Emergency HF Communication: US East Coast | Space Weather Center

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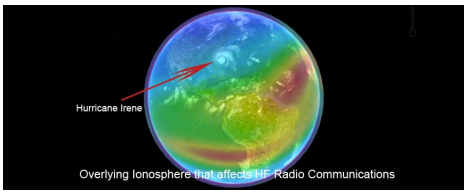

Welcome to the USU Space Weather Center (SWC) site that provides High Frequency (HF) radio communication availability for U.S. East Coast locations. This is a public service site organized for disaster preparedness and recovery during and after Hurricane Sandy.

> The advantage of these SWC HF products is that alternate HF frequencies can easily be found for emergency uses, even during periods of very active space weather.

The following information is provided:

- recent, current, and forecast 24-hour 7.23 MHz and 3.92 MHz frequencies' availability used by Hurricane Watch Net; this network is running on 14.325 MHz where there is a "net control" and then numerous stations check in from around the country; there is no central transmission location
- current and forecast Near Vertical Incidence Skywave (NVIS) radio-wave propagation conditions most useful where line-of-sight propagation is ineffective; the NVIS frequency range is between 1.8 and 15 MHz and is used when the communication distance is more than 50 miles (80 km) and less than 130 miles (200 km)

- currently available global radio propagation frequencies at 3.9, 7.3, and 14.3 MHz useful for those outside the U.S. trying to reach the East Coast
- a link to the D-Region HF Absorption and Current Solar Flare Conditions, useful for understanding whether or not a solar flare may disrupt radio communications
- a link to the 14.3 MHz, 7.3 MHz, and 4.0 MHz maps identified by WX4NHC for Hurricane Watch HF Frequencies; the dBWatts signal strengths are appropriate for 100W HF transmitters typical of HAM radios

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How do we create our HF products maps? First, the SWC uses the GAIM (Global Assimilation of Ionospheric Measurements) system to produce a physics-based, data assimilation representation of the current global ionosphere. It is updated every 15 minutes with 10,000 global TEC measurements to produce the F region ionosphere. Next, the ABBYNormal model from Space Environment Corporation is separately run to produce the D-E region ionosphere. The two datasets are combined to accurately represent the effects of space weather (from solar flares and geomagnetic storms) upon the ionosphere. This real-time and forecast global ionosphere is used for ray-tracing and signal absorption calculations to propagate HF signal strengths. Both oblique and NVIS HF propagation maps are generated using the GAIM, ABBYNORMAL, and HF propagation models.