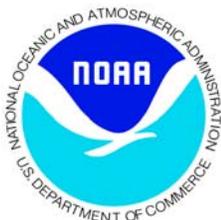


Distance Learning Aviation Course 2: Producing Customer-Focused TAFs



Winter Weather Simulation Guide: *02/03/2009* Case

Presented by the
Warning Decision Training Branch



Acknowledgments

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Cover photo courtesy of COMET

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Document History

The document history is provided to track updates and changes to the simulation guide. The version number, seen at the bottom of every page, will be updated as each significant change is made to the simulation guide.

Version	Date	Description
1.0	July 1, 2009	This is the third set of aviation simulations in support of COMET's DLAC-2 course.

To provide feedback, comments or ideas related to this document, please visit our web site at: <http://www.wdtb.noaa.gov>

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1: How to Use This Document

I. Introduction

Welcome to the **February 3, 2009 DLAC-2 Winter Weather** Simulation Guide! The purpose of this guide is to provide the training facilitator at a forecast office with case-specific materials needed to prepare and deliver effective simulations in support of the winter weather portion of the Distance Learning Aviation Course 2 (DLAC-2). The general approach for using these simulations is the same as with the simulation associated with the convective and wind shear DLAC-2 modules.

Since this document outlines the “answers” to the challenges of the event, it is specifically meant for the use of the training facilitator only.

In order to create effective simulations with this case, you will need to familiarize yourself with the details of this event. We recommend installing the case first, followed by reading each short section in order. See Table 1-1 for a description of the layout of this document.

Table 1-1: Simulation Guide Layout

1: How to Use This Document
The introduction describes the content of the simulation guide and how to use this document.
2: The February 3, 2009 Event Overview
The event overview provides a summary of the key components of this event.
3: Background Information
Read this section to become familiar with loading an aviation simulation, the data characteristics of this case, and information on WESSL.
4: Simulation Suggestions
Descriptions of each of the two simulations, including the performance objectives and evaluation criteria are contained in this section.

After reviewing the simulation guide and becoming familiar with the details of this event, the training facilitator will be ready to begin loading simulations for

the trainees. The training facilitator will need to understand the performance objectives associated with each simulation, which are directly tied to the DLAC-2 Module 4 training module. You will be able to evaluate a trainee's performance either during each simulation, or afterwards as all TAFs will be archived for each simulation. Each performance objective has a corresponding evaluation criteria to allow you to assess the trainee's performance, all of which are provided in Section 4 of this document.

This set of DLAC-2 simulations contains effective ways of incorporating immediate feedback to the trainee without training facilitator interaction, and it is possible for the trainee to start and complete the training without the training facilitator present. However, training research indicates that one-on-one training, where ***training facilitator and trainee participate together for the optimum learning experience***, is the most effective way to run a simulation. While time consuming, this can insure that:

1. the trainee remains focused on the objectives of the simulation,
2. the trainee receives essential feedback on performance, and
3. the training facilitator develops a solid understanding of how well the trainee comprehends the training and how well the trainee transfers the training to application.

In order to manage a simulation session, the training facilitator must be able to run a simulation as documented with the WES install and testing instructions included with the WES software. The simulations will be much more relevant if local AWIPS and AVNFPS customizations (e.g. preferences, procedures, color tables, etc.) are ported to the WES machine as outlined in the WES installation instructions. For more information on the WES, visit <http://www.wdtb.noaa.gov/tools/wes/index.htm>

2: The February 3, 2009 Event Overview

The New York City/Upton CWA, which covers much of southern New York including Long Island, northeastern New Jersey, and southern Connecticut, experienced a winter weather event the first week of February 2009. The storm that affected the CWA started out as a low pressure system in the Gulf of Mexico a few days earlier and gained strength as it moved north up the East Coast, typical of most “nor’easter” storms. This storm was one of three winter weather events to impact the New York metropolitan area in a two week time frame. Select snowfall totals for the storm include 4.3 inches at Central Park on Man-

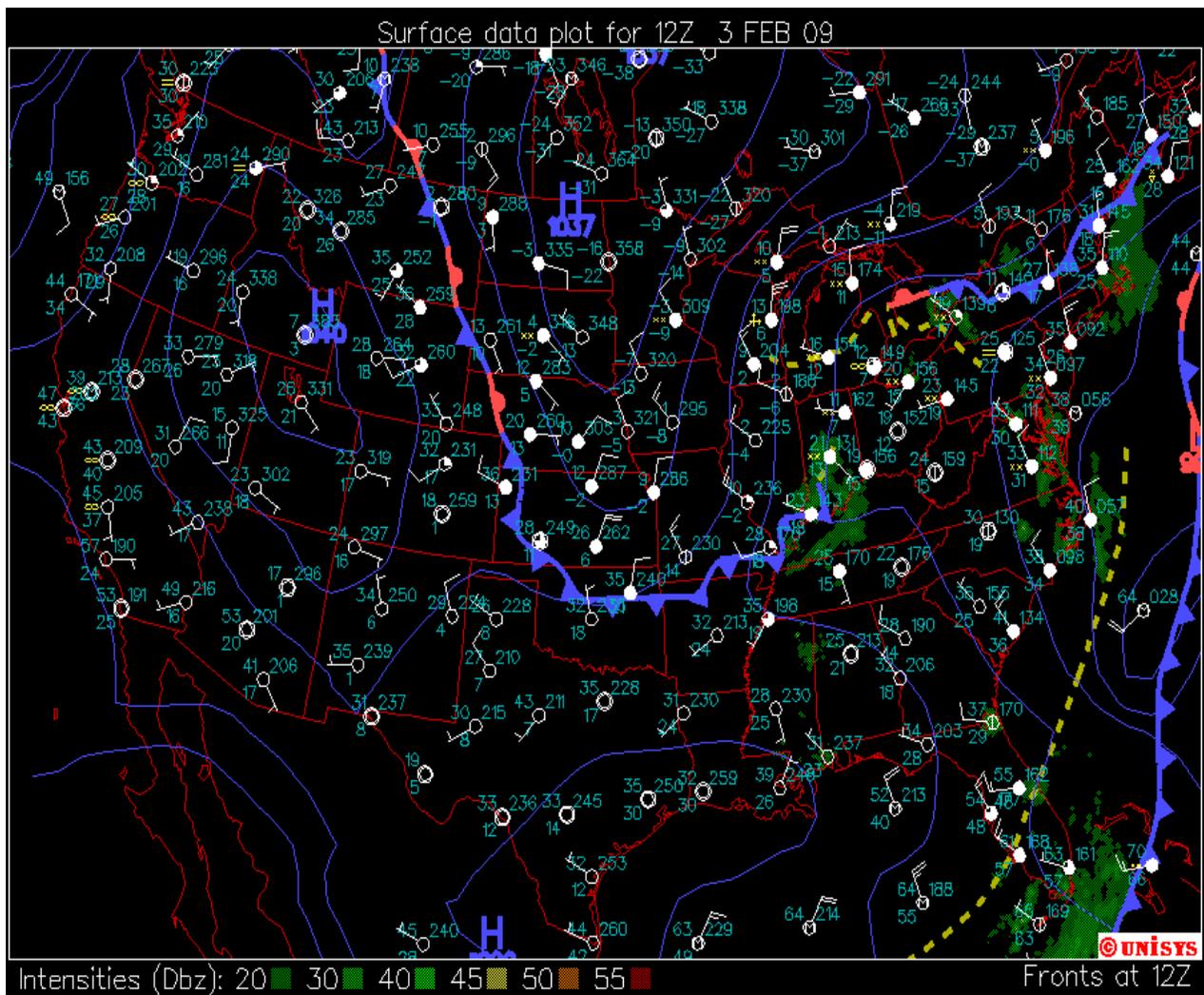


Figure 2-1. Composite map showing surface observations, position of fronts and weather systems, and radar overlay for 12Z on 3 February 2009.

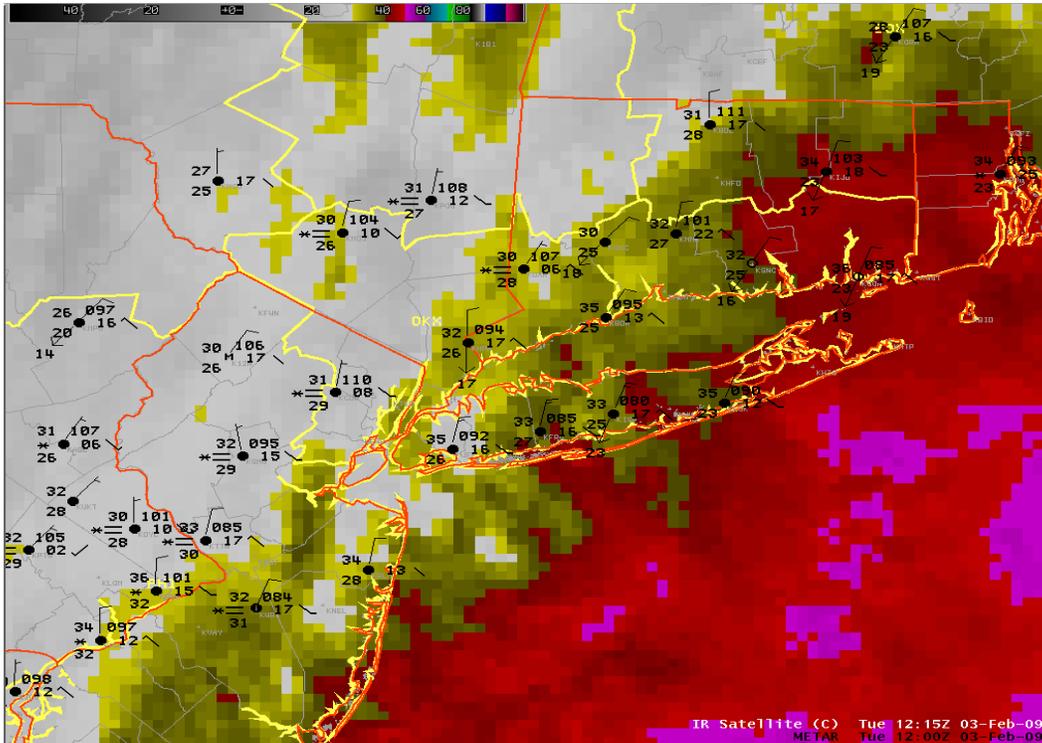


Figure 2-2. Conditions over the CWA at 12Z on 2/3/2009.

hattan, 4.0 inches at JFK International , 3.3 inches at Long Island MacArthur Airport, 2.9 inches at Newark Liberty International, and 2.5 inches at LaGuardia Airport. Generally the snowfall totals increased in a west to east direction with the highest snowfall totals reported over eastern Long Island.

The trainee will take two simulations during the event. Maps are provided to show the nationwide conditions several hours before the precipitation began in the CWA(see Fig. 2-1) and a close-up map of the CWA with satellite and surface obs at the same time (see Fig. 2-2).

The OPSNET Delays Report for the three major airports (EWR, JFK, LGA) is also provided (see Fig. 2-3). Based upon the chart, 11% of the operations at the three airports were delayed, and 88% of those delays were due to weather. Of the delays due to weather, 77% occurred on the 3rd (UTC time) and 23% occurred on the 4th (UTC time).

Two simulations, intended to be taken sequentially, are available to the trainee. The first one begins at 11Z on February 3rd and the second one begins at 17Z on February 3rd. In both simulations, the trainee will create an Aviation Forecast

OPSNET : Delays : Standard Report

From 2/3/2009 To 2/4/2009 | Facility=EWR, JFK, LGA

System Impact Delays										
Facility	Date	Total Ops	Total Delays	TMI To	Occurred At Delays					Abrn Dest To Delays
					Dep	Abrn	TMI From	Total Occ At		
EWR	02/03/2009	861	153	153	0	0	5	5		78
EWR	02/04/2009	1218	208	163	45	0	64	109		34
Sub-Total for EWR		2079	361	316	45	0	69	114		112
JFK	02/03/2009	914	81	49	32	0	6	38		9
JFK	02/04/2009	1136	2	2	0	0	1	1		8
Sub-Total for JFK		2050	83	51	32	0	7	39		17
LGA	02/03/2009	770	201	201	0	0	12	12		140
LGA	02/04/2009	1095	0	0	0	0	0	0		8
Sub-Total for LGA		1865	201	201	0	0	12	12		148
Total :		5994	645	568	77	0	88	165		277

System Impact Delays												
Facility	Date	By Class				By Cause					Time	
		AC	AT	GA	Mil	Wx	Vol	Equip	Rwy	Other	Avg (Min)	Total (Min)
EWR	02/03/2009	92	56	5	0	153	0	0	0	0	132.00	20196
EWR	02/04/2009	134	72	2	0	130	78	0	0	0	52.00	10816
Sub-Total for EWR		226	128	7	0	283	78	0	0	0	85.91	31012
JFK	02/03/2009	62	19	0	0	81	0	0	0	0	56.00	4536
JFK	02/04/2009	0	2	0	0	0	2	0	0	0	26.00	52
Sub-Total for JFK		62	21	0	0	81	2	0	0	0	55.28	4588
LGA	02/03/2009	114	87	0	0	201	0	0	0	0	107.00	21507
LGA	02/04/2009	0	0	0	0	0	0	0	0	0	0.00	0
Sub-Total for LGA		114	87	0	0	201	0	0	0	0	107	21507
Total :		402	236	7	0	565	80	0	0	0	88.54	57107

Figure 2-3. A list of the delays for KEWR, KJFK, and KLGA for 2/3-4/2009 (UTC-based).

Discussion and the accompanying TAFs for the Upton CWA. The next section of this guide details how to load the data and run the simulator.

3: Background Information

I. WES9.0 AVNFPS

These simulations require that you have WES9.0 AVNFPS loaded on your WES machine. Do not continue with these simulations until you have successfully installed and tested AVNFPS in a simulation. Full information on this can be found at <http://www.wdtb.noaa.gov/tools/wes/wes90.htm>

II. Loading the Case from DVD

There are two install discs for the February 3, 2009 case that was shipped to each DLAC-2 facilitator. **The case occupies ~ 33GB of disk space when converted to DRT**, so please plan accordingly. For details on how to load the case, see the README on the install discs.

III. AVNFPS Customization

There are several easy ways to customize AVNFPS on your WES machine. Prior to starting these DLAC-2 winter weather simulations, be sure NOT to modify any of the site-specific AVNFPS localization files in /awips/adapt/avnfps/etc. What you can do (and what is recommended) is copy your forecaster IDs file into the /awips/adapt/avnfps/etc directory. This will overwrite a link to the default forecaster ID file, which contains 5 default IDs. Also, you are encouraged to insert your office's AVNFPS preferences into /awips/adapt/avnfps/etc/app-resources directory. All 5 default preference files are identical.

IV. Starting WES-AVNFPS for a Simulation

Starting an aviation simulation is done exactly the same way as any other WES simulation, other than the fact that you need to input a "TAFs directory" (See Fig. 3-1.). Macro files are accessed from the "Load Saved Settings", and should be used for each of the simulations. The simulation suggestions section details which macro goes with a particular simulation. **You must input a TAFs Directory** to be able to launch AVNFPS after starting the simulation, and the TAFs contained in the specified directory will be initialized into AVNFPS. You have two

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The image shows a 'Simulation Entry' dialog box with the following fields and buttons:

- FXA_DATA (i.e. case location): /data/awips/2009Feb03 [Select]
- FXA_INGEST_SITE: OKX [Select]
- Case Start Time: 200902031700 [Select]
- Case End Time: 200902031740 [Select]
- WESSL Script (optional): /data/awips/2009Feb03/wessl/sim2.wessl [Select]
- WESSL Case Flags (optional): [Select]
- GFE Directory: [Select]
- GFE Grid: [Select]
- TAFs Directory: okx_12z [Select]

Buttons at the bottom: Save Current Settings, Load Saved Settings, OK, Cancel.

Figure 3-1. Simulation Entry window for the 2nd simulation. Pay particular attention to the bottom and “TAFs Directory”. You must select either a directory with default TAFs for the time-frame of the simulation, or a previously run simulation from the same trainee.

options for loading TAFs: Default TAFs and previous simulation forecaster-issued TAFs.

Default TAFs:

Default TAFs are available for both simulations. You **MUST** ensure that a default TAF directory appears when the simulation macro loads so that AVNFPS will have TAFs to process when it starts. The default TAFs for the simulations are located in the following directories in /data/awips/2009Feb03/avn-fps/archived_TAFs:

- okx_06Z (for simulation #1)
- okx_12Z (for simulation #2)

Sending TAFs:

Once the trainee has created their TAFs in AVNFPS, you will want to check for Syntax and QC by clicking those respective buttons. Doing so will cause the

TAFs to be highlighted in a yellow-orange color. However, not to worry as the QC results are purely advisory/informational, not indicating anything wrong with the TAFs; it is just merely informing the forecaster or potential impacts to planning/airport operations, like the Fuel-Alternate rule or LIFR conditions, or flagging something climatologically rare.

Once the TAFs are ready, click the “Send” button only; **DO NOT CLICK THE “SAVE” BUTTON.**

TAFs from Previous Simulations:

For the special case when you have the same trainee running back-to-back simulations, just select TAFs Directory as /data/awips/2009Feb03/avn-

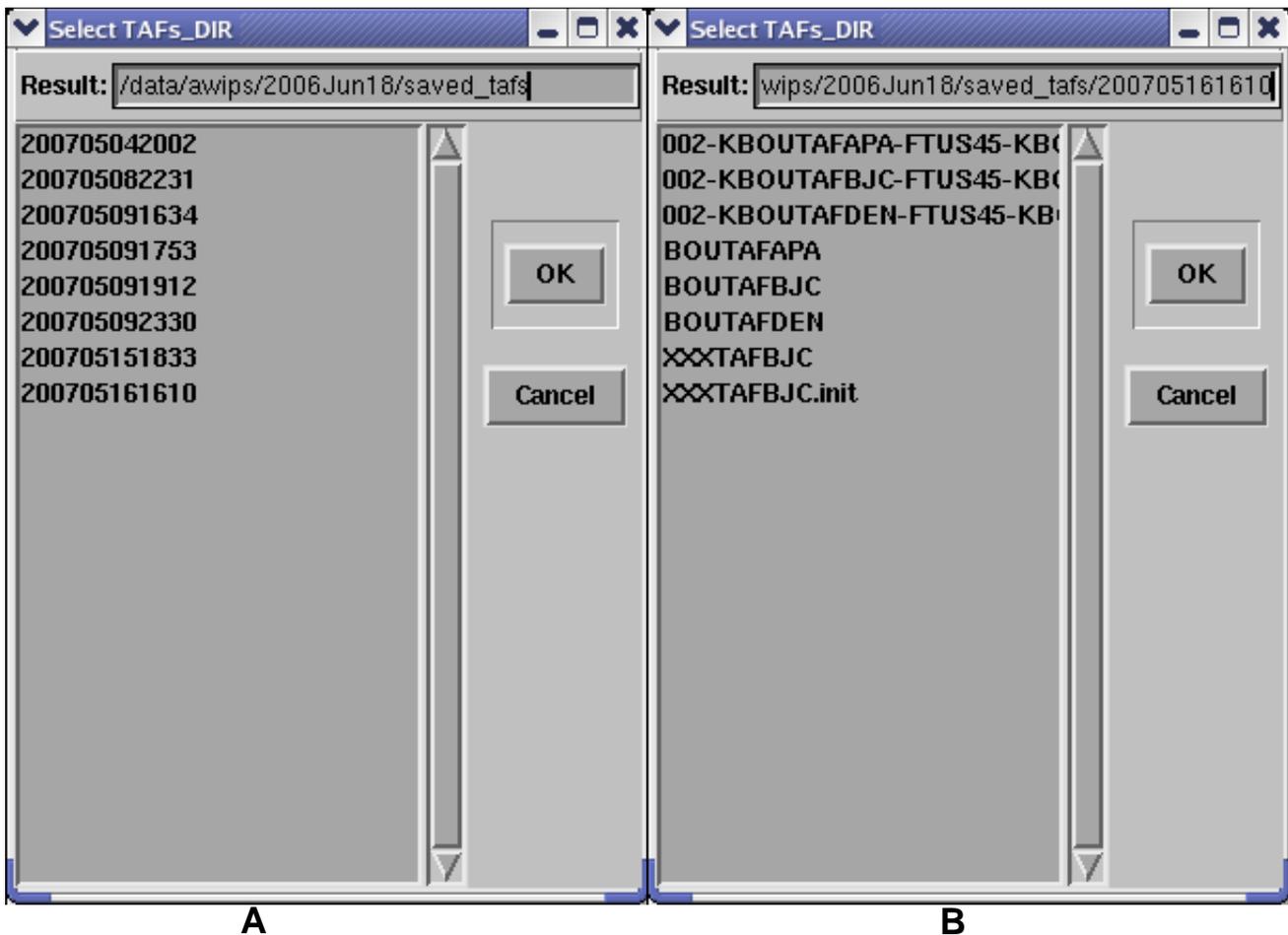


Figure 3-2. The “Select TAFs_DIR” GUI. A) is the location of all saved TAFs from all previous simulations, containing a time-stamped directory of each simulation. B) is the result of clicking on one of the time stamped directories. This is what you want to select as the final input into to the TAFs Directory prior to starting the simulation.

fps/archived_TAFs/previous_simulation. However, if you want to start up a simulation for a particular trainee who was not going through back-to-back sequential simulations, and you wanted to ingest that trainee's TAFs from his or her previous simulation, the following must be done:

- Start by entering the directory /data/awips/2009Feb03/saved_tafs into the selection window (similar to Fig. 3-2-A). If you have previously run a simulation, you'll notice a time stamped directory.
- Next, if you know the date and time of the trainee's previous simulation, select that directory.
- If you are unsure about the date/time of the trainee's previous simulation, click into the directories to check (Fig. 3-2-B). Inside each saved, time-stamped directory are TAFs beginning with a number, which is the forecaster ID number. If you customized the avnfps/etc/forecaster file, you would then be able to match the previous TAFs to the proper trainee. Otherwise, the numbers will be one of the five defaults.

Launching the AVNFPS GUI and D2D

After successfully setting up a simulation, and after clicking "Run Simulation", in a separate window in the monitor of your choosing, you will need to run separate commands to load D2D and to load AVNFPS. You can load from any command line these two separate commands:

- start_awips (this starts D2D)
- start_avnfps (this starts AVNFPS)

When the AVNFPS GUI loads, choose a proper username.

NOTE: If you use default username and configurations for your WES AVNFPS (one of the 5), remind the trainee to remember which default user they select in the AVNFPS startup window. This will allow for quicker identification of their saved TAFs.

V. Localizations:

OB9.0 localizations for OKX are included with the case. We encourage you to customize your WES from your AWIPS. For information on customizing WES, please see the WES users guide available with the WES release.

VI. WESSL:

The WESSL script for each of the two simulations will contain an introductory Articulate presentation that loads immediately after a simulation starts. These presentations provide an overview of the simulation, a list of what is expected from the trainee, a detailed overview of climatology, airport specific criteria, and other bits of important information. The WESSL script will also have many different pop-up windows: some will require a response from the student, some will have useful reports and information, and some will pause the simulation. The NWSSChat pop-up that occurs a few minutes after the simulation starts is optional. After the second simulation, there will be an Articulate debrief of the entire event along with TAFs created by aviation forecasting experts designed to provide instant feedback to the trainee. **Loading the appropriate saved settings macro from the simulation setup window will automatically insert the correct WESSL files for each simulation.**

VII. Data Characteristics

The original data set came from the OKX office archives, and most all data is accessible during the simulations. While there may be some incomplete or missing data due to the archiving process, there is enough data that the trainee should be able to satisfy the learning objectives. The details of the data sets are included below:

Model Data:

The following model data exists in this dataset: GFS40, NAM40, NAM80, RUC13, and RUC40.

Bufkit Data:

Each simulation will have a Bufkit window pop up approximately one minute into the simulation that will contain NAM model data from the most recent run. Verify that the local time is set to Eastern Standard Time (GMT - 5 hours). If the time needs to be changed, click the "Adjust Time" button at the bottom of the Overview window.

Radar Data:

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8-bit data exists for KOKX and the surrounding radars. However, some elevation angles are missing.

Other Data:

VWPs, wind profilers, and MDCARS are available for this event.

4: Simulation Suggestions

I. Introduction

Two simulation descriptions are included in this section for the February 3, 2009 case, and they are intended to be taken sequentially. Simulation 1 focuses on writing the routine 12Z TAFs for the 3rd for five of the nine TAF sites (see Summary below) in the OKX CWA and accompanying Aviation Forecast Discussion. Simulation 2 focuses on writing the routine 18Z TAFs for the 3rd and accompanying AFD for the same five TAF sites.

WESSL files are provided to help pace each simulation and provide extra data sets. The WESSL file response boxes are also used to document information that can be accessed after the simulation is over.

II. Simulations

Simulation 1 (3 February 1100Z - 1140Z) Issuing 12Z AFD and TAFs

WES Macro: sim1_2009Feb03

*****NOTE: Be aware that the simulation may take several minutes to prepare once the OK button has been clicked in the Simulation Entry window due to the total amount of data.*****

AVNFPS Directory: Make sure the directory okx_06z is selected as the TAF directory

Summary:

In this simulation, the trainee will be writing the 12Z AFD for the OKX CWA as well as the TAFs for KEWR, KHPN, KISP, KJFK, and KLGA. The simulation start time is 1100Z on February 3, 2009, at which time it is necessary to begin looking

at model data and other data found in AWIPS to write an AFD for the Upton CWA as well as the TAFs.

The simulation occurs at the beginning of the winter storm of interest that is affecting the New York City area.

Simulation 1 is designed to be taken before Simulation 2, therefore at the conclusion of Simulation 1, you are advised not to reveal any information regarding the event beyond 1140Z.

Schedule for trainee:

- 1100 (Pause): Articulate introduction to simulation with objectives and other useful information (approx 5 minutes).
- 1100-1120 (20 min): Become familiar with CWA, evaluate data and respond accordingly to any WESSL pop-ups. The NWSSChat pop-up that occurs a few minutes after the simulation starts is optional.
- 1120 (Pause): Trainee will write an AFD for the Upton CWA to be consistent with the criteria given in the simulation. Trainee will resume simulation after writing the AFD.
- 1120-1140 (20 min): Trainee will create TAFs for the five TAF sites of interest in the Upton CWA. The simulation can be ended as soon as the forecasts are submitted in AVNFPS.
- 1140 (or when trainee is finished): Simulation will automatically end. However, **as soon as trainee issues TAFs, stop simulation and in a new terminal window, load the debrief presentation from the command line using: [firefox file:///data/awips/2009Feb03/wessl/Debrief_Sim1/player.html](file:///data/awips/2009Feb03/wessl/Debrief_Sim1/player.html).**

Performance Objective 1. Demonstrate the ability to assess potential aviation hazards and their impacts to TAF sites.

Evaluation Criteria 1. The trainee should attempt to properly assess any possible weather threat that will disrupt aviation activity based upon the available data. Feedback will be provided at the end of this simulation on what an “expert” would have written in his/her TAF, and this should be the basis for evaluation of the trainee’s TAFs. As facilitator, you have access to the trainee’s TAFs (located

in /data/awips/2009Feb03/avnfps/archived/_TAFs/previous_simulation immediately after the simulation has ended). The trainee's TAFs are also permanently archived in /data/awips/2009Feb03/saved_tafs/ in the directory time-stamped with the actual date and time when the trainee completed the simulation. It may be a good idea to go over them with the student at the completion of this first simulation.

Performance Objective 2. Demonstrate the effective use of aviation forecasting tools.

Evaluation Criteria 2. The trainee should be able to effectively use such tools as BUFKIT, AWIPS model soundings, aircraft data, surface observations and analyses, satellite and radar, and local climatology. This objective may be evaluated in person as you monitor which tools the trainee uses during this simulation. Also, the trainee will be writing an aviation forecast discussion where it is appropriate for the trainee to mention the tools used in the forecast preparing process. The trainee's AFD is available in the /data/awips/2009Feb03/wessl/ directory, as a current date/time stamped file with the format sim1.log.YYYYMMDD_HHMM". It is a text file, and the HHMM time stamp is LOCAL TIME that the AFD was issued.

Performance Objective 3. Effectively articulate forecast logic and uncertainty with an Aviation Forecast Discussion.

Evaluation Criteria 3. The trainee will write an AFD in a WESSL window which will be in the same format as one written operationally. For comparison, the debrief Articulate presentation will contain an AFD written by an expert. A saved copy of the trainee's AFD may be retrieved; see Evaluation Criteria 2 above for information on how to do so.

Performance Objective 4. Produce a practically perfect TAF for winter weather and its related hazards:

- Write to the flight categories first, establish trends
- Add specific ceiling and visibility details for the first 6 hours only (the critical TAF period)
- Limit TEMPOs to first 6 hours and avoid use of PROB groups

- Review for consistency and make sure you have addressed the expected flight category changes

Evaluation Criteria 4. This is the most important of the four criteria. The guidelines above will be in the pre-brief for the trainee. The trainee should use these guidelines as much as possible when writing the TAFs. During the Articulate debrief, the PPTAFs written by experts will be shown along with the reasoning for their forecast. As facilitator, you are encouraged to discuss the trainee's TAFs with them, and information on how to retrieve their TAFs is included in Evaluation Criteria 1.

Simulation 1 Debrief

As discussed previously, at the end of the simulation a short Articulate debrief will be launched manually after the TAFs have been sent. From a new terminal window, enter the following command:

[firefox file:///data/awips/2009Feb03/wessi/Debrief_Sim1/player.html](firefox:file:///data/awips/2009Feb03/wessi/Debrief_Sim1/player.html)

The debrief will discuss the expert 12Z TAFs and the aviation forecast discussion. There also will be instructions on how to start Simulation 2.

Simulation 2 (3 February 1700Z - 1740Z) Issuing 18Z AFD and TAFs

WES Macro: `sim2_2009Feb03`

*****NOTE: Be aware that the simulation may take several minutes to prepare once the OK button has been clicked in the Simulation Entry window due to the total amount of data.*****

AVNFPS Directory: Make sure the directory `okx_12z` is selected as the TAF directory, or select `previous_simulation` or `time-stamped` directory from same forecaster using the steps previously mentioned on page 3-4.

Summary:

In this simulation, the trainee will be writing the 18Z AFD for the OKX CWA as well as the TAFs for KEWR, KHPN, KISP, KJFK, and KLGA. The Simulation 2 start time is 1700Z on February 3, 2009, at which time it is necessary to begin

looking at model data and other data found in AWIPS to write an AFD for the Upton CWA as well as the TAFs.

The simulation occurs during the winter storm of interest that is ongoing in the Upton CWA.

Schedule for trainee:

- 1700 (Pause): Articulate introduction to simulation with objectives and other useful information (approx 5 minutes).
- 1700-1720 (20 min): Evaluate new data and respond accordingly to any WESSL pop-ups. The NWSChat pop-up that occurs a few minutes after the simulation starts is optional.
- 1720 (Pause): Trainee will write an AFD for the Upton CWA to be consistent with the criteria given in the simulation. Trainee will resume simulation after writing the AFD.
- 1720-1740 (20 min): Trainee will create TAFs for the five TAF sites of interest in the Upton CWA. The simulation can be ended as soon as the forecasts are submitted in AVNFPS.
- 1740 (or when trainee is finished): Simulation will automatically end. However, **as soon as trainee issues TAFs, stop simulation and in a new terminal window, load the debrief presentation from the command line using: [firefox file:///data/awips/2009Feb03/wessl/Debrief_Sim2/player.html](file:///data/awips/2009Feb03/wessl/Debrief_Sim2/player.html).**

Performance Objective 1. Demonstrate the ability to assess potential aviation hazards and their impacts to TAF sites.

Evaluation Criteria 1. The trainee should attempt to properly assess any possible weather threat that will disrupt aviation activity based upon the available data. Feedback will be provided at the end of this simulation on what an “expert” would have written in his/her TAF, and this should be the basis for evaluation of the trainee’s TAFs. As facilitator, you have access to the trainee’s TAFs (located in /data/awips/2009Feb03/avnfps/archived/_TAFs/previous_simulation immediately after the simulation has ended). The trainee’s TAFs are also permanently archived in /data/awips/2009Feb03/saved_tafs/ in the directory time-stamped with the actual date and time when the trainee completed the simulation. It may

be a good idea to go over them with the student at the completion of this first simulation.

Performance Objective 2. Demonstrate the effective use of aviation forecasting tools.

Evaluation Criteria 2. The trainee should be able to effectively use such tools as BUFKIT, AWIPS model soundings, aircraft data, surface observations and analyses, satellite and radar, and local climatology. This objective may be evaluated in person as you monitor which tools the trainee uses during this simulation. Also, the trainee will be writing an aviation forecast discussion where it is appropriate for the trainee to mention the tools used in the forecast preparing process. The trainee's AFD is available in the /data/awips/2009Feb03/wessl/ directory, as a current date/time stamped file with the format sim2.log.YYYYMMDD_HHMM". It is a text file, and the HHMM time stamp is LOCAL TIME that the AFD was issued.

Performance Objective 3. Effectively articulate forecast logic and uncertainty with an Aviation Forecast Discussion.

Evaluation Criteria 3. The trainee will write an AFD in a WESSL window and will be in the same format as one written operationally. For comparison, the debrief Articulate presentation will contain an AFD written by an expert. A saved copy of the trainee's AFD may be retrieved; see Evaluation Criteria 2 above for information on how to do so.

Performance Objective 4. Produce a practically perfect TAF for winter weather and its related hazards:

- Write to the flight categories first, establish trends
- Add specific ceiling and visibility details for the first 6 hours only (the critical TAF period)
- Limit TEMPOs to first 6 hours and avoid use of PROB groups
- Review for consistency and make sure you have addressed the expected flight category changes

Evaluation Criteria 4. This is the most important of the four criteria. The guidelines above will be in the pre-brief for the trainee. The trainee should use these

guidelines as much as possible when writing the TAFs. During the Articulate debrief, the PPTAFs written by experts will be shown along with the reasoning for their forecast. As facilitator, you are encouraged to discuss the trainee's TAFs with them, and information on how to retrieve their TAFs is included in Evaluation Criteria 1.

Simulation 2 Debrief

As discussed previously, at the end of the simulation a short Articulate debrief will be launched manually after the TAFs have been sent. From a new terminal window, enter the following command:

[firefox file:///data/awips/2009Feb03/wessl/Debrief_Sim2/player.html](file:///data/awips/2009Feb03/wessl/Debrief_Sim2/player.html)

The debrief will discuss the expert 18Z TAFs, the aviation forecast discussion, and the impacts at the three major New York City airports due to this event.

Appendix A: METAR Observations for TAF sites

METARs for KEWR:

KEWR 022351Z 01017KT 10SM FEW050 BKN090 BKN220 06/M05 A2995
KEWR 030051Z 01012KT 10SM FEW050 BKN090 OVC220 05/M04 A2997
KEWR 030151Z 01015KT 10SM FEW060 BKN100 OVC200 04/M04 A2997
KEWR 030343Z 03017KT 10SM BKN019 BKN060 OVC075 02/M03 A2995
KEWR 030351Z 03015KT 10SM SCT019 BKN055 OVC090 02/M03 A2995
KEWR 030530Z 04012KT 4SM -SN BKN012 OVC020 01/M02 A2993
KEWR 030623Z 03011KT 2SM -SN BR FEW008 BKN012 OVC019 01/M02 A2992
KEWR 030747Z 02010KT 5SM -SN BR SCT013 BKN025 OVC040 01/M02 A2990
KEWR 030831Z 02014KT 5SM -SN BR BKN009 OVC020 01/M02 A2988
KEWR 030940Z 02011KT 3SM -SN BR BKN011 BKN029 OVC060 01/M02 A2986
KEWR 030951Z 01011KT 3SM -SN BR BKN011 BKN029 OVC060 01/M02 A2985
KEWR 031138Z 02013KT 4SM -SN SCT013 BKN028 OVC050 01/M02 A2982
KEWR 031242Z 02013KT 4SM -SN FEW012 BKN030 OVC050 01/M02 A2981
KEWR 031251Z 03012KT 7SM -SN FEW009 BKN040 OVC055 01/M02 A2980
KEWR 031426Z 01017KT 1 1/2SM -SN FEW009 OVC016 01/M02 A2977
KEWR 031542Z 03014KT 1 1/2SM -SN SCT008 OVC015 01/M02 A2975 RMK AO2 P0000
KEWR 031615Z 02015KT 3/4SM R04R/P6000FT -SN SCT006 BKN011 OVC017 01/M02
A2973
KEWR 031651Z 01013KT 3/4SM R04R/4500VP6000FT -SN BKN005 OVC010 00/M02
A2971
KEWR 031751Z 01014KT 3/4SM R04R/4000VP6000FT -SN BKN006 OVC015 00/M02
A2968
KEWR 031851Z 36013KT 3/4SM R04R/4000V4500FT -SN BKN005 OVC013 M01/M03
A2969
KEWR 032022Z COR 01012KT 1/2SM SN FZFG FEW005 BKN009 OVC015 M01/M03
A2971
KEWR 032137Z COR 01013KT 1SM -SN FEW009 BKN012 OVC020 M01/M04 A2974
KEWR 032245Z 01010KT 1SM R04R/P6000FT -SN BR BKN009 OVC016 M02/M04 A2977
KEWR 032251Z 01013KT 1SM R04R/P6000FT -SN BKN009 OVC016 M02/M04 A2977
KEWR 040016Z 02011KT 3SM -SN BKN047 OVC060 M02/M05 A2979
KEWR 040051Z 03009KT 5SM -SN FEW015 BKN038 OVC047 M02/M06 A2980
KEWR 040151Z 35009KT 7SM FEW020 BKN038 OVC060 M02/M07 A2982
KEWR 040251Z 01009KT 10SM FEW038 OVC060 M02/M08 A2983

METARs for KHPN:

KHPN 022356Z 35019G25KT 10SM BKN090 04/M04 A2993
KHPN 030056Z 36011G18KT 10SM OVC095 03/M04 A2994
KHPN 030156Z 35009G18KT 10SM SCT050 BKN080 02/M04 A2994

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KHPN 030256Z 01010KT 10SM SCT055 BKN080 02/M03 A2993
KHPN 030356Z 35012G20KT 10SM BKN050 OVC075 01/M04 A2992
KHPN 030456Z 01011KT 6SM -SN BR BKN045 OVC060 01/M03 A2990
KHPN 030556Z 02009KT 8SM -SN BKN035 OVC040 00/M02 A2989
KHPN 030656Z 01009KT 8SM -SN BKN035 OVC070 00/M02 A2988
KHPN 030831Z 04007KT 6SM -SN BR SCT011 BKN027 OVC046 00/M02 A2985
KHPN 030904Z 02007KT 3SM -SN BR SCT022 OVC060 00/M02 A2984
KHPN 030956Z 35009KT 9SM OVC055 00/M03 A2983
KHPN 031056Z 36010KT 10SM BKN060 00/M03 A2980
KHPN 031156Z 36010G17KT 10SM FEW010 OVC035 00/M03 A2979
KHPN 031256Z 02009KT 10SM BKN050 OVC070 00/M04 A2978
KHPN 031426Z 36012G17KT 3SM -SN BR OVC025 00/M03 A2975
KHPN 031456Z 36010KT 2SM -SN BR FEW008 OVC010 00/M03 A2974
KHPN 031612Z 01008KT 330V040 1 1/4SM -SN BR VV004 00/M03 A2970
KHPN 031730Z 01010G16KT 1/2SM -SN BR VV002 M01/M03 A2965
KHPN 031838Z 34010KT 3/4SM -SN BR VV004 M01/M03 A2964
KHPN 031856Z 34012KT 3/4SM -SN BR VV003 M01/M04 A2963
KHPN 031956Z 34012KT 1/2SM -SN BR VV003 M02/M04 A2967
KHPN 032132Z 34011KT 3/4SM -SN BR VV006 M02/M05 A2969
KHPN 032156Z 34011KT 3/4SM -SN BR VV006 M03/M06 A2971
KHPN 032328Z 34013G21KT 8SM BKN044 BKN055 M04/M07 A2973
KHPN 032356Z 34013KT 7SM BKN055 M04/M07 A2973
KHPN 040056Z 34011KT 10SM BKN065 M04/M07 A2975
KHPN 040156Z 33012KT 10SM OVC065 M04/M08 A2976
KHPN 040256Z 32009KT 10SM BKN070 M04/M08 A2978

METARs for KISP:

KISP 031156Z 02016G23KT 10SM OVC065 01/M04 A2977
KISP 031256Z 02015G19KT 10SM BKN037 BKN060 OVC075 01/M04 A2974
KISP 031356Z 03016G22KT 9SM -SN SCT037 OVC050 01/M04 A2972
KISP 031456Z 03016G26KT 4SM -SN FEW023 OVC041 01/M04 A2971
KISP 031635Z 01011G22KT 1 1/2SM -SN BKN012 OVC022 00/M03 A2966
KISP 031724Z 36011KT 1SM -SN FEW008 OVC013 00/M03 A2964
KISP 031756Z 36013G20KT 1SM -SN BR SCT008 OVC013 M01/M03 A2963
KISP 031856Z 01010G18KT 1SM -SN SCT008 OVC013 M01/M03 A2962
KISP 032026Z 35009G22KT 1/2SM SN BKN005 OVC012 M01/M04 A2967
KISP 032056Z 36012G22KT 1/2SM SN FZFG BKN005 OVC010 M02/M04 A2968
KISP 032208Z 01011KT 1SM -SN BR FEW005 BKN012 OVC016 M02/M04 A2971
KISP 032256Z 01007KT 1SM -SN BR BKN010 OVC016 M02/M04 A2973
KISP 040025Z 35011KT 2SM -SN BR BKN012 BKN017 OVC024 M02/M04 A2973
KISP 040138Z 34010KT 3SM -SN BR FEW010 OVC024 M02/M05 A2976
KISP 040156Z 32007KT 3SM -SN BR FEW010 OVC026 M02/M06 A2976
KISP 040320Z 32010KT 3SM -SN BKN034 OVC060 M03/M06 A2979
KISP 040356Z 32008KT 3SM -SN SCT023 BKN030 OVC060 M03/M06 A2979
KISP 040456Z 33009KT 5SM -SN BKN060 OVC090 M04/M07 A2980

KISP 040556Z 32007KT 5SM -SN SCT042 BKN055 OVC070 M04/M07 A2980
KISP 040656Z 34008KT 9SM -SN SCT044 OVC060 M04/M08 A2982
KISP 040756Z 33008KT 10SM SCT055 BKN075 OVC120 M06/M12 A2984

METARs for KJFK:

KJFK 031151Z 01016KT 10SM FEW015 BKN055 OVC140 02/M03 A2981
KJFK 031251Z 36016KT 10SM FEW015 OVC046 02/M04 A2978
KJFK 031432Z 02014G22KT 2 1/2SM -SN FEW011 BKN022 OVC036 02/M04 A2976
KJFK 031525Z 01013KT 1 1/2SM -SN FEW008 OVC014 01/M03 A2975
KJFK 031615Z 36015KT 3/4SM -SN BKN008 OVC015 01/M03 A2971
KJFK 031711Z 36014KT 1/2SM SN FG VV007 00/M02 A2968
KJFK 031836Z 36014G20KT 1 1/4SM -SN FEW006 BKN011 OVC017 01/M03 A2967
KJFK 031851Z 35012KT 1SM -SN FEW006 OVC011 00/M03 A2968
KJFK 032021Z 34014KT 1SM -SN BKN006 OVC011 M01/M03 A2970
KJFK 032123Z 35015G19KT 1SM -SN SCT006 BKN011 OVC028 M01/M04 A2972
KJFK 032151Z 35013G19KT 1SM -SN SCT008 BKN014 OVC028 M01/M04 A2974
KJFK 032339Z 36015KT 2SM -SN FEW008 OVC012 M02/M05 A2977
KJFK 040046Z 34010KT 4SM -SN FEW008 BKN011 OVC021 M02/M05 A2979
KJFK 040146Z 33008KT 4SM -SN FEW013 OVC024 M02/M06 A2982
KJFK 040232Z 32009KT 5SM -SN FEW014 BKN043 OVC060 M02/M06 A2983
KJFK 040251Z 33007KT 7SM -SN FEW014 BKN047 OVC060 M02/M06 A2983
KJFK 040351Z 35011KT 9SM -SN FEW022 OVC050 M03/M07 A2984
KJFK 040451Z 34009KT 6SM -SN SCT047 OVC075 M03/M07 A2984
KJFK 040551Z 35009KT 10SM FEW049 OVC080 M03/M11 A2984
KJFK 040651Z 36010KT 10SM OVC080 M04/M14 A2986

METARs for KLGA:

KLGA 030351Z 01010KT 10SM BKN055 OVC130 03/M03 A2994
KLGA 030546Z 03008KT 10SM -SN BKN022 BKN048 OVC060 02/M03 A2991
KLGA 030631Z 02008KT 7SM -SN SCT018 BKN032 OVC046 01/M02 A2991
KLGA 030743Z 03009KT 9SM SCT017 OVC060 01/M02 A2989
KLGA 030824Z 03010KT 6SM -SN SCT017 BKN027 OVC060 01/M02 A2986
KLGA 030943Z 02005KT 9SM -SN BKN013 OVC055 01/M02 A2985
KLGA 031033Z 05006KT 9SM FEW015 OVC060 01/M02 A2982
KLGA 031051Z 04006KT 10SM -SN FEW015 OVC060 02/M02 A2982
KLGA 031151Z 02010KT 10SM BKN041 OVC055 02/M02 A2981
KLGA 031251Z 03011KT 10SM FEW022 OVC050 02/M03 A2979
KLGA 031438Z 02009KT 1 1/2SM -SN FEW009 BKN018 OVC025 02/M03 A2976
KLGA 031547Z 03009KT 1SM -SN FEW008 SCT012 OVC015 01/M03 A2974
KLGA 031635Z 01008KT 1SM -SN BKN005 OVC010 01/M02 A2970
KLGA 031651Z 01010KT 1SM -SN BKN006 BKN008 OVC013 01/M02 A2969
KLGA 031751Z 36013KT 1SM -SN BR BKN006 OVC012 00/M02 A2967
KLGA 031947Z 34011KT 1 1/2SM -SN BR BKN012 OVC017 M01/M03 A2969
KLGA 032007Z 36011KT 3/4SM -SN BR BKN006 OVC012 M01/M03 A2970

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KLGA 032051Z 35014G21KT 3/4SM -SN BR BKN006 BKN009 OVC012 M01/M03 A2971
KLGA 032212Z 01014KT 1 1/2SM -SN BR SCT009 BKN014 OVC026 M02/M04 A2975
KLGA 032314Z 01014KT 1 1/2SM -SN BR BKN007 BKN009 OVC016 M02/M04 A2976
KLGA 040047Z 35012KT 7SM -SN FEW008 BKN039 OVC060 M02/M06 A2979
KLGA 040051Z 36014KT 7SM -SN FEW008 BKN041 OVC060 M02/M06 A2979
KLGA 040151Z 34006KT 9SM -SN FEW014 OVC038 M02/M07 A2981
KLGA 040251Z 34011KT 9SM BKN048 OVC060 M02/M07 A2982
KLGA 040351Z 35009KT 9SM -SN BKN047 OVC060 M03/M08 A2983
KLGA 040451Z 36009KT 10SM OVC060 M03/M08 A2983
KLGA 040551Z 36015G18KT 10SM BKN055 BKN070 M03/M14 A2984