent multiple cloud layers, visibility, and conditions
- **21/09** – Temperature/Dewpoint in Celsius. When close, watch out for low clouds, fog, etc.
- **A2993** – Barometric pressure
- **RMK A02** – you see this all the time right? Means it's an automated station (A) with a sensor that can distinguish between rain and snow. No rain sensor = A01.
- **P0050** – Rain accumulation during the last hour in 100th's of inches (i.e., half an inch!)
- **\$** – the station may be broken and requires maintenance



METARs

KBOS 150054Z 29006KT **5SM FEW010 SCT035 BKN070** 21/09 A2993 RMK A02

- The highlighted section includes:
 - Visibility and obscuration
 - Cloud conditions in hundreds of feet AGL (above ground level)
 - METAR and TAF altitudes are always AGL
 - Density – in 1/8 fractions of the sky
 - SKC or CLR : Skies Clear! Start your engines! - 0/8
 - FEW: 0 → 2/8
 - SCT (Scattered): 3/8 – 4/8
 - **BKN (Broken):** 5/8 – 7/8
 - **OVC (Overcast):** – 8/8
- The BKN or OVC layer is also known as the “ceiling” and cannot be penetrated safely in VFR Flight!
- To read the KBOS cloud cover from the example above:
 - FEW010 - Few clouds at one thousand feet AGL
 - SCT035 – Scattered clouds at three thousand five hundred feet AGL
 - BKN070 – Broken layer at seven thousand feet above ground level (AGL)



VFR Weather Minima

What constitutes “VFR Weather”?

- There is no ‘right’ answer – it changes based on the airspace and time of day
- You’re safe if you wait for:
 - 3 miles of visibility
 - A ceiling of at least 1,000’ AGL

But remember, especially if you’re not using an add-on weather product, your weather can differ quite extensively from what’s posted in the METAR.



Examples: Decoding the METAR and TAF

KBDL 152253Z 14008KT 10SM FEW060 32/19 A2993 RMK A02

KBOS 152254Z 26010G17KT 10SM FEW035 BKN065 BKN270 19/11 A2989 RMK A02 SLP119 T01940106

KACK 161853Z 23008KT 1SM -RA BR OVC008 20/17 A2993

KBOS 152254Z 26010G17KT 10SM FEW035 BKN065 BKN270 19/11 A2989 RMK A02 SLP119 T01940106

KDEN 152253Z 33012KT 10SM -TSRA SCT060CB BKN070 OVC100 23/15 A3015 RMK A02 PK WND
35038/2159 RAB43 SLP137 OCNL LTGICCG DSNT S AND SW CB DSNT S AND SW MOV SE P0000
T02280146

KSEA 152104Z 1521/1624 22006KT P6SM SCT012 BKN050 OVC100

FM160000 VRB03KT P6SM SCT050 OVC100

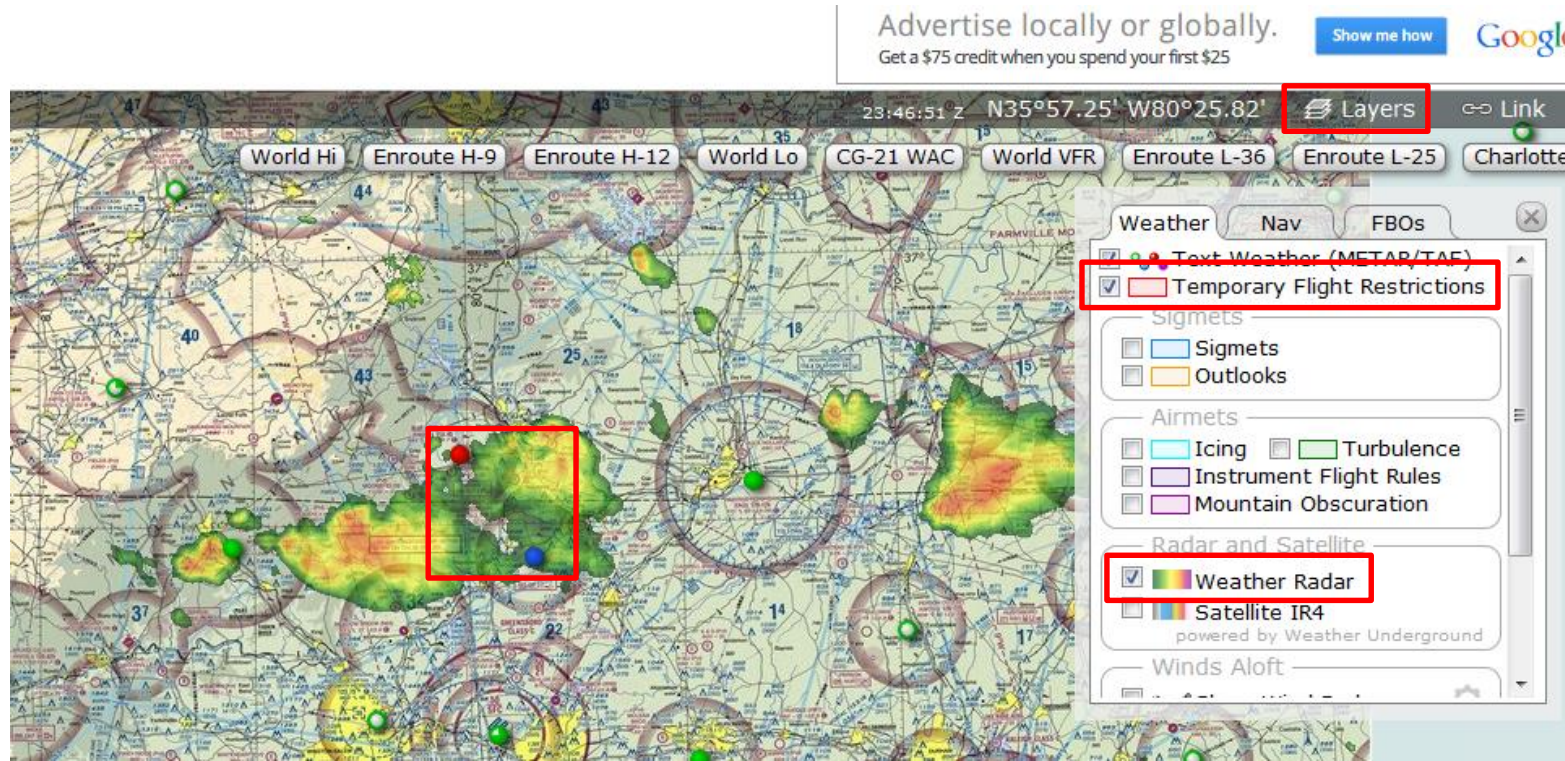
FM161300 VRB03KT P6SM OVC012

For more info on METARs visit <http://www.ofcm.gov/fmh-1/fmh1.htm> or use the METAR decode key: http://www.wrh.noaa.gov/wrh/metar_decode_key.pdf



Useful Online Resources: SkyVector

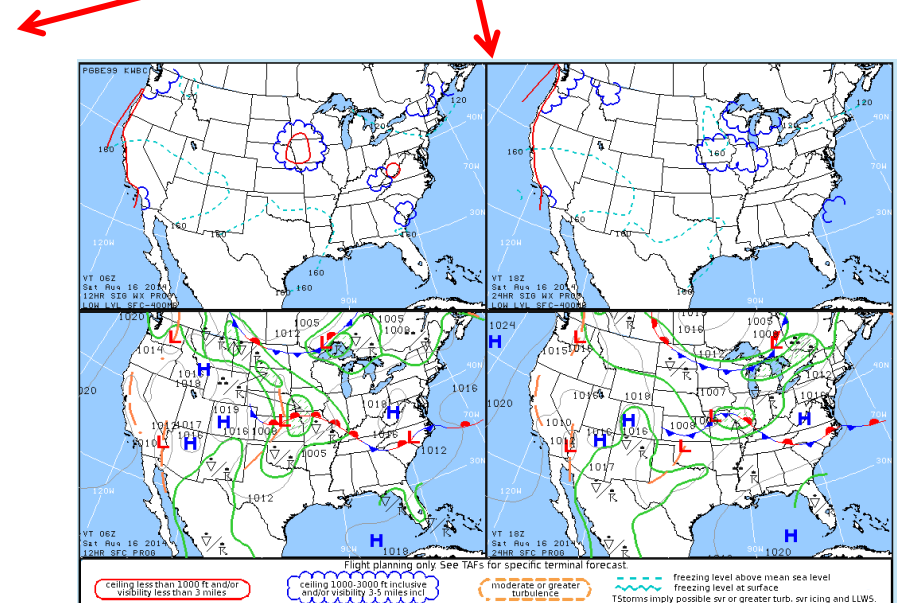
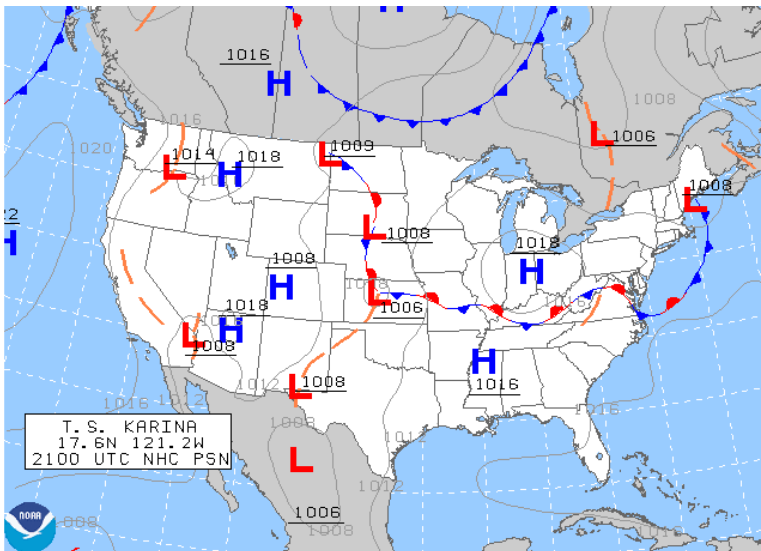
<http://www.skyvector.com>



Useful Online Resources: Aviation Weather Center

<http://www.aviationweather.gov/adds/>

The screenshot shows the top of the Aviation Weather Center website. At the top left is the NOAA logo and the text "AVIATION WEATHER CENTER" and "NOAA NATIONAL WEATHER SERVICE". Below this is a navigation bar with links: USER, HOME, ADVISORIES, FORECASTS, OBSERVATIONS, USER TOOLS, NEWS, SEARCH, ABOUT. A dark blue banner below the navigation bar reads "ADDs - Aviation Digital Data Service". Underneath this banner is a grid of buttons for various services: Home, Turbulence, Icing, Convection, Wind/Temps, Prog Charts, Java Tools, METARs, Ceil&Vis, TAFs, PIREPs, SIGMETs, Satellite, and Radar. The "METARs" and "Prog Charts" buttons are highlighted with red boxes. A red arrow points from the "Prog Charts" button to the right-hand weather chart.



Useful Online Resources: FltPlan.com

<http://www.fltplan.com/>

- Very useful for the “jet jockeys” – and check out FltPlan.com’s app

Navigation Log
back
FltPlan.com
Friday 08-15-14
Dept: 2050L - Arr: 2125L
Save

NOTE: Sample Data-Will NOT Be Saved

GLOBAL	IFR	GenAv	GLEXM	Equip: SBDE2E3FGHIJ5M2RWXYZ/SU2	ATIS:127.87 VOT:111.0
Dep: KBOS	0050Z	395kts	16,000	Route (see below)	Clnc:121.65 FSS: 800-992-7433 (1-62-1)
Dest: KBTW		ETE: 0:35		Altn:	Elev:20 Gnd:121.9/121.75 Twr:132.22/128.8
item 18: PEN/B1C1D1L1 NAV/RNVD1E2A1 SBAS CODE/ASDFGG					
item 19: FOB: 0300 SOB: 2 PIC:JOE PILOT					

HYLND MHT V141 BTW

KBOS to KBTW : TC=324° : (FMS winds: 324°/ 10) : MC= 340° : ST. LINE=157nm : AIRWAY=162nm : Extra=3%

Imagery
Sectionals
Jet Airways
Victor Airways
Route Map
Current Radar
Radar Loop

Winds Aloft	FL180 ISA(-21) Comp	FL160 ISA(-17) Comp	FL140 ISA(-13) Comp	FL120 ISA(-09) Comp
HYLND	247/035 +08 -003	251/032 +08 -005	255/029 +08 -006	259/026 +08 -007
MHT	247/035 +08 -011	251/032 +08 -012	255/028 +08 -012	258/025 +08 -012
CON	249/034 +08 -002	252/031 +08 -004	255/027 +08 -004	257/024 +08 -005

<http://www.fltplan.com/AwFmsNewFlt.exe?CRN10=1&CARRYUNAME=PILOT&MODE=NEWFP&end=MSGend>



Before EVERY sim flight...

- Get the 'big picture' on SkyVector – but be careful about green dots
 - Go bigger if you want to: forecasts, prog charts, etc.
- Know the areas you might want to avoid
- Check the METARs and ensure you have good VFR weather (if required)
- Get the upper wind and temperatures, if helpful



Thank You!

Boston Virtual ARTCC Ground School takes place every in our Member TeamSpeak.
The program is designed to help pilots of all skill levels share their knowledge and experience with members.

Ground School Curriculum

Radio Communications ✓

Weather ✓

VFR Departure and Arrival Procedures

IFR Clearances

Oceanic Procedures

Holds

Approach Plates – Part 1

Approach Plates – Part 2

RNAV (Area Navigation): Departures, Arrivals, and Approaches

