

EMWIN User Training

For Colorado Front Range

October, 2006



Agenda

- 08:30 **Getting Started – “SOME ASSEMBLY REQUIRED”**
 - Antenna
 - Radio equipment
 - RealEMWIN Software installation

- 10:00 **BREAK**

- 10:30 **Basic features of RealEMWIN and other EMWIN software**
 - Features in RealEMWIN
 - Other Software available on the market
 - Weather Message
 - InterWarn

- 12:00 **LUNCH**

- 13:30 **Adams County Training Room**
 - Site tour – EMWIN Rebroadcast equipment

- 14:00 **Maintenance, repair, and support**

- 14:30 **Future Vision – how to make EMWIN more valuable**
 - Phase 2 funding
 - Next Steps



Getting Started

■ **SOME ASSEMBLY REQUIRED**



SECTION ONE

Antenna Assembly and installation



Antenna Assembly

- 1) Unpack and assemble antenna per instructions supplied with antenna.

Assemble elements to mast, being careful to match colors



Antenna Installation

- 3) Before mounting antenna, use Figure 1 and a compass to identify the approximate direction from your location to the transmitter site (the Cherokee Power Plant near Commerce City).

CAUTION: antenna installation should be performed by an electrician or qualified radio technician. Keep antenna away from metal objects and power lines.

(See pictures in following pages for details)

- 4) Mount antenna on 1 ½” to 2 ½” pipe mast, at least 10 feet above ground level. (Keep antenna away for metal objects and power lines.) Aim antenna toward transmitter site.
- 5) Connect 50 foot coaxial cable to the antenna connector. Waterproof the connection by wrapping with electrical tape.

**Use this map to estimate compass heading
For alignment of your receiver antenna to point
At the Cherokee Power Plant transmitter site**

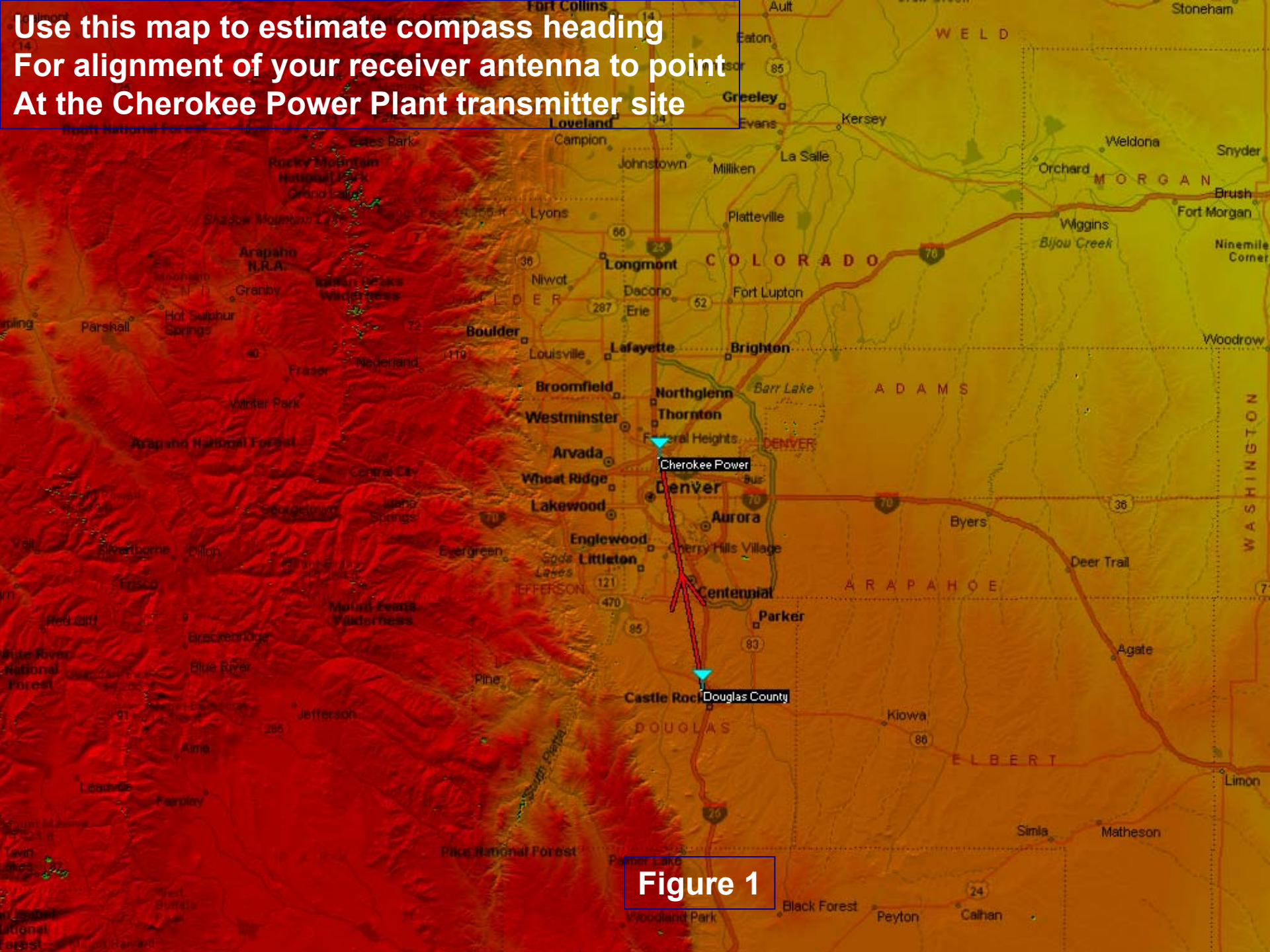


Figure 1

Attach antenna to mast

Mounting bracket



Attach mounting bracket to customer - provided 1 ½" to 2 ½" vertical pipe mast using large U-bolts



Attach antenna mast to mounting Bracket with smaller U-bolts provided

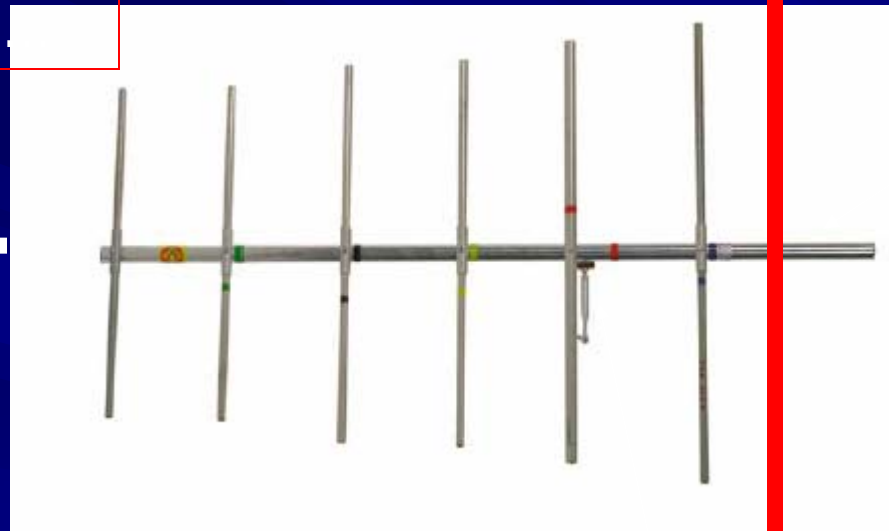
Antenna Alignment

Antenna is directional.

Aim in direction of
arrow as shown.

Vertical pipe mast

Antenna
Mast



“gamma” Matching element

Install antenna with this pointed
downward – as shown

Remove coaxial cables and lightning arrestor from boxes.



Connect coaxial cable to antenna



- a) Attach cable to antenna
- b) Tighten connector
- c) Wrap connection with Weather-proof tape* to protect from moisture

*such as 3M product Scotch 70
Silicone rubber tape

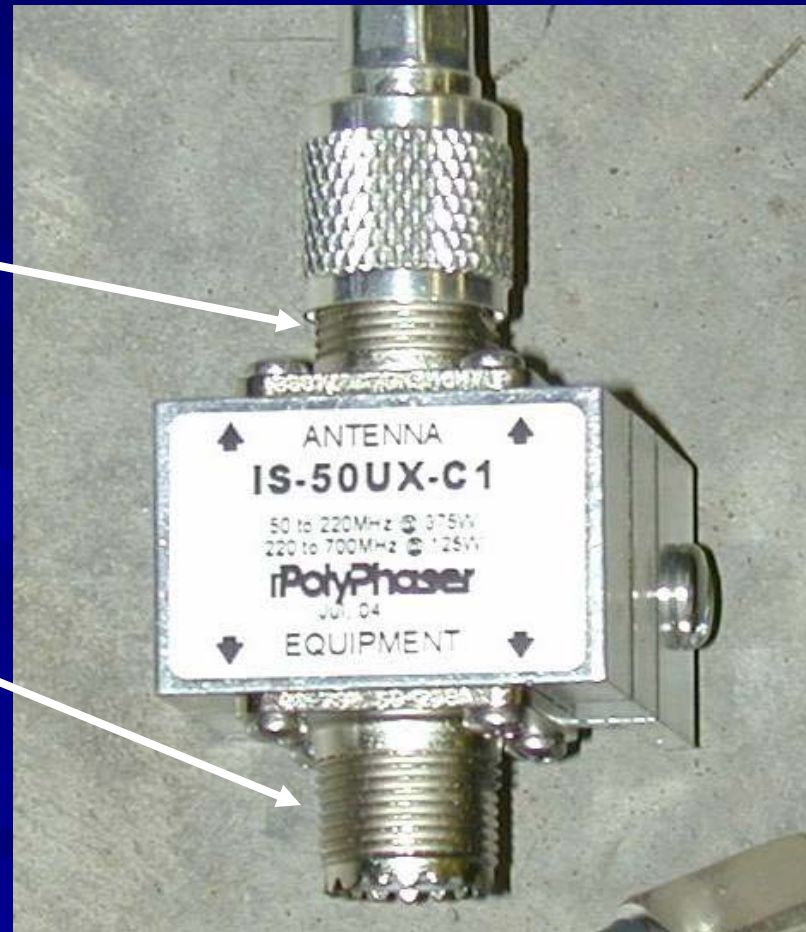
Antenna Installation

- 6) Route coaxial cable to radio unit. Seal any openings in the building walls or roof with caulk or other sealant.
- 7) Install lightning arrestor on other end of 50 foot coaxial cable. See picture.
- 8) Connect ground wire from AC outlet ground to lightning arrestor.
- 9) Attach 3-foot jumper cable to lightning arrestor “equipment” connector

Note markings for Proper connection Of coaxial cables when installing lightning arrestor

Antenna cable
connection

Connect 3 foot
Jumper cable
to radio here



SECTION TWO

Radio installation

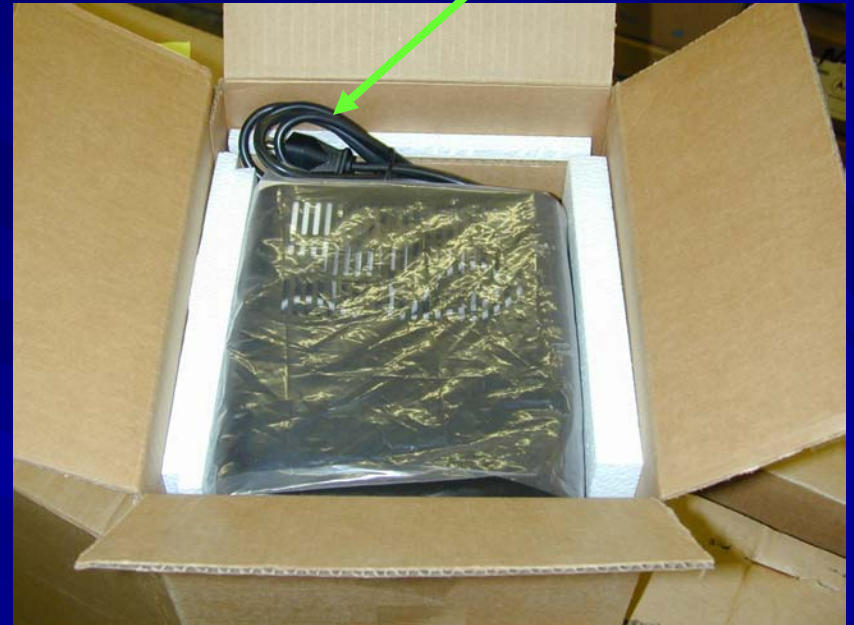


Receiver Hardware Installation

1) Remove all items from packing material.

AC Line Cord

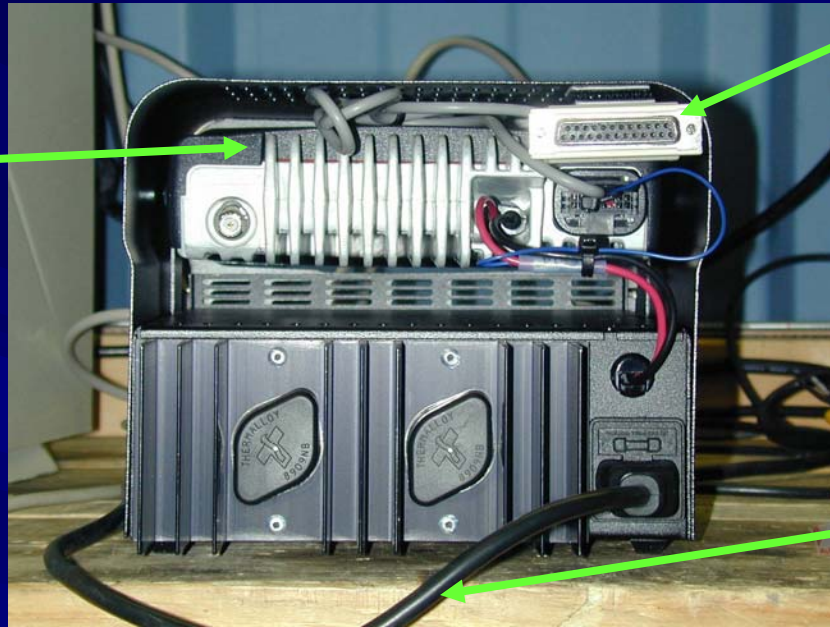
Serial Cable



Radio and power supply in packing box

- 2) Place radio and power supply unit on work surface. Turn unit so rear of radio is visible.

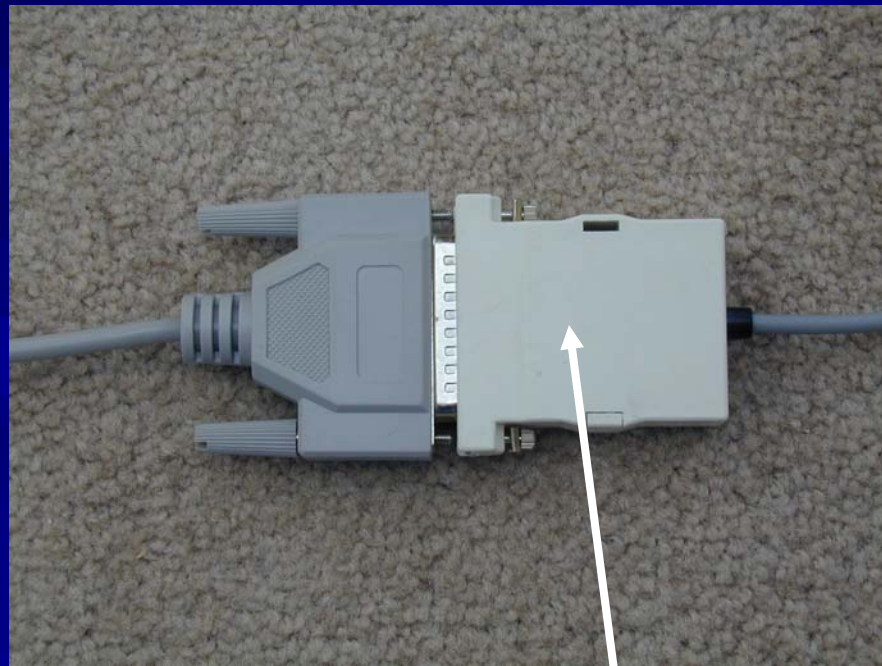
Antenna
Connector



Demodulator

AC Line Cord

3) Connect large end of serial cable (25 pin connector) to demodulator.



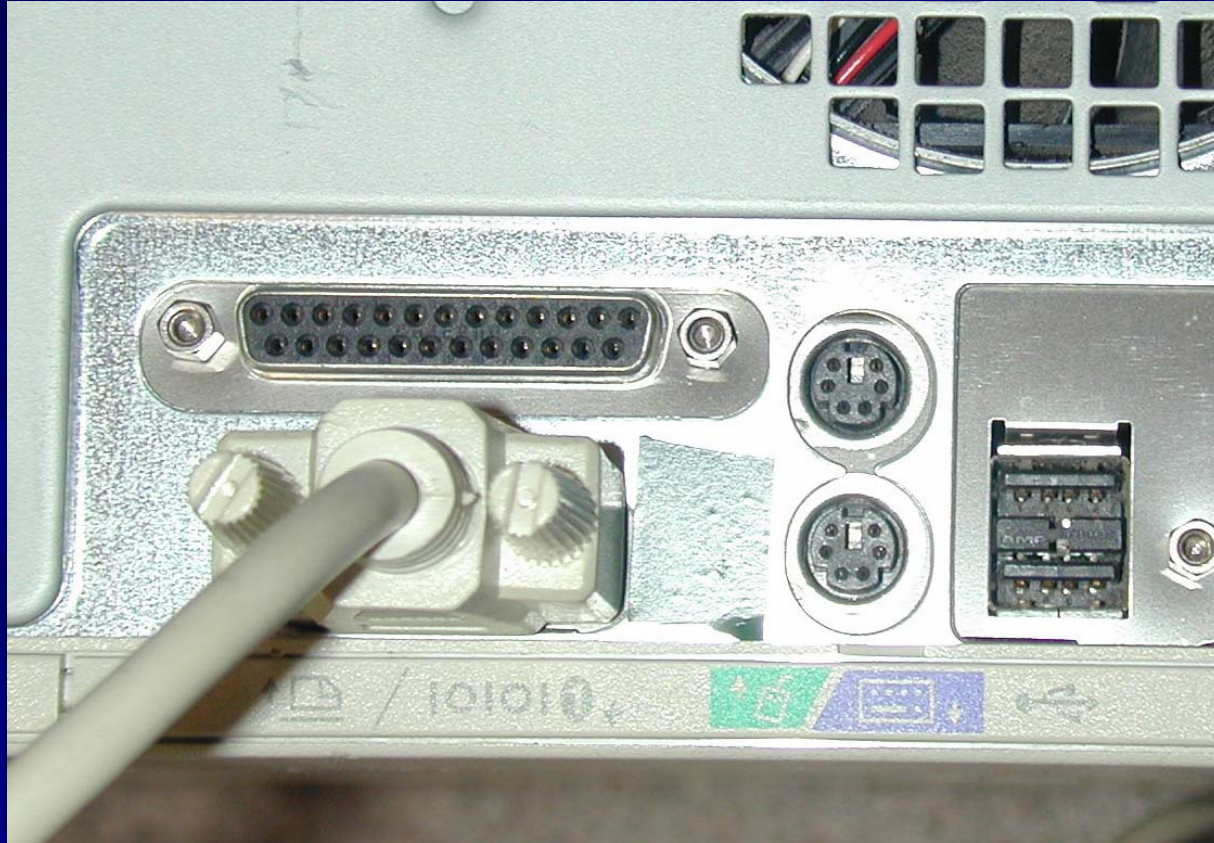
Demodulator

Connect 3-foot jumper coaxial cable from lightning arrestor to antenna connector.

Attach AC line cord to power supply.



Connect 9 pin connector (small end) of serial cable to your pc's COM port 1.



Turn unit around so front of radio is visible.

Plug in AC line cord to wall outlet.

Turn on power supply. (Red switch at lower left front of power supply.)

Power Switch



Power Supply

Select "1" on the radio.

Red LED channel indicator over "1" button will light.



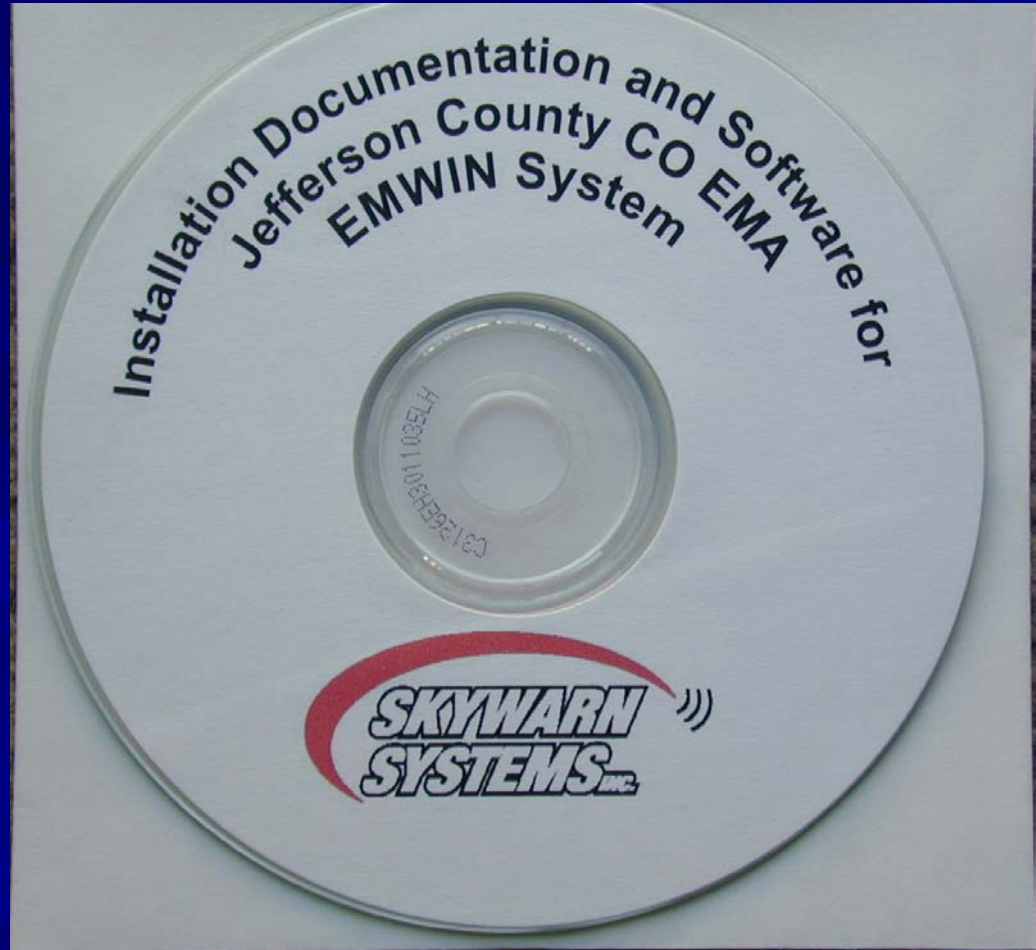
"F1" button

Channel Indicator

Power Supply



Software CD



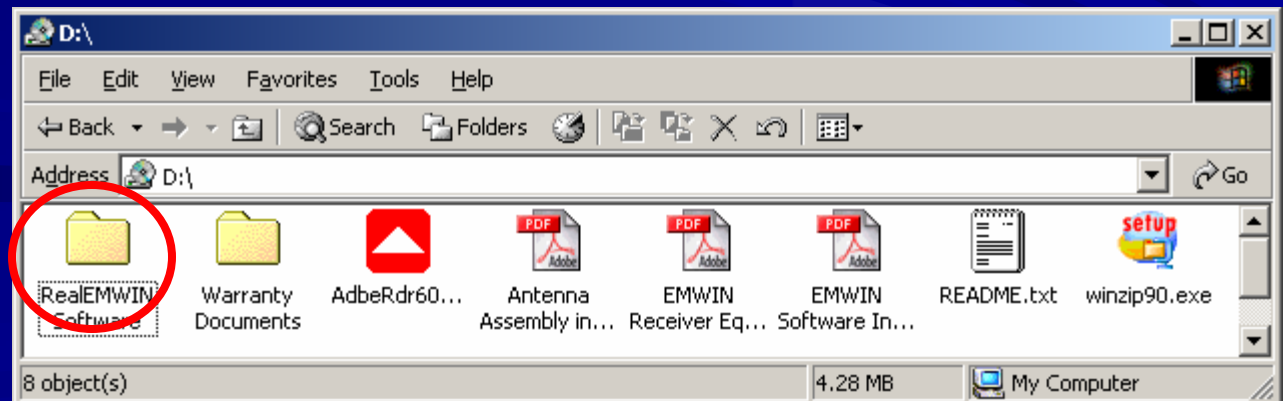
SECTION THREE

Software installation



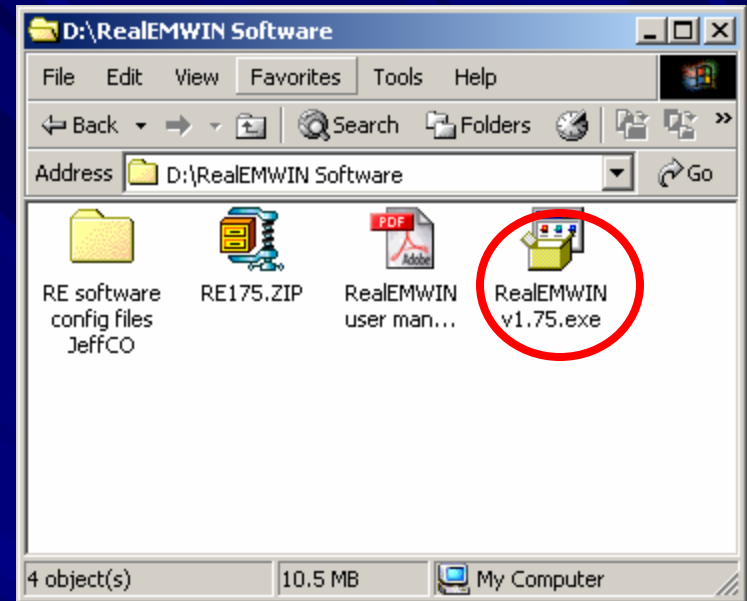
Initial Setup

- **NOTE:** Have your IT group complete this installation or give you full Administrator rights on the computer before you begin.
- 1) Open CD to see contents.
- 2) Select “RealEMWIN Software” folder



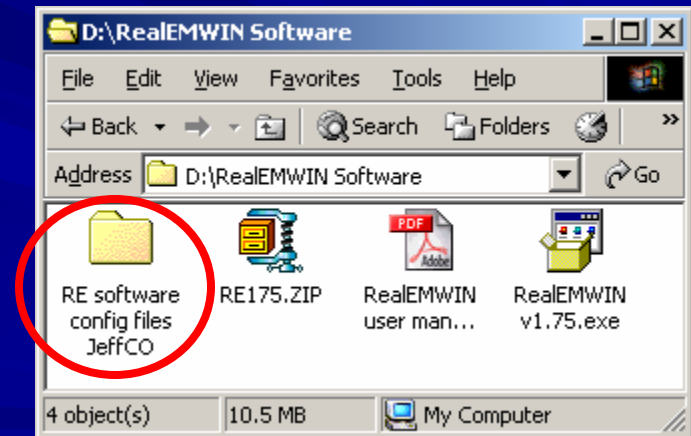
3) Double click RE175.exe, and follow installation instructions....

(Select “Next” or “Yes” to step through the default installation.)

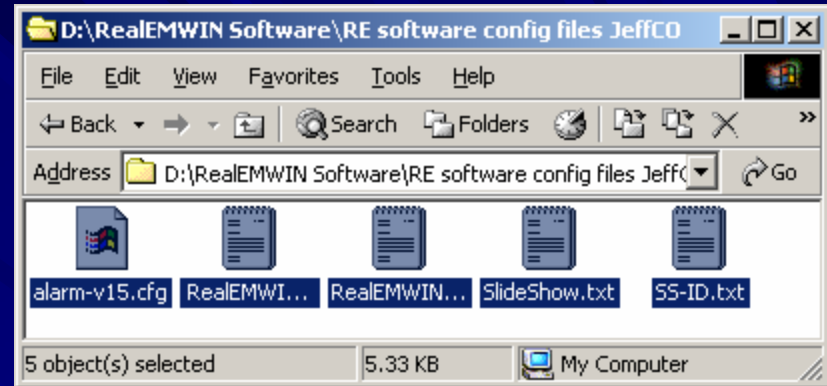


4) When asked to restart the computer, select: “No, I will restart later”

5) Open the “RE software config files JeffCO” folder



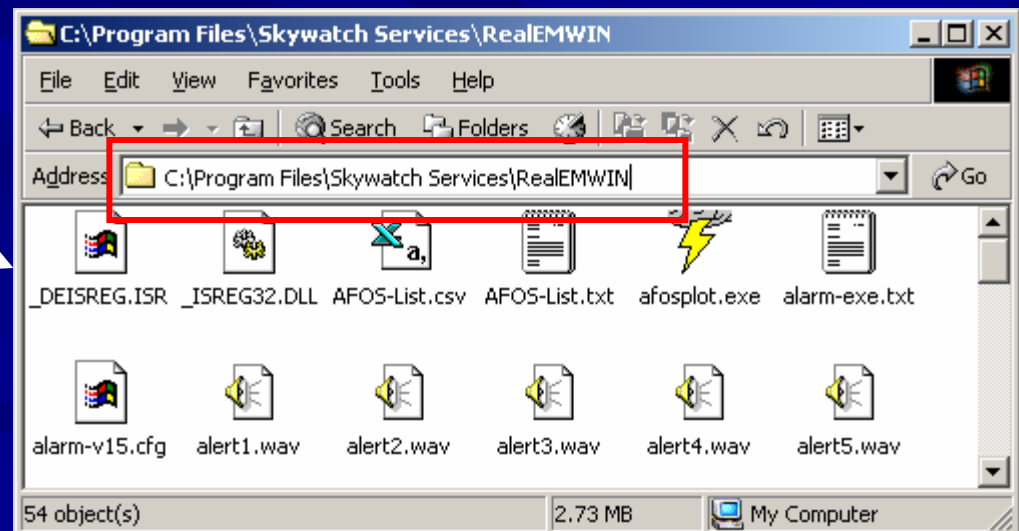
6) Select all files in the folder, and copy them.



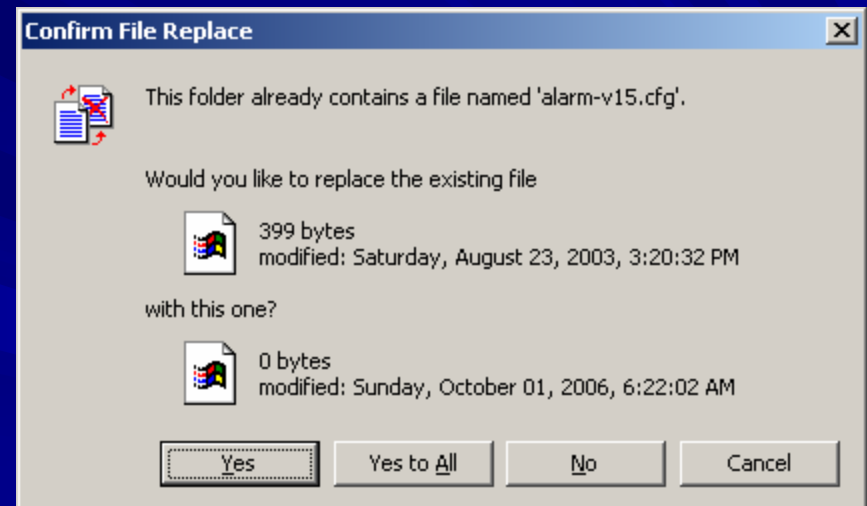
7) Paste them to the following folder:

“C:\ Program Files\Skywatch Services\RealEMWIN”

(Paste files here:)



8) When asked if you would like to replace the existing file, select “Yes to All”

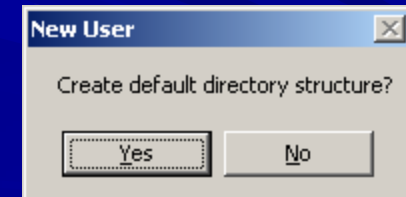


9) Remove CD from drive, and restart computer.

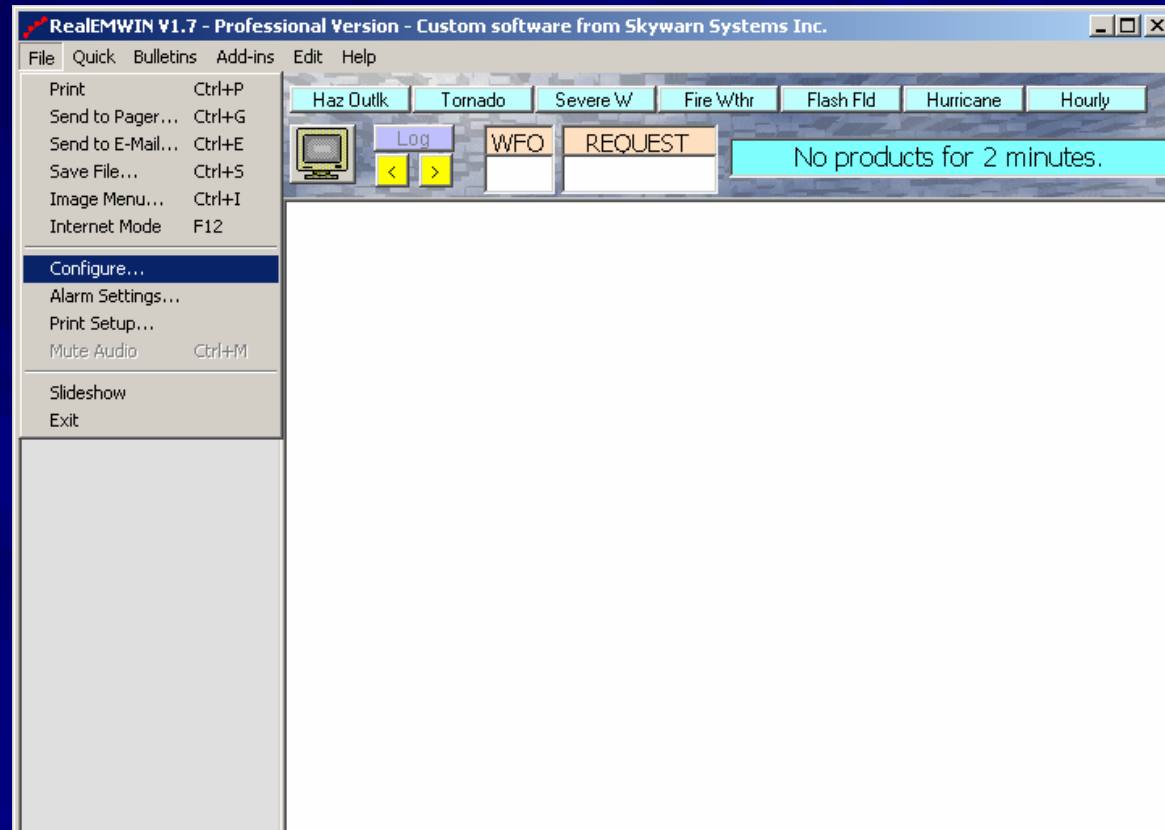


10) When computer is ready, Start RealEMWIN.

11) Select “Yes” when asked to
“create default directory structure”



12) When completed, select “File” then “Configure”



13) Set / Verify the following values in the configuration window:

a) Standalone operational mode

b) Comm Port 1 and Baud 9600 (verify Comm Port with IT if unsure)

c) Enter “DEN” and “BOU” in the first Local WFO box, and clear the remaining boxes.

d) Check the METAR box, and type in “KDEN”

e) Click on “SAVE”.

Configuration

Operational Mode

Standalone Network Internet Feed

Comm Port 1 Baud 9600

Text c:\Weather\EMWIN\Data\

Images c:\Weather\EMWIN\Images\

Hourly c:\Weather\EMWIN\HourlyWX\

Data-In C:\Program Files\Skywatch Services\Real

Custom c:\Weather\EMWIN\Archive\

WXPLOT

Local WFO's

DEN BOU

Purge Time: 12

Prods: 3

US N. America Pacific

Audio

Unlimited Restrict Once

E-Mail

Compress Bulletins

Expand Headers

Server enter.smtp.here.com

Personal from@where

Idle Alert

E-Mail

Pager

I-Net

3 Delay

Internet RCM Unzip

Bulletin Descriptions

METAR Reverse

KDEN

Save Exit

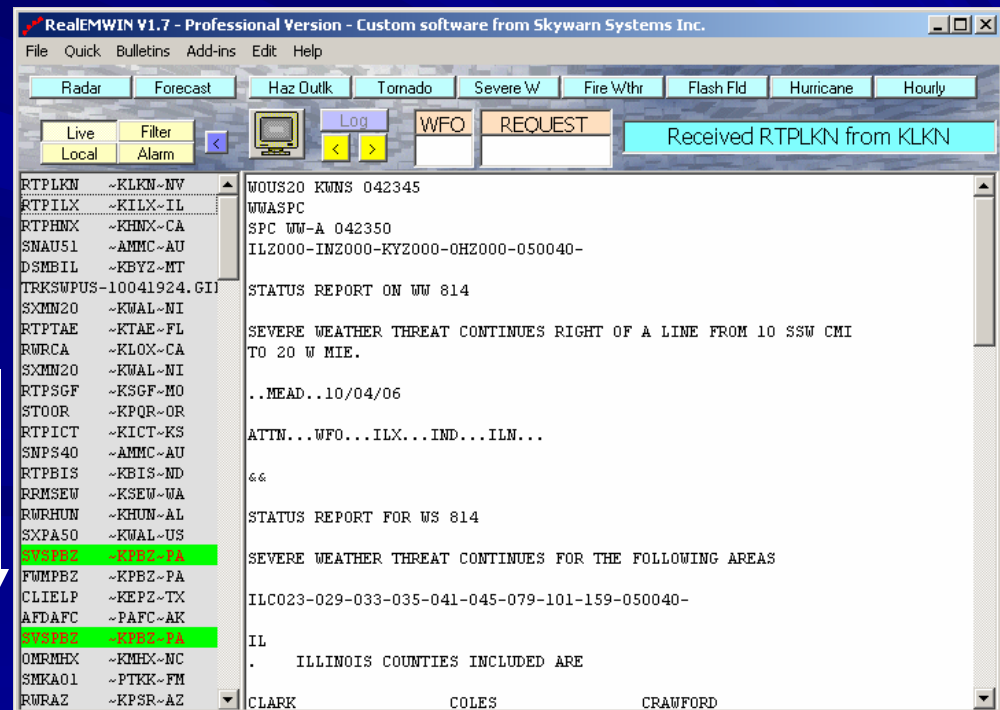
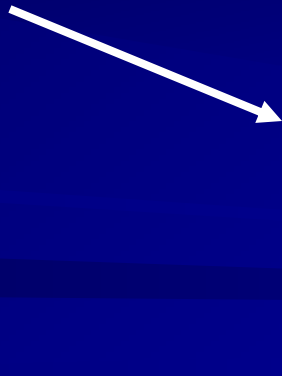


14) Select "OK" when the following dialog box appears:



15) Restart RealEMWIN. File names should begin appearing on the left side.

File names appear and fill down



**You have successfully
installed your equipment
and
configured RealEMWIN software
for use in the Front Range.**

Enjoy!



Capabilities of EMWIN satellite feed

■ Prioritized content

- Watches, warnings, Homeland Security content
- Amber alerts
- Forecasts, current conditions
- Satellite-based imaging
 - Infrared, visible, water vapor
 - Hurricane tracks

■ Does **NOT** include:

- Local radar
- Other local or customized content



Comparison of Software Capabilities

RealEMWIN
WeatherMessage
Interwarn



RealEMWIN

- General purpose interface
 - Text based
 - Simple, easy to use
- Target Audience
 - Emergency Managers
 - Amateur weather spotters
 - Meteorologists
- Most popular software package

RealEMWIN

The screenshot displays the RealEMWIN V1.7 software interface. The title bar reads "RealEMWIN V1.7 - Professional Version - Custom software from Skywarn Systems Inc." and the address bar shows "192.168.1.53:1". The menu bar includes "File", "Quick", "Bulletins", "Add-ins", "Edit", and "Help". The main interface features several tabs: "Radar", "Forecast", "Haz Outlook", "Short Tm", "Watches", "Fire Wthr", "Flash Fld", "Winter", and "Hourly". Below these are buttons for "Live", "Filter", "Log", "WFO", "REQUEST", and a status bar indicating "Received RWRNY from KBLF".

The main display area shows a list of state weather roundups on the left and a detailed hazardous weather outlook on the right. The outlook text is as follows:

PLUS45 KBOU 091154
HWOBOU

HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE DENVER CO
554 AM MDT THU SEP 09 2004

COZ030>051-091700-

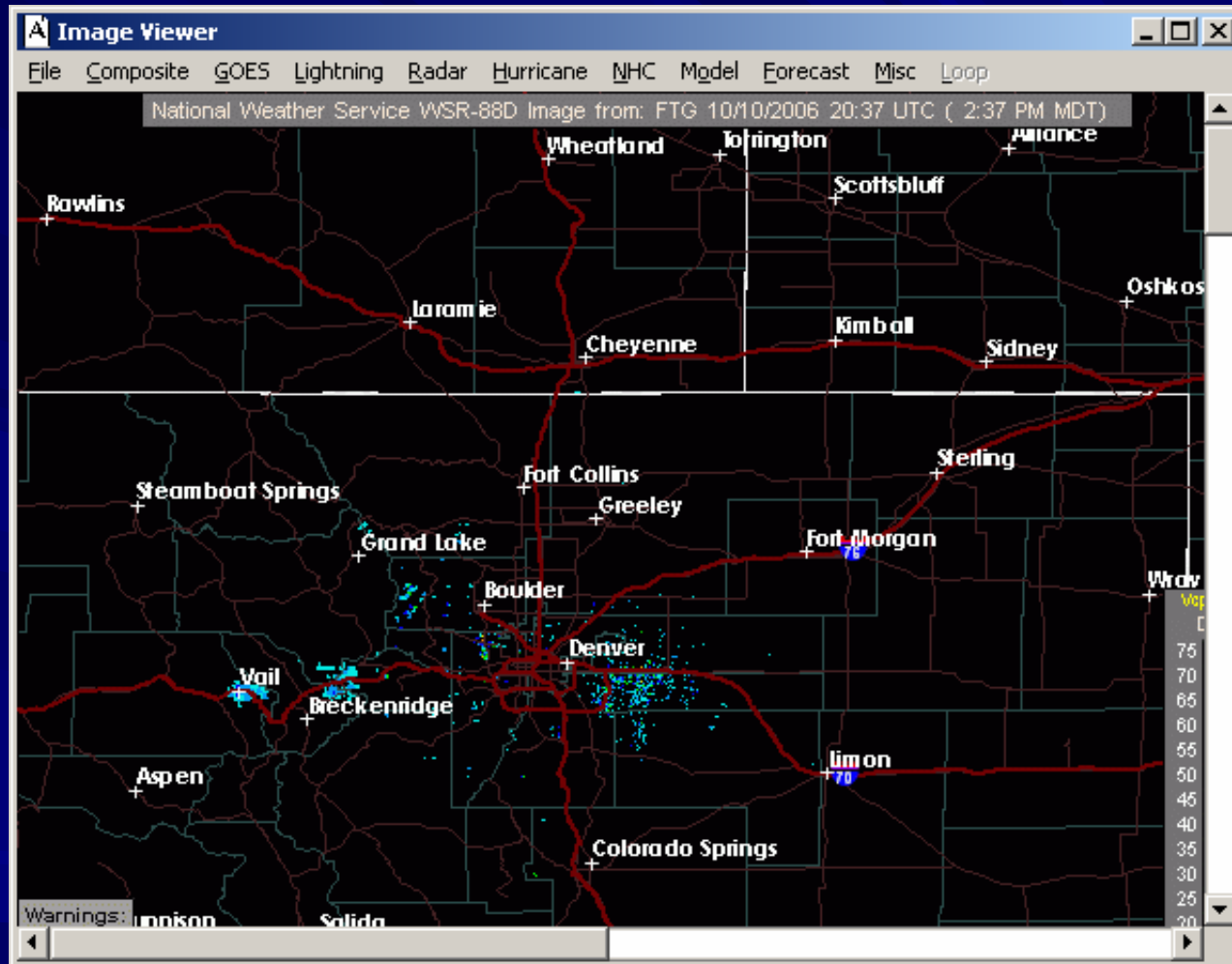
JACKSON COUNTY BELOW 9000 FEET-WEST JACKSON AND WEST GRAND COUNTIES ABOVE 9000 FEET-GRAND AND SUMMIT COUNTIES BELOW 9000 FEET-SOUTH AND EAST JACKSON/LARIMER/NORTH AND NORTHEAST GRAND/NORTHWEST BOULDER COUNTIES ABOVE 9000 FEET-SOUTH AND SOUTHEAST GRAND/WEST CENTRAL AND SOUTHWEST BOULDER/GILPIN/CLEAR CREEK/SUMMIT/NORTH AND WEST PARK COUNTIES ABOVE 9000 FEET-LARIMER AND BOULDER COUNTIES BETWEEN 6000 AND 9000 FEET-JEFFERSON AND WEST DOUGLAS COUNTIES ABOVE 6000 FEET/GILPIN/CLEAR CREEK/NORTHEAST PARK COUNTIES BELOW 9000 FEET-CENTRAL AND SOUTHEAST PARK COUNTY-LARIMER COUNTY BELOW 6000 FEET/NORTHWEST WELD COUNTY-BOULDER AND JEFFERSON COUNTIES BELOW 6000 FEET/WEST BROOMFIELD COUNTY-NORTH DOUGLAS COUNTY BELOW 6000 FEET/DENVER/WEST ADAMS AND ARAPAHOE COUNTIES/EAST BROOMFIELD COUNTY-ELBERT/CENTRAL AND EAST DOUGLAS COUNTIES ABOVE 6000 FEET-NORTHEAST WELD COUNTY-CENTRAL AND SOUTH WELD COUNTY-MORGAN COUNTY-CENTRAL AND EAST ADAMS AND ARAPAHOE COUNTIES-NORTH AND NORTHEAST ELBERT COUNTY BELOW 6000 FEET/NORTH LINCOLN COUNTY-SOUTHEAST ELBERT COUNTY BELOW 6000 FEET/SOUTH LINCOLN COUNTY-LOGAN COUNTY-WASHINGTON COUNTY-SEDGWICK COUNTY-PHILLIPS COUNTY-

554 AM MDT THU SEP 09 2004

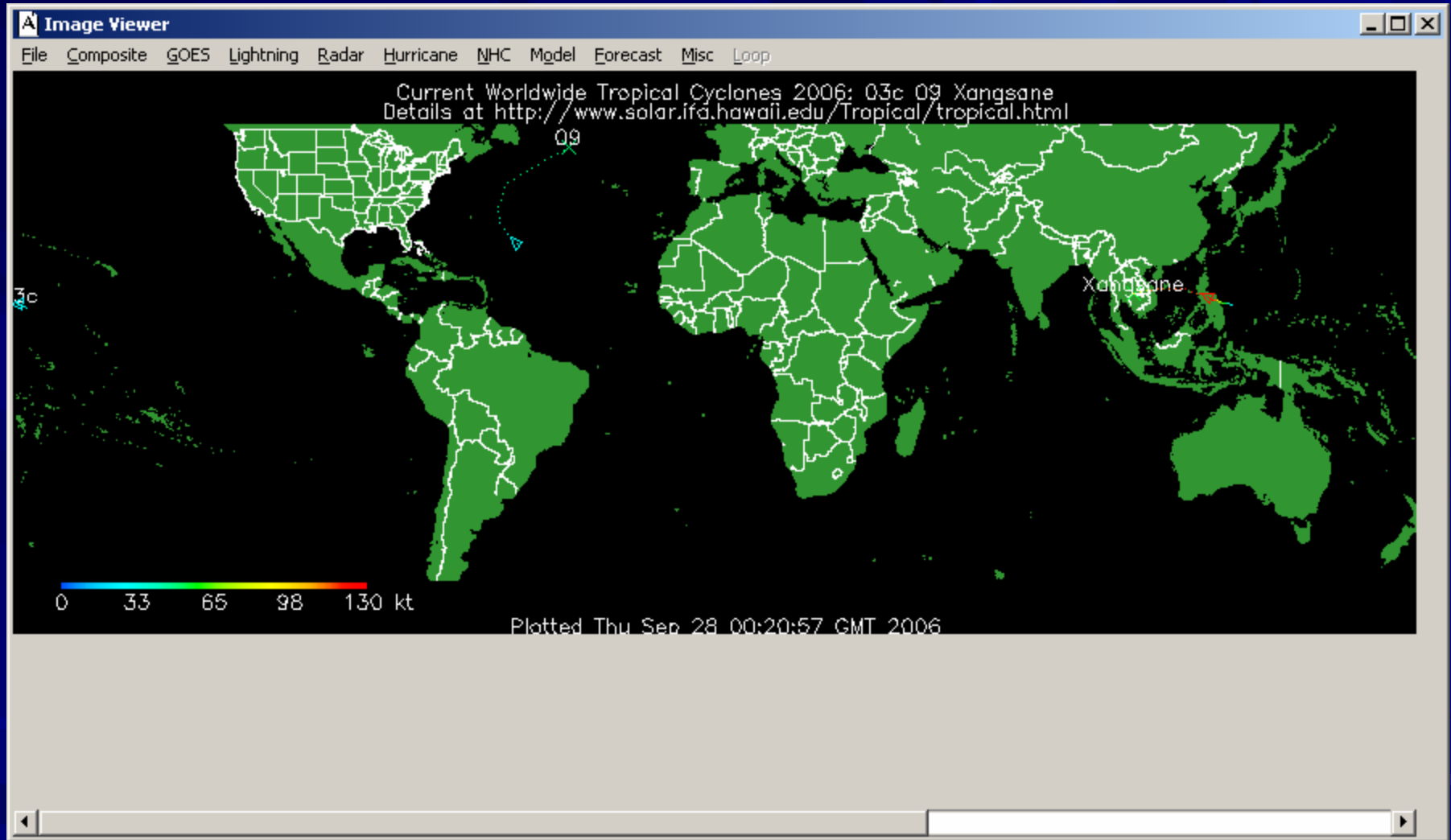
THIS HAZARDOUS WEATHER OUTLOOK IS FOR NORTHEAST AND NORTH CENTRAL COLORADO.

The bottom of the screen shows the Windows taskbar with the "start" button, various application icons, and the system clock displaying "5:01 PM" on "Thursday".

RealEMWIN Graphics



RealEMWIN Graphics



RealEMWIN

- Useful alerting interface
 - Audible and visible alerts on-screen
 - Text messages to cell phones and pagers
 - Email
 - Execute programs
 - Print

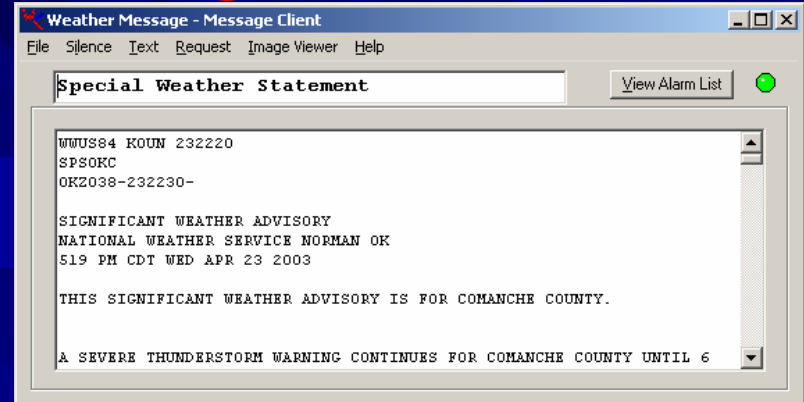
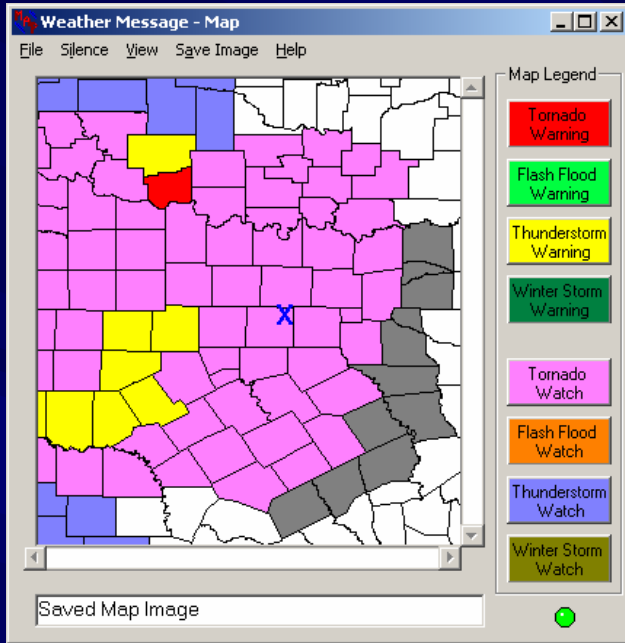
Other Software is available on the market

- Weather Message
- InterWarn

Weather Message

- Severe weather and HLS (exceptions) focus
- “Low profile” interface with pop-ups
- Target Audience
 - Public safety / Dispatchers
 - Emergency Managers
 - Busy people that only want to know what will impact their community *now* or in *the near future*

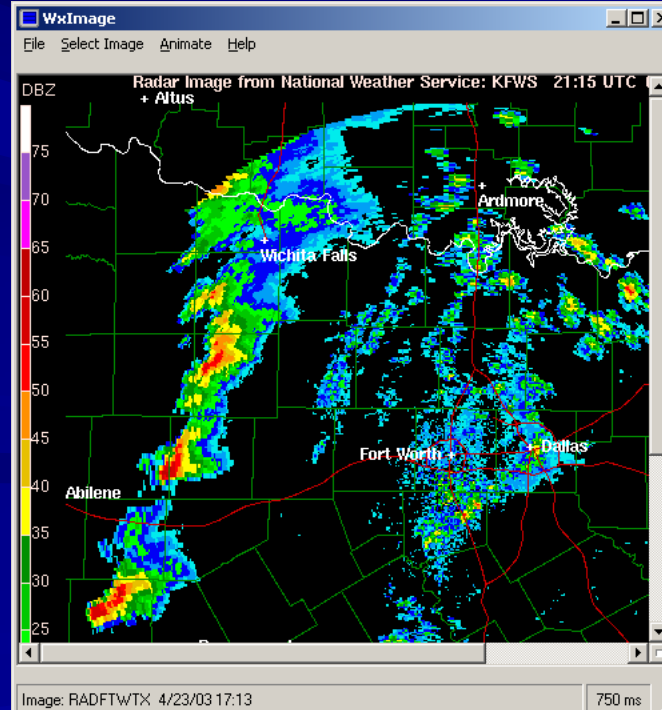
Weather Message



Pop-up displays

Real time update of
Watch and Warning areas

Radar loop
Including zoom and
autoupdate



Weather Message

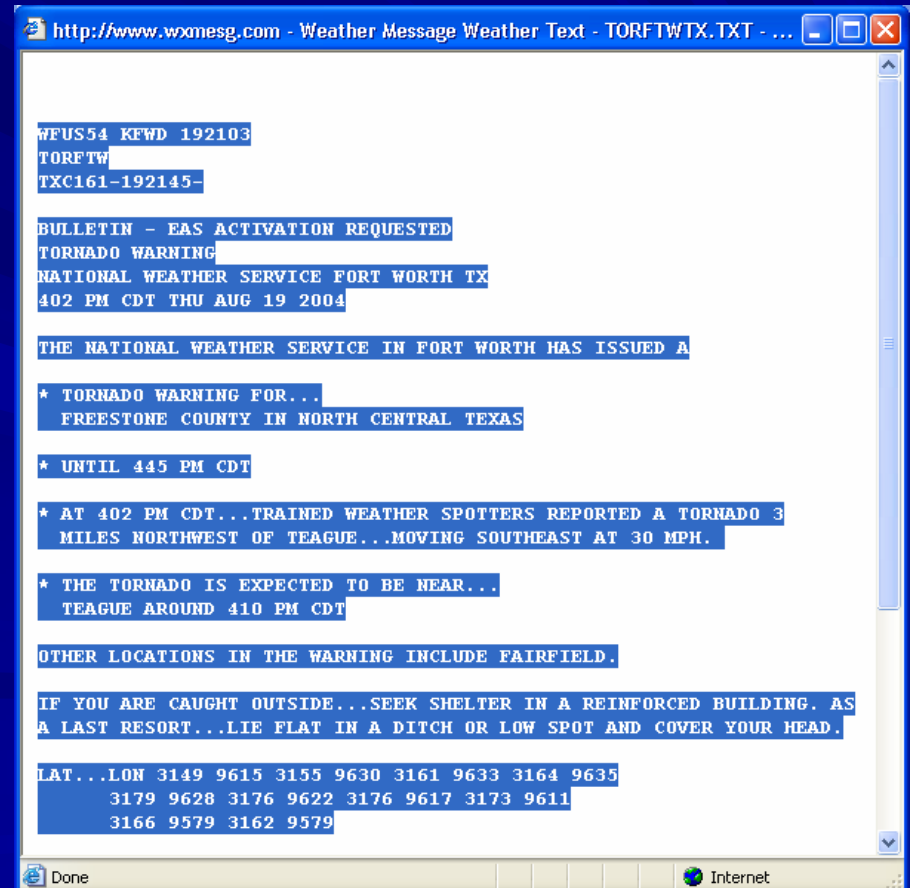
- Rich alerting interface
 - Audible and visible alerts on-screen
 - Text messages to cell phones and pagers
 - Email
 - Fax
 - Print
 - Execute programs
 - ***Text parsing capability***



Weather Message

- *Text parsing capability*
 - *Intelligently filters text messages from hundreds of words to less than 15 words*

“NWS has issued a Tornado Warning
For Freestone County until 4:45 pm”



InterWarn

- Severe weather (exceptions) focus
More interactive than WeatherMessage
- Target Audience
 - Emergency Managers
 - Amateur weather spotters
 - Meteorologists

InterWarn

InterWarn V3.3

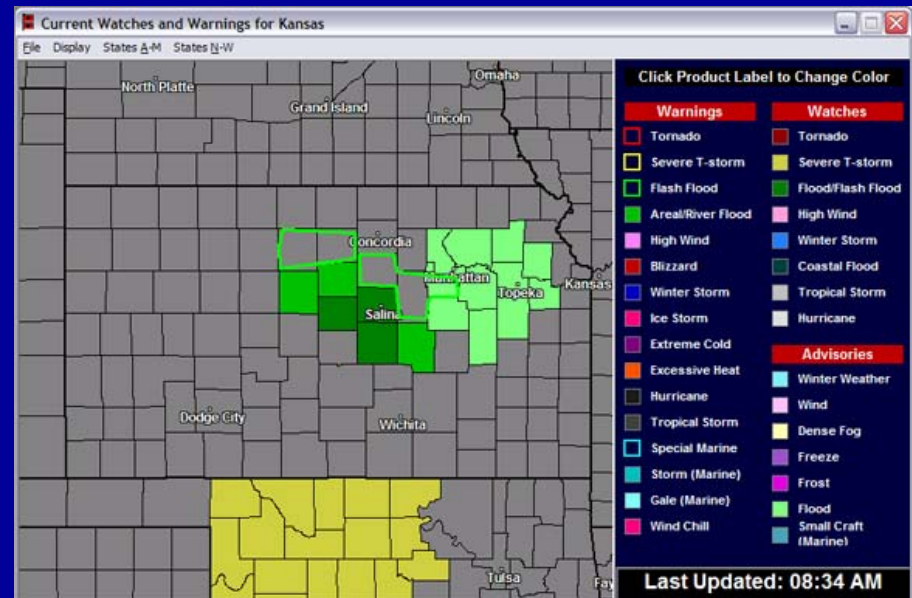
File Setup Bookmarks National Tropical Plugins Help

Bulletins National Data Current Conditions Text Data Graphical Data QuickLinks/News

Update Real Time Watch/Warning Map Display Delete

Product Type	State(s)	Counties/Areas Affected	Valid Until
Special Weather Statement	OK	Woods, Woodward.	5:00 PM CST
Special Weather Statement	OK	Custer.	5:00 PM CST
Severe Weather Statement	OK	Alfalfa.	5:45 PM CST
Severe Thunderstorm Warning	KS.	Barber.	5:30 PM CST
Tornado Warning	OK.	Washita.	5:00 PM CST
Severe Thunderstorm Warning	KS.	Saline.	5:30 PM CST
Severe Thunderstorm Warning	KS.	Pratt, Stafford.	5:15 PM CST
Severe Weather Statement	KS.	Barton.	5:00 PM CST
Severe Thunderstorm Warning	KS.	Barton.	5:00 PM CST
Tornado Watch	KS.	Barber, Barton, Ellsworth, Harper, Harvey, Kingman, McPherson, Pawnee, Pratt, Reno, Rice, Rush, Sedgwick, Stafford, Sumner.	7:00 PM CST
Tornado Watch	OK.	Alfalfa, Beckham, Blaine, Caddo, Canadian, Comanche, Custer, Dewey, Ellis, Garfield, Grady, Grant, Greer, Harmon, Harman, Jackson, Marshall, Nowata, Osage, Pottawatomie, Sherman, Woodward.	6:00 PM CST

Status: OK Last Updated: 4:49 PM



InterWarn

InterWARN V3.3
File Setup Bookmarks National Tropical Plug-ins Help

Bulletins | National Data | Current Conditions | Text Data | Graphical Data | QuickLinks/News

Current Conditions as of 900 AM CST

Retrieve Recent METARs

Choose a State or Province
Missouri

Now Choose A Location
Springfield

Weather/Sky Condition
Partly Sunny

Temperature 40°F (4°C)
Dewpoint 36°F (2°C)
Humidity 86% Pressure 29.78" Rising
Wind Southeast at 16 mph

Remarks

Sunrise 7:15 AM CST
Sunset 4:56 PM CST
Moonrise 4:45 PM CST
Moonset 7:10 AM CST

Status: OK Last Updated: 9:44 AM

InterWARN V3.3
File Setup Bookmarks National Tropical Plug-ins Help

Bulletins | National Data | Current Conditions | Text Data | Graphical Data | QuickLinks/News

Local Forecast by "City, St" or Zip Code
Springfield, MO Get Forecast

Satellite/Obs Data (Courtesy of UCAR and NOAA)

- Visible
- IR Color
- IR Black/White
- Water Vapor *
- Shortwave IR *
- Station Plots * = Entire US Only.
- Latest Image
- Loop (Small Size)
- Loop (Large Size)

Doppler Radar (From NWS)

- Latest Image
- Loop

Image Type

- Base Reflectivity
- Base Reflectivity - Long Range
- Composite Reflectivity
- Comp Reflectivity - Long Range
- One Hour Precipitation
- Storm Total Precipitation

Status: OK Last Updated: 8:00 PM

Questions



LUNCH

Meeting this afternoon at Adams County Training Room





***Welcome
Back***



Site tour

EMWIN Rebroadcast system at Adams County

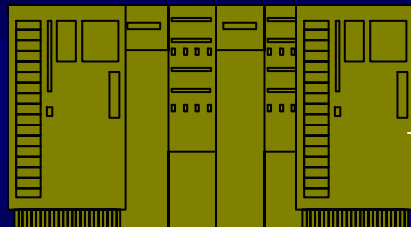




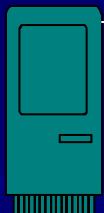
NWS EMWIN Architecture

GOES SPACE CRAFT

NWS GATEWAY SYSTEM



WEATHERWIRE SYSTEM



A & C



B & D



DEDICATED ANALOG LINE

DEDICATED ANALOG LINE/T1 backup

BYTE BLASTER NETWORK

EMWIN PC NETWORK

EMWIN INTERNET PUSH BITSTREAM

EMWIN FEED SOURCES

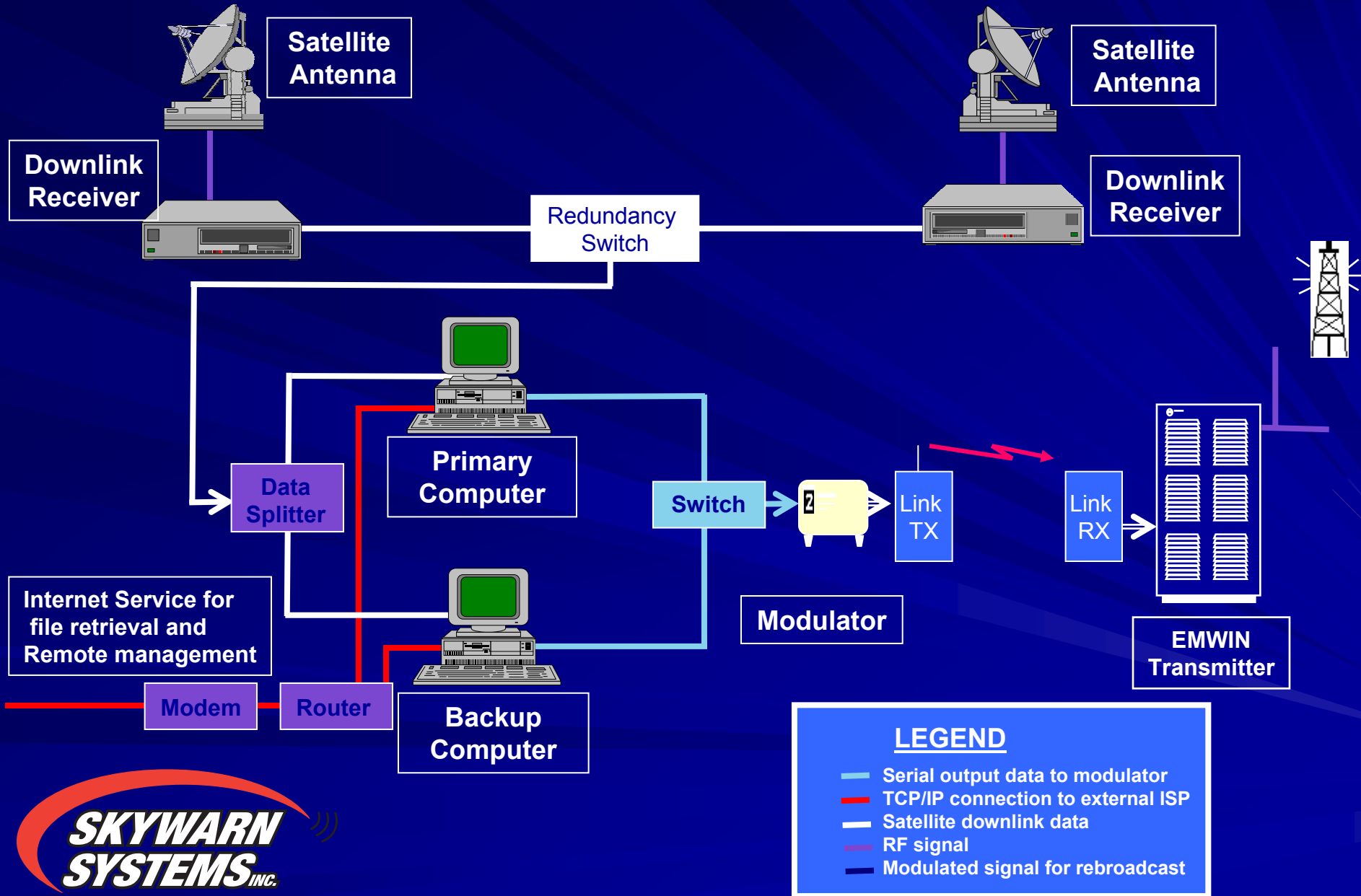
INTERNET CLOUD

WALLOPS CDAS



Source: Santos Rodriguez – NWS EMWIN

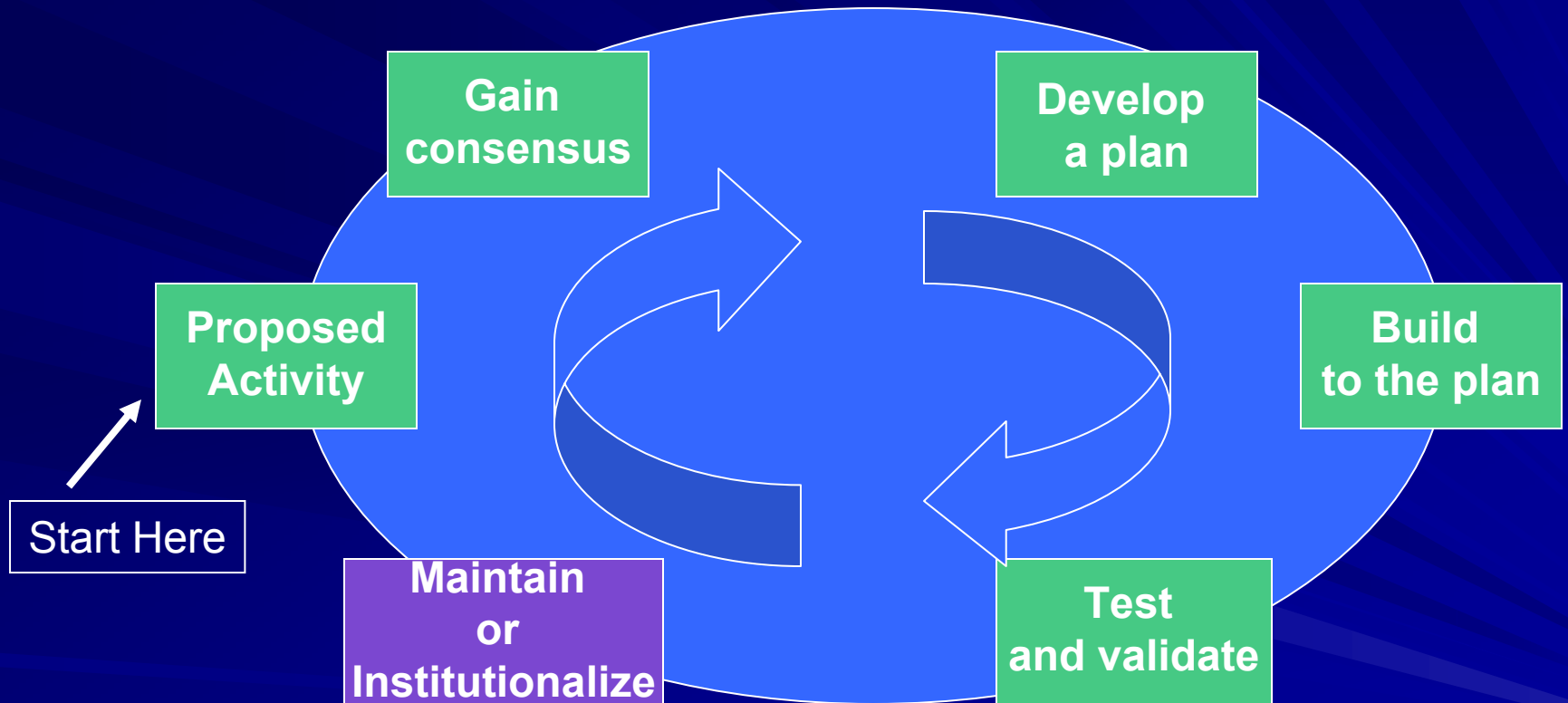
Front Range Retransmission System



Where we are today...



Classic Improvement Cycle



Maintenance Plan

- Keep it simple
- Focus on what is realistic
- Get commitments from members
- Implement
- Adjust or “course correct” over time

Starts with “Who owns this project?”

Identified Tasks

- UDFCD owns the system for now...
- Kevin and Jim L to talk with METS regarding ownership

Suggested Initial Step

- Identify key tasks and responsible members
- Publish a **CONTACT LIST**
 - General information / media contact
 - Software questions
 - Hardware / installation questions
 - System status
 - Technical support
 - Investigate
 - Diagnose
 - Repair
 - Funding source for on-going repair and maintenance costs



Contacts Discussion

- Media and general info - Kevin & Jim L.
- System support (downlink) - Jim K.
- Receiver support - Jim K, Chad
- Software support - Chad
- Cherokee transmitter and links - Jim K.
- System status - text messages sent to
 - Kevin, Jim K, Chad

Phase 2 Grant

Training (this session)

Installation support

Second training session for all users

Web page development

- EMWIN weather page for public use
- secure alert generator for emergency managers

Spare hardware



**What would make EMWIN
more valuable to the
Emergency Management
community?**



Top Ideas

- Lightning data inserted locally
- Spot forecast product inserted locally
- Insert other radar features – storm totals
- Text Messaging for the public
 - web interface to sign up
- Text Messaging for emergency managers
 - same info to all
 - timely
- School administrators access to info

Next Steps

- Monthly meetings - 3rd Tuesday 10-12
- Jim and Kevin to discuss long term ownership with METS and others
- Get attendees' receivers operational
- Contact each receiver owner -
 - prompt them to setup and try out equipment

APPENDIX



Local Message Generator
for DENVER EMWIN system
Initial draft

**Skywarn Systems
Inc.**

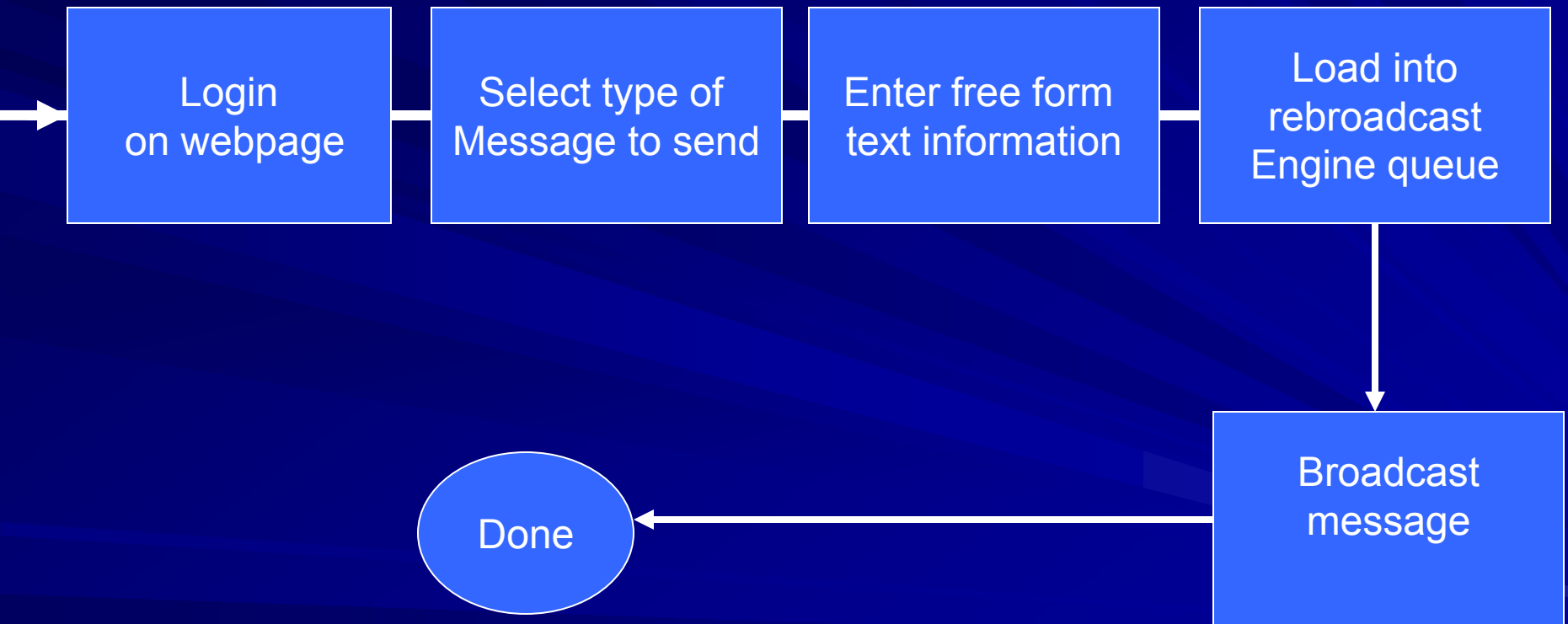
Raymond Bartik
Oct. 06, 2006



Purpose

- To generate messages in the EMWIN rebroadcast system for retransmission to other local Emergency Managers.
 - Easy to use interface
 - Password protected
 - Immediate dissemination to local EM's

Flow diagram



A typical EMWIN text message

WUUS52 KFWD \$WXUTC\$
TSTFWD
TXC439-\$WXEXPIRE\$-

BULLETIN - EAS ACTIVATION REQUESTED
TEST WARNING
SKYWARN SYSTEMS TEST VEHICLE
\$WXDATE\$

THIS IS A TEST OF THE SKYWARN SYSTEMS ALERTING SYSTEM

THIS MESSAGE IS PROVIDED EACH WEDNESDAY AT 8:00 A.M. LOCAL TIME TO
VERIFY THE EMWIN SYSTEM IS PROVIDING PROPER ALERT CAPABILITIES.

PLEASE ADDRESS QUESTIONS AND COMMENTS TO
SUPPORT@SKYWARNSYSTEMS.COM

\$\$\$\$



EMWIN text message components

The format of the EMWIN text messages can be constrained to be relatively simple to use.

There are three major components:

- Message ID – defines the type of message
- Timing info – defines release time and duration of warning
- Text – plain text component of variable length



Components of the text message

Message ID – fixed for each message type

WUUS52 KFWD **\$WXUTC\$**
TSTFWD
TXC439-**\$WXEXPIRES-**

Timing info - based on
time of transmission

BULLETIN - EAS ACTIVATION REQUESTED
TEST WARNING
SKYWARN SYSTEMS TEST VEHICLE
\$WXDATES\$

THIS IS A TEST OF THE SKYWARN SYSTEMS ALERTING SYSTEM

THIS MESSAGE IS PROVIDED EACH WEDNESDAY AT 8:00 A.M. LOCAL TIME TO
VERIFY THE EMWIN SYSTEM IS PROVIDING PROPER ALERT CAPABILITIES.

PLEASE ADDRESS QUESTIONS AND COMMENTS TO
SUPPORT@SKYWARNSYSTEMS.COM

\$\$\$\$

text section of variable length



Example – page 1

Denver Front Range Emergency Manager Notification System

Login:

Password:



Example – page 2

Denver Front Range Emergency Manager Notification System

Select Message type:



Enter message text:

Effective until:

SEND



Email entry of local content

- Team requested addition of email method for local content insertion

Weather information from the National Weather Service
Emergency Managers Weather Information Network

4:07:03 PM

Fri. 6 Oct 2006 21

Forecasts

Summaries & Reports

Local Radar

Select a Product

Select a Product

Select a Product

Satellite Imagery

Models & Maps

EMWIN Information

Select a Product

Select a Product

Select a Product





4:07:03 PM

Fri. 6 Oct 2006 2



FPUS51 KBOX 062009 PAA

ZFPBOX ZONE FORECAST PRODUCT FOR SOUTHERN NEW ENGLAND

NATIONAL WEATHER SERVICE TAUNTON MA 409 PM EDT FRI OCT 6 2006

RIZ001-003-071030- NORTHWEST PROVIDENCE RI-WESTERN KENT RI- INCLUDING THE CITIES OF...CUMBERLAND...FOSTER...GLOCESTER... SMITHFIELD...COVENTRY...WEST GREENWICH 409 PM EDT FRI OCT 6 2006

.TONIGHT...MOSTLY CLOUDY THIS EVENING...THEN BECOMING PARTLY CLOUDY. LOWS AROUND 40. NORTHEAST WINDS 10 TO 15 MPH. .SATURDAY...PARTLY CLOUDY IN THE MORNING...THEN CLEARING. HIGHS IN THE LOWER 60S. NORTHEAST WINDS 5 TO 10 MPH WITH GUSTS UP TO 20 MPH. .SATURDAY NIGHT...MOSTLY CLEAR. LOWS IN THE UPPER 30S. NORTH WINDS 5 TO 10 MPH. .SUNDAY...SUNNY. HIGHS IN THE UPPER 60S. NORTH WINDS AROUND 5 MPH... BECOMING SOUTH IN THE AFTERNOON. .SUNDAY NIGHT...CLEAR. LOWS IN THE UPPER 40S. SOUTHWEST WINDS AROUND 5 MPH. .COLUMBUS DAY AND MONDAY NIGHT...MOSTLY CLEAR. HIGHS IN THE LOWER 70S. LOWS IN THE UPPER 40S. .TUESDAY AND TUESDAY NIGHT...MOSTLY CLEAR. HIGHS IN THE LOWER 60S. LOWS IN THE LOWER 40S. .WEDNESDAY...PARTLY CLOUDY. HIGHS AROUND 60. .WEDNESDAY NIGHT...PARTLY CLOUDY. A CHANCE OF SHOWERS AFTER MIDNIGHT. LOWS IN THE UPPER 40S. CHANCE OF RAIN 30 PERCENT. .THURSDAY THROUGH FRIDAY...MOSTLY CLOUDY WITH A 40 PERCENT CHANCE OF SHOWERS. HIGHS IN THE LOWER 60S. LOWS IN THE UPPER 40S. \$\$

RIZ002-004-071030- SOUTHEAST PROVIDENCE RI-EASTERN KENT RI- INCLUDING THE CITIES OF...CRANSTON...JOHNSTON...PAWTUCKET... PROVIDENCE...EAST GREENWICH...WARWICK...WEST WARWICK 409 PM EDT FRI OCT 6 2006

.TONIGHT...MOSTLY CLOUDY THIS EVENING...THEN BECOMING PARTLY CLOUDY. LOWS IN THE LOWER 40S. NORTHEAST WINDS 10 TO 15 MPH. .SATURDAY...PARTLY CLOUDY IN THE MORNING...THEN CLEARING. HIGHS IN THE LOWER 60S. NORTHEAST WINDS 10 TO 15 MPH. .SATURDAY NIGHT...MOSTLY CLEAR. LOWS AROUND 40. NORTHEAST WINDS 5 TO 10 MPH. .SUNDAY...SUNNY. HIGHS IN THE UPPER 60S. NORTHEAST WINDS AROUND 5 MPH... BECOMING SOUTHEAST IN THE AFTERNOON. .SUNDAY NIGHT...CLEAR. LOWS IN THE UPPER 40S. SOUTHWEST WINDS AROUND 5 MPH. .COLUMBUS DAY AND MONDAY NIGHT...MOSTLY CLEAR. HIGHS IN THE LOWER 70S. LOWS IN THE UPPER 40S. .TUESDAY AND TUESDAY NIGHT...MOSTLY CLEAR. HIGHS IN THE LOWER 60S. LOWS IN THE MID 40S. .WEDNESDAY AND WEDNESDAY NIGHT...PARTLY CLOUDY. HIGHS AROUND 60. LOWS IN THE LOWER 50S. .THURSDAY THROUGH FRIDAY...MOSTLY CLOUDY

SKYWARN
SYSTEMS
www.nwst.com