

Winlink 2000 e-mail anytime, anywhere



SeaPac – Jun 2013

Scott Scheirman W7SLS, NNN0YMY

w7sls@arri.net

Agenda

- Welcome, Intro, Credits
- What is Winlink 2000? (What's in it for me?)
- What hardware do I need?
- What software do I need?
- Demo (?)
- Q&A Throughout!
- Resources

Winlink 2000 - Credits

Winlink Development Team (WDT)

- Victor D. Poor, W5SMM (sk)
- Rick Muething, KN6KB
- Steve Waterman, K4CJX
- Tom Lafleur, KA6IQ
- Lee Inman, K0QED
- Hans A. Kessler, N8PGR
- Don Moore, KM0R
- Lor Kutchins, W3QA
- Neil Hughes, VE1YZ
- Don Trotter, VE1DTR
- Phil Sutherland, VK6KPS
- Peter Woods, N6PRW
- Steve Hicks, N5AC
- Phil Sherrod, W4PHS

Help with this presentation

- Phil Sherrod, W4PHS
- Gary Takis, K7GJT
- Steve Aberle, WA7PTM
- Vern Smith, KA7DCQ

What is Winlink 2000?

- “Worldwide system of volunteer sysops, radio stations, and network assets that support e-mail by radio ... “
- Includes non-commercial link to internet e-mail
- Users include
 - Many government agencies (contingency communication)
 - Amateur Radio operators
 - MARS operators
 - Private sailboats
 - Non Governmental organizations (NGOs)
 - Examples: Red Cross, AT&T, FedEx

WL2K: e-mail when you are away



Mobile HF rig and antenna: \$1,200...

PACTOR III Modem: \$1,000...

**Ability to send email when
commercial communications
systems fail: Priceless**

Disaster Assessment Picture Sent Via Winlink 2000

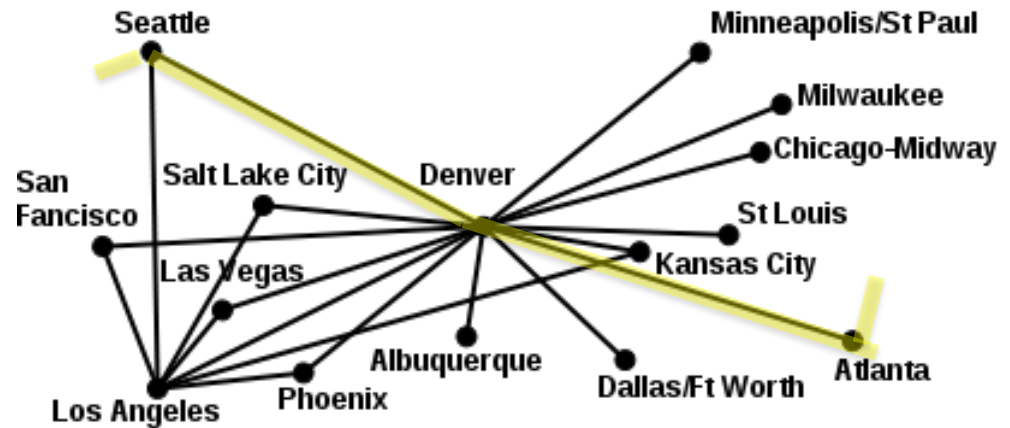
Public
safety
systems
do fail.

Kentucky
ice storm
pix from
TEMA
recon
vehicle.



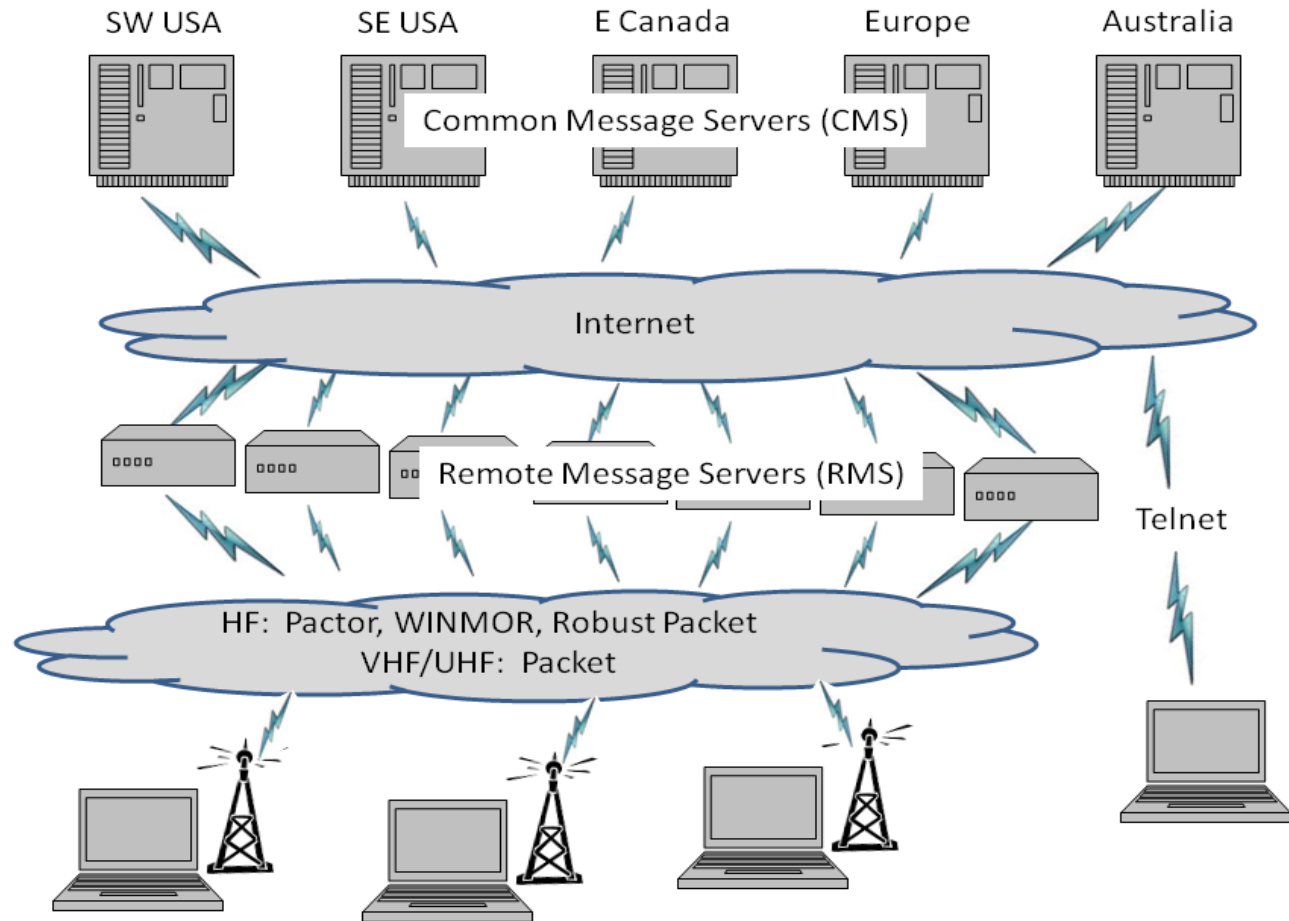
WL2K – like the hub and spoke airline system

- Drive to SeaTac
- Fly to Denver
- Change Planes
- Fly to Atlanta
- Rent a car
- Drive to your destination

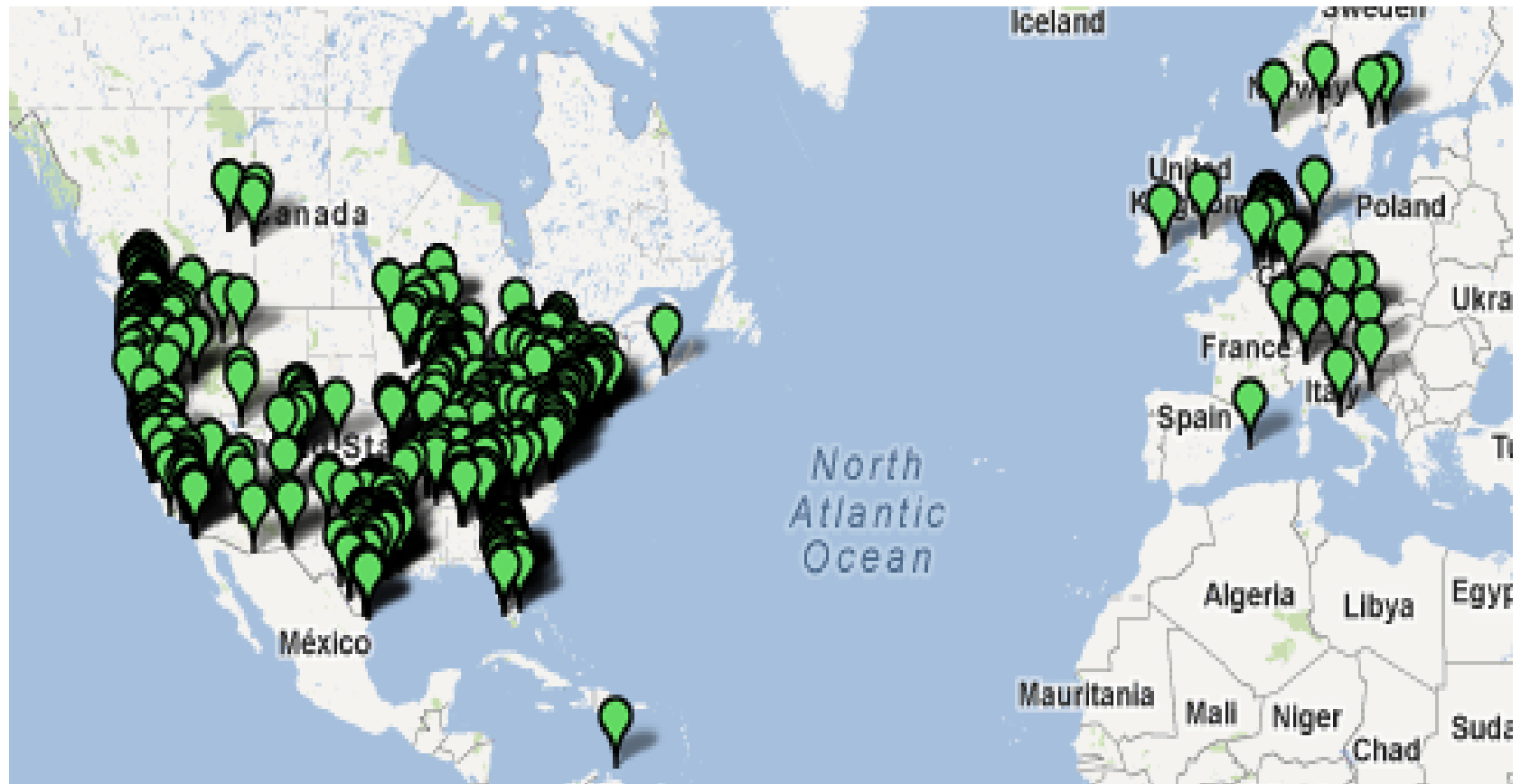


Winlink 2000 System Architecture

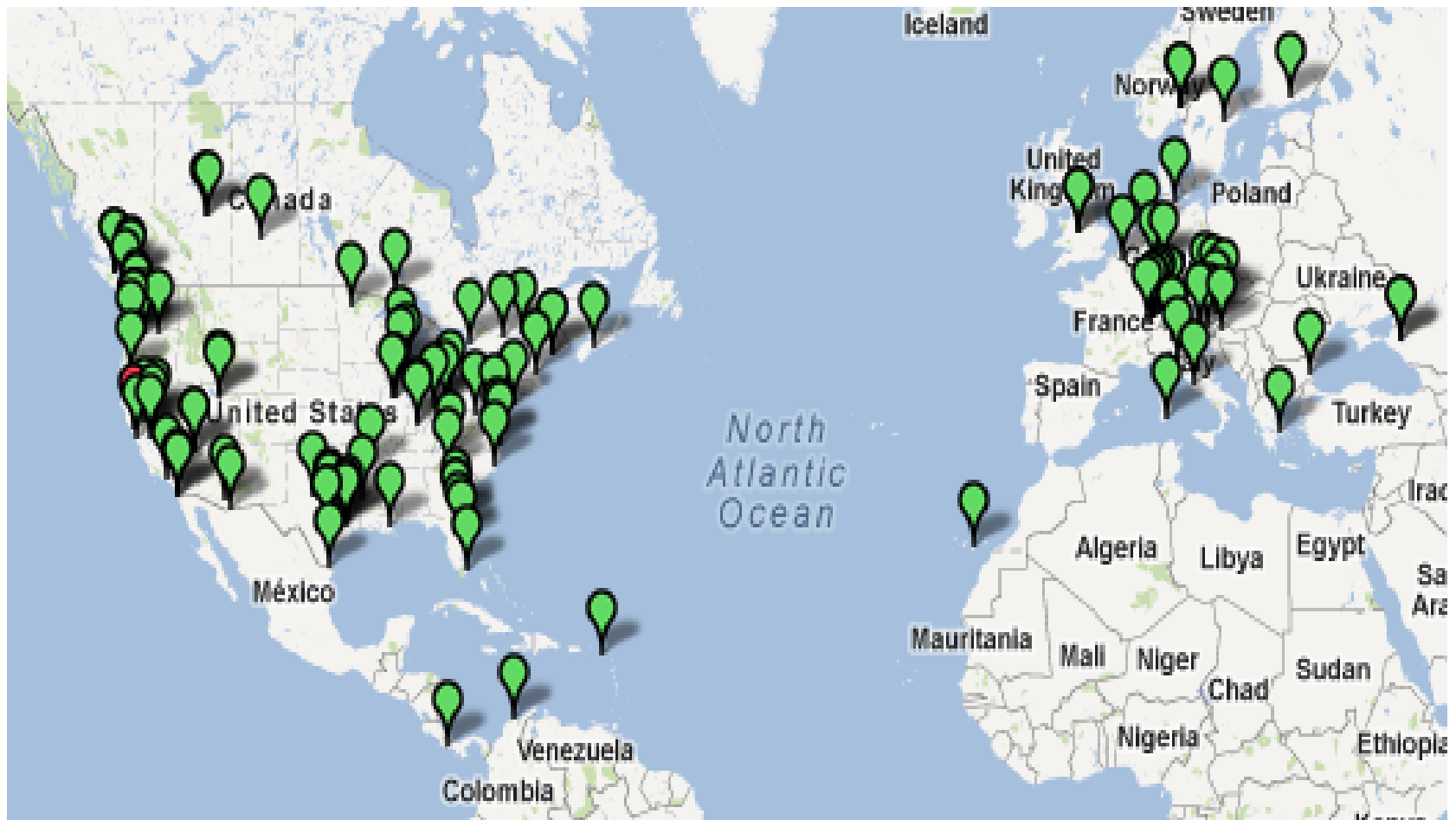
- CMS
- RMS (gateway)
- Client (you)



Winlink Ham VHF/UHF Gateways in America & Europe



Winlink Ham HF Gateways in America & Europe



What hardware do I need for WL2K?



Pactor



HF Radio



HF Antenna



Computer, PII or higher
XP or better
(or VM on a Mac)
1+ GB RAM



Soundcard



TNC



V/UHF Radio

V/UHF Radio with
built-in TNC



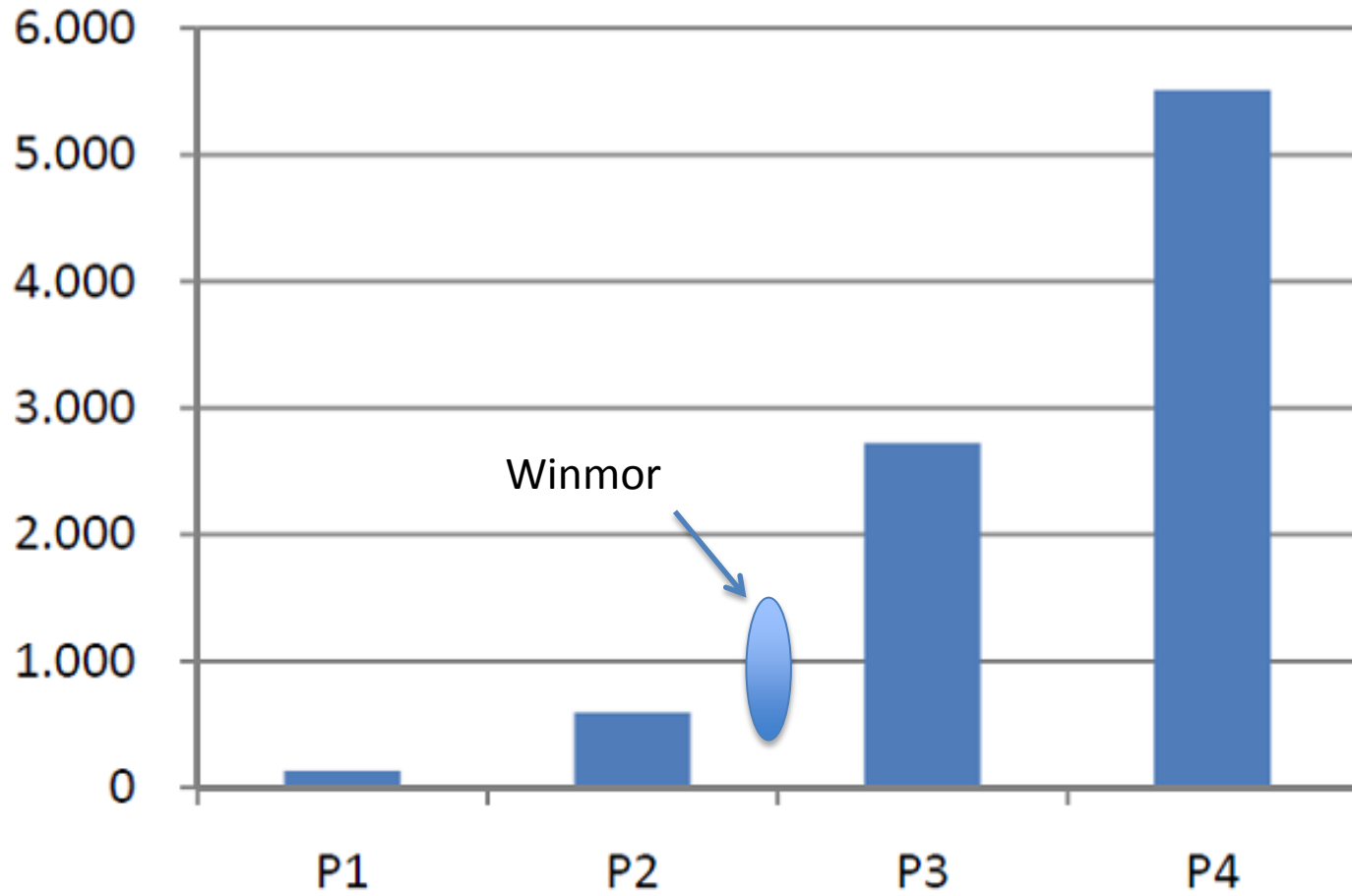
V/UHF Antenna

Winlink Connection Modes

- **HF Pactor 1, 2, 3, 4***
 - Fast and reliable
 - requires an expensive modem (\$1500+).
- **HF WINMOR**
 - “Poor man’s Pactor”
 - uses inexpensive sound card device (\$100)
 - Slower than Pactor (speed between P2 and P3)
- **VHF/UHF Packet**
 - **1200 baud VHF** – Slower, can use ~\$100 Byonics TinyTrak-4 modem.
 - **9600 baud UHF** – Fast. Requires \$400 modem (e.g., Kantronics, or SCS Tracker), or radio with built in modem (e.g. Kenwood TM-D710).
- **Telnet**
 - Non-radio connection through the Internet.
 - Good for training and use if radio is down or network is busy.

*Pactor 4 not yet legal for US hams. OK for MARS

Pactor Speeds (HF)



Will my radio work?

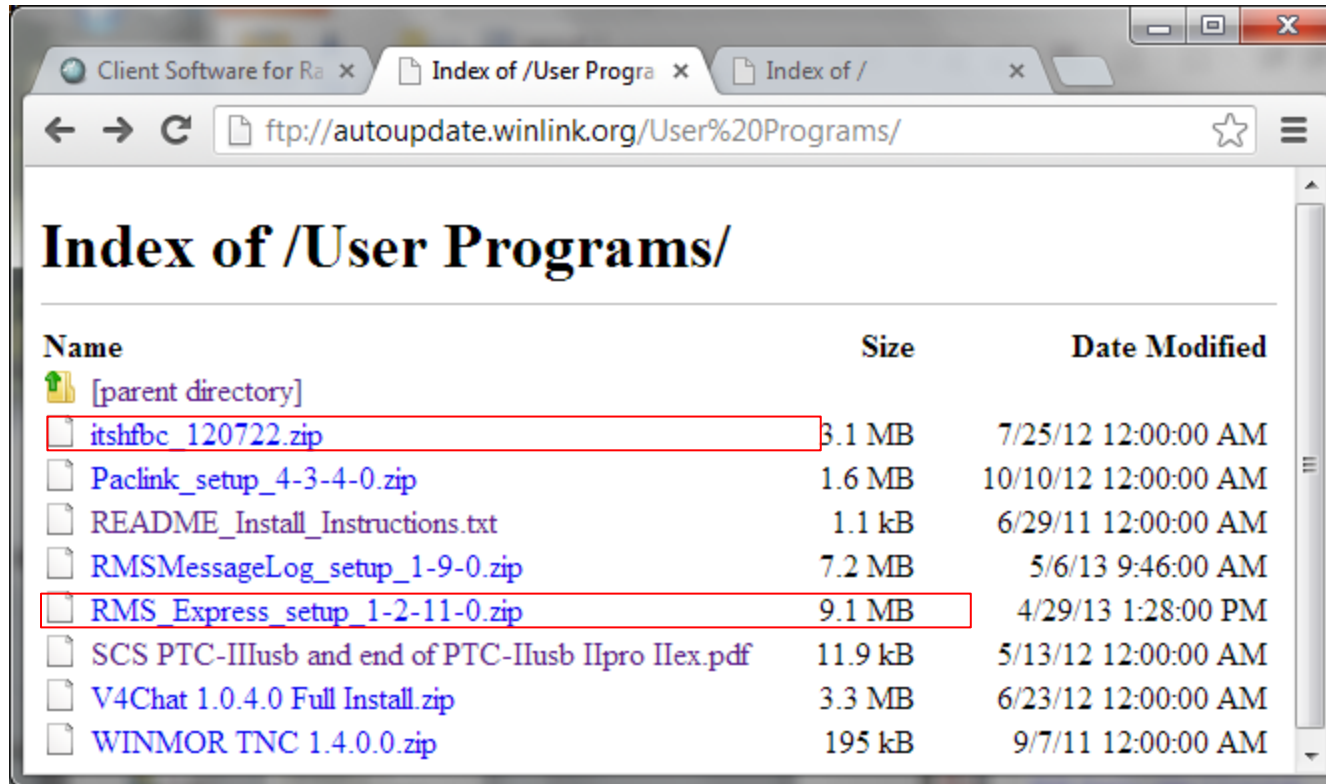
- **HF Pactor 1, 2, 3 and 4**
 - Visit SCS site
 - see if they have a cable for your radio
- **HF WINMOR**
 - Visit Tigertronics (Signalink USB) or US Navigator site
 - See if they have a cable for your radio
- **VHF/UHF Packet**
 - Google “<my radio> packet”
- **Telnet**
 - No radio needed. Computer and internet!

WKL2K: Software Choices

- RMS Express
 - Preferred e-mail client
 - Works with telnet, packet, WINMOR, PACTOR
 - Includes e-mail client
- Paclink
 - Streamlined radio e-mail client
 - Uses your e-mail application
 - Outlook, Thunderbird, etc.
 - No support for WINMOR
- Airmail
 - The oldest program for use with WL2K
 - No support for WINMOR



Download RMS Express & propagation sw



<http://www.winlink.org/> > Software > User Software >
RMS Express > Winlink ftp site > User Programs

RMS Express _includes_ the WINMOR Software (don't need "WINMOR TNC")

Install software and setup RMS Express

RMS Express Properties

Call Signs

My Callsign: W7SLS

Optional auxiliary callsigns

My shortened callsign:

Aux Call 1:

Add callsign suffix if required (optional):

Aux Call 2:

My Grid Square: CN85QT

Lat/Lon to Grid Square

My Password (optional):

Use Secure Login

NOTE: A password is required only if you use secure login.

Winmor registration key (optional):

Display list of pending incoming messages prior to download

Warn about connections to stations holding messages

Disable Peer-To-Peer Message Transfer

Path to propagation forecast program: C:\tshfbc\'

Service Codes

PUBLIC EMCOMM

(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)
If you change service codes, you must update the list of channels.

Recalculate HF path quality if SFI changes more than: 10

Keep logs for 2 weeks

Grid Square lookup: http://www.levinecentral.com/ham/grid_square.php

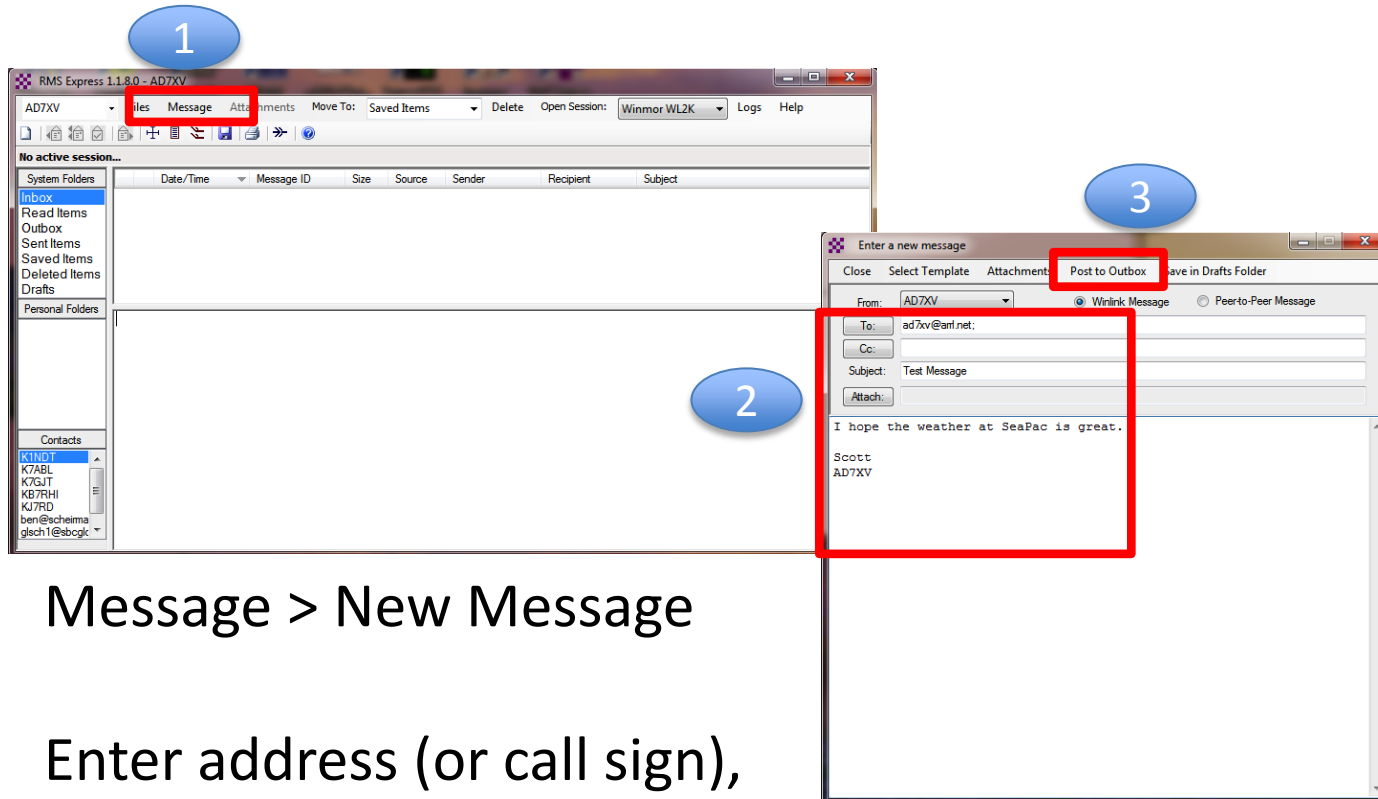
Get a list of HF RMS stations

Only needed occasionally, unless your location changes.

“Update table” uses the internet

Callign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (Kilometers)	Bearing (Degrees)	Path Quality Estimate
KD60AT-5	10144.000	500	DN40BO	00-23	PUBLIC	1044	120	52
K7EK	7101.500	1600	CN87TB	00-23	PUBLIC	140	008	51
K7EK	7104.000	1600	CN87TB	00-23	PUBLIC	140	008	51
VA7DEP-5	7088.500	1600	CN89ND	00-23	PUBLIC	372	357	50
VE5MU	14109.000	1600	DO62OD	00-23	PUBLIC	1358	053	49
K7EK	3597.000	1600	CN87TB	00-23	PUBLIC	140	008	48
KE7XO-10	10147.000	1600	DM26KE	00-23	PUBLIC	1239	147	48
KE7XO-10	10136.000	500	DM26KE	00-23	PUBLIC	1239	147	48
KE7XO-10	10142.000	1600	DM26KE	00-23	PUBLIC	1239	147	48
KJ6IX-10	7103.000	1600	DM08DV	00-23	PUBLIC	804	162	44
N7IPY-10	7105.000	500	CM98HS	00-23	PUBLIC	789	172	44
K7EK	10143.700	1600	CN87TB	00-23	PUBLIC	140	008	33
W6SH-5	10113.000	500	DM12KP	00-02,14-23	PUBLIC	1536	160	32
AE6LA-5	7080.000	500	CM98TF	00-23	PUBLIC	862	167	29
VE5MU	7095.000	1600	DO62OD	00-23	PUBLIC	1358	053	25
K9BBS-10	14111.000	1600	EM68SR	00-23	PUBLIC	3047	092	22
K9BBS-10	14110.800	1600	EM68SR	00-23	PUBLIC	3047	092	22
KE7XO-10	7083.000	500	DM26KE	00-23	PUBLIC	1239	147	21
KE7XO-10	7101.500	1600	DM26KE	00-23	PUBLIC	1239	147	21

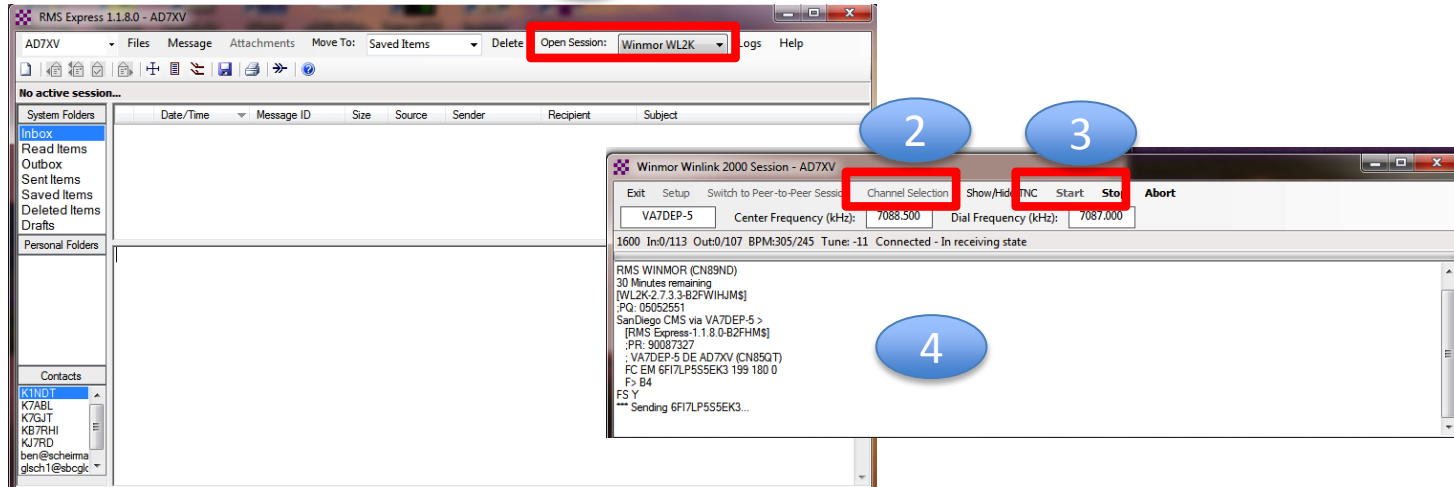
Compose a message



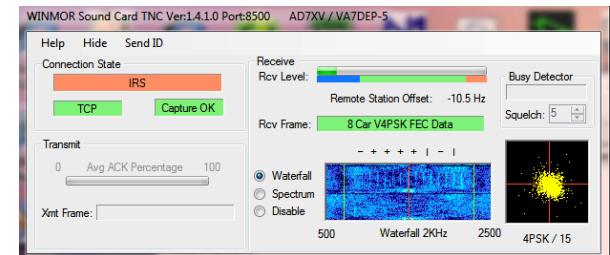
1. Message > New Message
2. Enter address (or call sign), subject, and contents
3. Post to Outbox

Send/Receive

1



1. Open a session
2. Choose a channel
3. Start
4. View progress (text)
5. View connection (graphical)



5

WL2K Resources

Your local ARES/RACES group

Getting Started with WL2K, Winmor, and RMS Express (emphasis on HF)

http://www.winlink.org/webfm_send/184

WL2K for the “Digitally Challenged” (emphasis on telnet and Packet)

http://groups.yahoo.com/group/LOADING_WL2K_USER_PROGRAMS/

WL2K Home Page <http://www.winlink.org/>

WL2K user (client) Software <http://www.winlink.org/ClientSoftware>

WL2K Yahoo groups

http://tech.groups.yahoo.com/group/Winlink_Programs_Group/

<http://groups.yahoo.com/group/wl2kemcomm/>

WL2K Key Messages

Winlink 2000 is a global system of volunteers, radios, and network infrastructure

RMS Express is provides a familiar, scalable interface

You can do this: winlink.org

Questions?



Scott Scheirman w7sls@arri.net
If you use WL2K, donate here:
<http://www.arsfi.org/donate.aspx>

OK, I want to get started

- Assemble / configure hardware
- Load user (“client”) software
 - <http://www.winlink.org/ClientSoftware>
 - <http://www.greg-hand.com/hfwin32.html>
- Configure the software
- Send a message by radio to a WL2K RMS station, or by telnet to CMS
 - Suggest: send it to your main e-mail address
- You now have a new WL2K address:
yourcall@winlink.org

V/UHF Packet (compared to HF)

Disadvantages

- Requires local V/UHF RMS site (not a repeater)
- Limited range, line of site
- Local “event” may take out V/UHF RMS (need HF as a backup anyway)

Advantages

- Smaller more convenient antenna
- Less expensive than Pactor
- High speed over UHF (9600 baud with SCS Tracker, Kantronics KPC-9612+, or Kenwood TM-D710)
- FM is usually noise/static free

WINMOR (compared to Pactor)

Disadvantages

- Soundcard settings can be tricky, subject to 'change' by Windows
- Not as robust as dedicated DSP hardware (i.e., Pactor)
- Speed between Pactor 2 and Pactor 3

Advantages

- Less expensive than Pactor (\$100 vs. \$1500)
- You may already have the equipment (e.g., if you do PSK-31)

What Winlink 2000 Offers for EmComm

- Flexibility:
 - Internet-only (Telnet) direct connections to Winlink.
 - Radio link bridge to Internet e-mail
 - Radio-only store and forward messaging
 - Peer-to-peer connections between radio end-users
 - Various levels of security including message encryption
- Interoperability: Connect different types of systems
 - Bridge different radio capabilities (VHF/UHF/HF)
 - Bridge protocols: Pactor, Winmor, Packet, Robust Packet
 - Seamless integration with Internet e-mail
- Geographical dispersion and redundancy for reliability

What Winlink Offers for EmComm (more)

- Standard e-mail format with many features
 - Binary file attachments (pictures, pdf, spreadsheets)
 - Automatic message compression/decompression
 - Encryption capabilities available to Agencies on non-ham channels
- Time independence
- Ability to collect messages while unattended
- Good operation at most power levels
- Not limited by station-to-station propagation
- Message logging, and ICS report generation
- Wide adoption by EmComm related agencies

Levels of Message Validation & Correction

- **No validation or correction** – RTTY, BPSK-31.
- **Forward Error Correction (FEC)** – Redundant information transmitted so minor errors can be corrected: MT63, Olivia, QPSK-31.
- **Automatic Repeat Request (ARQ)** – Positive or negative packet acknowledgements from receiving station: Pactor, Winmor, Packet, TCP/IP.
- Pactor and Winmor use both FEC and ARQ.
- Only ARQ provides 100% accurate message delivery.
- Accuracy is essential for EmComm.

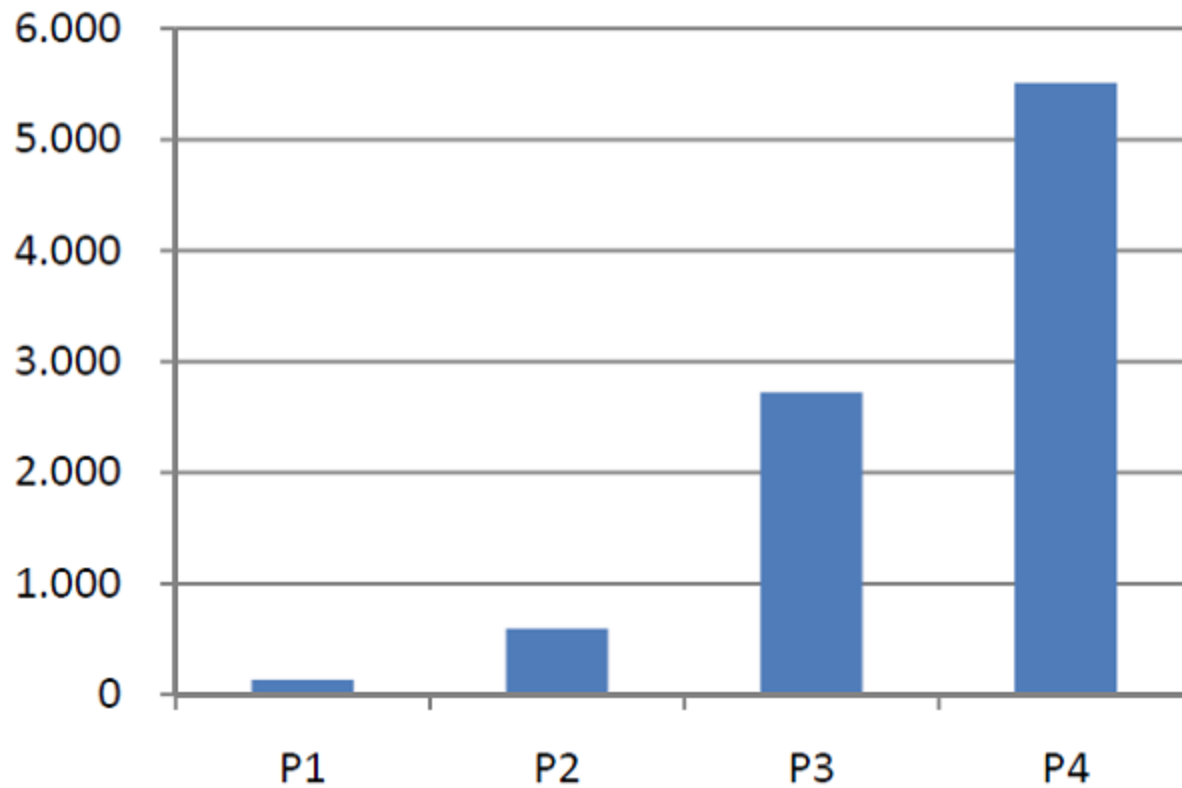
Good Operation at Most Power Levels

- QTH: Nashville, TN
- **0.5 watts Pactor 3:** South Carolina, New York, Michigan, Texas, Canada, Massachusetts, Pennsylvania, Florida, and Iowa.
- **0.5 watts Winmor:** Wisconsin, Maine, Ohio, Texas, Indiana, South Carolina, and North Carolina.
- **5 watts Winmor:** California and Canada
- Excellent for field operations on battery power.
- 100 watts is recommended for normal operations.

Recent Enhancements to Winlink for EmComm

- **Service Codes** to manage lists of channels
- **RMS Express** enhancements
- **Radio-only** store and forward message hubs
- **Trimode** RMS Server software

Pactor Speeds (HF)



Service Codes and Restricted Channel Lists

- Growing demand for separate channel lists
 - Public (ham)
 - EmComm (ham)
 - MARS
 - Other: International Red Cross, AT&T Disaster Recovery, etc.
- Each channel (frequency) has an associated *service code*
- Service codes are selected by the RMS node sysop
- Service codes are entered in client programs
- Service codes create channel lists with limited access

RMS Express Service Codes

The screenshot shows the 'RMS Express Properties' dialog box. It has several sections: 'Call Signs' with fields for 'My Callsign' (W4PHS), 'Optional Aux Call signs' (Aux Call 1 and 2), and 'My Shortened Callsign'. Below that is 'Add callsign suffix if required (optional)' and a 'Lat/Lon to Grid Square' button. The 'My Password (optional)' field is empty, and 'Use Secure Login' is checked. A note states: 'NOTE: A password is required only if you use secure login. Passwords are not required for most installations.' There are three checkboxes: 'Display list of pending incoming messages prior to download' (unchecked), 'Warn about connections to stations holding messages' (checked), and 'Disable Peer-To-Peer Message Transfer' (unchecked). The 'Path to propagation forecast program' is set to 'C:\tshfbc\'. The 'Service Codes' section has a list with 'PUBLIC EMCOMM' selected. Below the list is the text: '(Use PUBLIC for ham call signs. Separate multiple service codes by spaces.)' and 'If you change service codes, you must update the list of channels.' At the bottom, 'Keep logs for' is set to '2 weeks'. There are 'Update', 'Cancel', and 'Remove call sign' buttons.

Additional origination callsigns or tactical addresses for each "my callsign."

Additional security available.

Ability to review and select messages prior to download.

Combine multiple service code lists.

Propagation guidelines available.

RMS Express Channel List

HF Channel Selector

Exit Filter Select Update Table Update Table Via Radio SSN

Factor channels available at 1200Z, Up to 20000 Kilometers, Q >= 12

Callsign	Frequency (kHz)	Mode	Grid Square	Hours	Group	Distance (Kilometers)	Bearing (Degrees)	Path Quality Estimate
N0IA	7063.900	P1, P2, P3	EL98JV	00-23	PUBLIC	952	145	48
HP2XBA	21102.900	P1, P2, P3	EJ88RK	00-23	PUBLIC	3095	171	48
AE5R	10141.200	P1, P2, P3	EL16DE	00-23	EMCOMM	1499	226	48
KN6KB	7083.000	P1, P2	EL98PF	00-23	PUBLIC	1041	144	48
W5SEG	7098.500	P1, P2, P3	EL19AN	00-23	EMCOMM	1258	238	47
HP2XBA	18119.000	P1, P2, P3	EJ88RK	00-23	PUBLIC	3095	171	47
W0MAC	7101.200	P3	EM20GB	00-23	EMCOMM	1037	233	47
W0MAC	7066.900	P1, P2	EM20GB	00-23	EMCOMM	1037	233	47
KB5HCD	7096.000	P1, P2	EL29FU	00-23	PUBLIC	1058	232	47
W5SEG	7067.500	P1, P2, P3	EL19AN	00-23	EMCOMM	1258	238	47
KK5AN	7103.400	P3	EM11CC	00-23	PUBLIC	1147	245	47
KJ6VW	21122.500	P1, P2, P3	FK87ML	00-23	PUBLIC	3125	125	47
VE1YZ	14114.000	P1, P2, P3, P4	FN04BQ	00-23	PUBLIC	2102	030	47
VA3LKI	7092.000	P1, P2, P3, P4	FN04CR	00-23	PUBLIC	1137	030	47
KB5HCD	7065.300	P1, P2	EL29FU	00-23	PUBLIC	1058	232	47
KF5JJK	7105.900	P3	EM02DK	00-23	EMCOMM	1243	255	46
WB0TAX	10143.700	P3	EM32GI	00-23	PUBLIC	729	238	46
K6IXA	14063.900	P1, P2	CM97QI	00-23	PUBLIC	2994	283	46
K6CYC	14108.500	P3	DM03SX	00-23	PUBLIC	2870	275	46
K6IXA	14102.700	P3	CM97QI	00-23	PUBLIC	2994	283	46

Estimate of Signal Path Quality

Service Code Group

Factor Modes

RMS Express Enhanced Support

The screenshot shows the RMS Express 1.1.7.6 - W4PHS application window. The interface includes a menu bar (Files, Message, Attachments, Move To, Saved Items, Delete, Open Session, Pactor WL2K, Logs, Help), a toolbar, and a main display area. The left sidebar is divided into System Folders, Personal Folders, and Contacts. The main display area shows a message list table and a detailed message view.

Multiple call signs (Callouts point to the call sign list in the top left):

- W4PHS
- AAR4MX
- W4PHS
- (Add call sign)

Personal message folders (Callout points to the System Folders list):

- Inbox
- Read Items
- Outbox
- Sent Items
- Saved Items
- Deleted Items
- Drafts

Contacts address book (Callout points to the Contacts list):

- AAA9AC
- AAR4MX
- AK4FA
- KA4OTB
- KB6BT
- KC0QOD
- KE3XB
- KI4PSR
- KK4AIZ
- KK4CQD
- KQ1Q
- PHIL
- PHS
- VA3LKI
- W4PHS

Multiple modes (Callout points to the Open Session dropdown menu):

- Pactor WL2K

Message List Table:

Date/Time	Message ID	Size	Source	Sender	Recipient	Subject
2012/05/15 10:44	R3HTZ06PDCVF	343	K1KY	K1KY	W4PHS ...	Service Code Error
2012/05/07 09:05	FY7XIJ32L3VK	186	SMTP	SMTP:phil@phils...	W4PHS	Priority message
2012/05/07 08:40	KMG4HK6PJ35M	1585	SMTP	SMTP:phil@phils...	W4PHS	Message with attachment

Message Details:

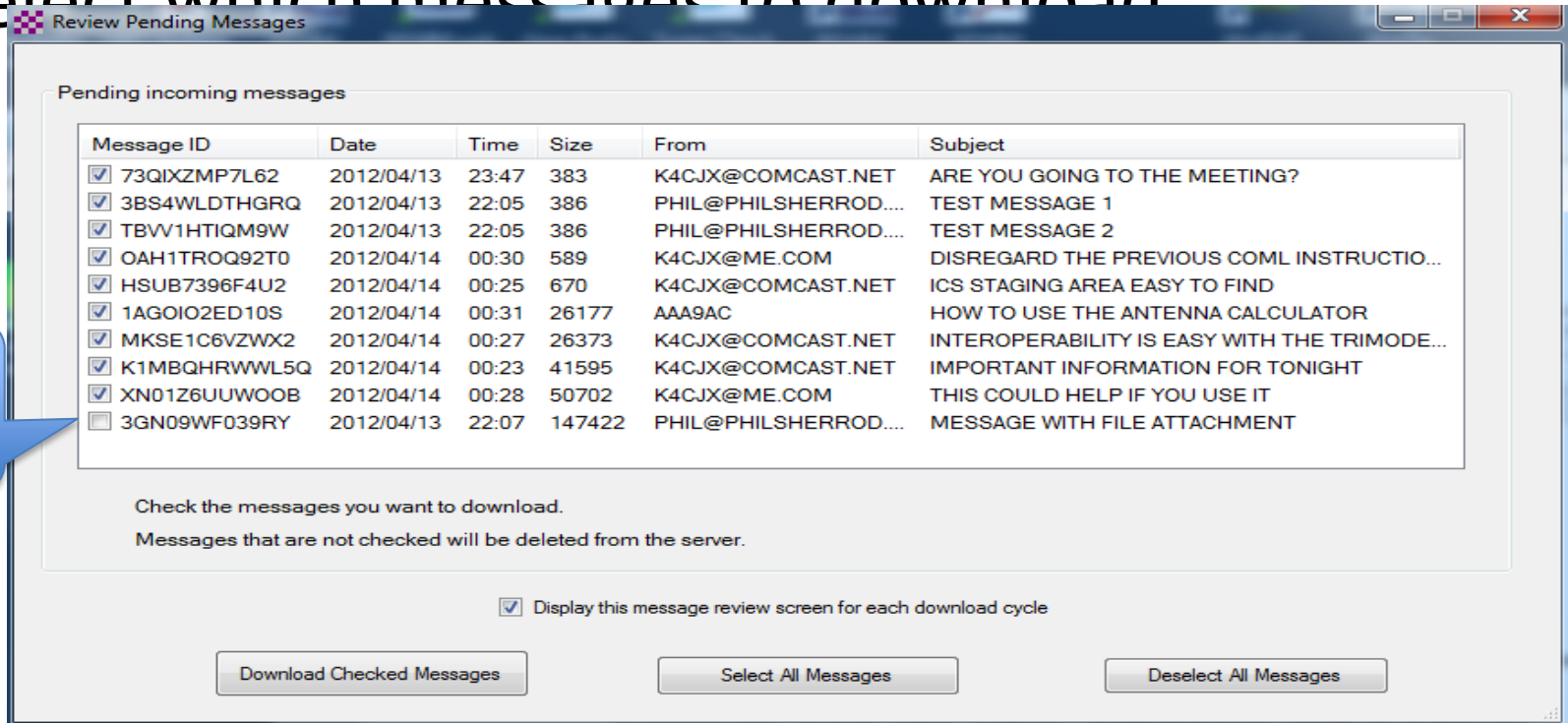
Message ID: KMG4HK6PJ35M
Date: 2012/05/07 08:40
From: phil@philsherrod.com
To: W4PHS
Source: SMTP
Subject: Message with attachment

----- NextPart_001_0354_01CD2C03.15A855D0
Content-Type: text/plain;
charset="US-ASCII"
Content-Transfer-Encoding: 7bit

This message has an attachment.

RMS Express Message Review

- Review pending messages before downloading.
- Select which messages to download

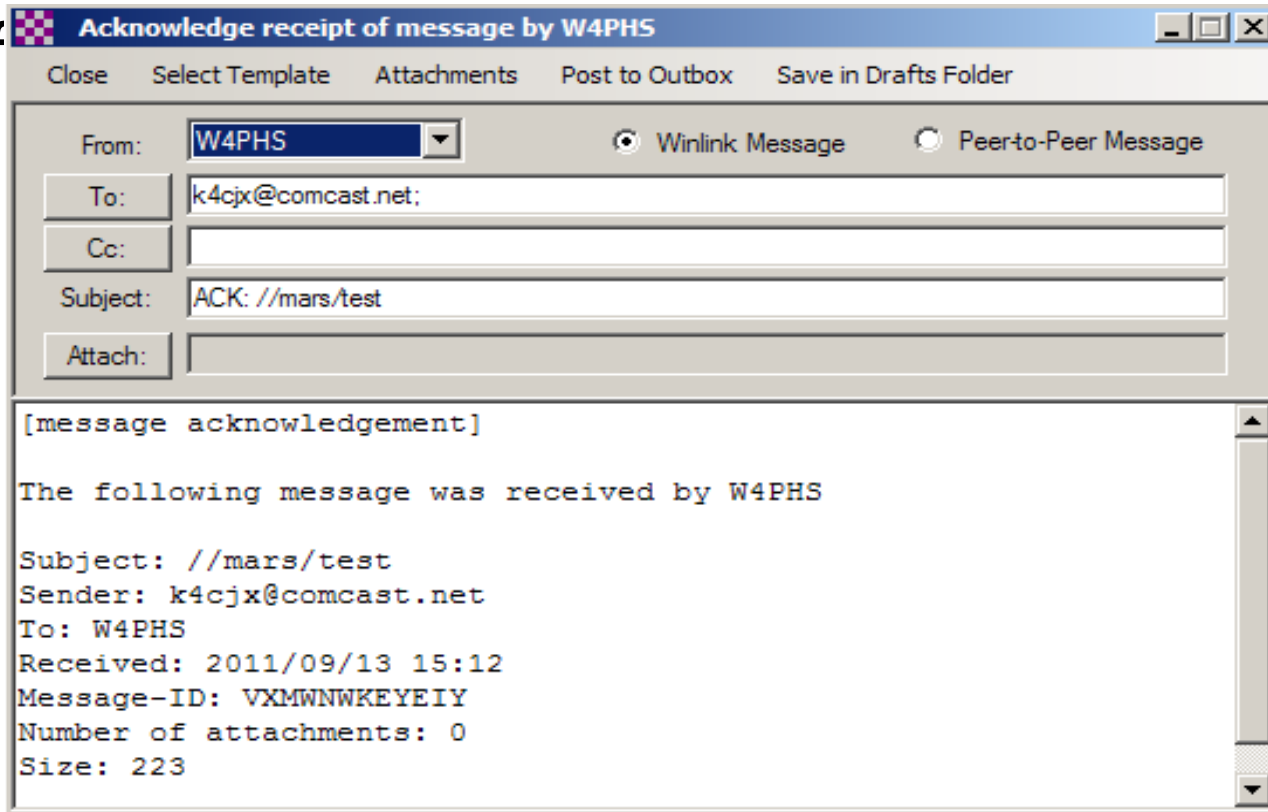


Message too large & not wanted

Message Receipt Acknowledgements

- Positive acknowledgment that message was received

• Inf
au



The screenshot shows a software window titled "Acknowledge receipt of message by W4PHS". The window has a menu bar with "Close", "Select Template", "Attachments", "Post to Outbox", and "Save in Drafts Folder". Below the menu bar, there are two radio buttons: "Winlink Message" (selected) and "Peerto-Peer Message". The "From:" field is set to "W4PHS". The "To:" field contains "k4cjsx@comcast.net;". The "Cc:" field is empty. The "Subject:" field contains "ACK: //mars/test". The "Attach:" field is empty. Below the form fields, there is a text area containing the following text:

```
[message acknowledgement]

The following message was received by W4PHS

Subject: //mars/test
Sender: k4cjsx@comcast.net
To: W4PHS
Received: 2011/09/13 15:12
Message-ID: VXMWNWKEYEYIY
Number of attachments: 0
Size: 223
```


Information Requests

- Use the “Winlink Catalog Request” feature in RMS Express to request:
 - Weather maps for most areas of the world
 - Weather forecasts
 - Maritime HF nets and frequencies
 - Satellite images
 - Location of closest 30 stations
 - ARRL Newsletter, e-letter, etc.
 - Misc. bulletins

RMS Express Query Catalog

Winlink Query Catalog

Categories

- ARCTIC_ICE
- ARRL**
- AUT_HAM
- GERMAN_BCST
- GMD_METFR
- GULF_CURRENT
- HF_NETS
- HONDURAS
- INDIAN_OCEAN
- LIGHTNING
- MEL_EXPLORE
- METAR
- METAREA
- METAREA_I
- METAREA_II
- METAREA_III
- METAREA_IV
- METAREA_IX
- METAREA_V
- METAREA_VI
- METAREA_VII
- METAREA_VIII
- METAREA_X
- METAREA_XI
- METAREA_XII
- METAREA_XIV
- METAREA_XVI
- NAVIMAIL
- PROPAGATION
- S/PACIFIC_WX
- SAT_KEPS
- SAT_PIX
- UK_CADET

Inquiry ID	Description	Size	Originated
ARES_E_LTR	Current ARRL ARES E-Letter	35537	2009-45-06
LETTER	Current ARRL Letter	23103	2010-17-04

Selections

ARES_E_LTR

Double click to add or delete query selections...

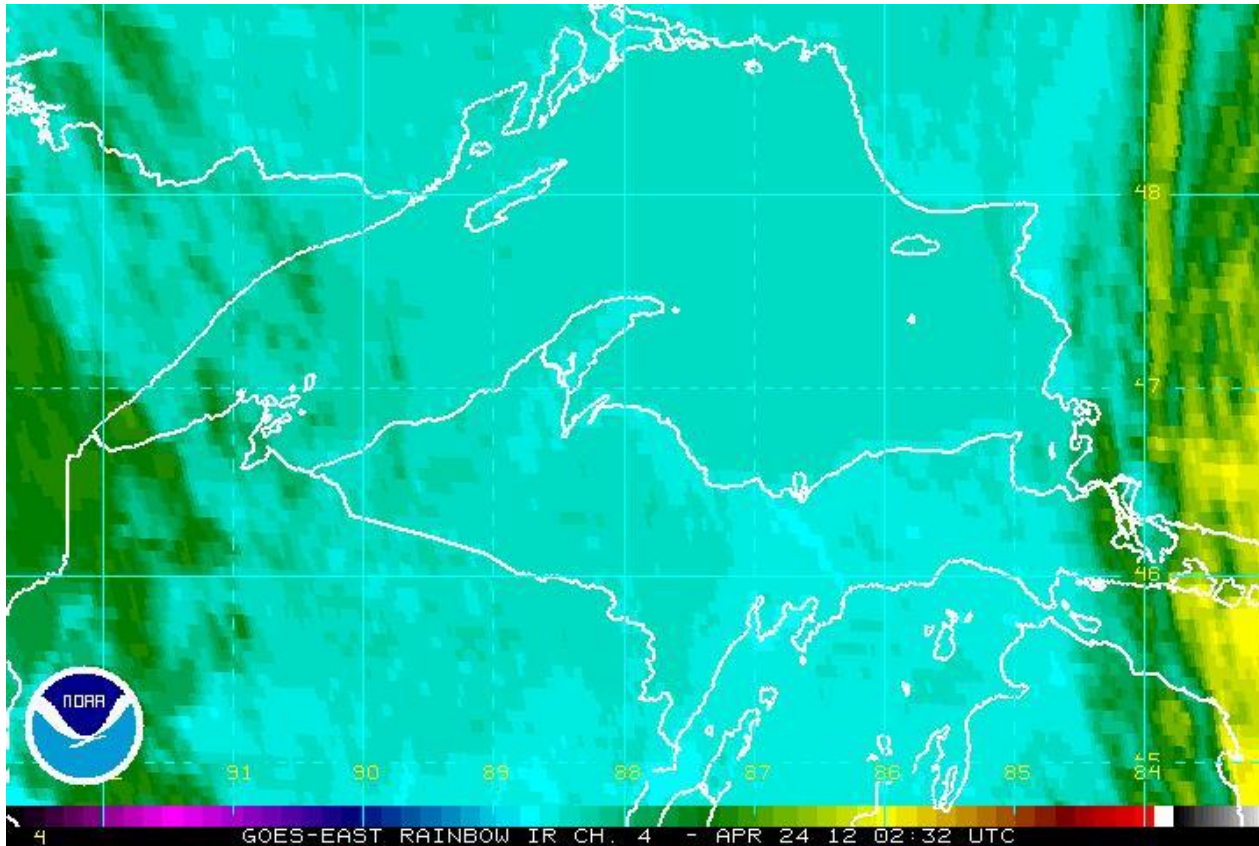
Post Request

Last Update
2012/04/20 11:00

Request Catalog Update

Cancel

Weather Map Image Returned for Request



Winlink Position Reports

- You can send position reports to the Winlink system.
 - Coordinates sent via connected GPS.
 - Otherwise, your position may be entered manually.
- Position Reports are sent to:
 - Winlink system map
 - ShipTrak maps
 - APRS maps
 - YotReps maps
- Extremely valuable for pinpointing locations, especially for maritime operation.

Posting a Position Report

GPS / Position Report

GPS Serial Port: GPS Baud Rate:

`$GPRMC,104855.000,A,3604.2206,N,08649.4427,W,0.05,53.91,200412,...A*4E`

Reporting - Last good GPS fix at 2012/04/20 10:48:55 UTC

GPS Latitude: GPS Longitude:

GPS Speed: Knots GPS Course: True

Position Report

Your last position report was posted at 0000/00/00 00:00 UTC

Report Date/Time: UTC

Latitude: Longitude:

Speed: Knots Course: True

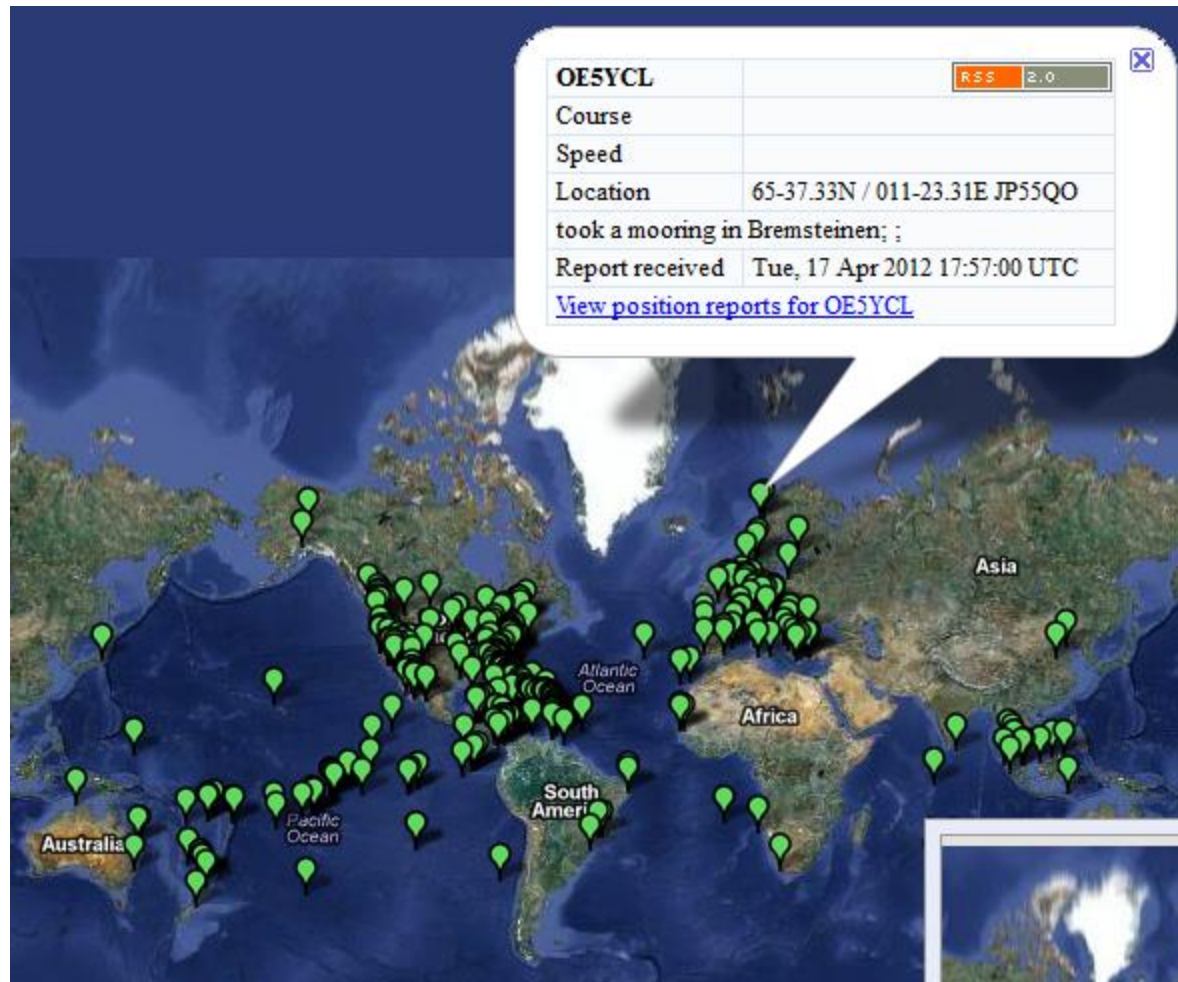
Comment - 148 Characters Maximum:

Data from a connected GPS unit.

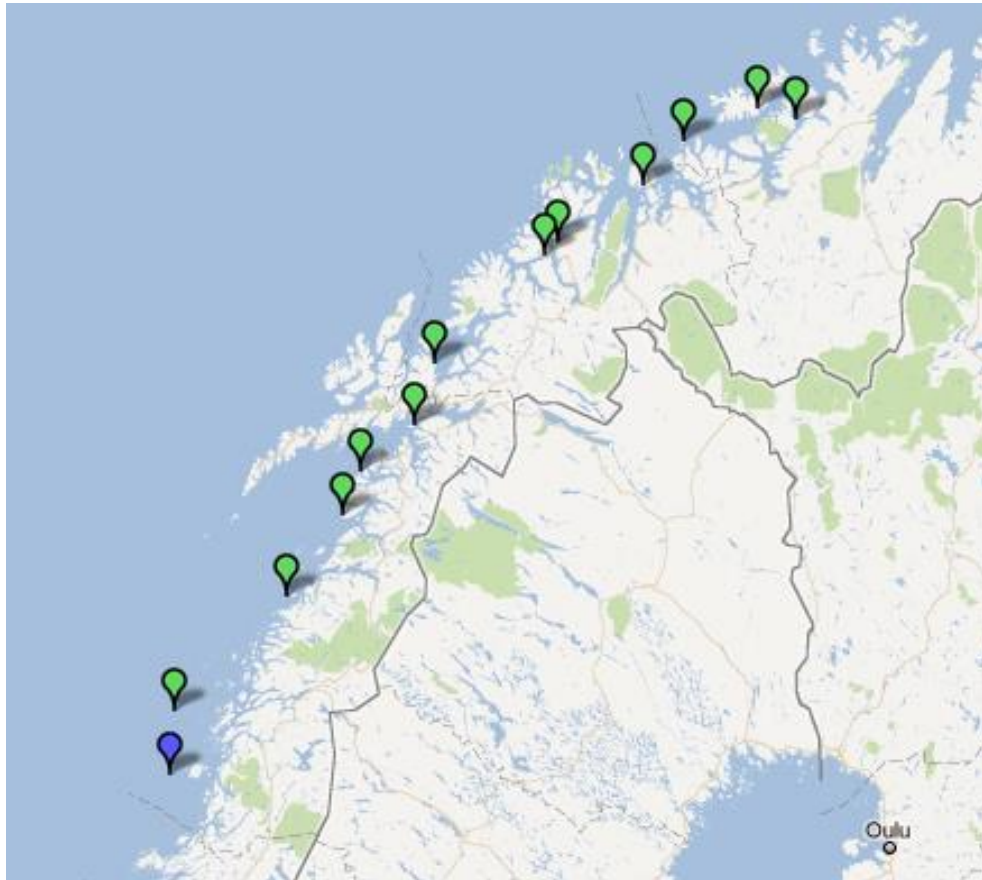
WX assistance to the NWS Voluntary Marine Observation Program.

Useful in tracking with e-mailed disaster assessments.

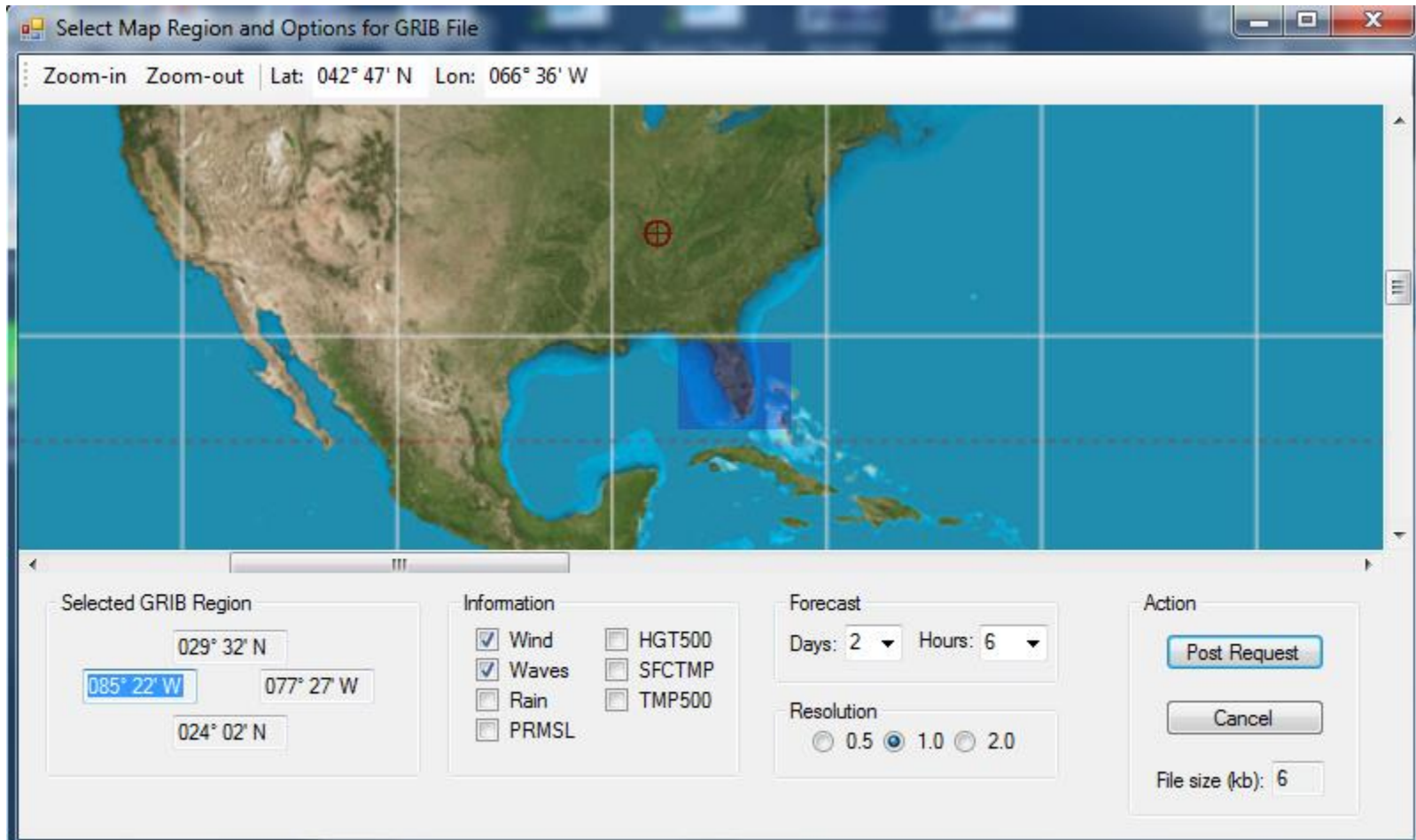
Winlink.org Real-time Position Report Page



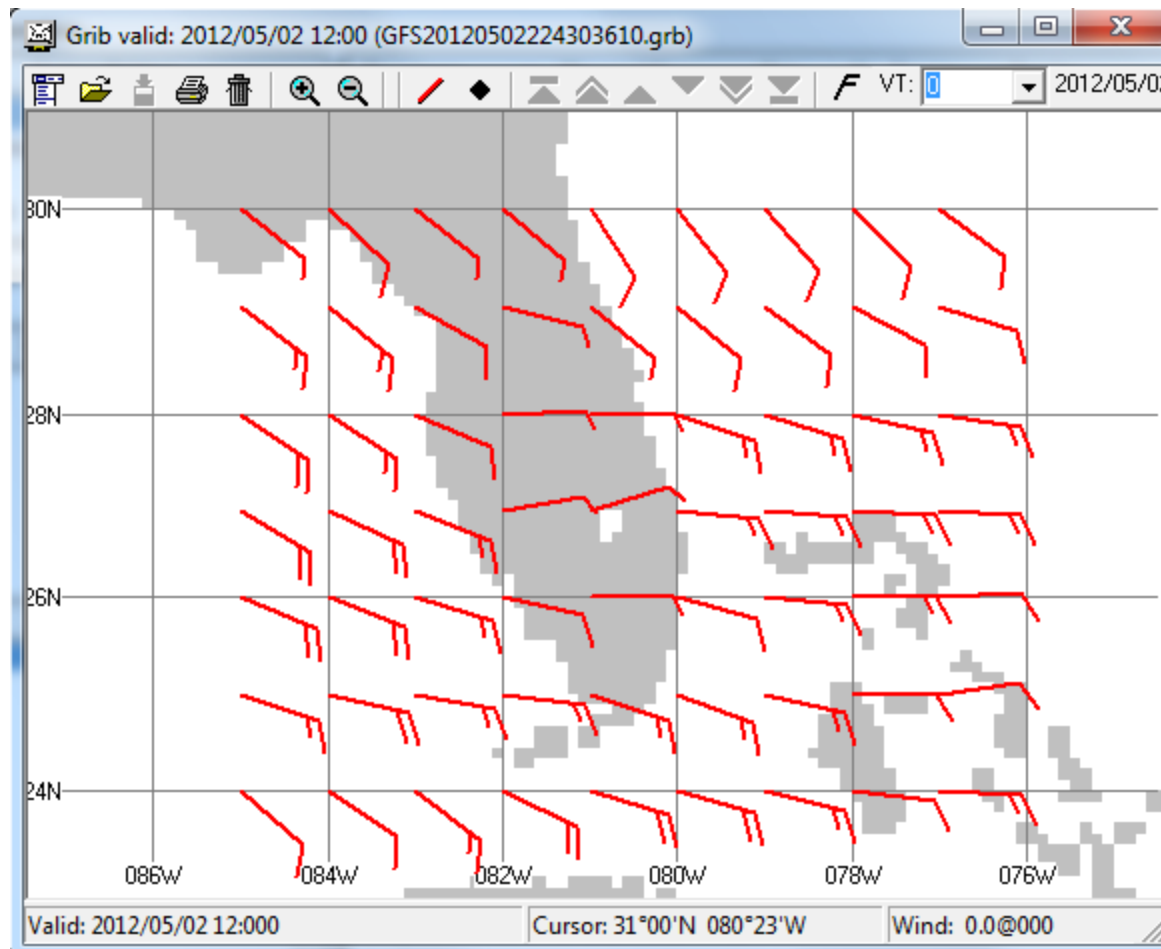
Position Tracking



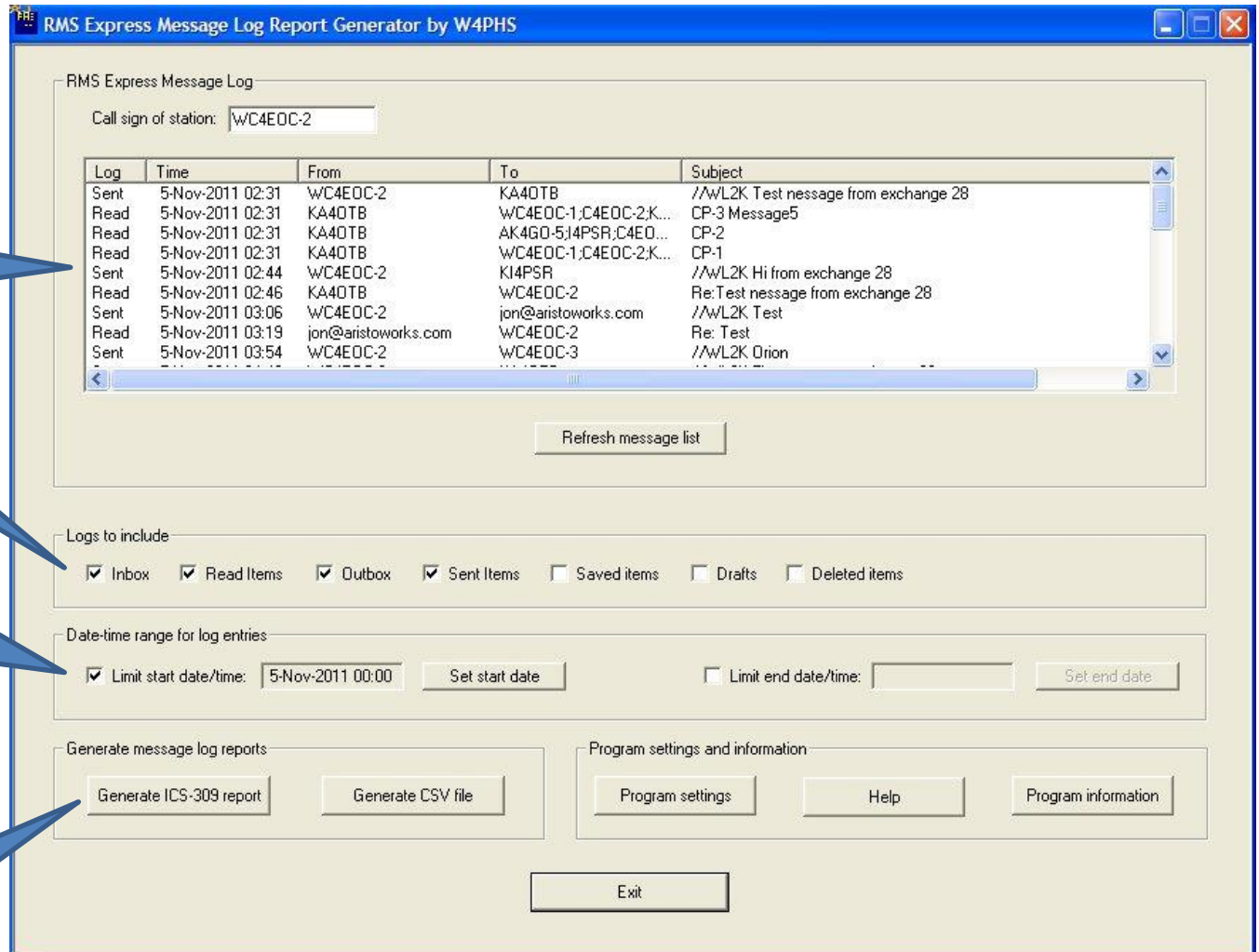
GRIB File Requests



GRIB Map Returned by Winlink System



RMSMessageLog ICS-309 Generator



Messages during period

Select folders

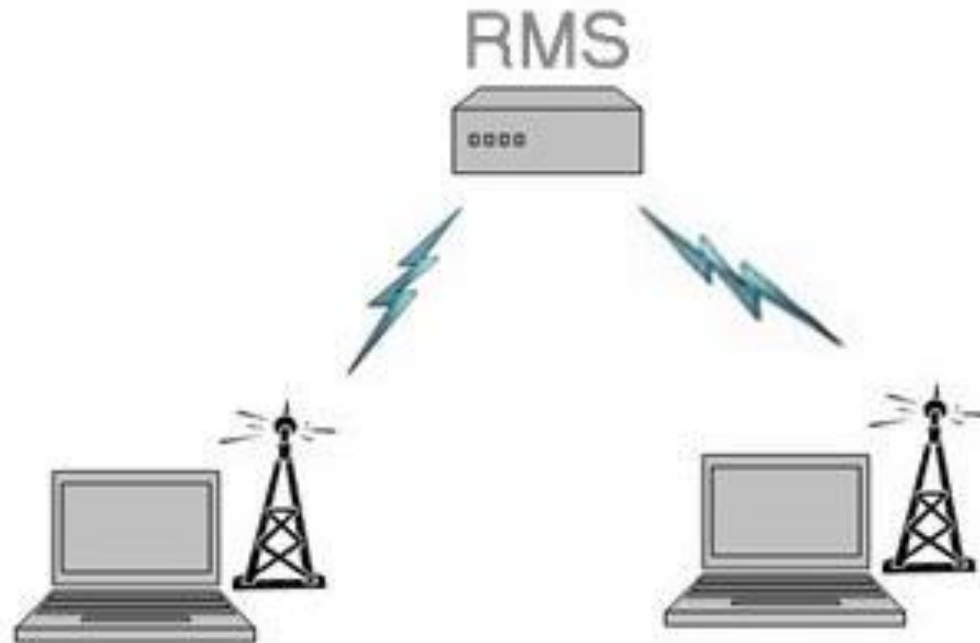
Starting & ending report period

Generate ICS-309 pdf file

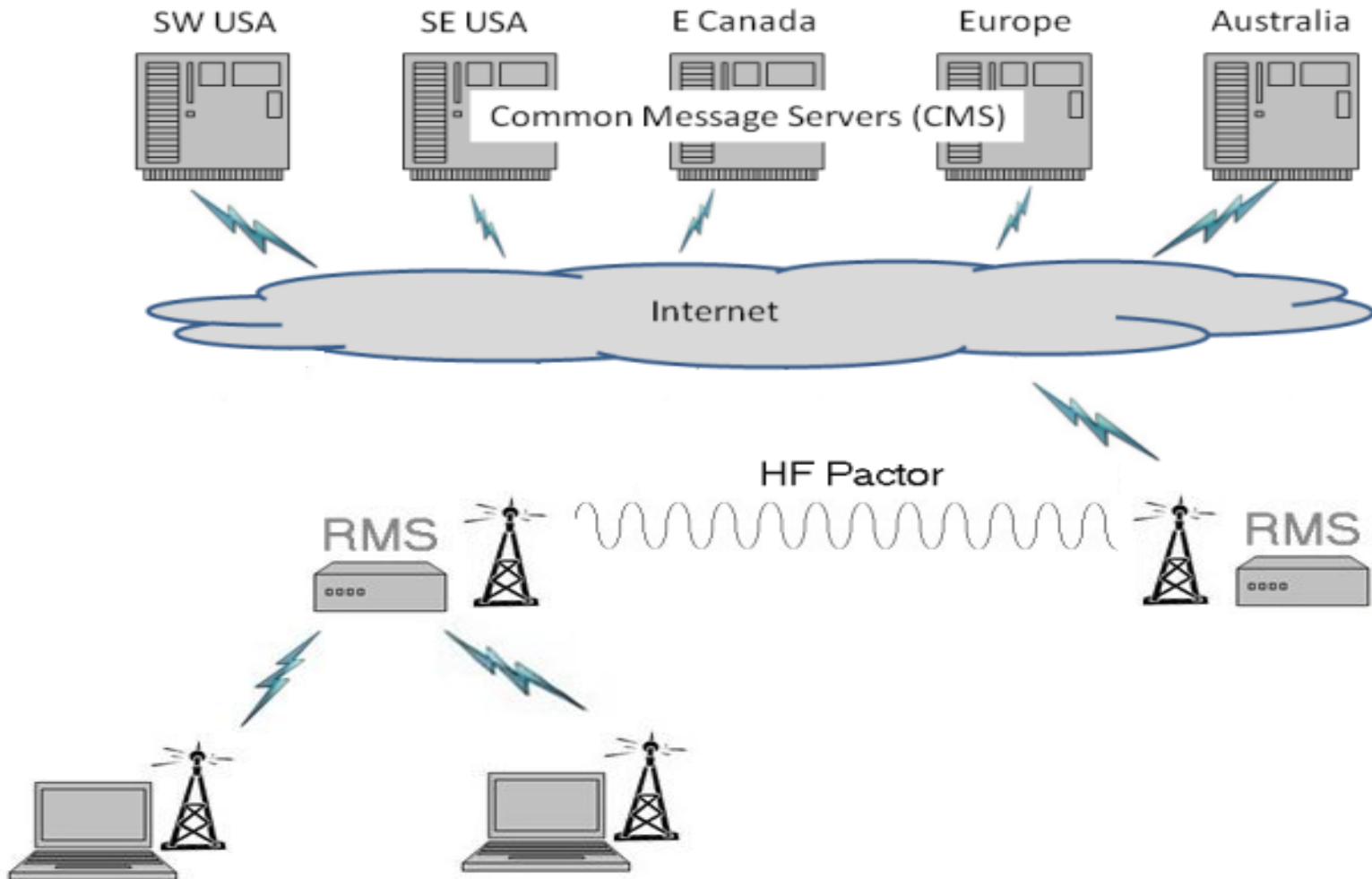
Winlink Radio-Only Message RMS Hub

- New capability for Winlink system.
- Radio-only: No Internet connection is required.
- RMS node running the *RMS Relay* program acts as a standalone message hub for multiple users.
- Messages are stored in a local database on the hub until picked up by the recipient.
- Any number of stations can communicate as long as they all connect to the same hub.
- Standard e-mail format is used and file attachments are supported.
- Option to hold messages until Internet available.
- HF forwarding to a RMS station via Pactor.

Radio-Only Message Hub Topology

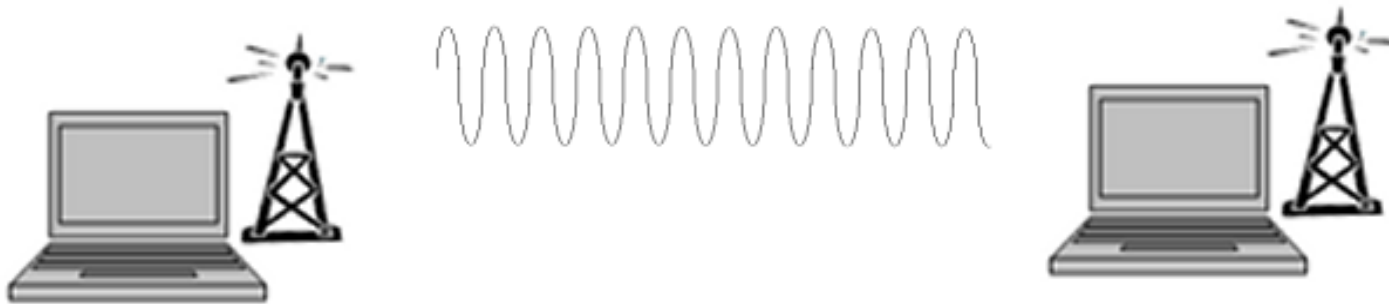


HF Forwarding from Radio-Only Hub



Winlink Peer-To-Peer Radio-Only Operation

- Peer-to-peer: direct radio connection between end-users
- The Internet is not used, all communication by radio.
- Only the two client stations are involved.



New “Trimode” RMS Node Software

- Single program allows one radio/computer to control:
 - Pactor
 - Winmor
 - Robust Packet
- The RMS station simultaneously monitors and responds to connections from all three protocols.
- A single computer and radio can service up to 8 channels with any mix of protocols.
- Each channel has its own service code
- Replaces RMS Pactor and RMS Winmor
- Enhances interoperability between modes

Trimode RMS Channel Setup Screen

- Per channel: Frequency, Bandwidth, scan period, modes, callsign, & class of service.
- Flexibility allows conforming to regulatory environments.

Channel Settings

When scanning the program dwells on each frequency for a time and then is 'deaf' for 500 ms while changing frequency. A shorter dwell time of 3 seconds is used if ONLY Factor is enable on a frequency. Individual modes may be enabled on each frequency using its check box. A maximum of five frequencies will be scanned during any given hour.

The start time is the BEGINNING of the indicated hour and the stop stop is the END of the indicated hour for each frequency (all times in UTC) . Time intervals may span midnight. A start time of 18 and a stop time of 6 represents a period from 1800 UTC time to 0659 UTC time.

A frequency setting of 0.000 represents an unused channel. A start hour of 0 and stop hour of 23 represents a continuous 24 hour period.

Frequency changes will not take place as long as there is a connection if progress. Center frequency is 1500 Hz higher than the upper sideband dial frequency for all modes.

Bandwidth should be set for "N" for Robust Packet, WINMOR 500, and Pactor 1 and 2 Channels and "W" for WINMOR 1600 and Pactor 3 or 4 Channels. Narrow modes can be used on Wide channels but this may be poor utilization of spectrum. Do not use narrow channels in the automatic subbands in the US. Coordinate the use of automatic subband frequencies with the WL2K network manager.

If desired each frequency may use a different call sign/ssid, Service code, Drive level adjustment, Tuner option and Antenna switch option. (Tuner and antenna switch options not yet enabled in Alpha version)

Note: All Active frequencies and Service codes will be reported to the WL2K Data base. Users are required to know service codes other than PUBLIC to view status information on the RMS Channels Status page:

<http://www.winlink.org/RMSChannels>

Center Frequency (KHz)	BW	Start Hour	Stop Hour	P3/4	P1/2	W	Rp	Callsign	Service Code	Drive Adj	Tuner	Ant
1 XXXX.000	W	0	23	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AAA9AC	MARS	0		
2 XXXX.000	W	0	23	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AAA9AC	MARS	0		
3 XXXX.500	W	0	23	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AAA9AC	MARS	0		
4 3591.000	W	11	23	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	K4CJX	PUBLIC	0		
5 3589.00	W	0	23	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	K4CJX	EMCOMM	0		
6 7077.00	N	0	23	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	K4CJX	PUBLIC	0		
7 XXXX.000	W	0	23	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	WEC234	GOVT	-12		
8 0.000	N	0	23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			0		

Update Cancel

Winlink Drop Kits for Field Operation



Conclusion

- Winlink use continues to grow, especially for EmComm.
- The Winlink Development Team continues to enhance capabilities to adapt to changing needs.
 - Service Codes provide a much-needed enhancement to channel management.
 - RMS Express has been enhanced to improve EmComm service. Paclink to follow.
 - Radio-only Winlink store and forward hubs.
 - Trimode RMS server consolidation



- Thank you!
- Questions?
- Information about Winlink can be found at www.winlink.org
- Information about presenter at www.qrz.com – W4PHS