



## Introduction to EMWIN

The Emergency Managers Weather Information Network is a service that allows users to obtain weather forecasts, warnings, and other information directly from the National Weather Service (NWS) in almost real time. EMWIN is intended to be used primarily by emergency managers and public safety officials who need timely all-hazard alerts and weather information to make critical decisions, but may be used by anyone.

EMWIN basically consists of two things:

1. A round-the-clock **data feed** of current weather warnings, watches, images from NESDIS, advisories, forecasts, and other products issued by the National Weather Service.
2. A **suite of methods** to obtain this data feed and display the products on your personal computer.

The methods for obtaining the EMWIN feed are **direct satellite** broadcast, **repeat radio** broadcast, and internet feed. With **direct satellite**, you receive the EMWIN feed directly from one of the satellites broadcasting the signal. With **repeat radio**, you get the feed from a repeat broadcast (usually VHF), which comes from an existing direct satellite receive site. However, with **repeat radio**, you must be within range (usually 10-50 miles) of a repeat broadcast from an existing direct satellite receive site.

To use the direct satellite or repeat radio method, you will need special **hardware** to receive the EMWIN feed. You will also need special **software** for storing, managing, and displaying the products on your computer. Many hardware vendors offer complete 'turnkey' systems that include software. Some of these software programs can access the EMWIN feed directly over the Internet, without buying any radio or satellite hardware. This method is only a few seconds slower than the

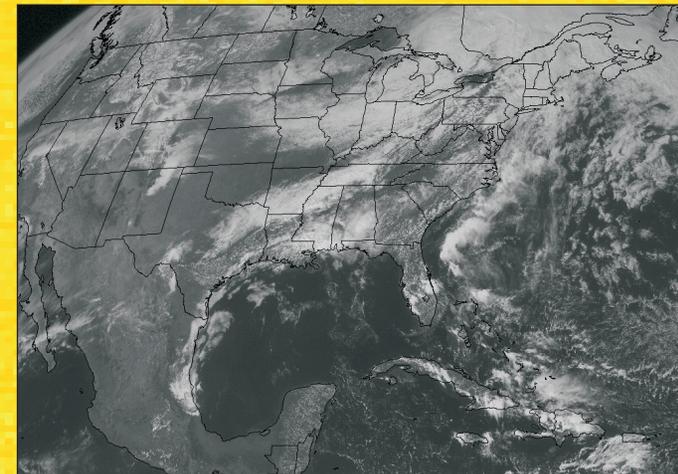
satellite or radio broadcast methods, but relies on the availability of the Internet, which is not always there.

**Remember:** Once you have paid for the initial hardware and software you need to start using the EMWIN service, there are no additional fees or recurring charges. The NWS forecasts, warnings, and other data you receive from this service are **FREE**, and you may do anything you want with them.

For more information on **repeat radio** or Internet access to EMWIN see <http://weather.gov/emwin/user-intro.htm>.

**Satellite Dissemination:** Presently, the NWS broadcasts EMWIN on NOAA's GOES East (at 75 degrees West) and GOES West (at 135 degrees West) satellites. Data is uplinked to the satellites from the NOAA Command and Data Acquisition (CDA) Station on Wallops Island, VA. The GOES downlink frequency used for the current 9600 baud EMWIN datastream is 1690.725 MHz.

The EMWIN data stream is also currently uplinked to the Telstar 5 Satellite, located at 97 degrees West. The center frequency of the



## EMWIN to help you sleep better

Imagine your worst nightmare: disaster strikes, power's down, communications lost - no phones, no internet. You're on your own, or are you? You have your emergency power, you have your emergency radios, and you have EMWIN for your emergency information.

EMWIN (Emergency Manager's Weather Information Network) is NOAA's satellite based system that provides weather and other emergency information that can be relied upon when all else has failed. With your own low-cost satellite station, you can receive up-to-the-minute weather information and emergency alerts. With EMWIN, you are not dependant on anyone else for your vital information.

As an integral part of its mission, the NWS recognizes the need to provide the emergency management community with access to a set of NWS warnings, watches, forecasts, and other products at no recurring cost. Toward that end, the EMWIN system was developed. In partnership with the NESDIS and other public and private organizations, EMWIN has now evolved into a fully operational and supported NWS service.

And now EMWIN is getting even better. Soon, the next generation of geostationary satellites, EMWIN-N, already in orbit, will be activated.

Telstar 5 EMWIN signal is 12,185 MHz, subcarrier frequency is 1.065 MHz.

**EMWIN will soon transition:** Sometime before 2011 the current GOES satellites will be removed from operation and will be replaced by a new series, EMWIN-N. All current EMWIN users will need to migrate to newer technologies due to frequency, power and modulation changes. With the advent of the EMWIN-N broadcast the data rate will double to 19.2 kbps, use offset quadrature phase shift keying (OQPSK) modulation, and employ error correction coding for additional gain. The GOES downlink frequency used for this new 19.2 kbps EMWIN datastream is 1692.7 MHz.

A dual-mode receiver has been developed using new software-defined radio technology that can receive both today's EMWIN and EMWIN-N. This dual-mode receiver is now available from Werner Labs Inc.

Currently, the first of the EMWIN-N satellites, GOES-13, has been placed in orbit (at 90 degrees West), and is in storage waiting to be activated. Plans are being made to launch the second of the EMWIN-N satellites in the summer of 2008.

**In other developments,** the EMWIN team working with NWS International Affairs developed a pilot project to help support the White House sponsored "Third Border Initiative". This project supplied current generation EMWIN systems to several Caribbean nations to help aid with emergency preparedness.

Also, GOES-10, a satellite that has been retired from US service, is currently transmitting an EMWIN-N format test signal on 1691.4 MHz.

**For more information about EMWIN see**  
[www.weather.gov/emwin/index.htm](http://www.weather.gov/emwin/index.htm)

**Werner Labs Inc can supply  
your needs with rugged,  
reliable equipment**



**Werner Labs** has developed a dual-mode receiver for the EMWIN-N format, that also works with the old one. Thus, purchasers can upgrade to the new receiver now, using it for the current satellites, and be ready for GOES 13 when it is activated.

### Acquisition Flexibility

The Werner Labs EMWIN dual-mode receiver may be acquired either as a complete system, or as components. Thus, users already equipped with a legacy EMWIN system, may upgrade to the new format by buying only those pieces that are needed. The design philosophy of the Werner Labs EMWIN system is to make it as compatible as possible with legacy hardware and software. See the description of the individual units for more details.

### Description

The EMWIN receiver system comes with the three main pieces of hardware - antenna, LNA, and IF adapter/receiver (front and back shown). The system package also includes all cables, brackets, hardware, 50 ft of coax with appropriate connectors, and the NOAA EMWIN demodulator software. Just add a PC with the display software

(**Weather Message** recommended) and mounting for the antenna.

**The antenna** A small, 100 by 60 cm, grid dish is all that is necessary. This antenna will fit almost anywhere, is lightweight, and most importantly, has low wind loading.

**The LNA** To provide for excellent performance with the small dish, a state-of-the-art low noise pre-amplifier is used. Its gain is adequate to drive up to 100 feet of small coax cable. For longer runs, simply use larger cable or in-line amplifiers.

**The IF adapter (receiver)** This is the heart of the new system. It provides the RF detection for compatibility with the software defined radio developed for NOAA. It interfaces to a sound card, and provides for dual-mode operation (legacy FSK and the new OQPSK) by a recessed back panel switch. To change from GOES East or West to GOES 13 requires only re-aiming the dish, switching the back panel mode, and setting the software.



### CONTACT INFORMATION

Werner Labs Inc  
PO Box 186  
Simpsonville, MD 21150-0186  
(443) 545-5876 / (877) 225-1960  
[www.wernerlabsinc.com](http://www.wernerlabsinc.com)  
e-mail: [info@wernerlabsinc.com](mailto:info@wernerlabsinc.com)