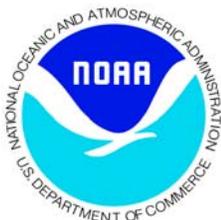


Distance Learning Aviation Course 2: Producing Customer-Focused TAFs



Convective Simulation Guide: 6/18/2006 Case

Presented by the
Warning Decision Training Branch



Acknowledgments

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Cover photo courtesy of COMET

Ed Mahoney, Chief

Warning Decision Training Branch

Training Division, OCWWS

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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, 2007	This is the first of several aviation simulations in support of COMET's DLAC-2 course.

Note: the date of modification is listed on the cover page.

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

Table of Contents

Acknowledgments	i-ii
Document History	i-iii
1: How to Use This Document	1-1
Introduction.....	1-1
2: The <i>June 18, 2006</i> Event Overview	2-1
3: Background Information	3-1
WES8.1 AVNFPS	3-1
Loading the Case from DVD/CD.....	3-1
AVNFPS Customization.....	3-1
Starting WES-AVNFPS for a Simulation	3-1
Localizations:	3-4
WESSL:	3-5
Data Characteristics	3-5
4: Simulation Suggestions	4-1
Introduction.....	4-1
Simulations	4-1

1: How to Use This Document

I. Introduction

Welcome to the **June 18, 2006 DLAC-2 Convective** Simulation Guide! The purpose of this guide is to provide the trainer at a forecast office with case-specific materials needed to prepare and deliver effective simulations for Distance Learning Aviation Course 2 (DLAC-2). The general approach for using simulations in the winter track of AWOC is the same as with the simulations associated with the core, severe, and winter tracks of AWOC, but now you will be able to utilize AVNFPS in simulation mode.

Since this document outlines the “answers” to the challenges of the event, it is specifically meant for the use of the trainer 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 June 18, 2006 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 4 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 trainer will be ready to begin loading simulations for the trainees.

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The trainer will need to understand the performance objectives associated with each simulation, which are directly tied to the DLAC-2 Module 2 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 an corresponding evaluation criteria to allow you to assess the trainee's performance, all of which are provided in Section 4 of this document.

This first set of DLAC-2 simulations contains effective ways of incorporating immediate feedback to the trainee without trainer interaction. However, training research indicates that one-on-one training, where ***trainer 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. trainee remains focused on the objectives of the simulation,
2. the trainee receives essential feedback on performance, and
3. the 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 trainer 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 *June 18, 2006* Event Overview

What had appeared to be a typical, benign summer evening for areas to the lee of the central Rockies turned out to be very busy for the Denver/Boulder (BOU) National Weather Service (NWS) Weather Forecast Office (WFO). Several microbursts were reported in the Denver Metro Area and in the vicinity of the 3 TAFs sites for which BOU is responsible. As early as 2200Z strong winds affected the TAF sites. The major event for Denver International Airport (KDEN) began after 0100Z (7:00 PM MDT). Microbursts with lightning and several con-

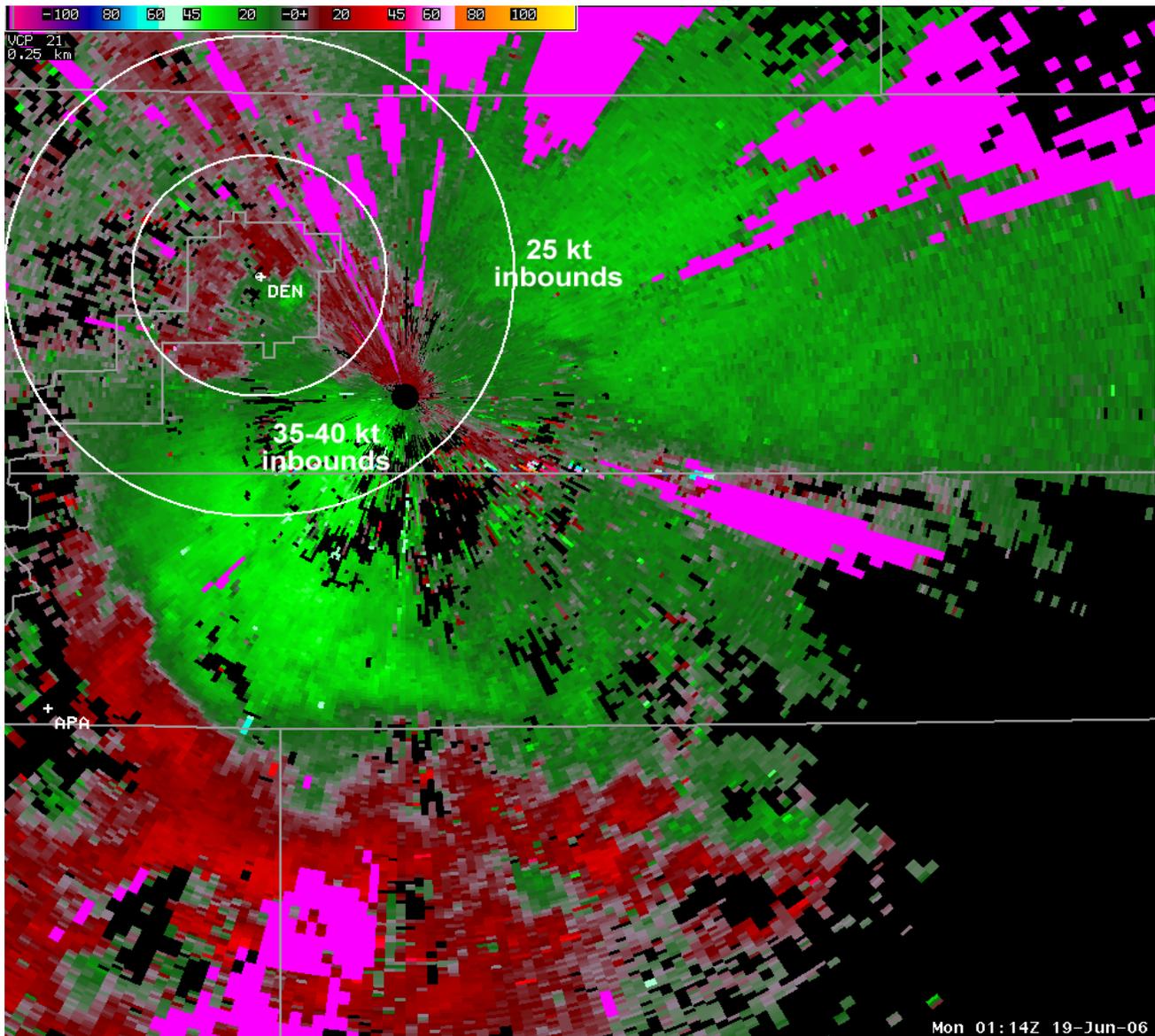


Figure 2-1. 0.5 degree radial velocity from KFTG at 0114Z. Radial velocities are as indicated on graphic, and range rings around KDEN are at 5 and 10 miles.

OPSNET : Delays Report

From 6/18/2006 To 6/18/2006

Facility - DEN

Facility	Date	Total Ops	Delays By Category				Delays By Class				
			Total Delays	Departure	Arrival	Enroute	TMS	Air Carrier	Air Taxi	General Aviation	Military
DEN	6/18/2006	1760	56	11	45	0	0	39	15	2	0
Total		1760	56	11	45	0	0	39	15	2	0

Weather	Delays By Cause					Delays Per 1000 Ops	Avg Time (Min)	Total Time (Min)	Percent Ops Delayed
	Term Vol	Center Vol	Equip	Runway	Other				
55	0	0	0	0	1	31.82	25.43	1424	3.18
55	0	0	0	0	1	31.82	25.42	1424	3.18

Figure 2-2. A list of the delays for KDEN on 6/18/2006.

vective outflow boundaries collided in the vicinity of KDEN, causing LLWS alerts and crosswind problems that forced ATC personnel to close the airport for almost an hour (see Fig. 2-1). Figure 2-2 shows that numerous commercial flights were delayed. MOS output indicated about a 37% chance of TS. Forecast soundings did show steep low level lapse rates, which can be conducive to microburst potential, and CAPE values were low, in the 50-200 J/kg range. MDCRS profiles and BUFKIT forecast soundings were crucial in raising a "red flag" on the potential of microbursts for BOU and providing detail for the period of greatest threat. Four simulations, intended to be taken sequentially, are available to the trainee. The first two cover writing TAFs for 12Z and 18Z, while the final 2 allow for TAF amendments at 22Z and 01Z. The next section of this guide details how to load the data and run the simulator.

3: Background Information

I. WES8.1 AVNFPS

This simulation requires that you have WES8.1 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/wes81.htm>

II. Loading the Case from DVD/CD

There are 2 install discs for the 18 June 2006 case. A DVD and CD were shipped to each DLAC-2 facilitator. The case occupies ~ 18 GB of disk space. 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 your WES-boxes AVNFPS. Prior to starting this particular DLAC-2 convective simulation, 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 to 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.

The localization for this set of simulations should be set by default to be BOU. However, if it is not, just run the script in /data/awips/2006Jun18 called BOU_Localization_Change. Also, when any future simulations are run using AVNFPS for a different localization and you want to do one of these BOU simulations again, this script will need to be run prior to starting so the localization can be reset to BOU.

IV. Starting WES-AVNFPS for a Simulation

Starting an aviation simulation is done exactly the same way as other WES simulations, other than the fact that you need to input a "TAFs directory" (See

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Simulation Entry

Please Enter:

FXA_DATA (i.e. case location): /data/awips/2006Jun18

FXA_INGEST_SITE: BOU

Case Start Time: 200606181700

Case End Time: 200606181740

WESSL Script (optional): /data/awips/2006Jun18/wessl/sim2.wessl

WESSL Case Flags (optional):

FFMP File and Radars:

GFE Directory:

TAFs Directory: bou_18z

Figure 3-1. Simulation Entry window. Pay particular attention to the bottom and “TAF 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.

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. However, most importantly, 2 of the macros do not contain an input for “TAFs Directory” (bottom of Fig. 3-1). **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 options for loading TAFs: Default TAFs and previous simulation forecaster-issued TAFs.

Default TAFs:

Default TAFs are available for each of the 4 simulations. For simulations 1 and 4, you **MUST** input the default TAF directories, and to assist this the macros have the default TAFs Directory input for those 2 simulations. The default TAFs for all 4 simulations are located in the following directories in /data/awips/2006Jun18/avnfps/archived_TAFs:

- bou_06Z (for simulation #1, 12Z TAFs)

- bou_12Z (for simulation #2, 18Z TAFs)
- bou_18Z, (for simulation #3, ~22Z amendments)
- bou_00Z, (for simulation #4, ~01Z amendments)

For simulations 2 and 3 it is recommended that you load the trainee's TAFs from previous simulations, as outlined below.

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/2006Jun18/avn-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

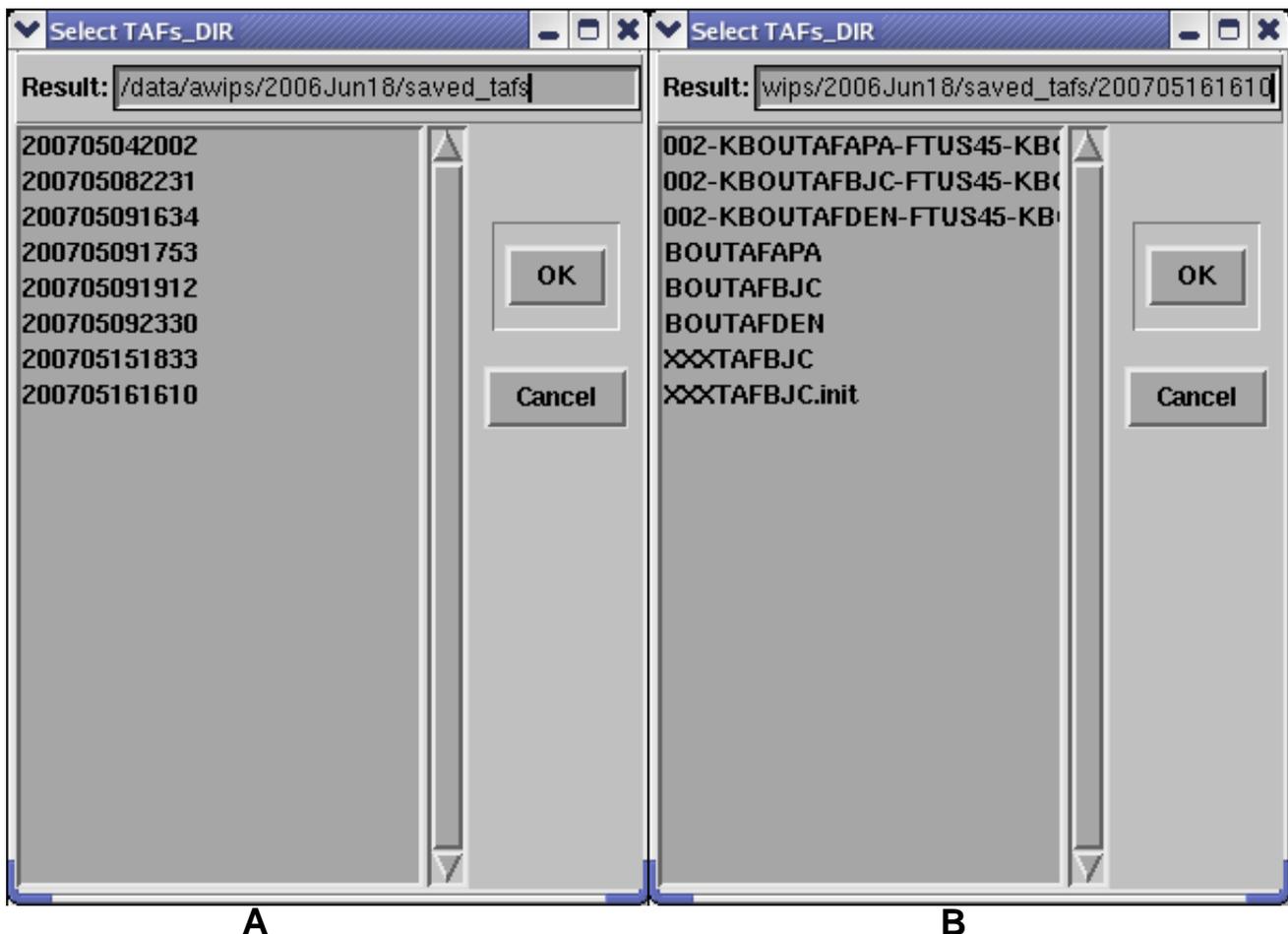


Figure 3-2. The select TAFs_DIR gui. A) is the location of all saved TAFs from all previous simulations, containing a time-stamped directory of each simulation. B) is the result of clicking on one of the time stamped directories. This is what you want to select as the final input into to the TAFs Directory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

sequential simulations, and you wanted to ingest that trainee's TAFs from his or her previous simulation, the following must be done:

- Enter the directory `/data/awips/2006Jun18/saved_tafs` into the selection window (Fig. 3-2-A). If you have previously run a simulation, you'll notice a time stamped directory.
- 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:

OB8.1 localizations for BOU 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 four 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, some will just serve as distractions, and some will pause the simulation. After the fourth 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 PUB office archives, so the regionally clipped data sets are centered around PUB even though these simulations are centered on BOU. This should not cause any problems for the trainee. The details of the data sets are included below:

METAR Data:

In D2D, there are inconsistencies with viewing more than one METAR observation for the same hour from a given station. For more information, refer to the WES8.1 Release Notes Section 1.1. NOTE: AVNFPS has no inconsistencies with ingesting and viewing METARs in the simulation. It should display METARs as it does operationally.

Model Data:

The following model data exists in this dataset: Eta12, Eta40, Eta80, GFS80, GFSLR, DGEX, RUC40, RUC80, NGM, LAPS (PUB).

BUFR Profiles and Bufkit Data:

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Bufkit BUFR profiles pertinent to this event are available for download from the WDTB website (<http://www.wdtb.noaa.gov/tools/bufkit>). These can be viewed on a windows machine. Additionally, WESSL will contain bufkit overview plots that pop-up for KDEN at normal times.

Radar Data:

Eight-bit data exists for KFTG and KPUX. Other radars with low-level base data include: KCYS, KGLD, and KGJX. There will be times during simulation #4 when 8bit data are not available for KFTG, and at times there are no data above the lowest 4 elevation angles.

4: Simulation Suggestions

I. Introduction

Four simulation descriptions are included in this section for the June 18, 2006 case, and they are intended to be taken sequentially. Simulation 1 focuses on familiarizing the trainee with the Boulder CWA TAF sites while writing the routine 12Z TAFs and an Aviation Forecast Discussion (AvnFD), as well as watching for any indications of convection later in the day. Simulation 2 focuses on writing the routine 18Z TAFs and AvnFD in addition to analyzing convective potential in the early evening hours. Simulation 3 begins at 22Z when convection is beginning to occur in the mountains west of Denver and will serve as an opportunity to make updates to the TAFs and AvnFD. Simulation 4 begins at 0025Z and will be similar to Simulation 3 in that the student will be updating the TAFs and AvnFD and not issuing new forecasts. The microburst that occurred at Denver International Airport will occur during this simulation.

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

II. Simulations

Simulation 1 (18 June 1100Z - 1140Z) Issuing 12Z AvnFD and TAFs

WES Macro: `sim1_2006Jun18`

AVNFPS Directory:

`/data/awips/2006Jun18/avnfps/archived_TAFs/bou_06Z`

- You must use this directory to initialize TAFs since the trainee did not issue 06Z TAFs during any of the previous simulations. This directory is auto-inserted by the macro for this simulation.

Summary:

This simulation focuses on becoming familiar with the terrain and environment around the TAF sites in the Boulder CWA. The objective of this simulation is to write the routine 12Z TAFs and AvnFD. The Simulation 1 start time is 1100Z June 18, 2006, and the trainee will need issue the 12Z TAFs during the NWS directive time window ending at 1140Z. During the data analysis time, the 06Z models are showing a chance of precipitation for the Denver area beginning just after 00Z on the 19th; however, the atmospheric column is expected to be very dry and CAPE values are expected to remain low.

Simulation 1 is approximately 14 hours prior to the microburst affecting Denver International Airport and approximately 10 hours before the first convection impacts any of the TAF sites. ***Simulation 1 is designed to be taken before any of the other simulations, 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): Evaluate data and become familiarized with CWA.
- 1120 (Pause): Trainee will write an AvnFD to be consistent with the criteria given in the simulation. Trainee will resume simulation after writing the AvnFD.
- 1120-1140 (20 min): Trainee will create TAFs for the three forecast sites in the Boulder CWA. The simulation can be ended as soon as the forecasts are submitted in AVNFPS.
- 1140: Simulation will automatically end and an Articulate presentation debrief will automatically load.
- **As soon as trainee issues TAFs, stop simulation and in a new terminal window, load the debrief presentation from the command line by: `firefox file:///data/awips/2006Jun18/wessl/debrief1/player.html`**

Performance Objective 1. Demonstrate the ability to assess potential convective 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, they will be located immediately after the simulation has ended in /data/awips/2006Jun18/avnfps/archived_TAFs/previous_simulation, and are permanently archived in /data/awips/2006Jun18/saved_tafs/ in the directory timestamped 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 AvnFD is available in the /data/awips/2006Jun18/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 AvnFD was issued.

Performance Objective 3. Effectively articulate forecast logic and uncertainty with an AvnFD.

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

Performance Objective 4. Produce a practically perfect site specific TAF for the expected type of convection:

- Write to thunderstorms first, establish trends
- Add convective details to first 6-8 hours only
- Limit TEMPOs to first 6-8 hours, avoid use of PROB groups

- Review for consistency, ensuring convective changes are addressed

Evaluation Criteria 4. This is the most important of the four criteria. The guidelines above will be in the handout and 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/2006Jun18/wessl/debrief1/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 (18 June 1700Z - 1740Z) Issuing 18Z AvnFD and TAFs

WES Macro: sim2_2006Jun18

AVNFPS Directory: Choose trainee's 12Z TAFs from the saved_tafs/YYYYMMDDHHMM directory, or use the default TAFs: /data/awips/2006Jun18/avnfps/archived_TAFs/bou_12Z

Summary:

This simulation is very similar to Simulation 1. The trainee will be writing the 18Z AvnFD and TAFs for the Boulder CWA TAF sites. However, there is a twist to this scenario: five minutes into the simulation the Pueblo WFO will be calling to say their systems went down. So, the trainee will have to forecast for those TAF sites as well. ***Do not let the trainee know about this ahead of time!*** The Simulation 2 start time is 1700Z June 18, 2006, at which time it is necessary to begin looking at model data and other data found in AWIPS to write an AvnFD for the Boulder CWA and the TAFs for both the Boulder and Pueblo CWA TAF

sites. The 12Z models are still indicating a chance for precipitation for the Denver area around 00Z on the 19th and the CAPE values are forecast to rise slightly; however, the air is still expected to remain dry.

The simulation is approximately 8 hours prior to the microburst affecting Denver International Airport and approximately 4 hours before the first convection begins in the Boulder CWA. ***Simulation 2 is designed to be taken after Simulation 1 and before Simulation 3, therefore at the conclusion of Simulation 2, you are advised not to reveal any information regarding the event beyond 1740Z.***

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 become familiarized with Pueblo CWA.
- 1720 (Pause): Trainee will write an AvnFD to be consistent with the criteria given in the simulation. This will only pertain to the Boulder CWA. Trainee will resume simulation after writing the AvnFD.
- 1720-1740 (20 min): Trainee will create TAFs for the three forecast sites in the Boulder CWA and the three forecast sites in the Pueblo 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 and an Articulate presentation debrief will automatically load.
- As soon as trainee issues TAFs, stop simulation and in a new terminal window, load the debrief presentation from the command line by: `firefox file:///data/awips/2006Jun18/wessl/debrief2/player.html`

The performance objectives and evaluation criteria are identical to those from simulation 1. All objectives may be evaluated in person by the facilitator during the simulation, but there are also opportunities for the trainee to receive feedback during the debrief. To retrieve Simulation 2 TAFs, go to `/data/awips/2006Jun18/saved_tafs`, and find the corresponding date and time stamped directory. The AvnFDs are located in `/data/awips/2006Jun18/wessl/`

and are labeled sim2.log.YYYYMMDD_HHMM, with the date and time stamp of those files also the current local date and time.

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/2006Jun18/wessi/debrief2/player.html

The debrief will discuss the expert 18Z TAFs and the aviation forecast discussion. There also will be instructions on how to start Simulation 3.

Simulation 3 (18 June 2200Z - 2245Z) Observing period and amending 18Z TAFs if necessary

WES Macro: sim3_2006Jun18

AVNFPS Directory: Choose trainee's 18Z TAFs from the saved_tafs/YYYYMMDDHHMM directory, or use the default TAFs: /data/awips/2006Jun18/avnfps/archived_TAFs/bou_18Z

Summary:

Unlike Simulations 1 and 2, Simulation 3 will not *require* the trainee to create an AvnFD or TAFs, because this simulation is not run during routine TAF issuance time windows. This simulation gives the trainee an opportunity to analyze new model data and amend the 18Z TAFs. During this simulation, convection develops over the mountains west of Denver and over the high plains north and northeast of the city. The Simulation 3 start time is 2200Z June 18, 2006, at which time the 18Z models are still suggesting a bit more CAPE will be present in the area and that there is a chance for some rain around and just after 00Z on the 19th.

The simulation is approximately 3 hours prior to the strongest microburst affecting Denver International Airport. ***Simulation 3 is designed to be taken after Simulation 2 and before Simulation 4, therefore at the conclusion of Simu-***

lation 3, you are advised not to reveal any information regarding the event beyond 2245Z.

Schedule for trainee:

During this simulation there really is no set schedule other than the start/stop times (2220Z through 2245Z). There will be several pop-up windows that will appear throughout the simulation. These are meant to serve as distractions to create a real-world forecast office environment for the trainee.

Performance Objective 1. Demonstrate the ability to assess potential convective 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 how the “experts” would have amended their 18Z TAFs, and this should be the basis for evaluation of the trainee’s TAFs. As facilitator, you have access to the trainee’s TAFs, they will be located immediately after the simulation ends in /data/awips/2006Jun18/avnfps/archived_TAFs/previous_simulation, and are permanently archived in /data/awips/2006Jun18/saved_tafs/ in the directory timestamped 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 AvnFD is available in the /data/awips/2006Jun18/wessl/ directory, as a current date/time stamped file with the format “sim3.log.YYYYMMDD_HHMM”. It is a text file, and the HHMM time stamp is LOCAL TIME that the AvnFD was issued.

Performance Objective 3. Effectively articulate forecast logic and uncertainty with an AvnFD.

Evaluation Criteria 3. The trainee will be given an opportunity to update the AvnFD written in Simulation 2 in a WESSL window, but this is not *required*. For comparison, the debrief Articulate presentation will contain an updated AvnFD written by an expert and the facilitator will want to verify if one was written by checking the WESSL log as described in Evaluation Criteria 2.

Performance Objective 4. Ensure TAFs are relevant and updated in a proactive fashion, so customers have the latest and best information on expected weather:

- Run an effective weather watch by identifying when expected changes warrant an update
- Make the basis of an update on key convective decision points and/or airport specific criteria
- Don't "chase the observations"
- Respond appropriately when coordination is warranted

Evaluation Criteria 4. Again, this is the most important of the four criteria. The guidelines above will be in the handout and pre-brief presentation. It is encouraged that the trainee follow these guidelines as much as possible when making decisions on when and how to update the AvnFD and TAFs. During the Articulate debrief, the updates made to the AvnFD and TAFs by experts will be shown along with the reasoning for any changes. As facilitator, you are encouraged to discuss any updates the trainee made with them, and you can retrieve their TAFs as described in Evaluation Criteria 1.

Simulation 3 Debrief

As discussed previously, a short Articulate debrief will launch automatically at the end of the simulation. However, if the simulation is prematurely ended before 2245Z, you also may manually load the debrief presentation from a new terminal window by entering the following command:

firefox file:///data/awips/2006Jun18/wessl/debrief3/player.html

The debrief will discuss the a study of Denver area microbursts to serve as

“food for thought” along with the expert AvnFD and TAF amendments. There also will be instructions on how to start Simulation 4.

Simulation 4 (19 June 0025Z - 0140Z) Making more amendments and watching the event happen

WES Macro: sim4_2006Jun18

AVNFPS Directory:

/data/awips/2006Jun18/avnfps/archived_TAFs/bou_00Z

- You must use this directory to initialize TAFs since the trainee did not issue 00Z TAFs during any of the previous simulations. (Of course, as a side exercise, the facilitator could always have a trainee go through writing 00Z TAFs, but in the interest of time we did not include a 00Z TAF writing simulation.) This directory is auto-inserted by the macro for this simulation.

Summary:

Like Simulation 3, Simulation 4 will not *require* the trainee to create an AvnFD or TAFs. The trainee will be given default 00Z TAFs for the Boulder CWA TAF sites to amend. It becomes clear very early that the TAFs will need amending. Convection is now more prevalent than in Simulation 3 and they have the low reflectivity structure common with dry microbursts. There is a strong outflow boundary approaching Denver International Airport from the northeast. Another gust front forms from convection to the south, and moves towards KDEN. The radial velocities are much stronger with this one, but on reflectivity it is far less defined as the gustfront to the northeast. In the end, a storm drops a microburst just before both boundaries collide over the airport, making for an extremely difficult aviation forecasting situation. The Simulation 4 start time is 0025Z June 19, 2006, at which time the 00Z models are virtually unchanged from the 18Z model run in terms of CAPE values and rainfall amounts.

This simulation is the last simulation for this event and the dry microburst over KDEN will occur roughly 10 minutes before the end of the simulation.

Schedule for trainee:

Like Simulation 3, there is really no set schedule. There will be several pop-up windows that will appear throughout the simulation and there is a pre-brief articulate presentation. The WESSL pop-ups are meant to serve as distractions to create a real-world forecast office environment for the trainee as well as pass along useful information.

Performance Objective 1. Demonstrate the ability to assess potential convective 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 how the “experts” would have amended the default 00Z TAFs, and this should be the basis for evaluation of the trainee’s TAFs. As facilitator, you have access to the trainee’s TAFs, they will be located immediately after the simulation ends in /data/awips/2006Jun18/avnfps/archived_TAFs/previous_simulation, and are permanently archived in /data/awips/2006Jun18/saved_tafs/ in the directory timestamped 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.

Performance Objective 3. Ensure TAFs are relevant and updated in a proactive fashion, so customers have the latest and best information on expected weather:

- Run an effective weather watch by identifying when expected changes warrant an update
- Make the basis of an update on key convective decision points and/or airport specific criteria
- Don’t “chase the observations”

- Respond appropriately when coordination is warranted

Evaluation Criteria 3. Again, this is the most important criterion. The guidelines above will be in the handout the trainee will receive. It is encouraged that the trainee use these guidelines as much as possible when making decisions on when and how to update the TAFs. During the Articulate debrief, the updates made to the TAFs by experts will be shown along with the reasoning for any changes. As facilitator, you are encouraged to discuss any updates the trainee made with them.

Simulation 4 Debrief

As discussed previously, a short Articulate debrief will launch automatically at the end of the simulation. However, if the simulation is prematurely ended before 0140Z, you also may manually load the debrief presentation from a new terminal window by entering the following command:

firefox file:///data/awips/2006Jun18/wessi/debrief4/player.html

The debrief will discuss the expert 00Z TAF amendments, the full impacts at KDEN Airport due to this microburst event and colliding gustfronts, and a notification to complete a final exercise on writing a PPTAF using METAR observations.

Warning Decision Training Branch