

Exhibit C: Impact of Man-Made Noise From Broadband Over Power Line Systems Operating at the FCC Part-15 Radiated Emissions Limits on Worldwide HF Communications

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1. Methodology:

1.1 ARRL used the HFWIN32 VOACAP_INVERSE_AREA software program¹ to predict communications-circuit reliability on 14 MHz and 5 MHz under the following conditions for various man-made noise levels:

- A sunspot number of 50, to represent reasonable, but not maximum, world-wide propagation conditions²
- The dates of January 1, April 1, July 1 and October 1
- Times of 0000, 0400, 0800, 1200, 1600 and 2000 UTC
- An amateur transmitter EIRP of 30 dBW (1 kW)
- A receive antenna gain of 7.5 dBi on 14 MHz and 2.14 dBi on 5 MHz
- A receiver system for 2K50J3E emissions (2.5 kHz bandwidth SSB)

1.2 The man-made noise levels chosen for this study are:

- The RF environment at ARRL Headquarters, located in a residential neighborhood in Newington, Connecticut. This location was measured by ARRL in 1996 at a minimum ambient-noise level of -170 dBW/Hz at 14 MHz.
- The “residential” environment described in ITU-R Recommendation P.372-8 (2003), “Radio Noise.” This is -163.5 dBW/Hz on 14 MHz (extrapolated from -145 dBW/Hz on 3 MHz using Formula 11 described in the document).
- An environment with an ambient man-made noise level of -140.5 dBW/Hz on 14 MHz, calculated from the §15.107(a) HF radiated emission limits for carrier-current devices and isotropic receive antenna gain.

¹ This program is part of the HFWIN32 suite of software freely available from the Institute for Telecommunication Sciences, Boulder, CO at http://elbert.its.bldrdoc.gov/pc_hf/hfwin32.html.

² ARRL has repeated these calculations for other frequencies and sunspot numbers and concludes that the results described in this paper generally apply to all HF communications circuits.

1.3 ARRL used several levels of ambient man-made noise levels in its calculations:

Noise level dBW/Hz at 3 MHz as entered into the VOACAP program ³	Noise level measured or extrapolated to 14 MHz	Environment
-153 dBW/Hz	-170.0 dBW/Hz	Best case measurements made by ARRL in a typical residential environment on quiet frequencies with minimal interference ⁴ . Residential environment described in ITU-R P.372-8, Table 1. Noise level at 14 MHz, calculated from the FCC §15.107(a) radiated emissions limits. ⁵
-145 dBW/Hz	-163.5 dBW/Hz	
-122 dBW/Hz	-140.5 dBW/Hz	

1.4 The noise levels were entered into VOACAP in dBW/Hz on 3 MHz. VOACAP extrapolates this to other frequencies per Formula 11 listed in Section 5 of ITU-R P.372-8.

2. **Bandwidth:** The levels of man-made noise described in ITU-R P.372-8 are expressed in dBW/Hz. VOACAP extrapolates this to real receiver bandwidth by having the user set the appropriate “Required Signal to Noise” parameter. The required signal-to-noise ratio referenced to dBW/Hz used in VOACAP was conservatively based on a receive bandwidth of 2500 Hz, plus a modest 10 dB signal/noise ratio, for a value of 44 dB required SNR referenced to 1 Hz bandwidth.

3. Part-15 Emissions Noise Levels:

3.1 ARRL has previously provided to the FCC calculations⁶ that show that BPL deployed at the present §15.107(a) limits will create man-made noise levels of up to approximately 60

³ This extrapolation to 14 MHz is based in the $27.7 \log_{10}(FMHz)$ factor described in ITU-R P.372-8 for residential and rural environments. This calculation is done automatically by the VOACAP software suite, using the 3 MHz data entered by the program user.

⁴ These levels are extracted from ARRL’s paper, “Operating Parameters of Typical HF US Amateur Stations”, <http://www.arrl.org/~ehare/rfi/vdsl/vdsl-tia.html>. The *maximum* level of man-made noise was slightly higher at the stations ARRL tested (close to the levels in the ITU-R P.372-8 Recommendation), but this lower level represents the man-made noise most of the time, on frequencies in between the discrete noise sources heard at various points on the 14-MHz amateur band. ARRL obtained the lower levels cited by tuning the band being measured for a clear communications channel and by making measurements when specific discernable noise sources were not observed by an experienced test engineer.

⁵ See the section in this paper, “Part-15 Emissions Noise Levels.”

⁶ These were provided as Exhibit C to ARRL’s comments in this proceeding, “Calculated Levels from Broadband Over Power Line Systems and Their Impact on Amateur Radio Communications Circuits.”

dB greater than the ambient noise levels at many amateur stations. For the calculations in this paper, ARRL will conservatively estimate that BPL operating at the FCC emissions limits of +29.5 dBuV/m at 30 meters distance from the radiating source will have a peak-envelope power⁷ received signal level (RSL) of:

$$RSL_{dBW/Hz} = -107.2 + 29.5 \text{ dBuV/m} - 20\log_{10}(F_{MHz}) + \text{rcv ant gain } 0 \text{ dBi} - 10\log_{10}(9000 \text{ Hz})$$

- 3.2 This calculation results in a $RSL_{dBW/Hz}$ of -140.2 dBW/Hz on 14 MHz and -131 dBW/Hz on 5 MHz for isotropic antennas placed in fields that are at the §15.107(a) limit of +29.5 dBuV/m. These antennas are conservatively presumed to be 30 meters from the radiating source.

4. Analysis of Results:

- 4.6 ARRL has included all of the graphs from its calculations at the end of this document. To analyze the impact of the results of this study in the following discussion, ARRL has chosen samples from the set of graphs that best represent the overall results.

- 4.2 ARRL has reached the following conclusions:

- The present levels of man-made noise in residential environs described in ITU-R P.372-8 have a demonstrable effect on the ability of HF stations to communicate. The predominant effect of the man-made noise level is to decrease the reliability of communications within the range of the stations involved. Some decrease in range is also observed.
- The median levels of man-made noise described in ITU-R P.372-8 are determined from an aggregate of measurements and devices. Most radiators do not radiate continuously and do not radiate equally on all frequencies. Although man-made noise can be very high from nearby devices that radiate at the FCC limits, with the present nature and deployment of most unlicensed emitters, there is usually spectrum available in between these emissions on which communications can be conducted. Within that spectrum, the emissions are below the median noise levels.
- The ability to communicate in the presence of man-made noise is just at the edge of degradation, however. The calculations in this paper demonstrate that a modest 10-dB increase over the present median noise levels described in ITU-R P.372-8 has a significant effect on the reliability and range of HF communications. In virtually all cases analyzed, this 10-dB degradation would literally change the 14-MHz band from being a worldwide band to one of limited regional communications capability at the transmitter power levels usually used by stations operating in the Amateur Radio Service.⁸

⁷ Peak-envelope-power (PEP) was chosen for these calculations because the 1 kW EIRP programmed corresponds to the PEP of an amateur SSB transmission. The automatic gain control circuitry (AGC) of most SSB receivers responds to the peak of the received signal. At the levels calculated, the receiver AGC circuitry will be fully engaged.

⁸ Part 97 rules require that amateurs use the minimum necessary power in their transmissions. Many amateurs routinely operate at power levels well below the assumptions used in this paper.

- Any change in the rules for unlicensed devices or in the nature of systems deployed under the present rules could tip the scales of this delicate balance. If the environment is changed from the present one where most HF Part-15 emitters are limited in geographical scope, duration of emissions and frequency of emission to an environment where devices emit on wide swaths of spectrum across entire geographical areas, the effect will be much more than the modest 10-dB increase in the median value of man-made noise that these calculations show will be significant. In an environment where the emitters occupied large geographical areas, had continuous or near-continuous emissions and whose spectral occupancy was relatively constant with frequency, the effect of those emitters on any nearby receivers tuned to the frequency of any such emission would significantly degrade the ability of those receivers to hear all but the strongest desired signals. Worldwide HF communications capability would be significantly impaired.

4.3 Figure 1 shows the results of using the VOACAP inverse-area coverage program to calculate the percentage of time that signals from stations located at various places around the world will be at least as strong as the required signal/noise ratio entered into the program. ARRL chose a required signal/noise ratio of 44 dB, representing 10 dB over the noise level in a 2500 Hz bandwidth. Figure 1 is based on measurements of man-made noise levels at amateur stations in Connecticut in 1996. This level was typically -170 dBW/Hz on 14 MHz. The VOACAP software combines the programmed man-made noise level with the predicted natural-noise levels for the geographic location, time of year, time of day and frequency and calculates reliability of a circuit, using the parameters provided. ARRL chose a transmit power level of 30 dBW EIRP (1 kW) to represent a typical amateur station using 100 watts PEP transmitter power and a 3-element Yagi antenna at a reasonable height.⁹

4.4 The reliability is shown on the charts in color. Each chart has the color contours explained in the upper right side of the chart.

⁹ As indicated in the hypothetical reference circuits for stations operating in the Amateur Radio Service previously provided to the Commission, amateur station capability can be significantly more sensitive and use much lower power than the conservative parameters chosen for this paper. This will result in an increased susceptibility to noise.

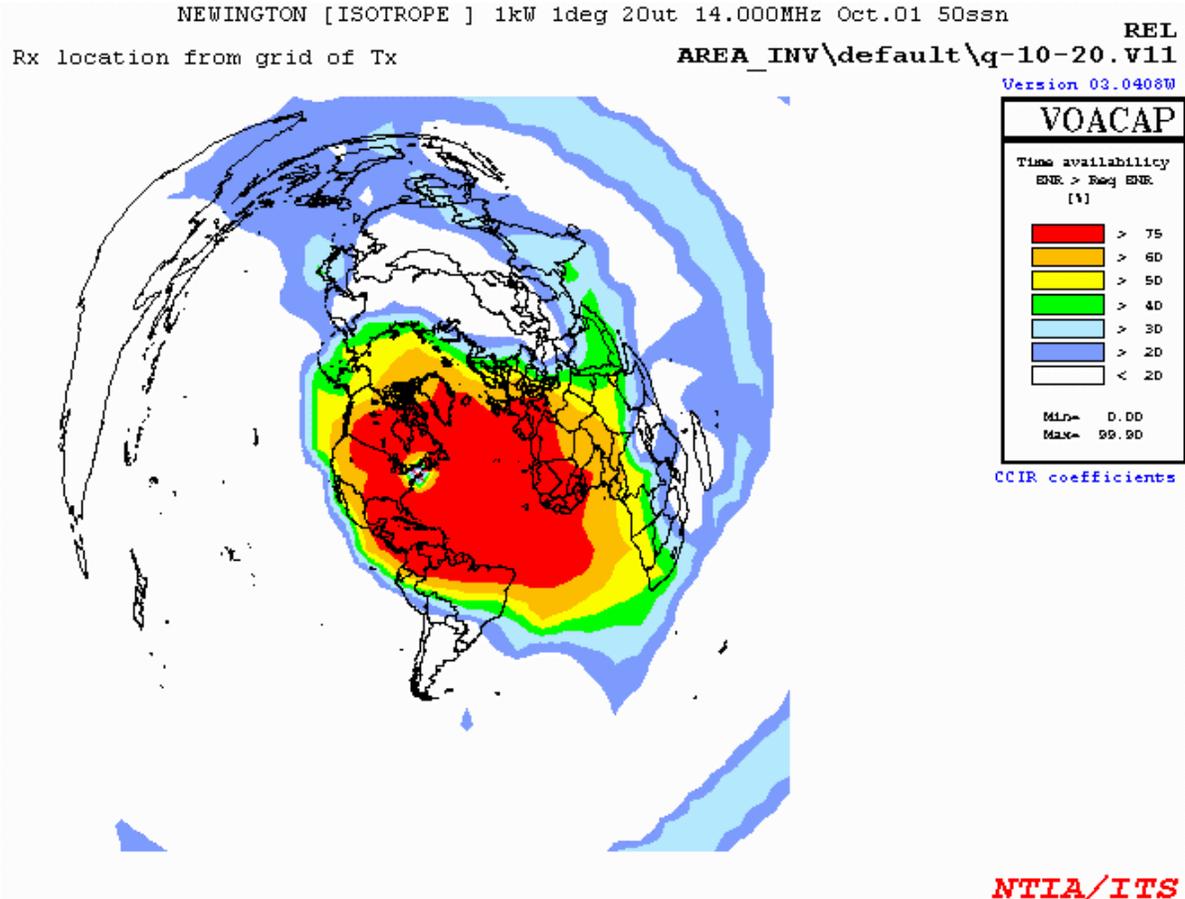


Figure 1. This shows the calculated reliability in percent for an ambient man-made noise level of -170 dBW/Hz on 14 MHz. The station in this model is using a 3-element Yagi¹⁰ to receive signals from world-wide stations transmitting $+30$ dBW EIRP. This station is capable of worldwide communication at various times of day. Date: Oct 01 2000 UTC SSN = 50.¹¹

4.5 The ITU-R P378.2 recommendation describes an ambient man-made noise level of -145 dBW/Hz for residential environments. This is somewhat higher than the levels ARRL used for its Figure-1 calculation. The ITU-R level is the median value of the measured results. The present nature of much man-made noise is such that all devices that radiate noise do not all radiate at the same time, or even all the time, in most cases. Most do not radiate equally on all frequencies. For example, a computer system may be a prolific generator on RF, but much of that energy is found on specific frequencies, with most spectrum being relatively clear. Nonetheless, ITU-R P.372-8 does represent the worldwide consensus of the present level of man-made noise from the types of devices and geographical distribution found in the environment measured.

¹⁰ A gain of 7.5 dBi has been entered for the isotropic radiator modeled on all of the 14-MHz graphs, to ensure that the program assumes that the antenna is always pointed optimally toward the source.

¹¹ The charts in this paper were prepared by ARRL. The “NTIA/ITS” that appears on each chart is part of the VOACAP program output.

4.6 Figure 2 shows that at the man-made noise levels in ITU-R P.372-8, there is a demonstrable degradation to the reliability and range of world-wide HF communications, compared to the results from a quieter location shown in Figure 1.

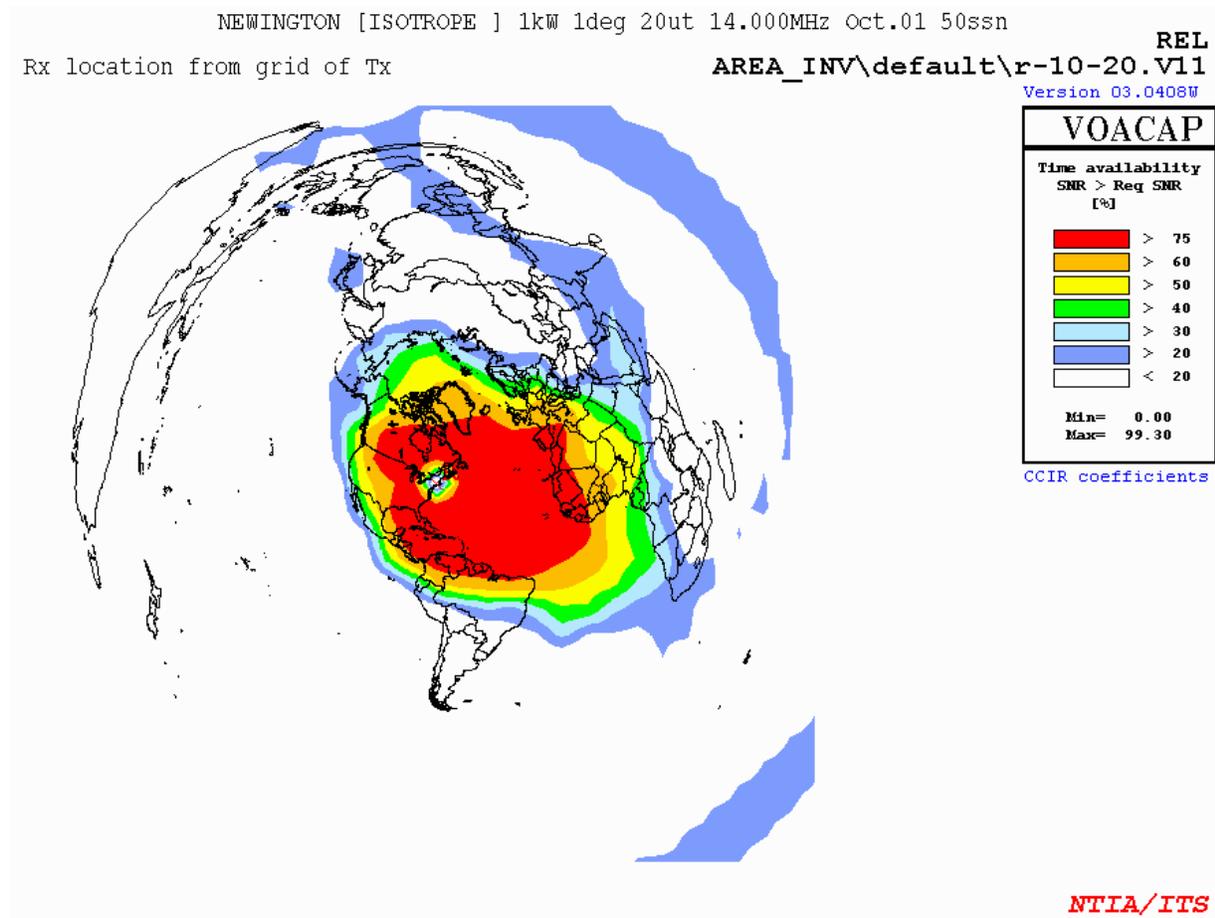


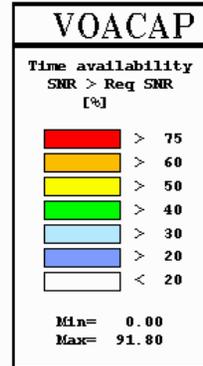
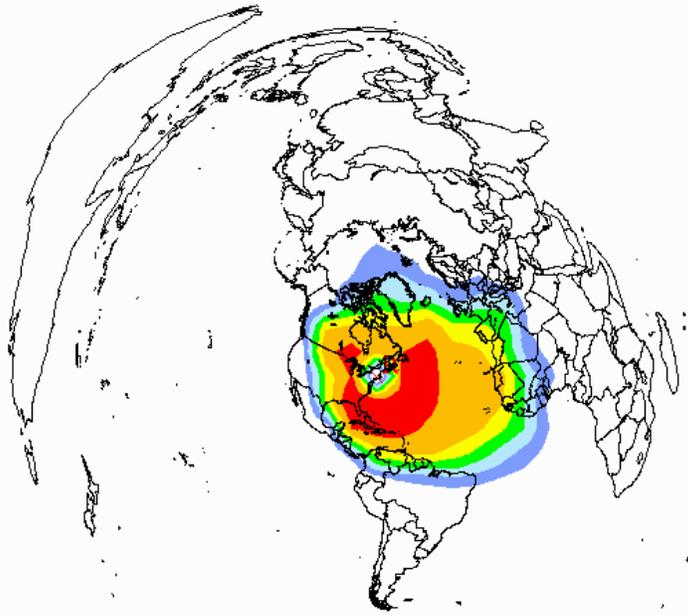
Figure 2. This shows the calculated reliability in percent for an ambient man-made noise level of -163.5 dBW/Hz, the ITU-R P372-8 level for “residential” environments at 14 MHz. The station in this model is using a 3-element Yagi to receive signals from worldwide stations transmitting 30 dBW EIRP. Although still capable of worldwide communications, the present level of man-made noise is just starting to have a significant effect on the capability of this station to establish reliable communications. Date: Oct 01 2000 UTC SSN = 50.

4.7 Any changes in regulations for unlicensed emitters on HF, or in the nature of devices that are deployed under the existing regulations, will have an impact on the median values of man-made noise. Even a small increase can have a severe effect on HF communications circuits. Figure 3 shows a graph of the reliability of HF communications with a modest 10 dB increase in the median value of man-made noise over the ITR-R P.372-8 levels for man-made noise.

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-20.V11
Version 03.0408W



CCIR coefficients

NTIA/ITS

Figure 3. This shows the calculated reliability in percent for an ambient man-made noise level of -153.5 dBW/Hz on 14 MHz, a modest 10 dB higher than the ITU-R P372-8 median noise level for “residential” environments at 14 MHz. The station in this model is using a 3-element Yagi to receive signals from worldwide stations transmitting 30 dBW EIRP. The ability to overlay other uses on top of HF communications over existing worldwide HF communications is tottering on the brink of degradation. This modest change in noise levels from the present environment has changed the 14-MHz spectrum region from a worldwide to a regional band. Date: Oct 01 2000 UTC SSN = 50.

- 4.8 Part 15 regulations set limits on the emissions of devices to control man-made noise. However, the regulations need to be used carefully to ensure that this continues to be the case. Figure 4 shows the effect on HF communications circuits of noise levels at the limits of Part 15.

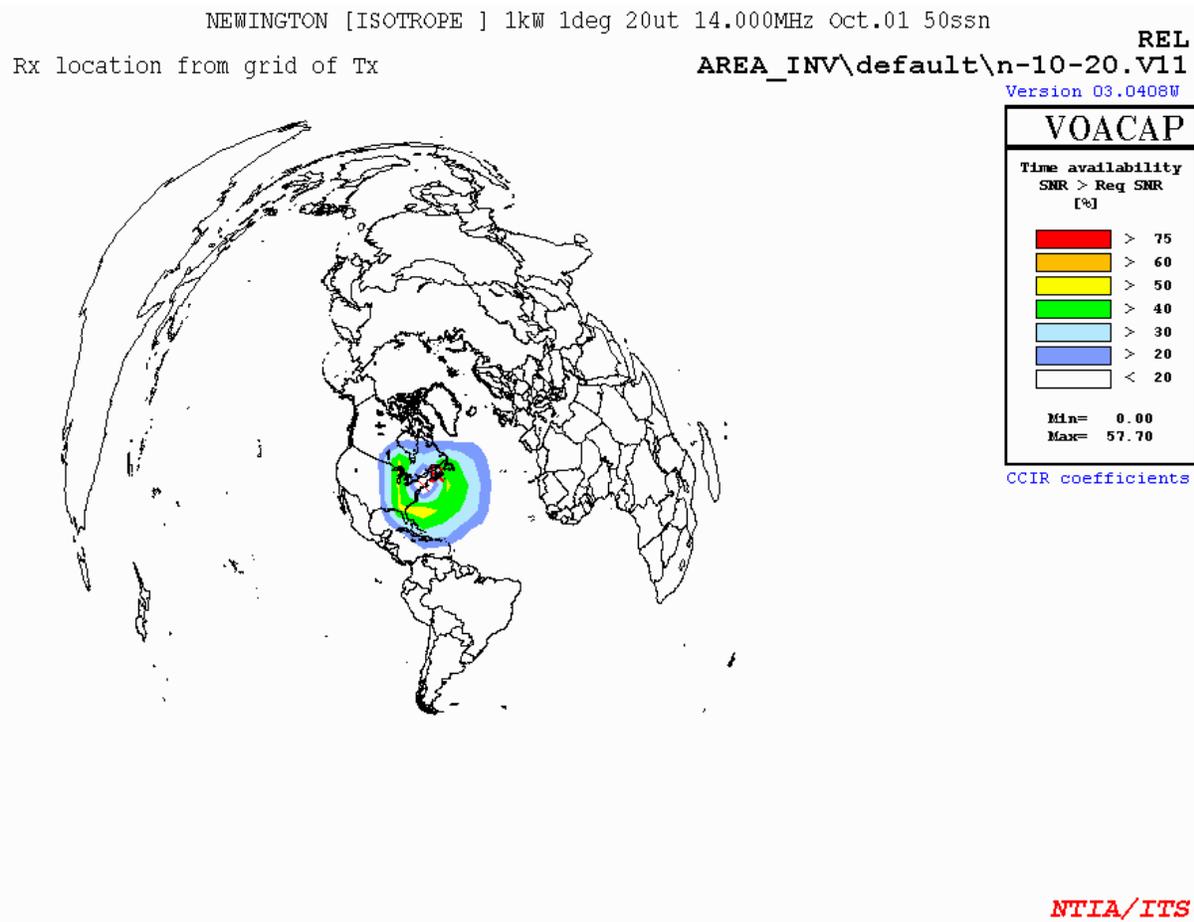


Figure 4. This shows the calculated reliability in percent for an ambient man-made noise level of -140.4 dBW/Hz on 14 MHz, the level of signal that would be received by an isotropic antenna placed in a field at the present level of Part-15 radiated emissions for carrier-current devices. The station in this model is using a 3-element Yagi to receive signals from worldwide stations transmitting $+30$ dBW EIRP. The range and reliability of this station on 14 MHz has been reduced to the point where this frequency range is no longer useful for long-distance communication. Date: Oct 01 2000 UTC SSN = 50.

5. Other Frequencies

- 5.1 The degradation to HF communications is not limited to 14 MHz. The following figures show the difference between regional communication on 5 MHz with an ambient man-made noise level from the residential environment described in ITU-R P.372-8 and a man-made noise level as described by the maximum radiated emissions Part-15 limits that apply to carrier-current devices.

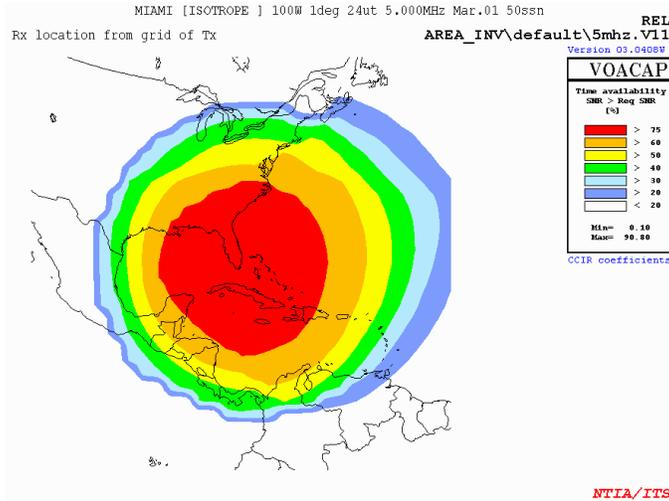


Figure 5. This shows the calculated reliability in percent for an ambient man-made noise level of -138.9 dBW/Hz at 5 MHz, the ITU-R P372-8 man-made noise level for “residential” environments at that frequency. The station in this model is using a half-wave dipole to receive signals from regional stations using $+20$ dBW EIRP on 5 MHz.¹² Date: Mar 01 0000 UTC SSN = 50.

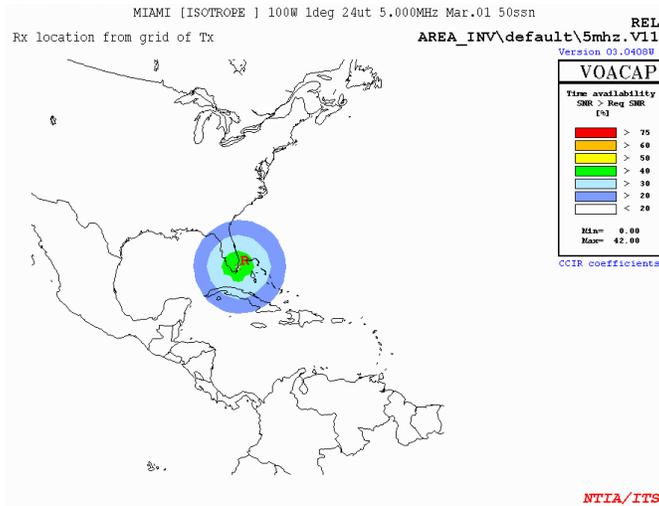


Figure 6. This shows the calculated reliability in percent for an ambient man-made noise level of -138.9 dBW/Hz at 5 MHz, the level of signal that would be received at that frequency by an isotropic antenna placed in a field at the present level of Part-15 radiated emissions for carrier-current devices. The station in this model is using half-wave dipole to receive signals from regional stations using $+20$ dBW EIRP on 5 MHz. Date: Mar 01 Time: 0000 UTC SSN = 50.

¹² A gain of 2.14dBi has been entered for the isotropic radiator modeled on all of the 5-MHz graphs, to ensure that the program assumes that the antenna is always oriented optimally toward the source. This level is rounded down slightly from 50 watts to a half-wave dipole over ground with typical conductivity and dielectric constant.

6. BPL and Carrier-Current Devices

- 6.1 The models show that the widespread deployment of BPL systems under the present Part 15 rules would cause significant degradation of HF communications in areas that are near these systems. Unlike most devices regulated by Part 15 in use now, BPL systems are not limited to a single, small geographical area, but will occupy entire communities. BPL systems are not going to be used only for relatively short periods of time, but will see long-term and continuous use in most deployments. Many uses of BPL will include continuous connections to the Internet and streaming video, to name just a few applications that will keep BPL systems emitting all of the time.¹³ Unlike the present environment, where the emissions from most Part 15 devices that occur at the FCC limits often occur on discrete frequencies that can be avoided by a frequency-agile radio service, the emissions from BPL systems will be at a virtually constant level across all spectrum being used by BPL systems.
- 6.2 For all these reasons, the degradation of HF communications as shown in Figures 4, 6 and the complete set of figures from these calculations at the end of this document is a reasonable representation of what to expect from the widespread deployment of BPL systems operating at the radiated emissions limits of the present rules.

7. Conservative Assumptions

- 7.1 All of the estimates used for this paper are intentionally conservative. For example, although ARRL modeled the ability to receive worldwide stations of 30 dBW EIRP, many amateur stations utilize lower power or lower gain antennas. EIRP of 20 dBW is not at all uncommon and a growing number of low-power enthusiasts operate at power levels below 10 dBW EIRP. Although amateurs can operate at transmitter power levels of up to 31.8 dBW, FCC Part 97 rules require the use of the minimum-necessary power level.
- 7.2 The noise levels ARRL measured in Newington, CT are not as low as those found in the more quiet locations in use by some amateur operators. Many amateur operators have invested in quiet home locations to ensure that they have maximum communications capability. Just as an example, in the 1996 study that ARRL used to provide its estimate of the ambient noise level near W1AW in Newington, CT, ARRL measured a station in Somers, CT at an ambient noise level of -179 dBW/Hz on 14 MHz. Other stations are in even more quiet areas. These stations would generally have better communications capability than the examples used in this paper.
- 7.3 The noise levels ARRL used in VOACAP are referenced to an isotropic receive antenna. VOACAP, however, adds the programmed gain (7.5 dBi on 14 MHz and 2.14 dBi on 5 MHz) to the received signal, but not the noise. In practice, the received noise level at the

¹³ One of the BPL trial areas includes streaming video from a pole-mounted camera at a busy intersection. This is in actual use by the local authorities to monitor that high-accident intersection. One electric utility offered comments that said they intended to use BPL to do real-time reading of electric meters to allow them to vary their electric rates based on peak- and non-peak load times.

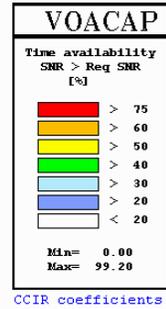
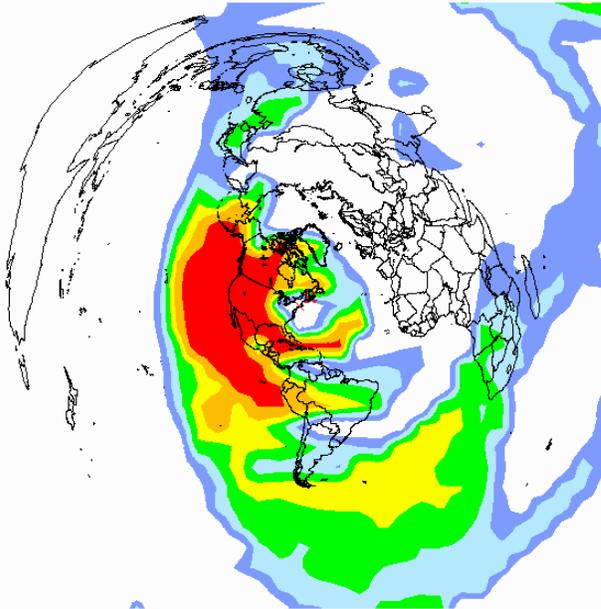
amateur station would also be increased over the levels ARRL assumed, if the antenna's directivity has gain in the direction of the noise source.

- 7.4 ARRL also presumed that the receive antenna was located 30 meters away from the noise source. A recent, albeit informal, survey on the ARRL web page indicates that over 50% of amateurs have antennas that are located closer than 30 meters to overhead power lines¹⁴. ARRL's calculations indicate that the noise level near power lines will increase at approximately a 20 dB / distance decade ratio. This is a conservative estimate, compared to the methods the rules permit, which is to presume that the field strength varies at a 40 dB / distance decade ratio.
 - 7.5 ARRL believes that it was not necessary to include all of these additional factors of closer antennas in this paper, because the conservative assumptions that ARRL used clearly demonstrate that HF communications would be significantly degraded by nearby BPL systems operating at the present FCC limits. If included, the less conservative assumptions, which do apply very well to routine amateur operation, would show results that are typically 20 to 40 dB worse than what is presented in this paper. Some amateur stations would require even more protection if the existing capability of the Amateur Radio Service it to be maintained intact.
8. The complete set of VOA graphs for various times of year and day follow¹⁵.

¹⁴ <http://www.arrl.org/survey.php3?pollnr=195>

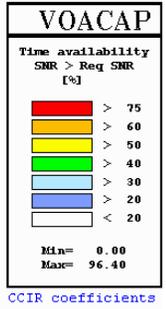
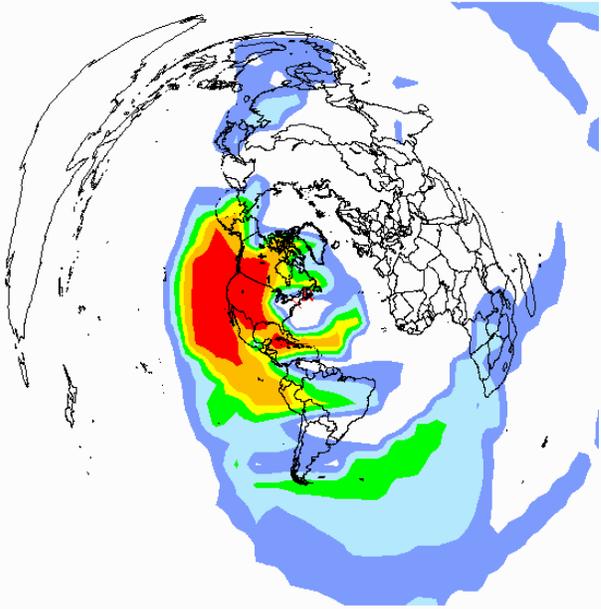
¹⁵ A zip file of the .voa files can be downloaded from <http://www.arrl.org/~ehare/rfi/plc/voa.zip>

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Jan.01 50ssn
 REL
 Rx location from grid of Tx
 AREA_INV\default\q-1-00.V11
 Version 03.0408W



NTIA/ITS
 Noise level: -170 dBW/Hz at 14 MHz. Date: Jan 01 Time: 0000 UTC SSN = 50
 NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx
 REL
 AREA_INV\default\r-1-00.V11
 Version 03.0408W

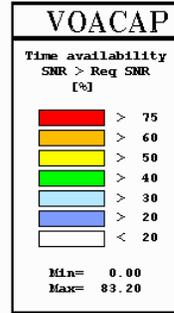
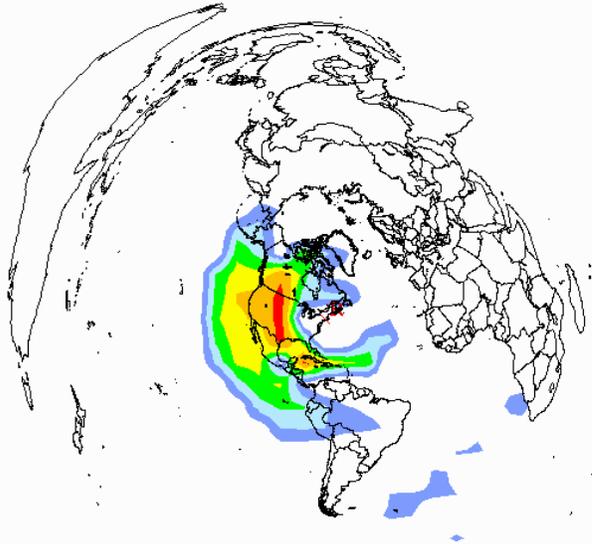


NTIA/ITS
 Noise level: Residential at 14 MHz Date: Jan 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-1-00.V11
Version 03.0408W



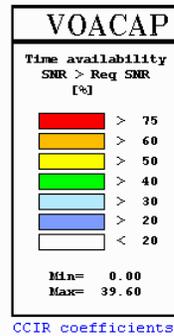
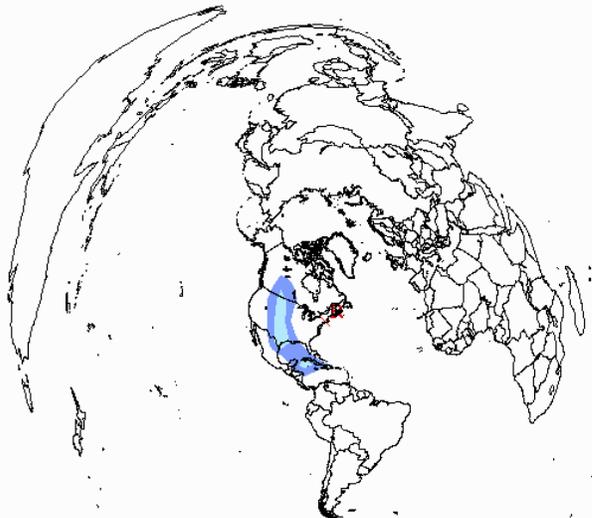
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jan 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-1-00.V11
Version 03.0408W



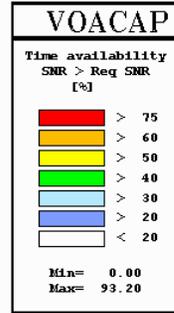
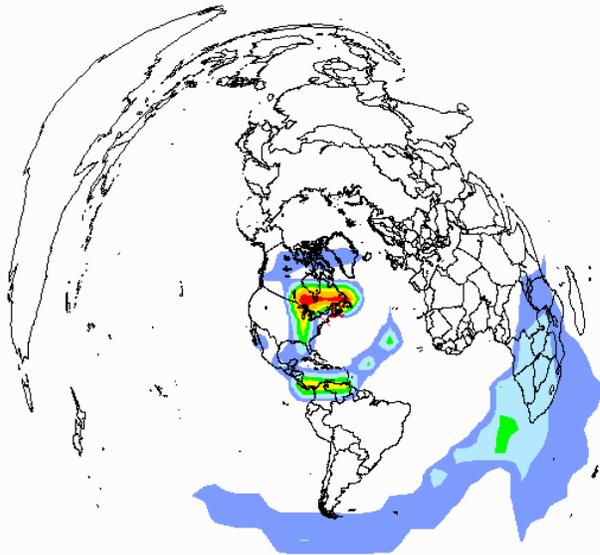
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jan 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-1-04.v11
Version 03.0408W



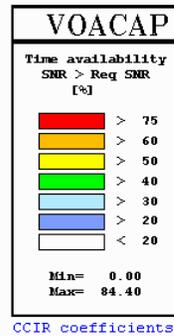
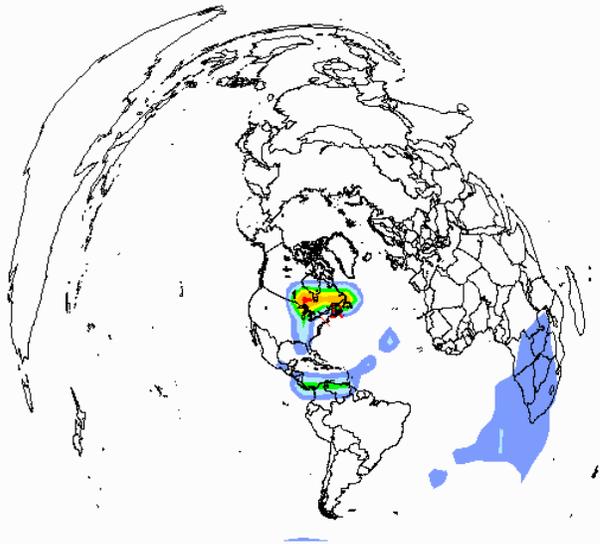
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Jan 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-1-04.v11
Version 03.0408W



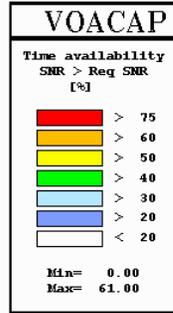
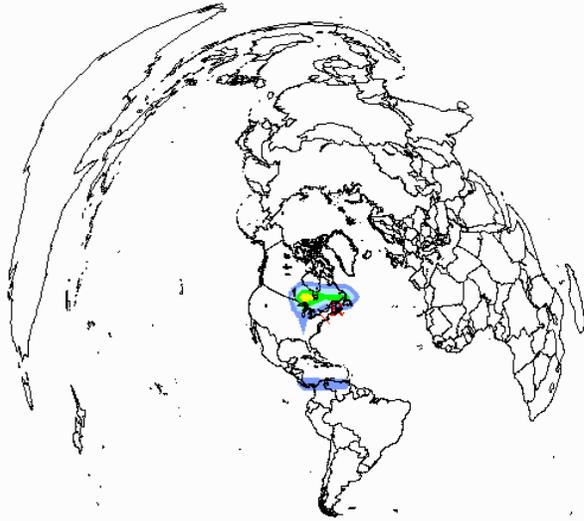
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jan 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-1-04.V11
Version 03.0408W



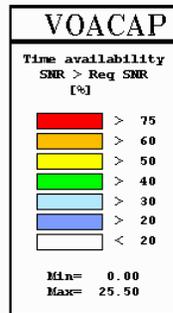
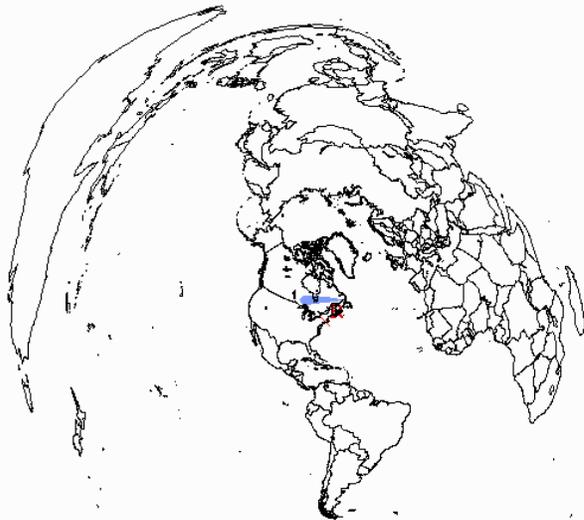
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jan 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-1-04.V11
Version 03.0408W



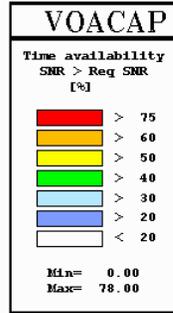
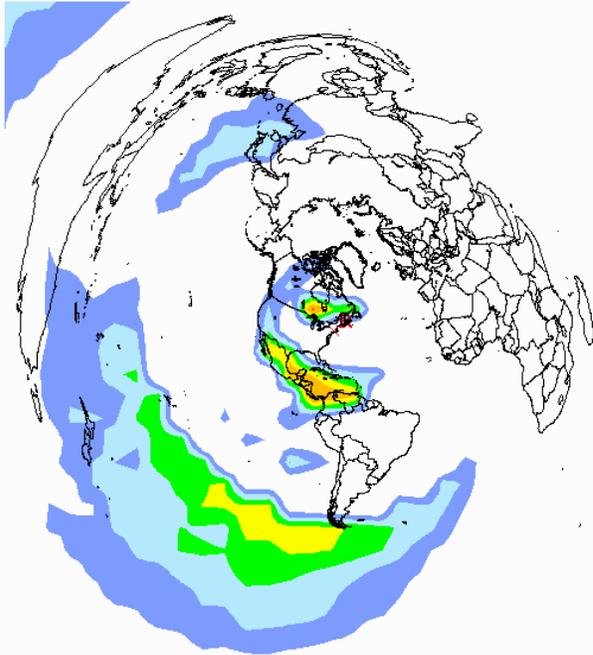
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jan 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-1-08.V11
Version 03.0408W



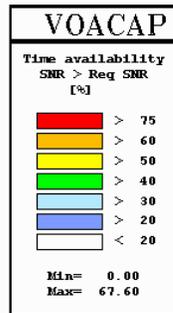
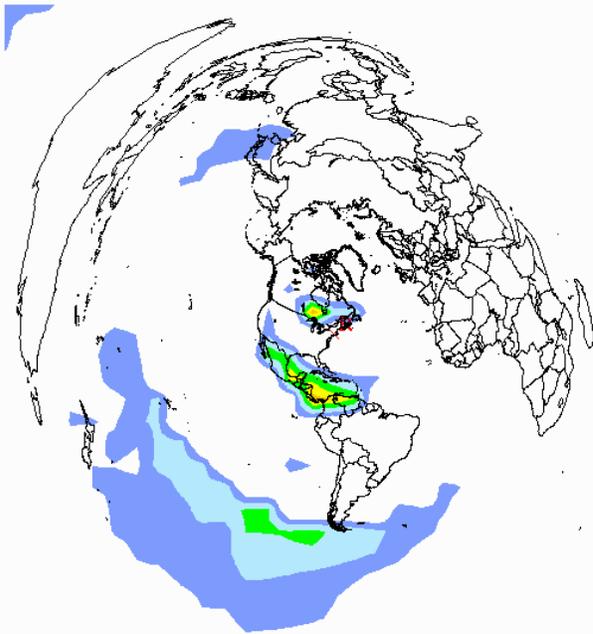
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Jan 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-1-08.V11
Version 03.0408W



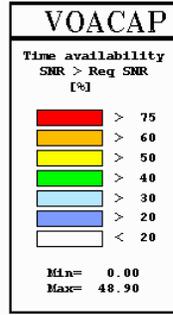
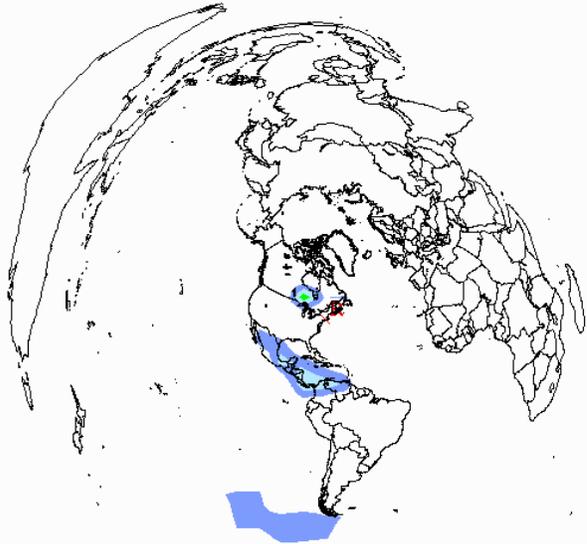
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jan 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-1-08.V11
Version 03.0408W



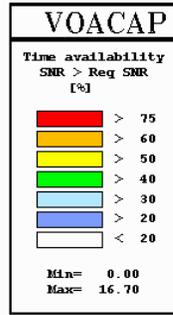
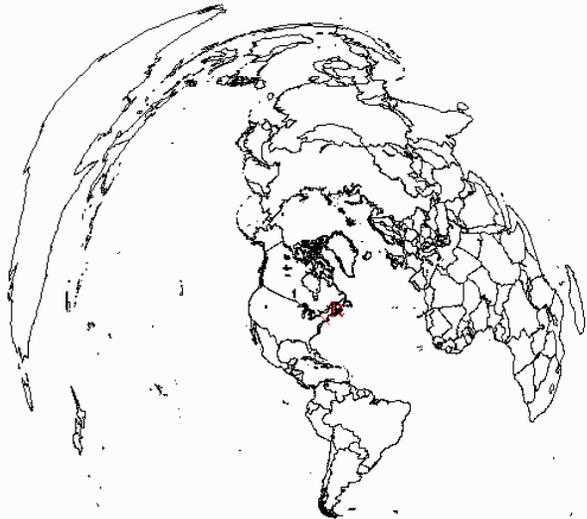
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jan 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-1-08.V11
Version 03.0408W



NTIA/ITS

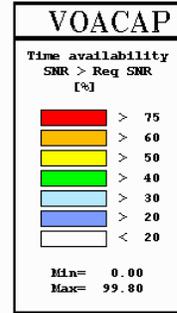
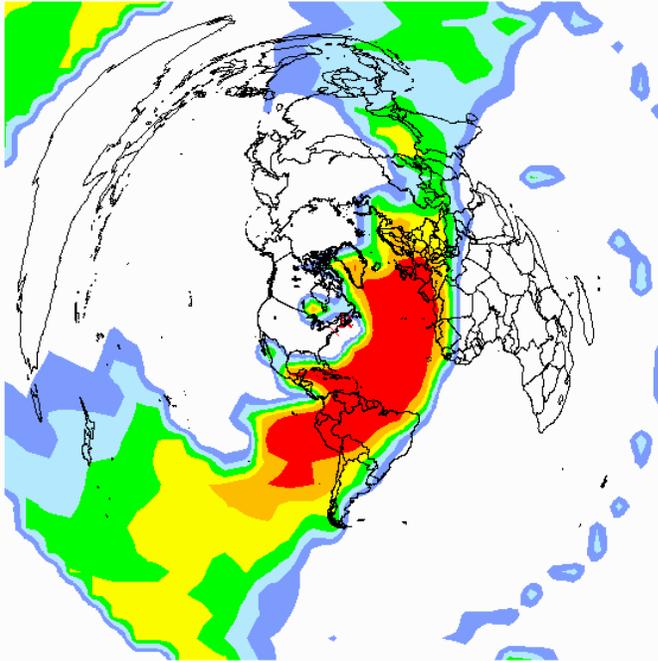
Noise level: Part 15 limits at 14 MHz. Date: Jan 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-1-12.V11

Version 03.0408W



NTIA/ITS

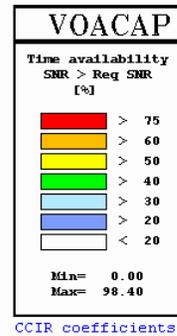
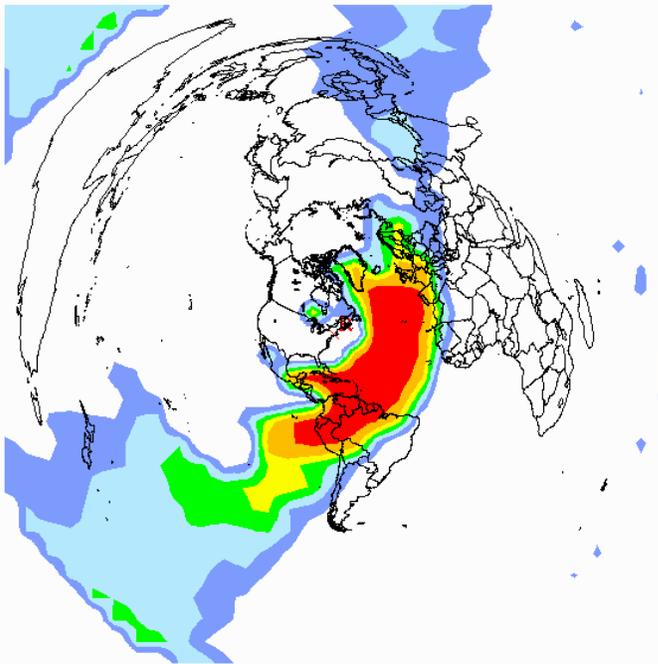
Noise level: -170 dBW/Hz at 14 MHz. Date: Jan 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-1-12.V11

Version 03.0408W



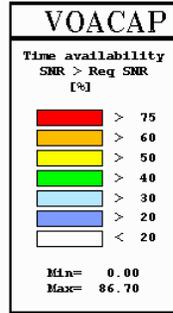
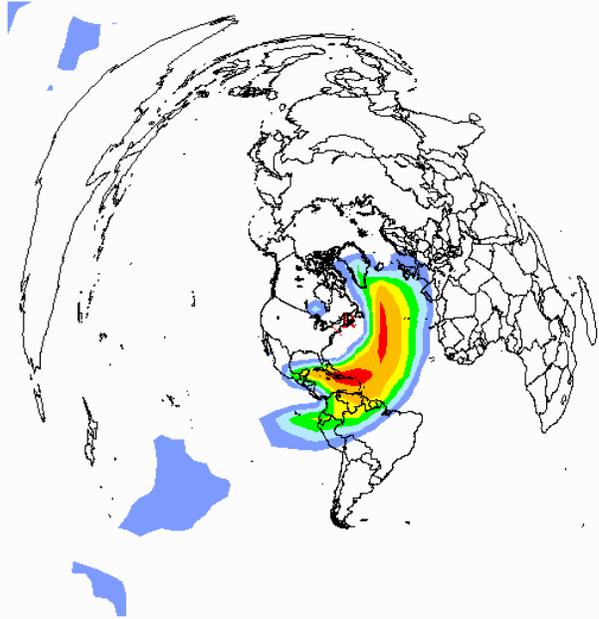
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jan 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-1-12.V11
Version 03.0408W



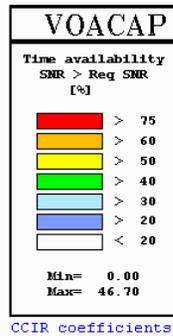
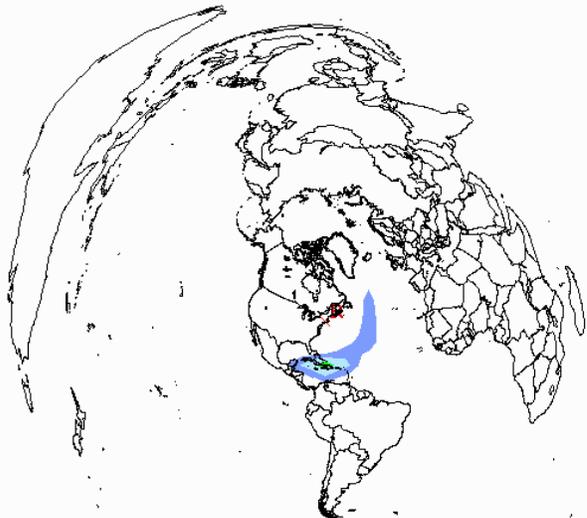
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jan 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-1-12.V11
Version 03.0408W



NTIA/ITS

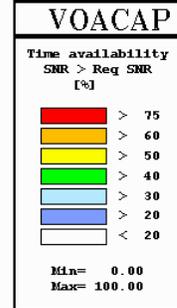
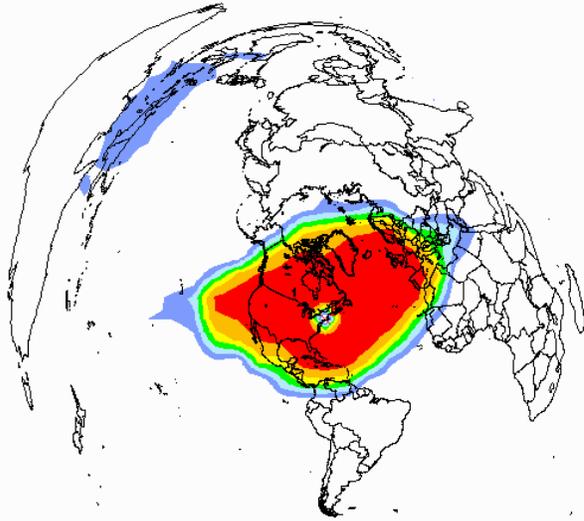
Noise level: Man-made noise at Part 15 limits at 14 MHz. Date: Jan 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-1-16.V11

Version 03.0408W



CCIR coefficients

NTIA/ITS

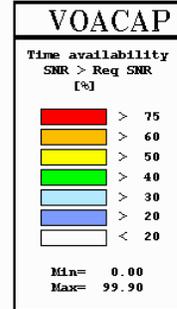
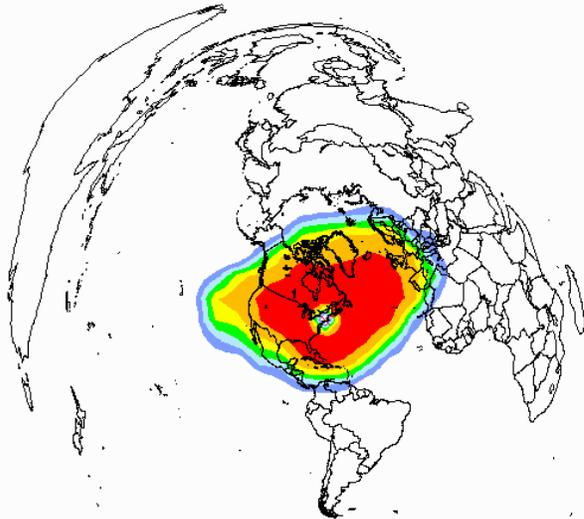
Noise level: -170 dBW/Hz at 14 MHz. Date: Jan 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-1-16.V11

Version 03.0408W



CCIR coefficients

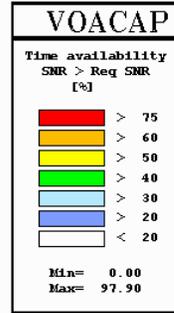
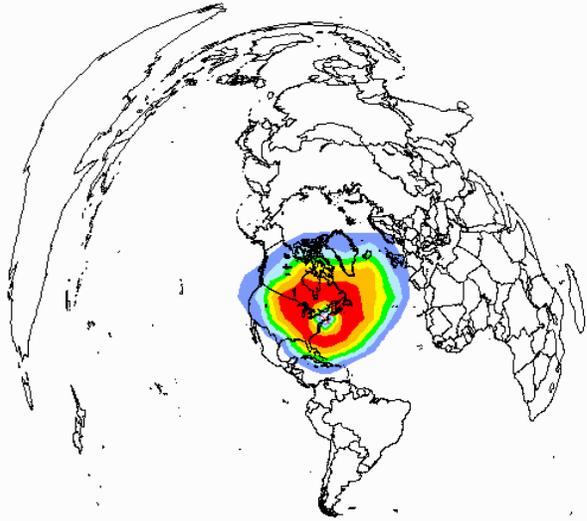
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jan 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-1-16.V11
Version 03.0408W



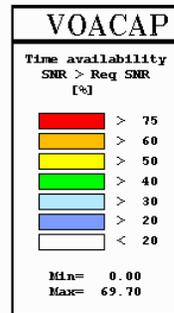
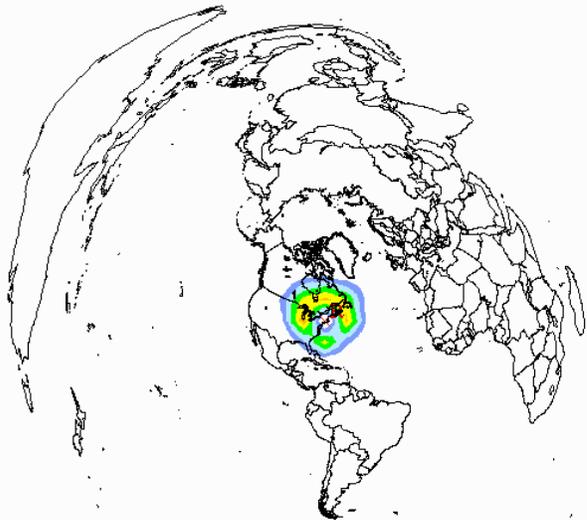
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jan 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-1-16.V11
Version 03.0408W



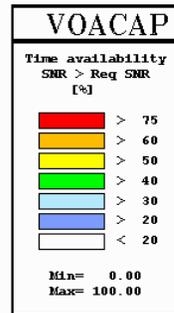
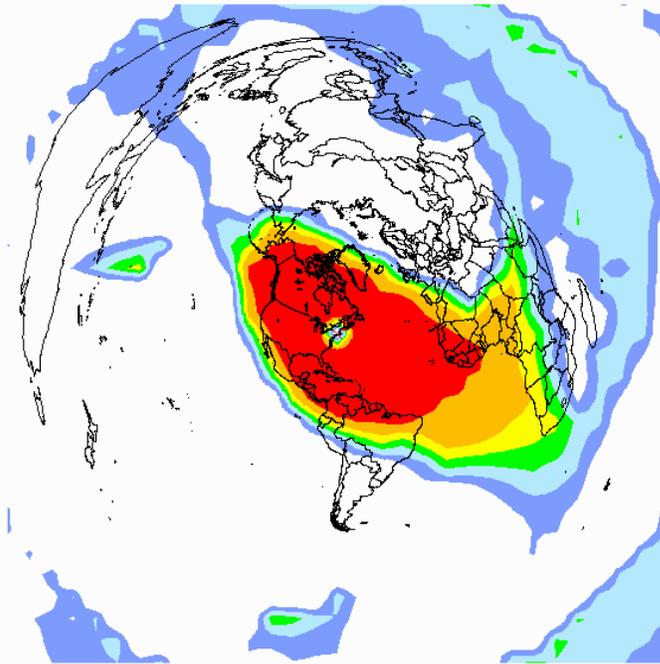
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jan 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-1-20.V11
Version 03.0408W



CCIR coefficients

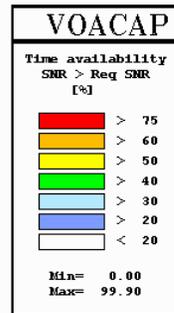
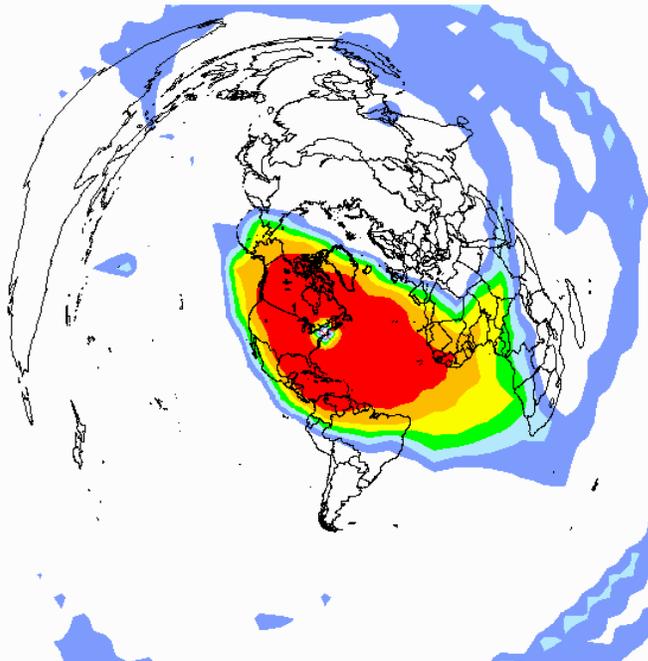
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Jan 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-1-20.V11
Version 03.0408W



CCIR coefficients

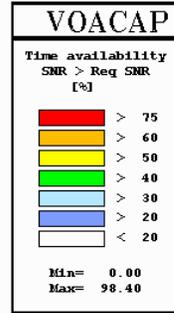
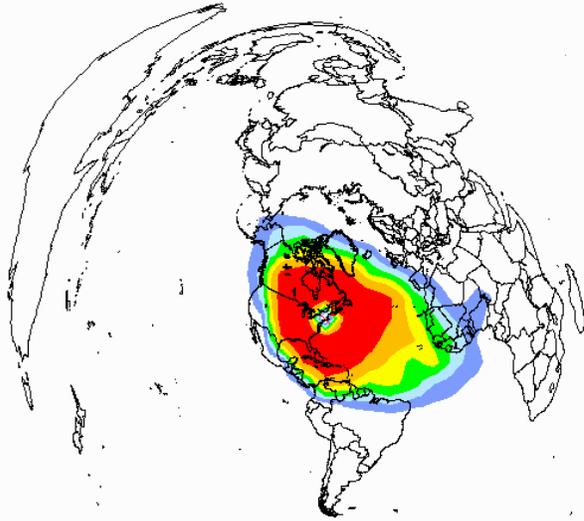
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jan 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-1-20.V11
Version 03.0408W



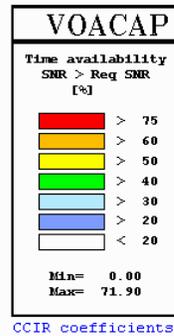
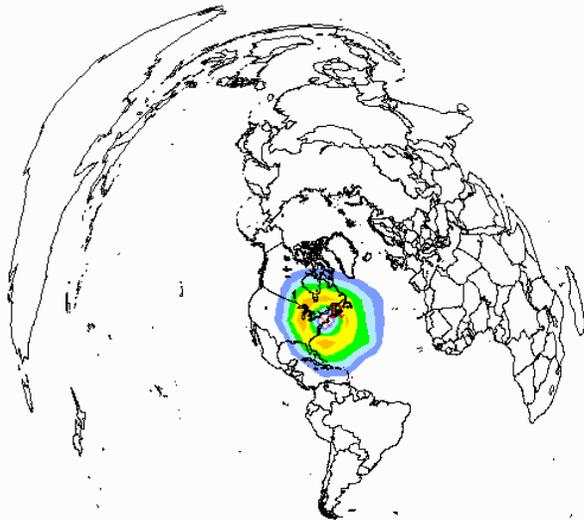
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jan 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHZ Jan.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-1-20.V11
Version 03.0408W



NTIA/ITS

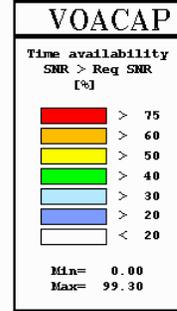
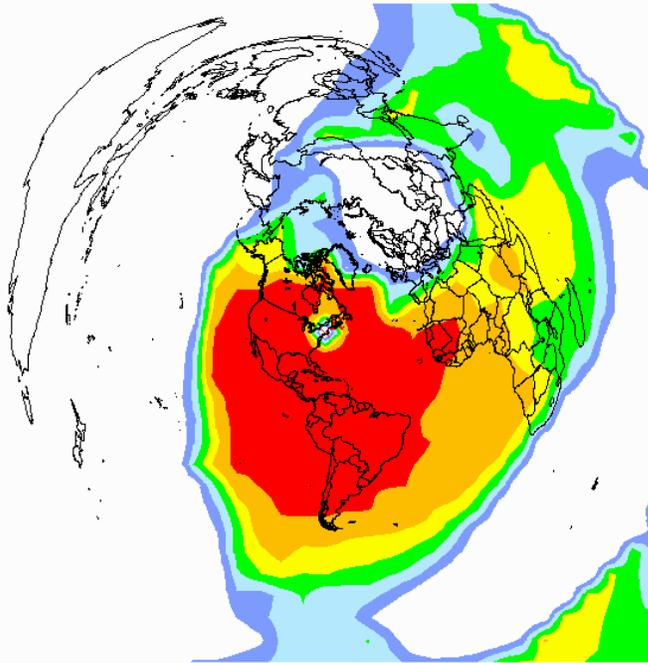
Noise level: Part 15 limits at 14 MHz. Date: Jan 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-4-00.v11

Version 03.0408W



NTIA/ITS

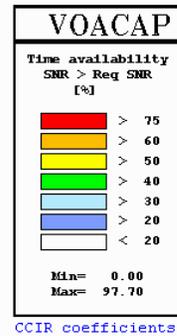
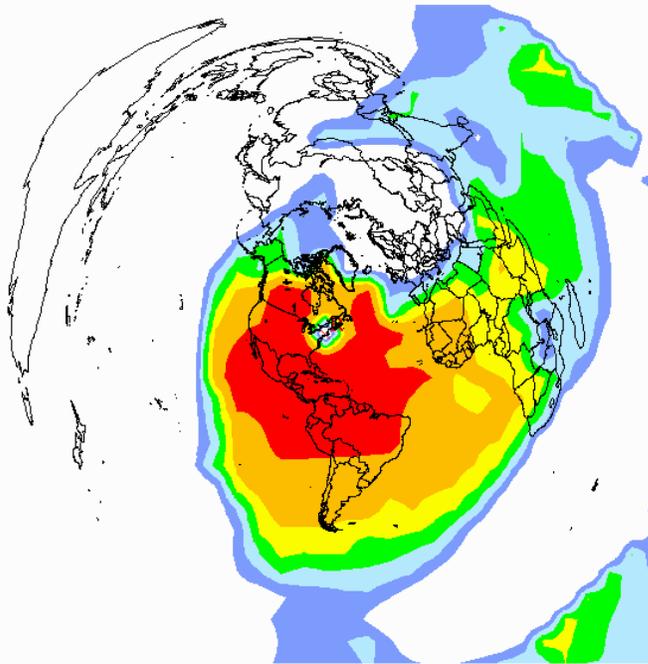
Noise level: -170 dBW/Hz at 14 MHz. Date: Apr 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-4-00.v11

Version 03.0408W

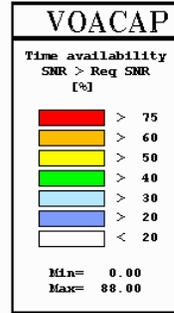
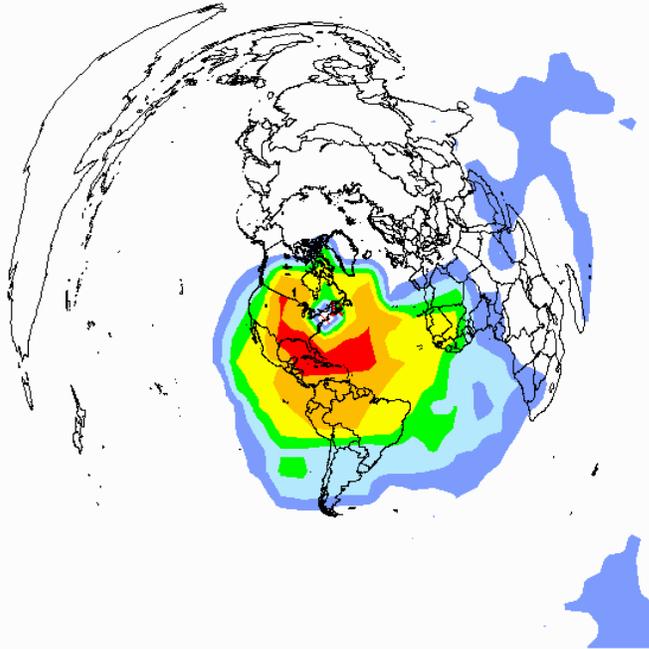


NTIA/ITS

Noise level: Residential at 14 MHz Date: Apr 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Apr.01 50ssn
Rx location from grid of Tx

REL
AREA_INV\default\n-4-00.V11
Version 03.0408W

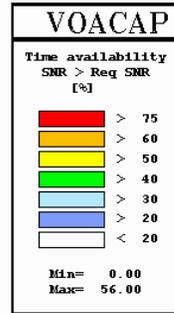
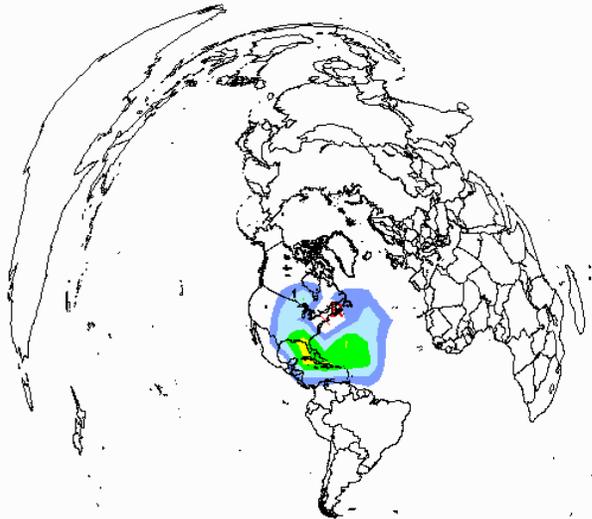


NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Apr 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Apr.01 50ssn
Rx location from grid of Tx

REL
AREA_INV\default\f-4-00.V11
Version 03.0408W



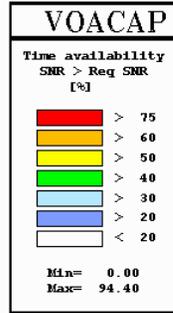
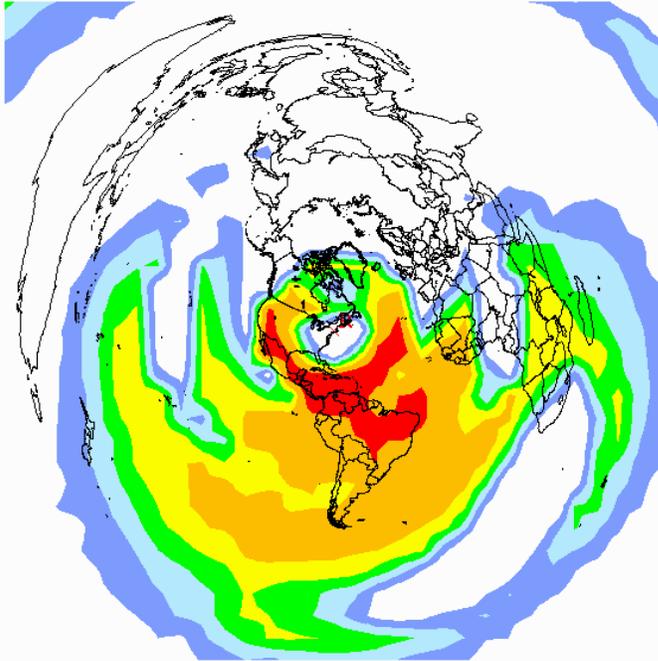
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Apr 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-4-04.v11
Version 03.0408W



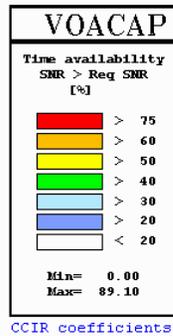
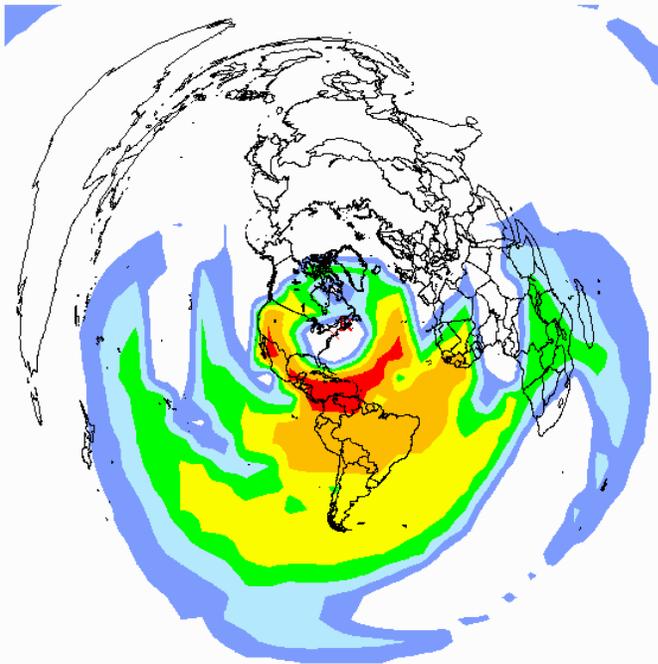
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Apr 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-4-04.v11
Version 03.0408W



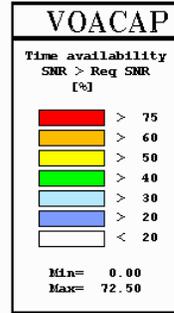
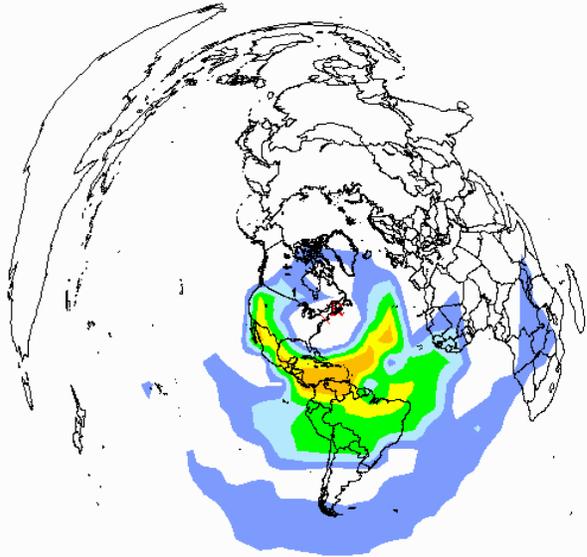
NTIA/ITS

Noise level: Residential at 14 MHz Date: Apr 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-4-04.v11
Version 03.0408W



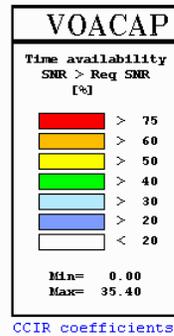
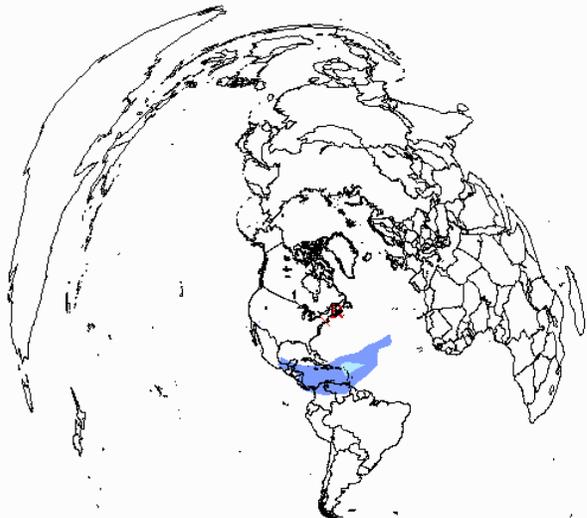
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Apr 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-4-04.v11
Version 03.0408W



NTIA/ITS

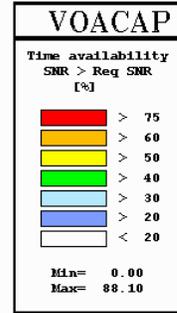
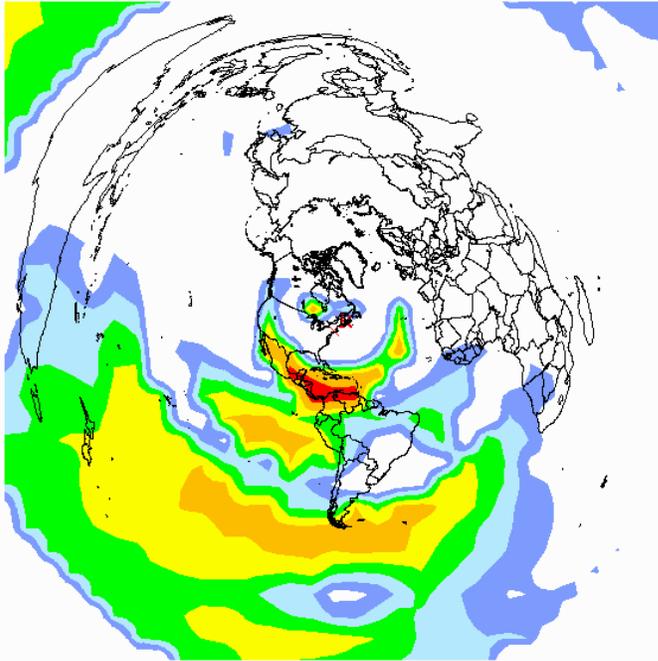
Noise level: Part 15 limits at 14 MHz. Date: Apr 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-4-08.v11

Version 03.0408W



NTIA/ITS

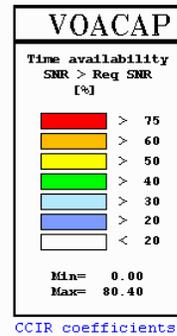
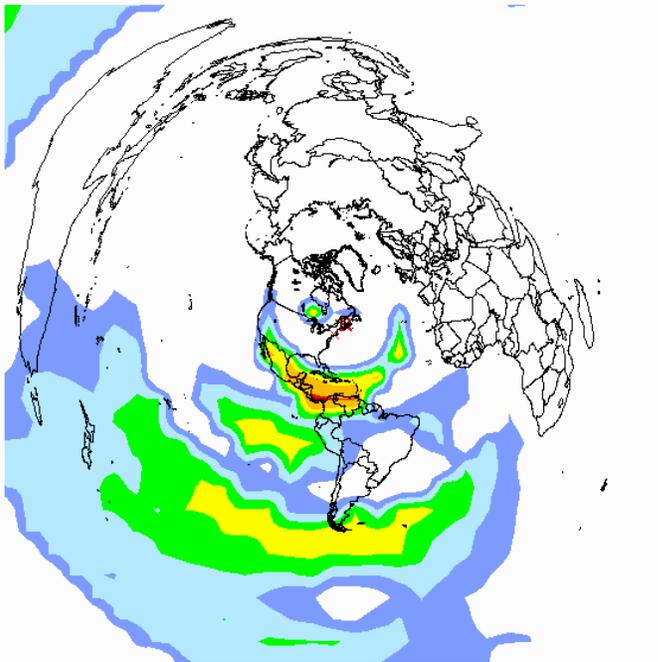
Noise level: -170 dBW/Hz at 14 MHz. Date: Apr 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-4-08.v11

Version 03.0408W



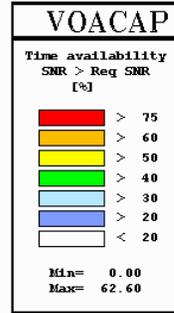
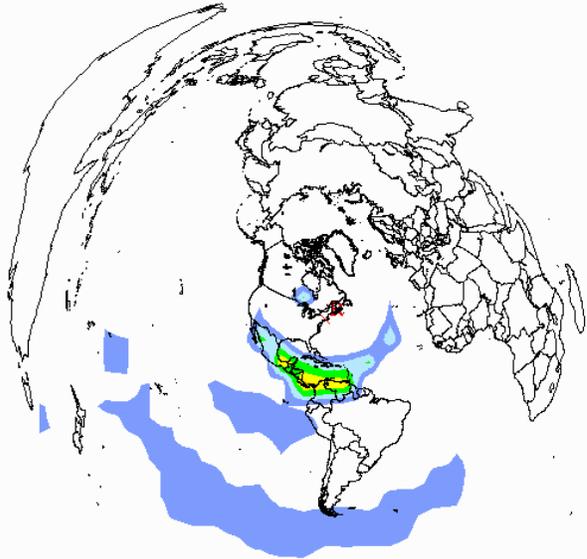
NTIA/ITS

Noise level: Residential at 14 MHz Date: Apr 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-4-08.v11
Version 03.0408W



CCIR coefficients

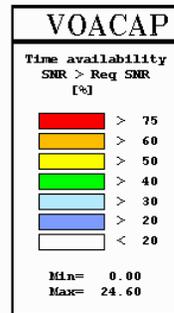
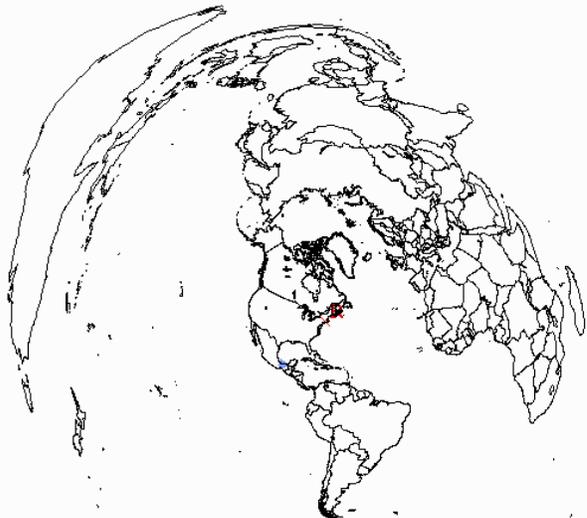
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Apr 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-4-08.v11
Version 03.0408W



CCIR coefficients

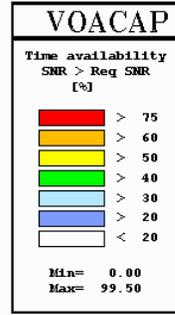
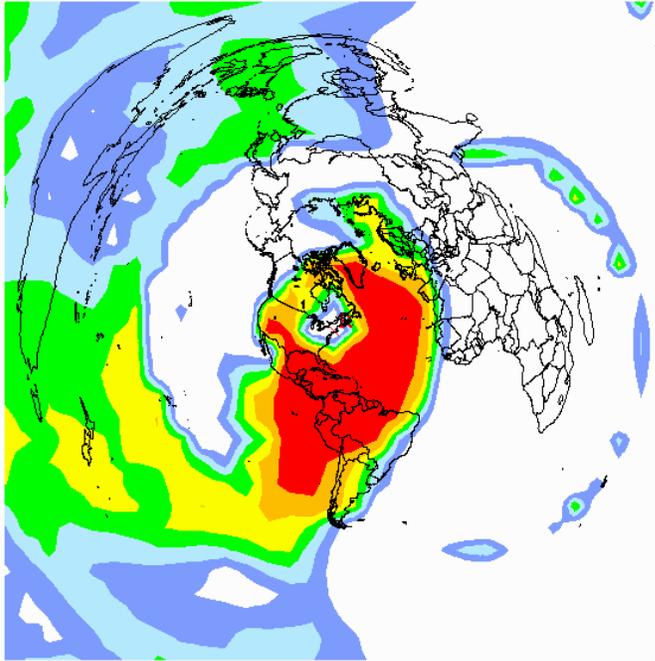
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Apr 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-4-12.V11
Version 03.0408W



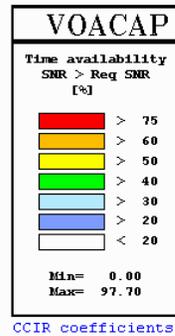
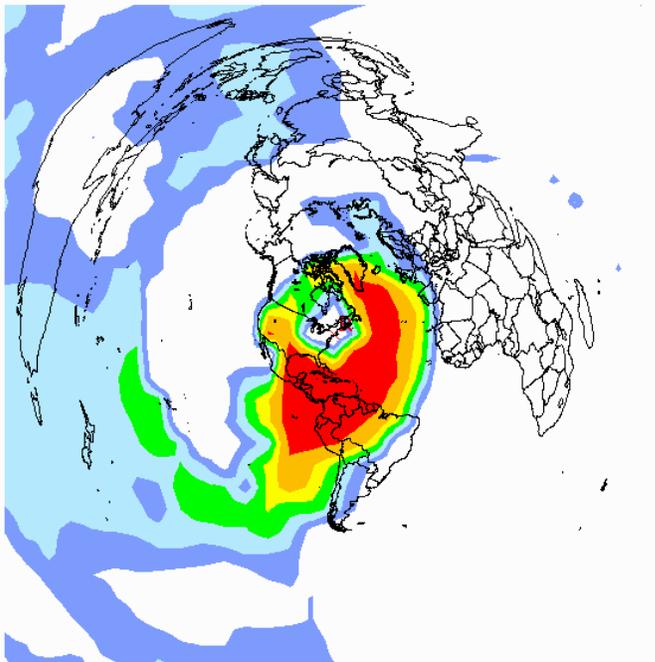
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Apr 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-4-12.V11
Version 03.0408W



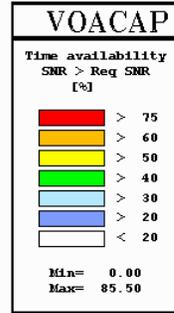
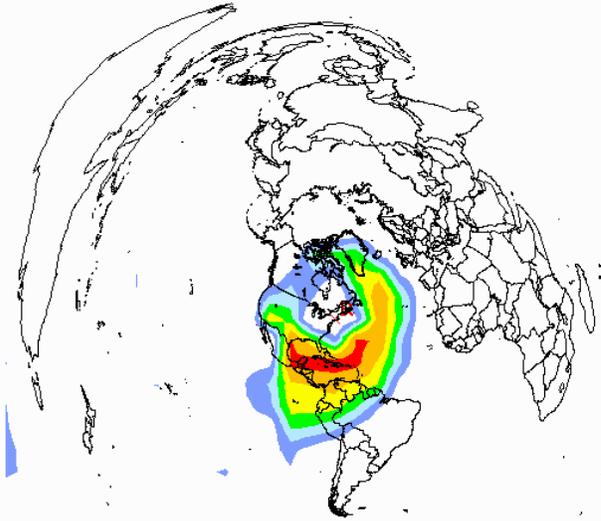
NTIA/ITS

Noise level: Residential at 14 MHz Date: Apr 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-4-12.V11
Version 03.0408W



CCIR coefficients

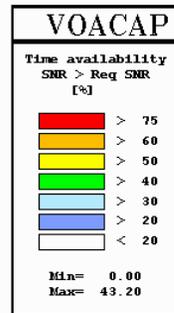
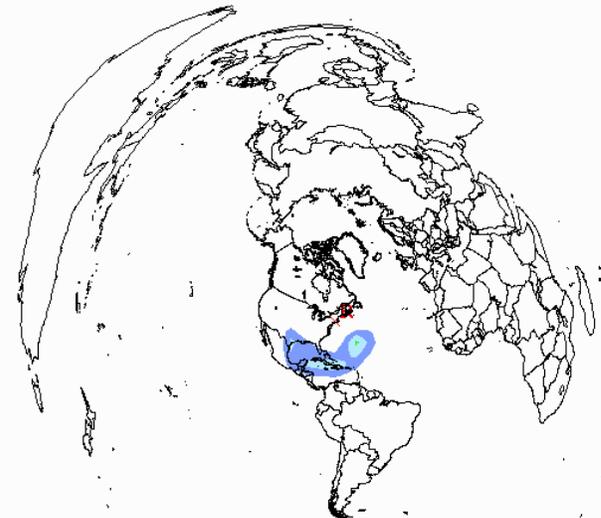
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Apr 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-4-12.V11
Version 03.0408W



CCIR coefficients

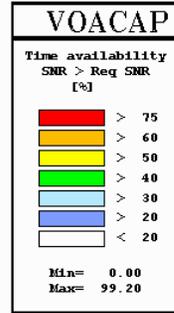
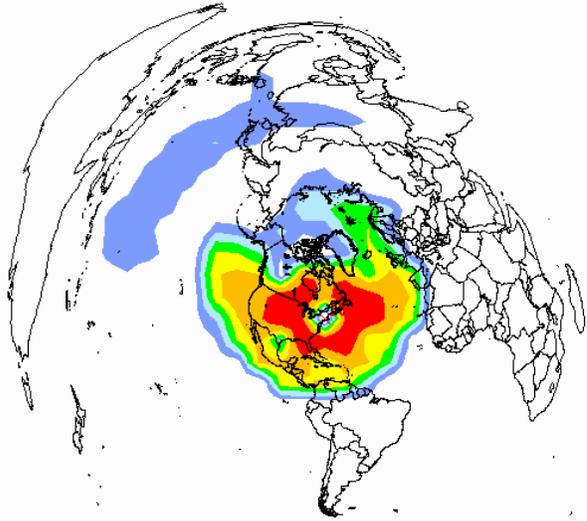
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Apr 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-4-16.V11
Version 03.0408W



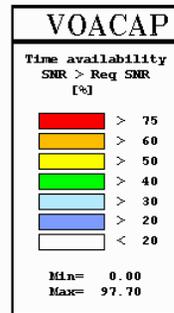
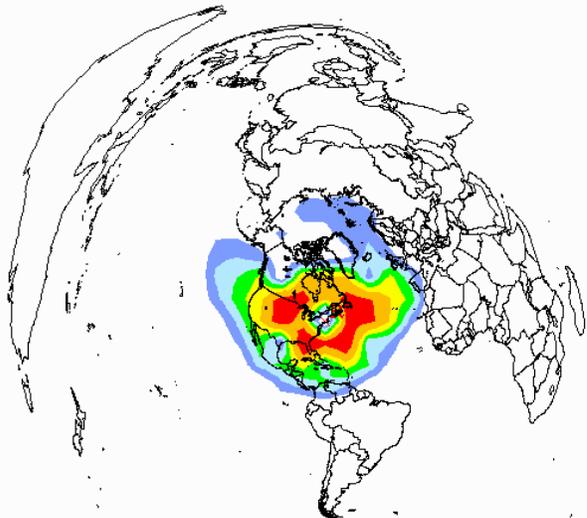
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Apr 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-4-16.V11
Version 03.0408W



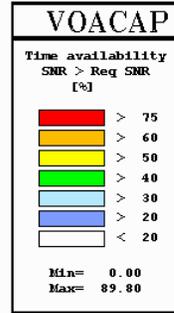
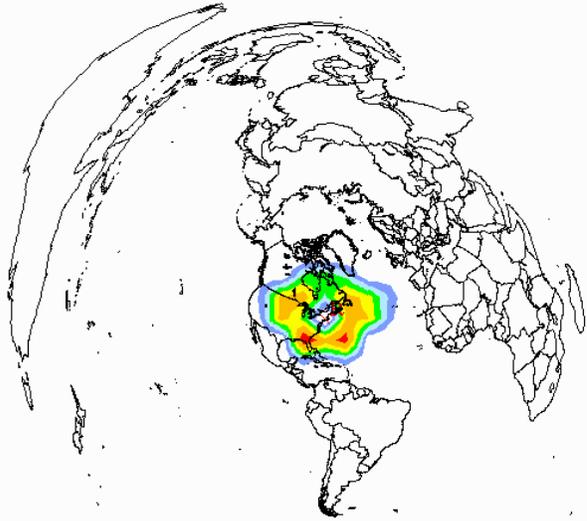
NTIA/ITS

Noise level: Residential at 14 MHz Date: Apr 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-4-16.V11
Version 03.0408W



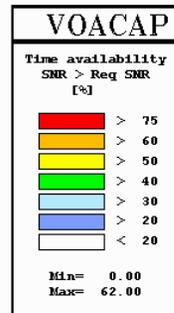
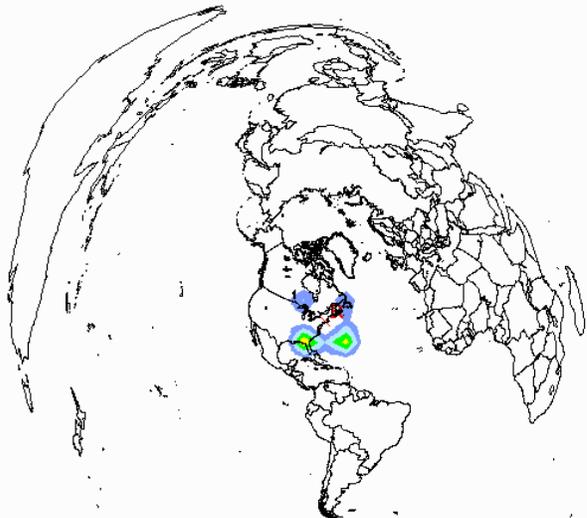
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Apr 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-4-16.V11
Version 03.0408W



NTIA/ITS

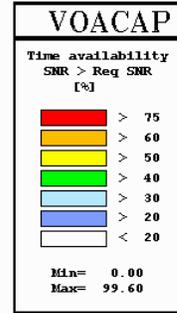
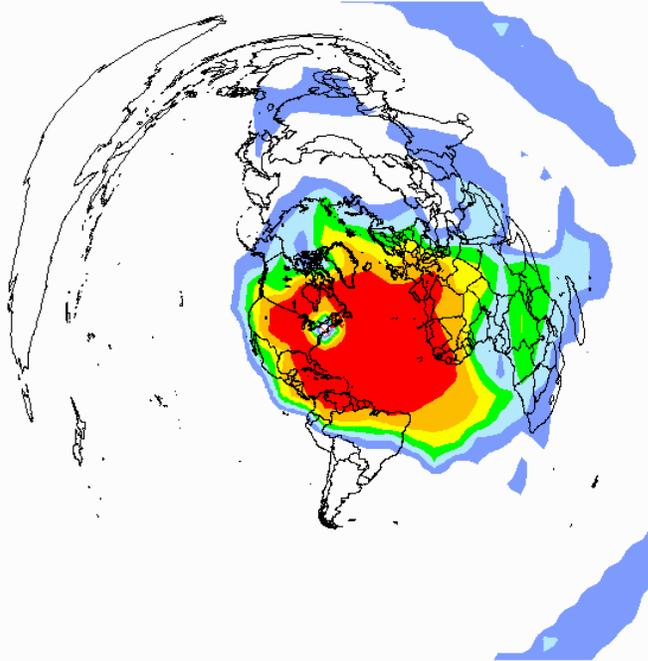
Noise level: Part 15 limits at 14 MHz. Date: Apr 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-4-20.v11

Version 03.0408W



NTIA/ITS

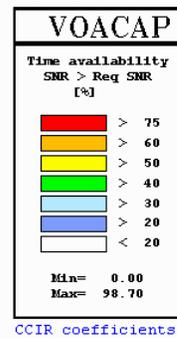
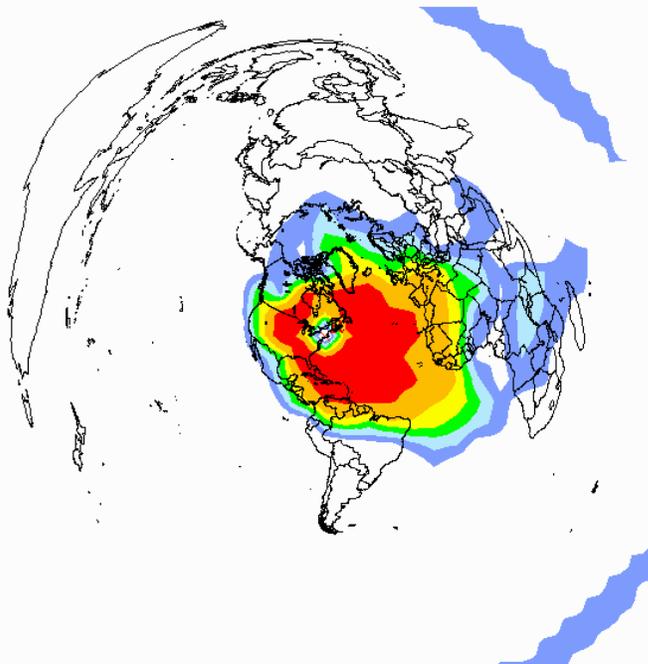
Noise level: -170 dBW/Hz at 14 MHz. Date: Apr 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-4-20.v11

Version 03.0408W



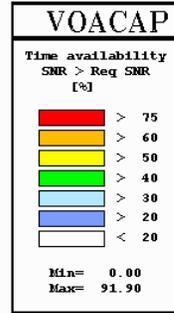
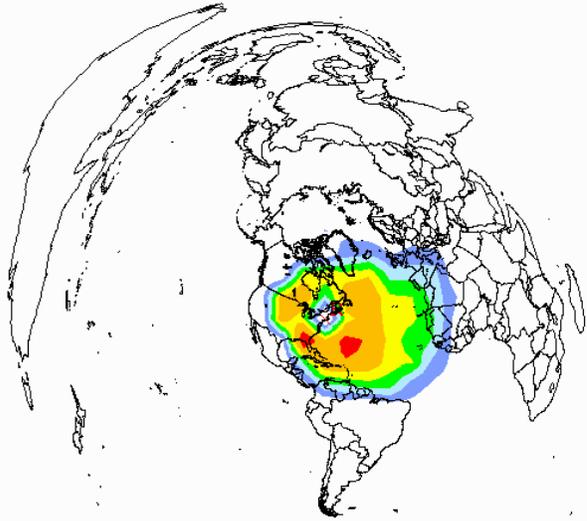
NTIA/ITS

Noise level: Residential at 14 MHz Date: Apr 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-4-20.V11
Version 03.0408W



CCIR coefficients

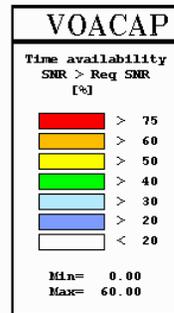
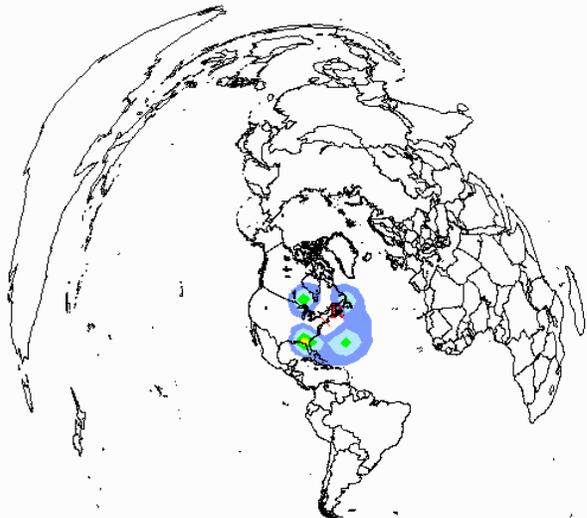
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Apr 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Apr.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-4-20.V11
Version 03.0408W



CCIR coefficients

NTIA/ITS

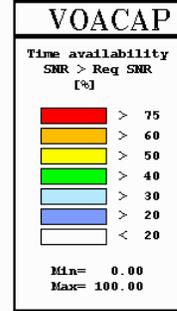
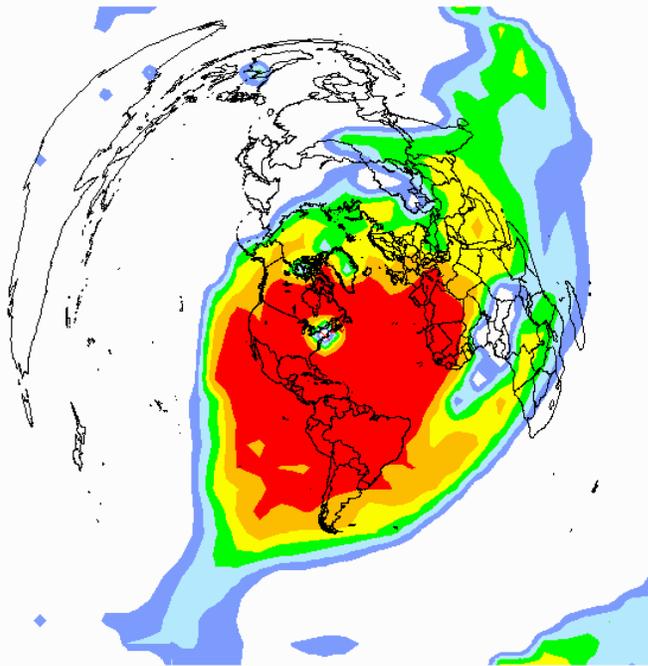
Noise level: Part 15 limits at 14 MHz. Date: Apr 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-7-00.v11

Version 03.0408W



NTIA/ITS

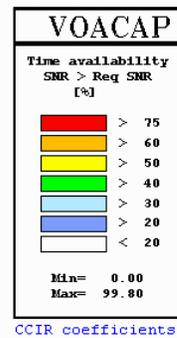
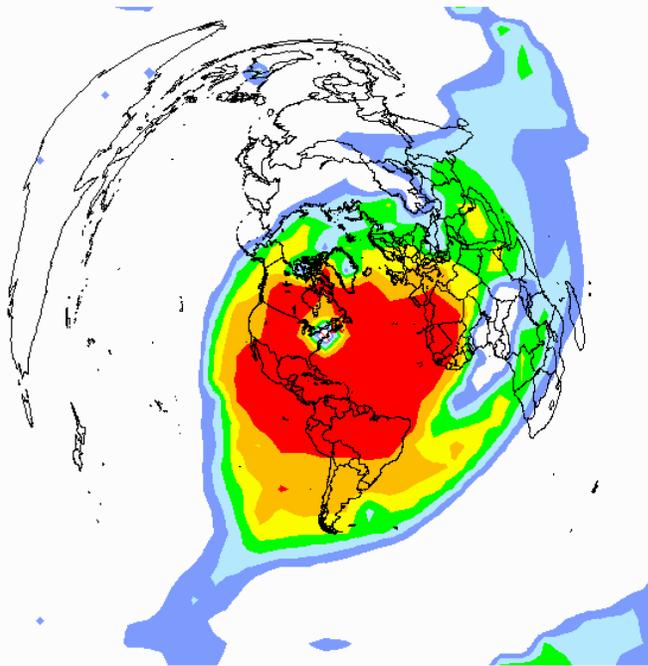
Noise level: -170 dBW/Hz at 14 MHz. Date: Jul 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-7-00.v11

Version 03.0408W



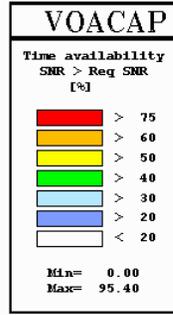
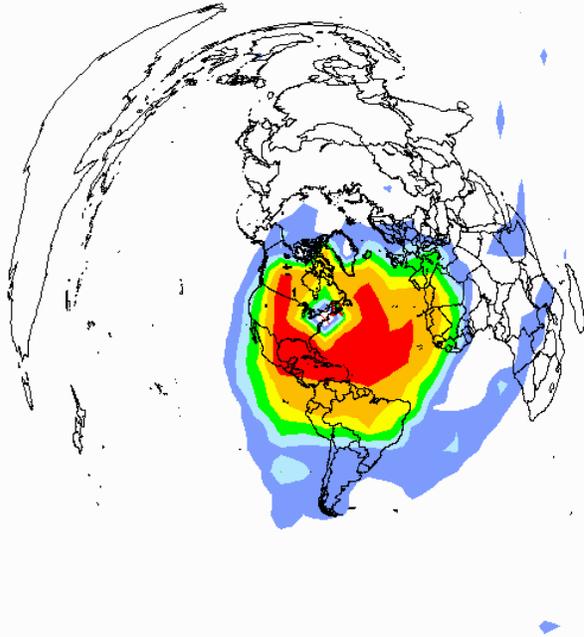
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jul 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-7-00.v11
Version 03.0408W



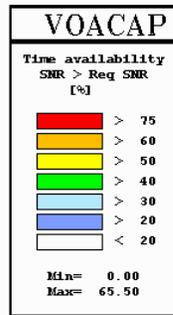
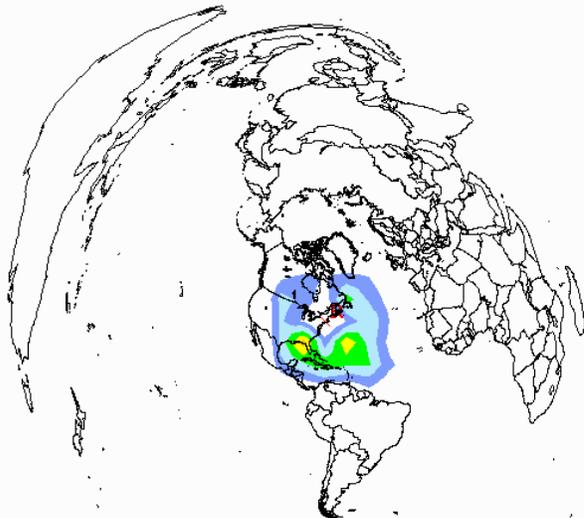
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jul 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-7-04.v11
Version 03.0408W



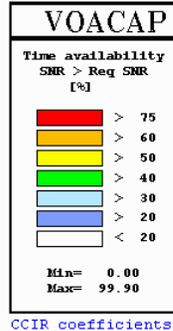
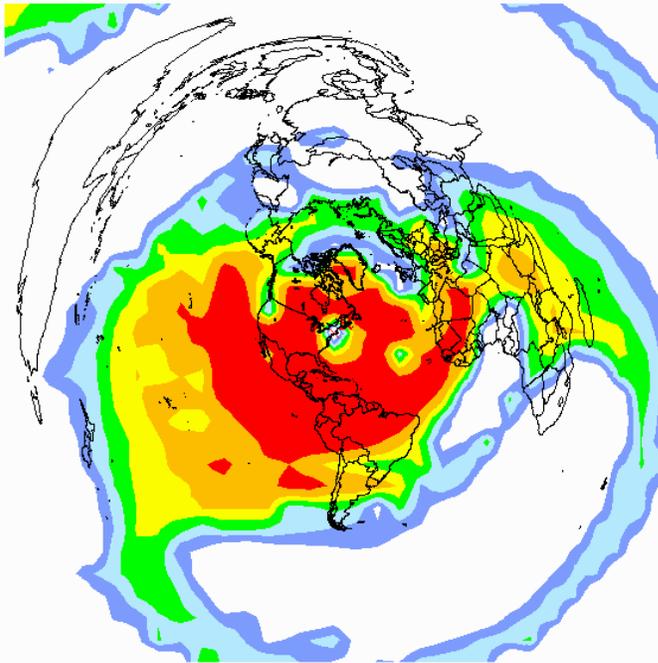
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jul 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-7-04.v11
Version 03.0408W



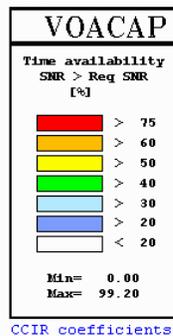
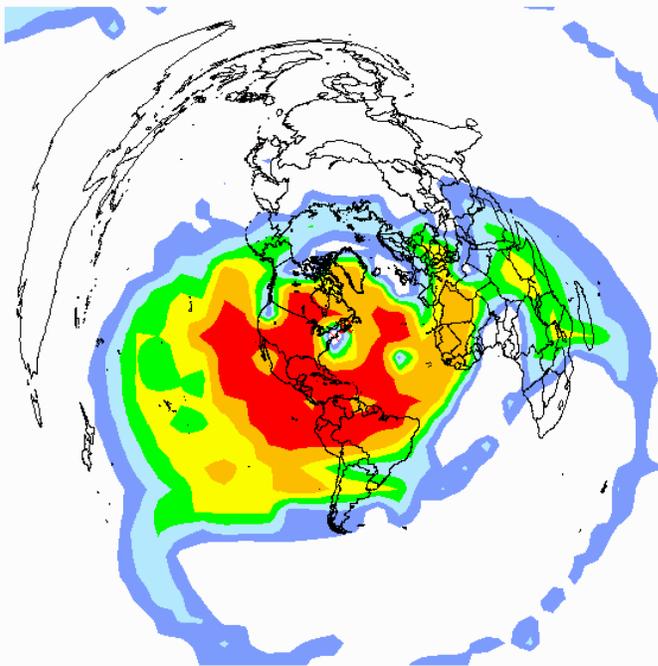
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Jul 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-7-04.v11
Version 03.0408W



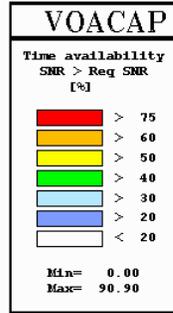
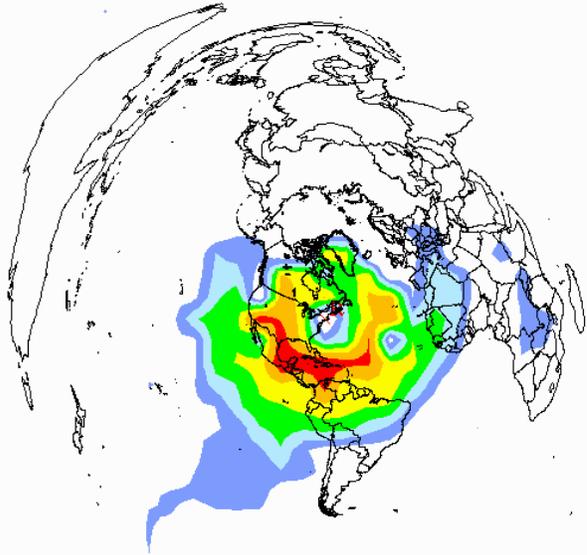
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jul 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-7-04.v11
Version 03.0408W



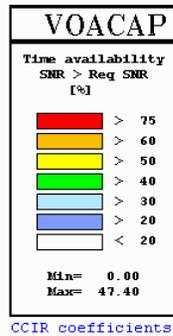
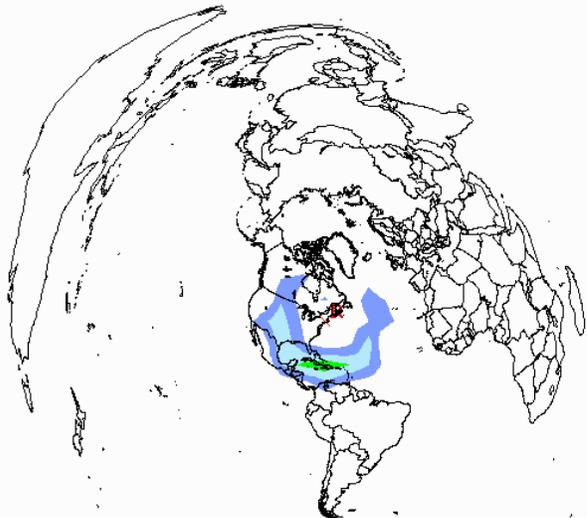
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jul 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-7-04.v11
Version 03.0408W



NTIA/ITS

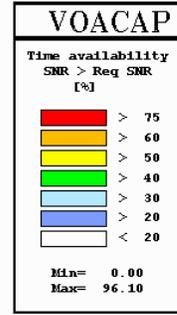
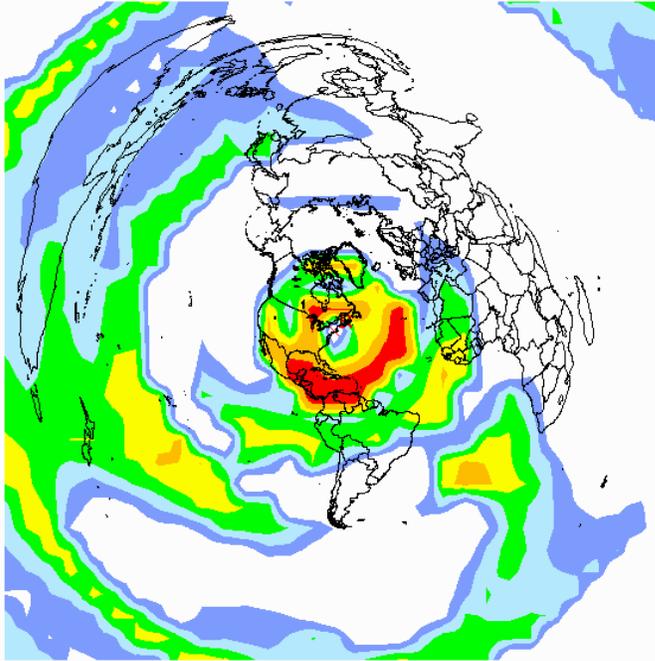
Noise level: Part 15 limits at 14 MHz. Date: Jul 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-7-08.v11

Version 03.0408W



NTIA/ITS

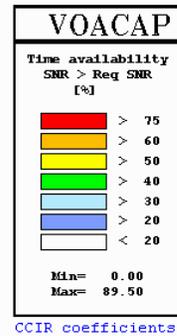
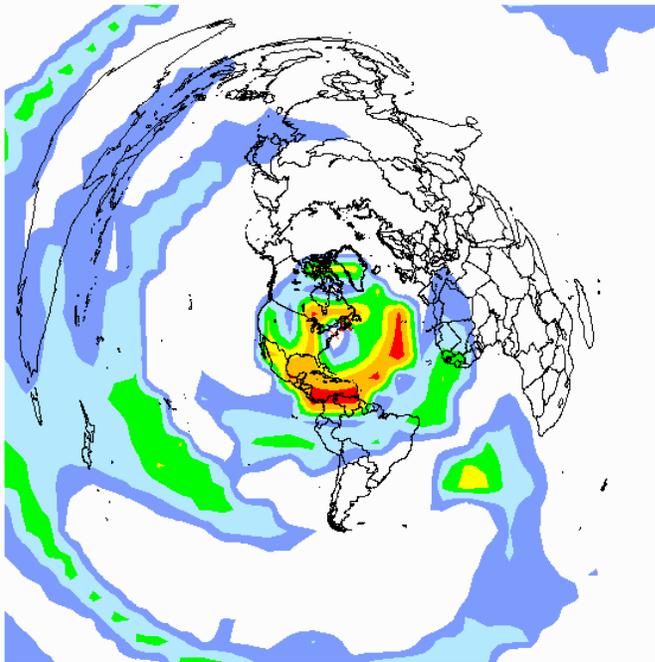
Noise level: -170 dBW/Hz at 14 MHz. Date: Jul 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-7-08.v11

Version 03.0408W



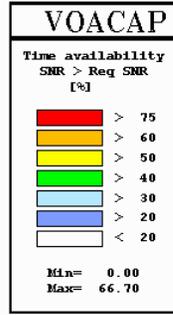
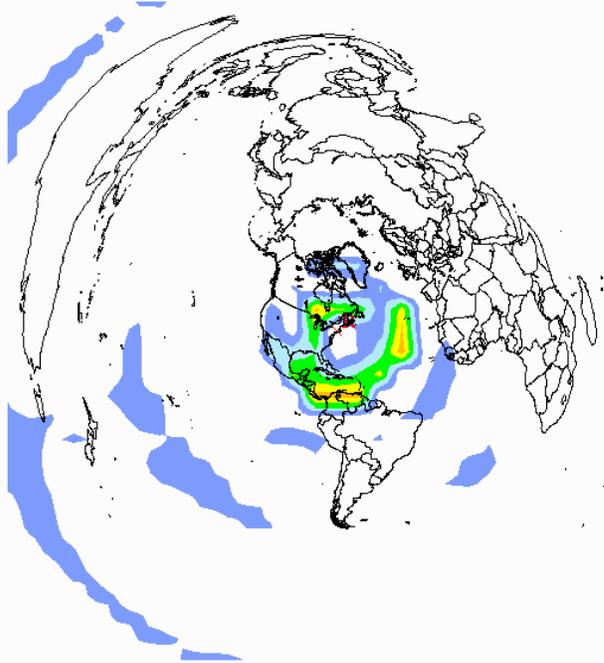
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jul 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-7-08.v11
Version 03.0408W



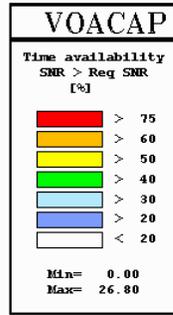
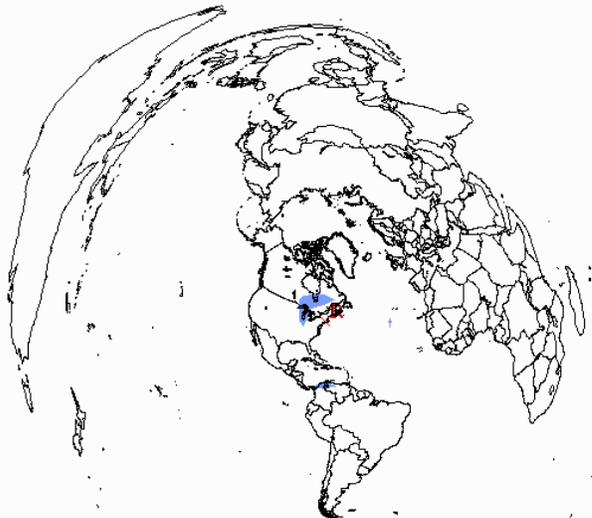
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jul 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

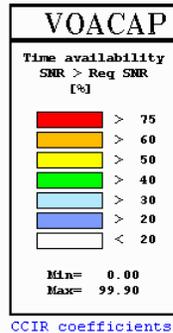
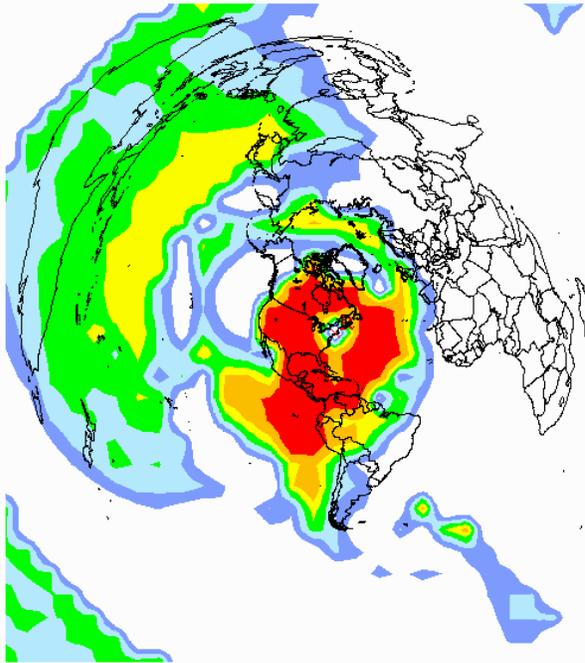
REL
AREA_INV\default\p-7-08.v11
Version 03.0408W



NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jul 01 Time: 0800 UTC SSN = 50

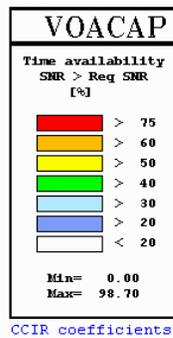
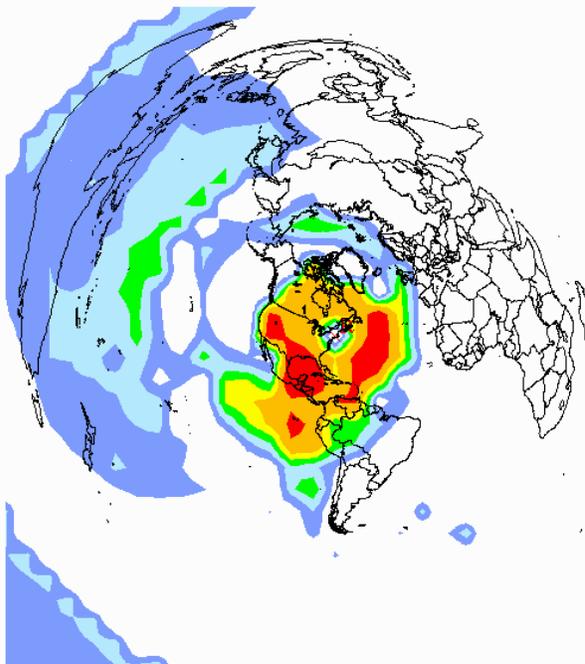
NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Jul.01 50ssn
 REL
 Rx location from grid of Tx
 AREA_INV\default\q-7-12.V11
 Version 03.0408W



NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Jul 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Jul.01 50ssn
 REL
 Rx location from grid of Tx
 AREA_INV\default\r-7-12.V11
 Version 03.0408W



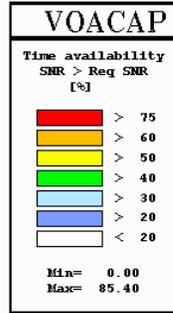
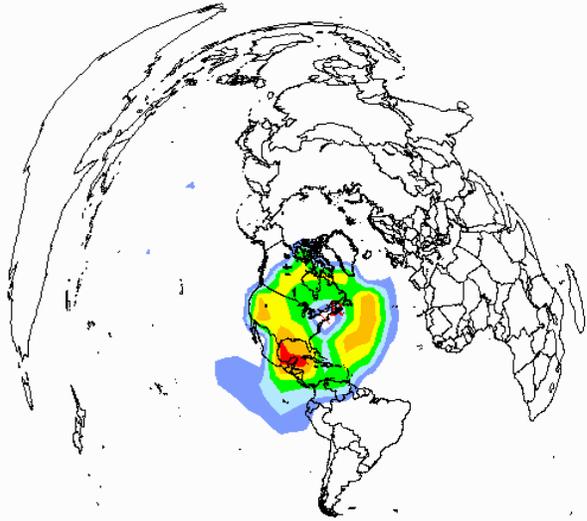
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jul 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-7-12.V11
Version 03.0408W



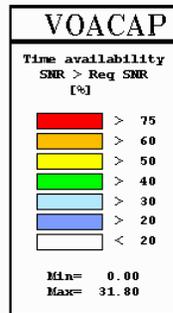
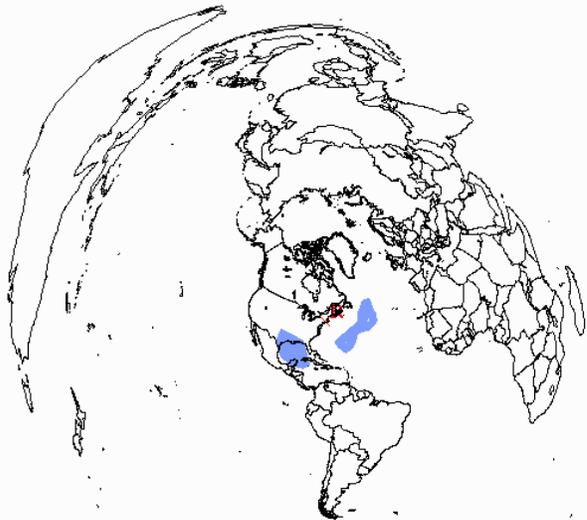
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jul 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-7-12.V11
Version 03.0408W



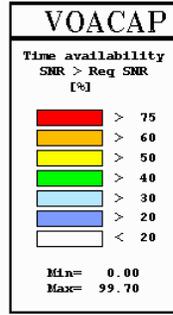
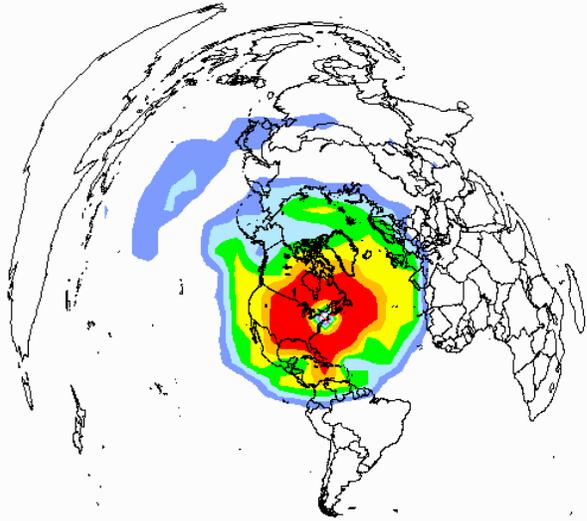
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jul 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-7-16.V11
Version 03.0408W



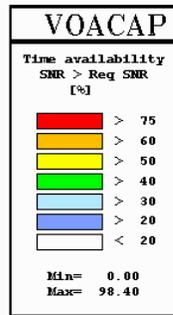
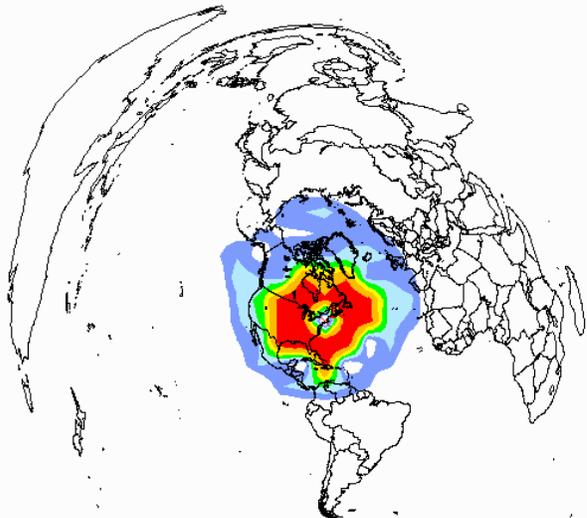
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Jul 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-7-16.V11
Version 03.0408W



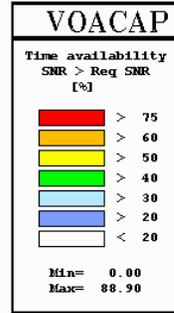
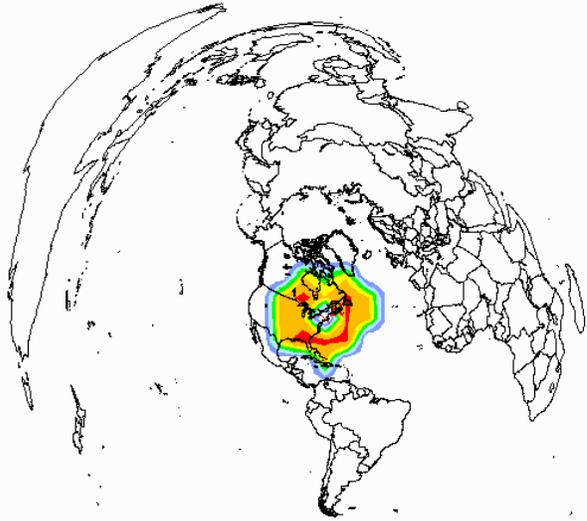
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jul 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-7-16.V11
Version 03.0408W



CCIR coefficients

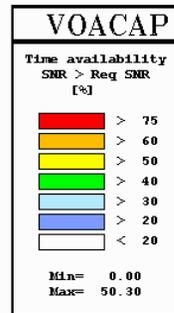
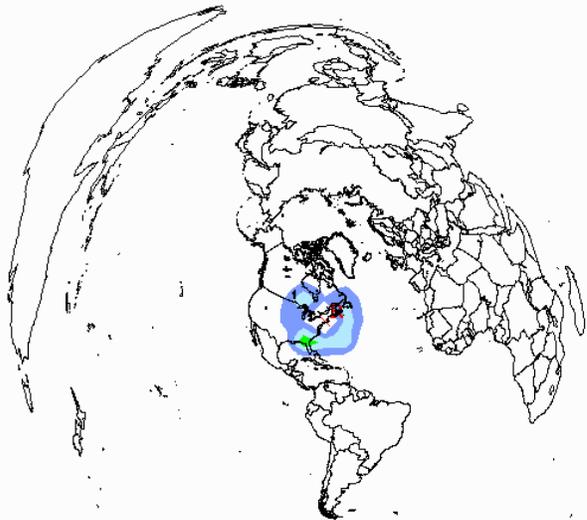
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jul 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-7-16.V11
Version 03.0408W



CCIR coefficients

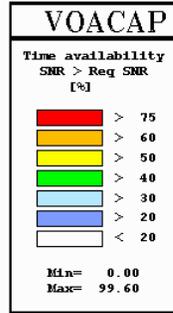
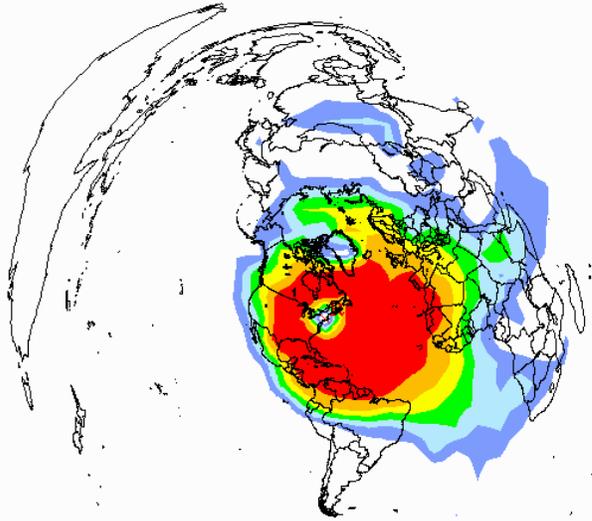
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jul 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-7-20.v11
Version 03.0408W



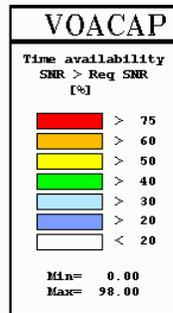
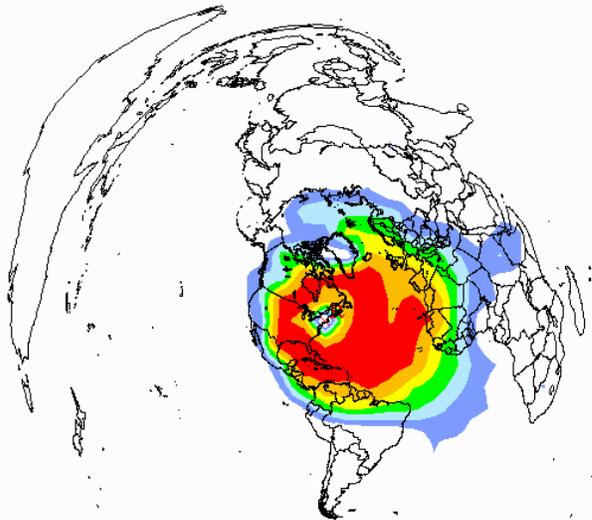
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Jul 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-7-20.v11
Version 03.0408W



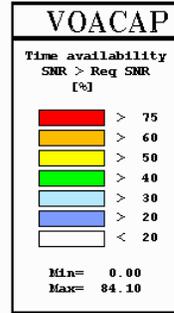
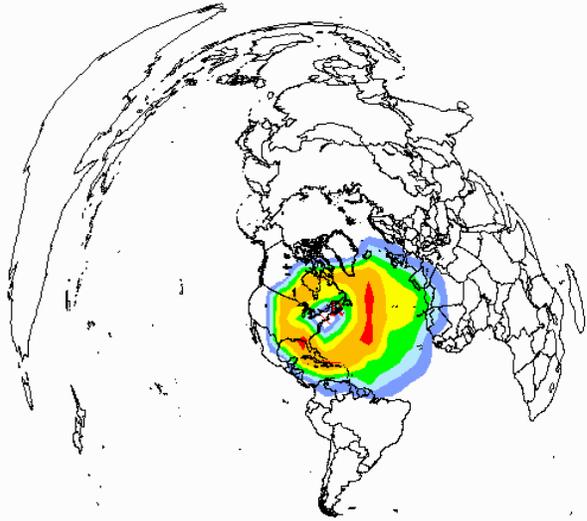
NTIA/ITS

Noise level: Residential at 14 MHz Date: Jul 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-7-20.V11
Version 03.0408W



CCIR coefficients

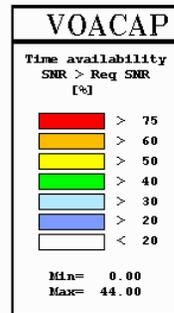
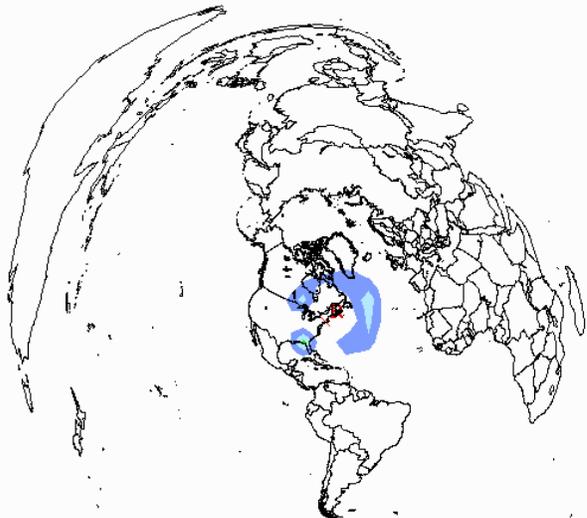
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Jul 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHz Jul.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-7-20.V11
Version 03.0408W



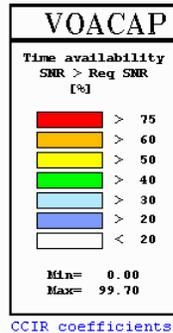
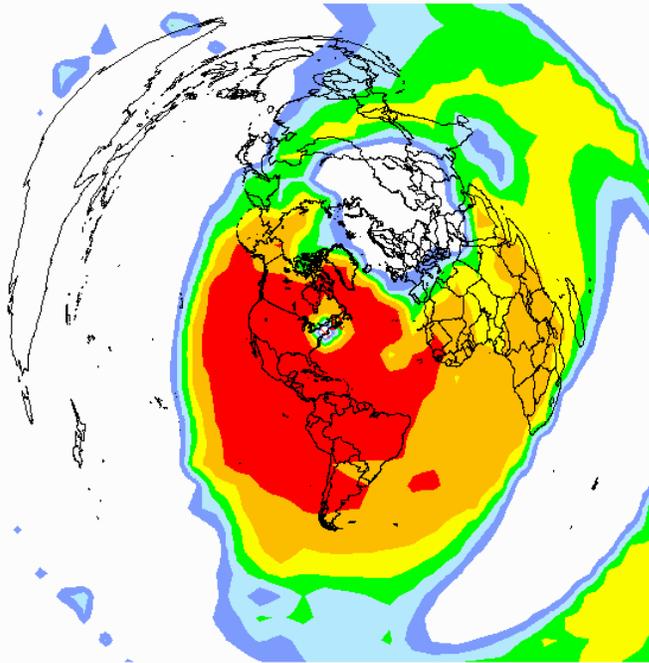
CCIR coefficients

NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Jul 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Oct.01 50ssn
Rx location from grid of Tx

REL
AREA_INV\default\q-10-00.v11
Version 03.0408W

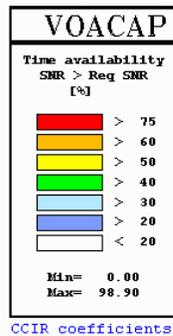
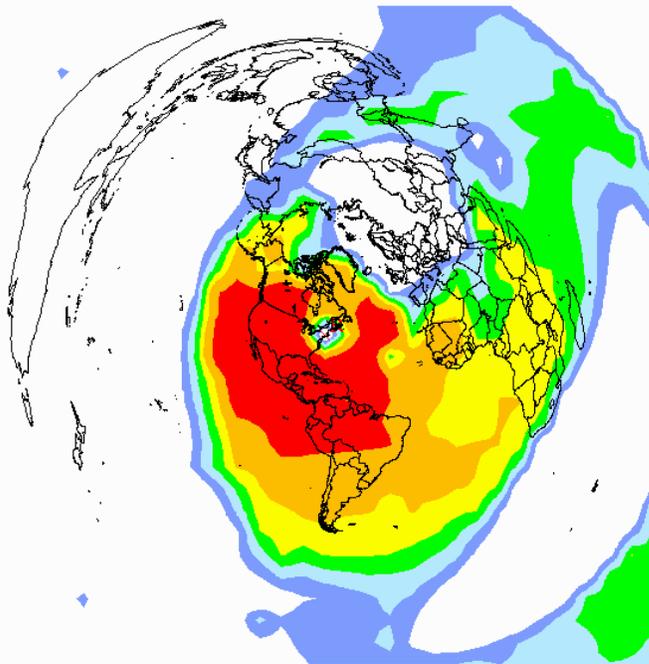


NTIA/ITS Noise level: -

170 dBW/Hz at 14 MHz. Date: Oct 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Oct.01 50ssn
Rx location from grid of Tx

REL
AREA_INV\default\r-10-00.v11
Version 03.0408W



NTIA/ITS

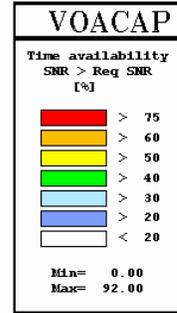
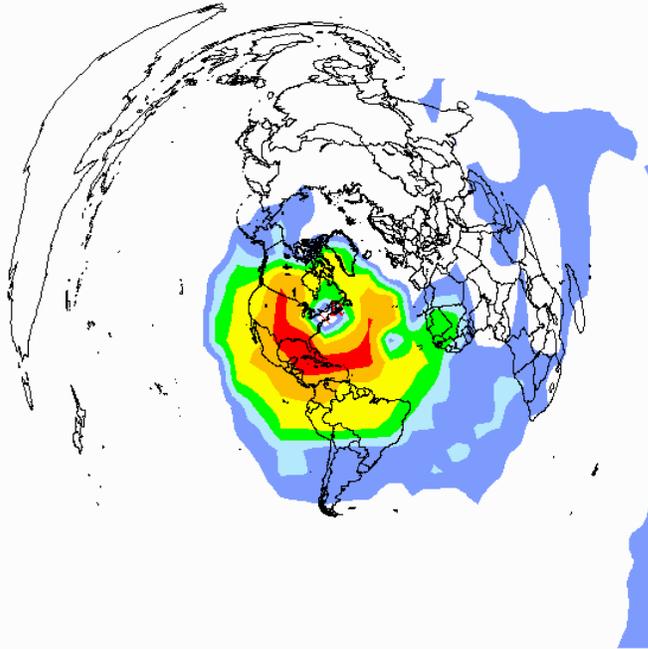
Noise level: Residential at 14 MHz Date: Oct 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-00.v11

Version 03.0408W



NTIA/ITS

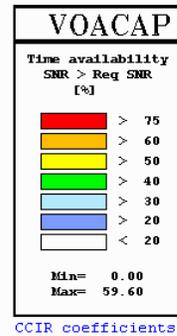
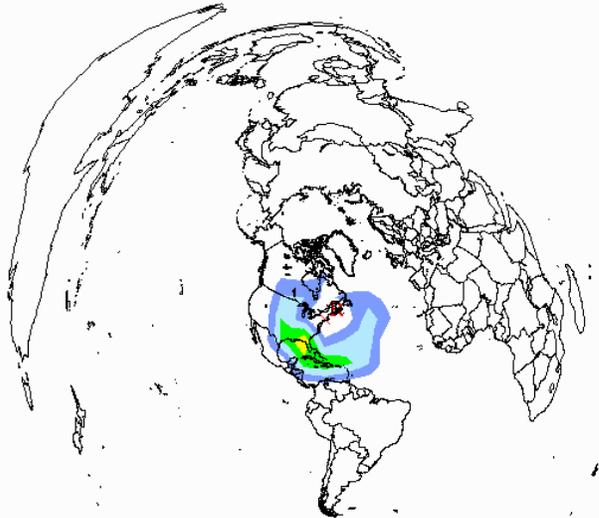
Noise level: Residential + 10 dB at 14 MHz. Date: Oct 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 24ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-10-00.v11

Version 03.0408W



NTIA/ITS

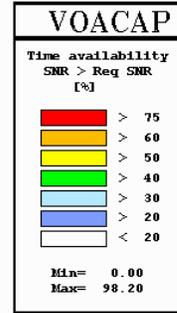
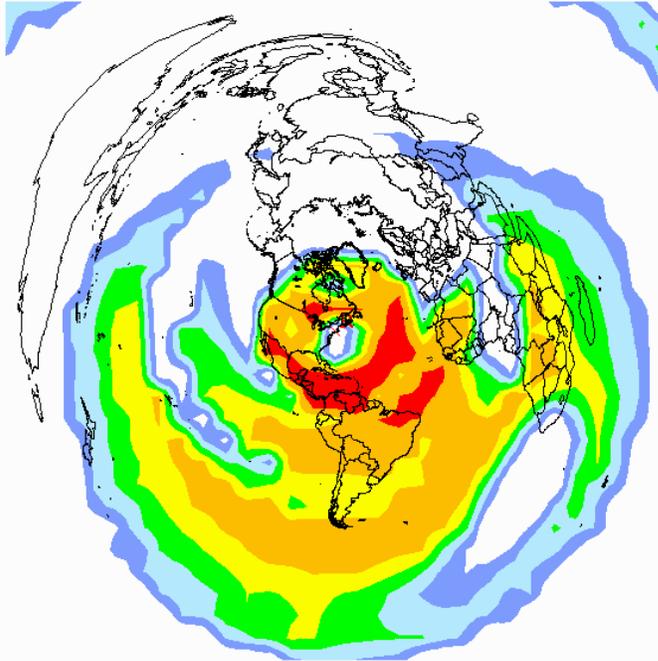
Noise level: Part 15 limits at 14 MHz. Date: Oct 01 Time: 0000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-10-04.v11

Version 03.0408W



NTIA/ITS

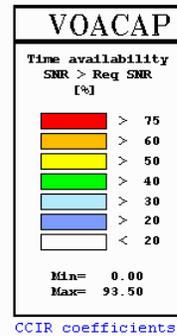
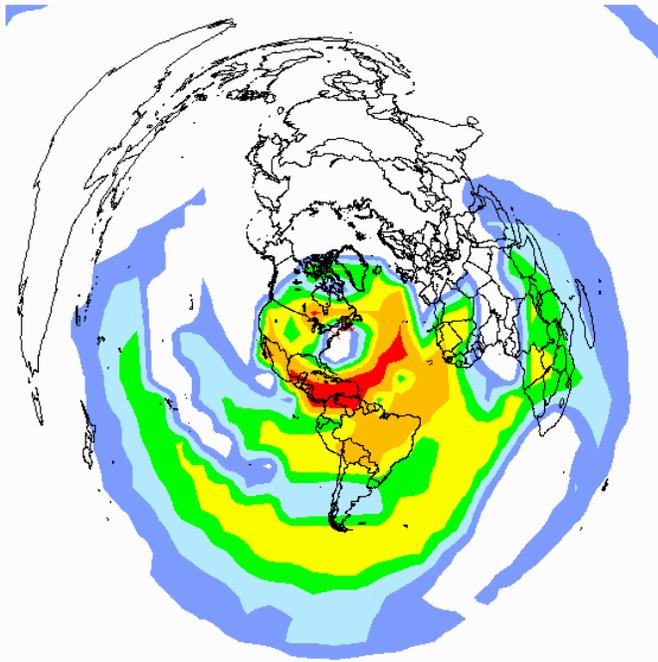
Noise level: -170 dBW/Hz at 14 MHz. Date: Oct 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHz Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-10-04.v11

Version 03.0408W



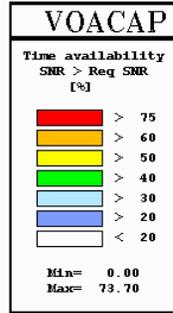
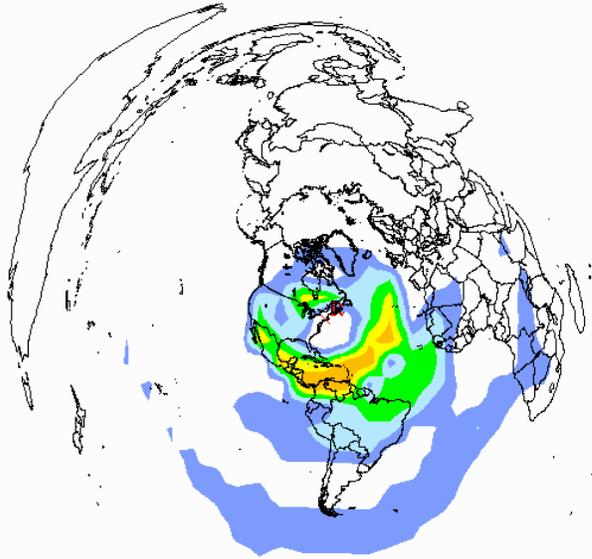
NTIA/ITS

Noise level: Residential at 14 MHz Date: Oct 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-04.v11
Version 03.0408W



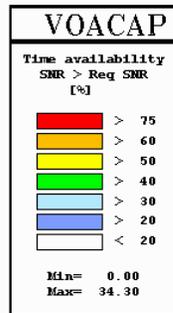
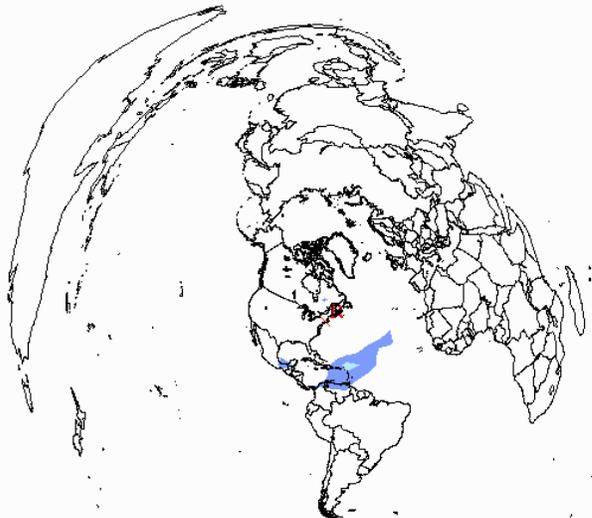
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Oct 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 04ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-10-04.v11
Version 03.0408W



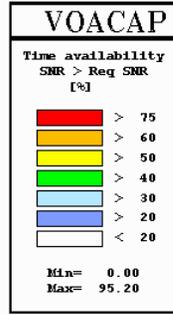
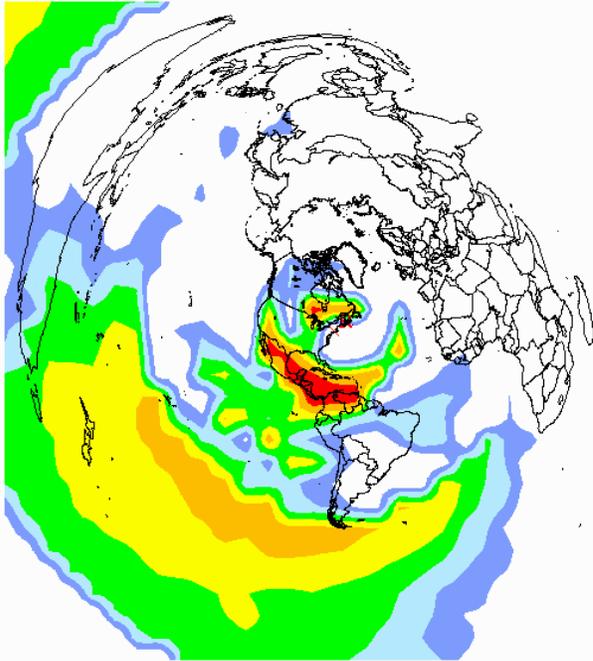
NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Oct 01 Time: 0400 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-10-08.v11
Version 03.0408W



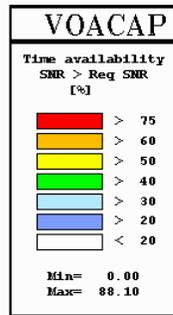
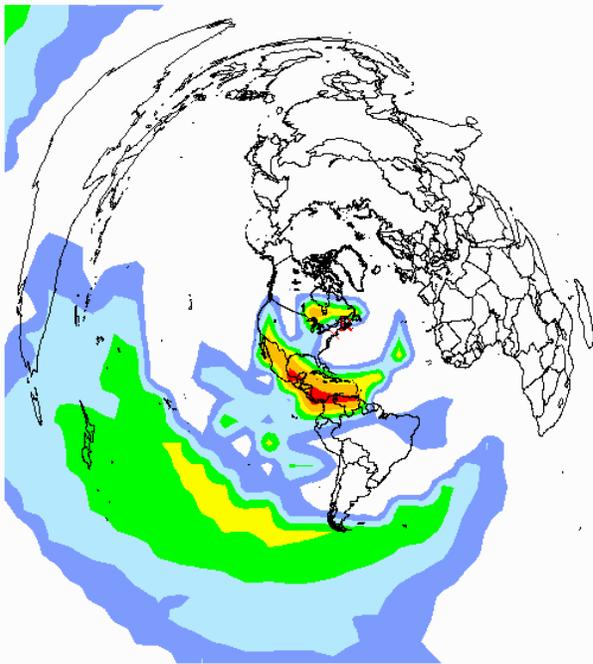
NTIA/ITS

Noise level: -170 dBW/Hz at 14 MHz. Date: Oct 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-10-08.v11
Version 03.0408W



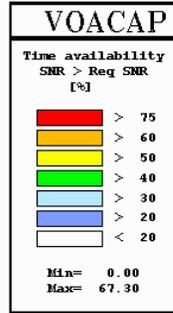
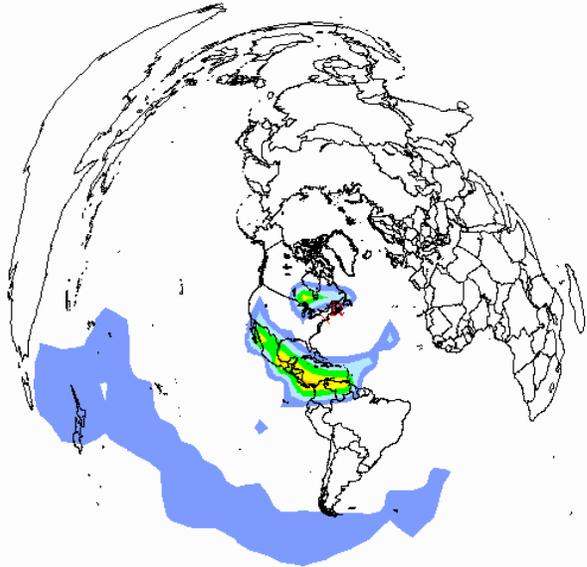
NTIA/ITS

Noise level: Residential at 14 MHz Date: Oct 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-08.v11
Version 03.0408W



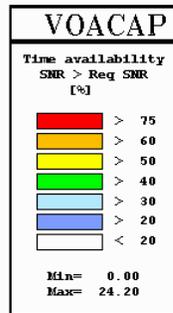
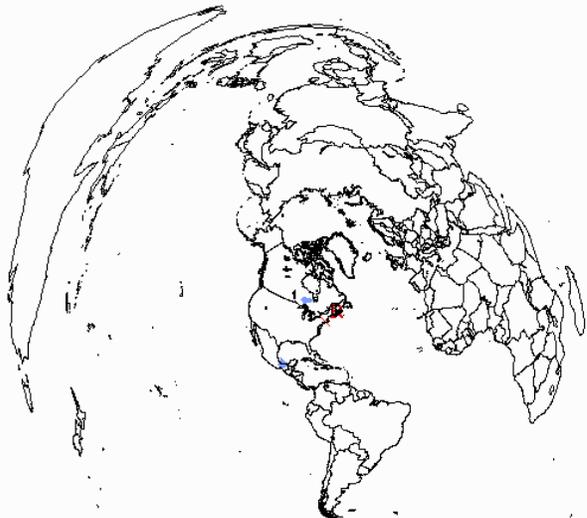
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Oct 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 08ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-10-08.v11
Version 03.0408W



NTIA/ITS

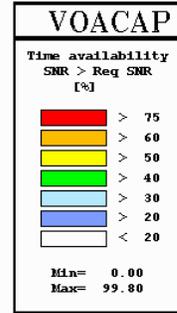
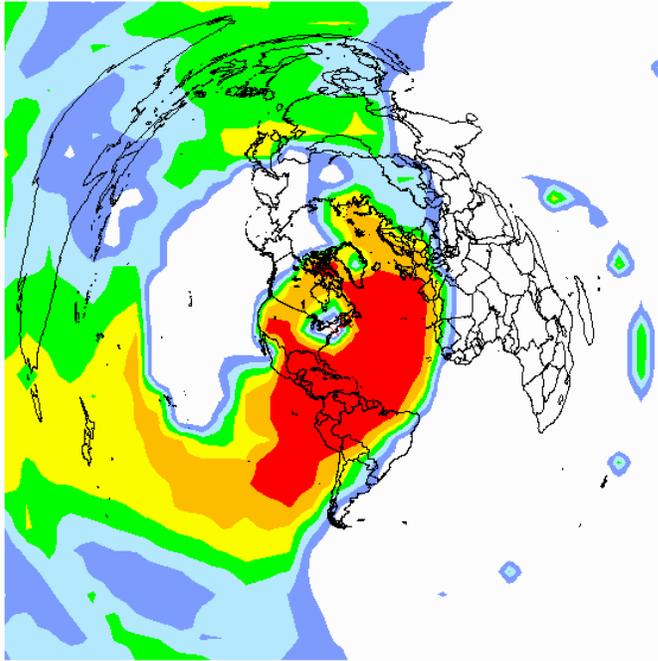
Noise level: Part 15 limits at 14 MHz. Date: Oct 01 Time: 0800 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-10-12.V11

Version 03.0408W



NTIA/ITS

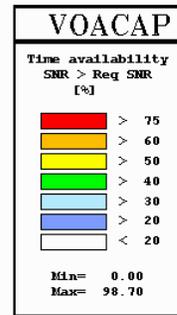
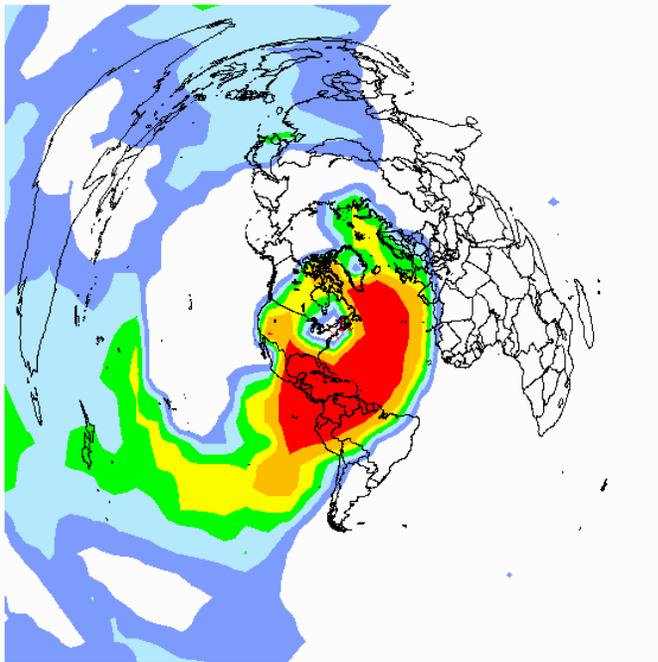
Noise level: -170 dBW/Hz at 14 MHz. Date: Oct 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-10-12.V11

Version 03.0408W



NTIA/ITS

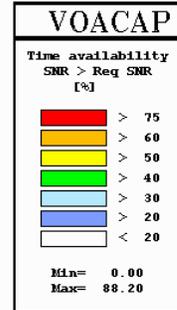
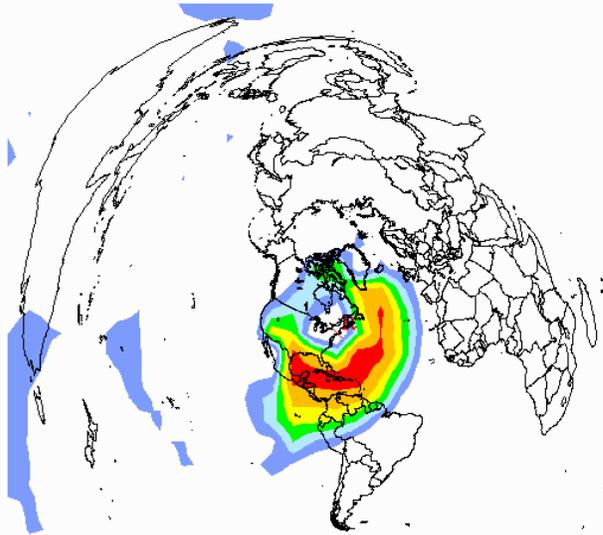
Noise level: Residential at 14 MHz Date: Oct 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-12.V11

Version 03.0408W



CCIR coefficients

NTIA/ITS

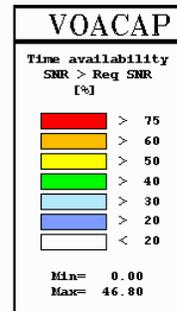
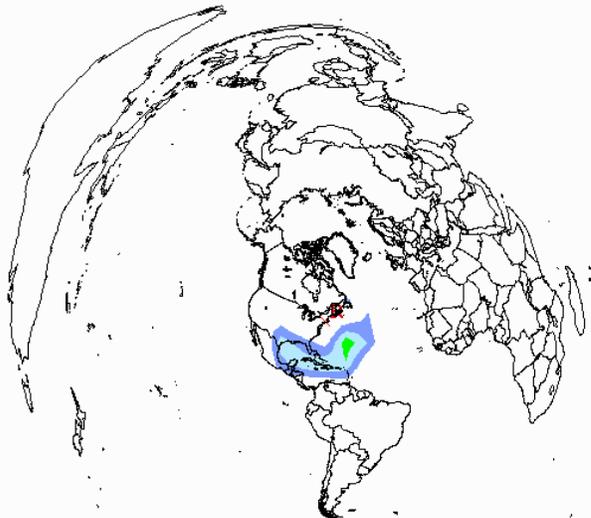
Noise level: Residential + 10 dB at 14 MHz. Date: Oct 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 12ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-10-12.V11

Version 03.0408W



CCIR coefficients

NTIA/ITS

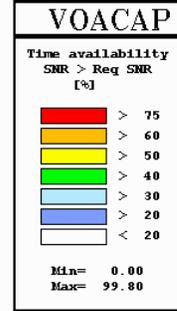
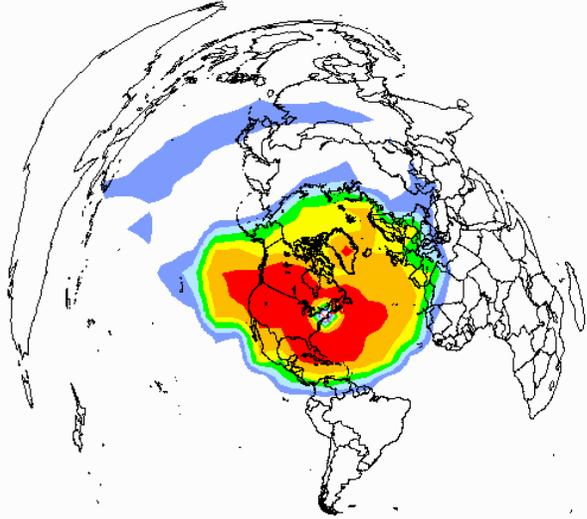
Noise level: Part 15 limits at 14 MHz. Date: Oct 01 Time: 1200 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-10-16.V11

Version 03.0408W



CCIR coefficients

NTIA/ITS

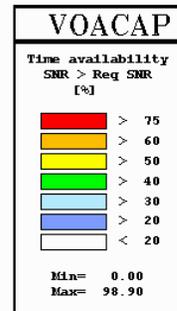
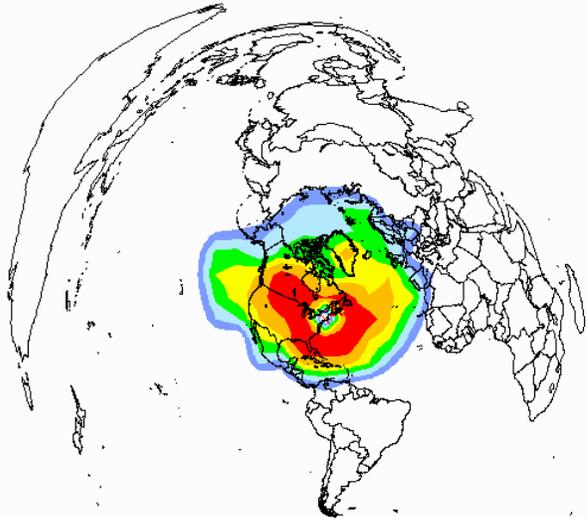
Noise level: -170 dBW/Hz at 14 MHz. Date: Oct 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-10-16.V11

Version 03.0408W



CCIR coefficients

NTIA/ITS

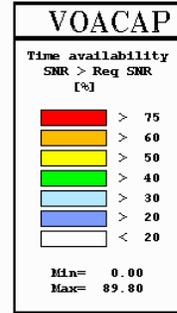
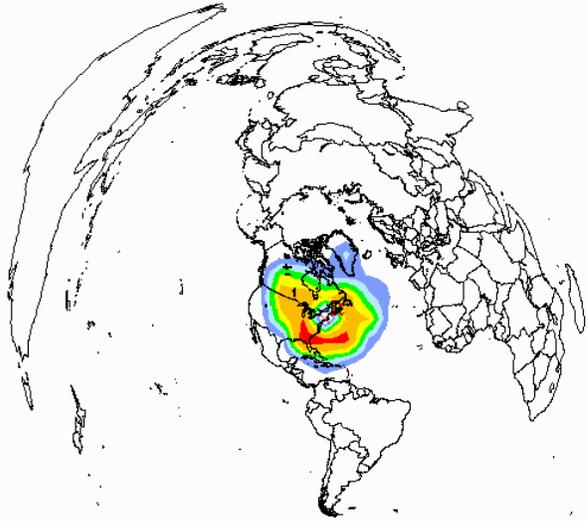
Noise level: Residential at 14 MHz Date: Oct 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-16.V11

Version 03.0408W



CCIR coefficients

NTIA/ITS

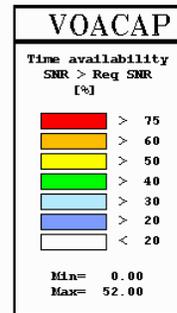
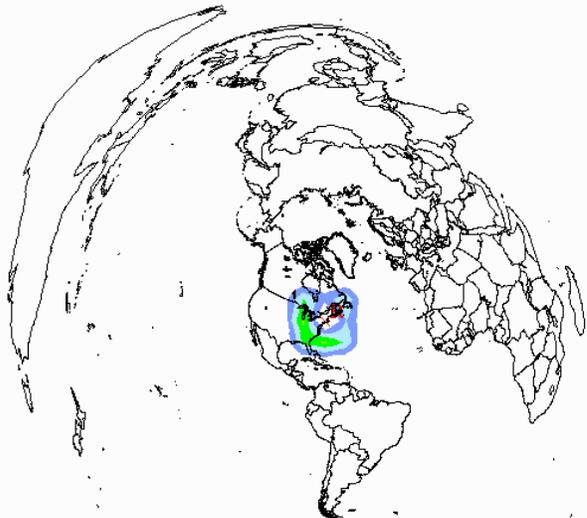
Noise level: Residential + 10 dB at 14 MHz. Date: Oct 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 16ut 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\p-10-16.V11

Version 03.0408W



CCIR coefficients

NTIA/ITS

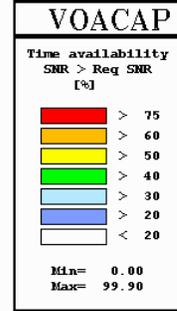
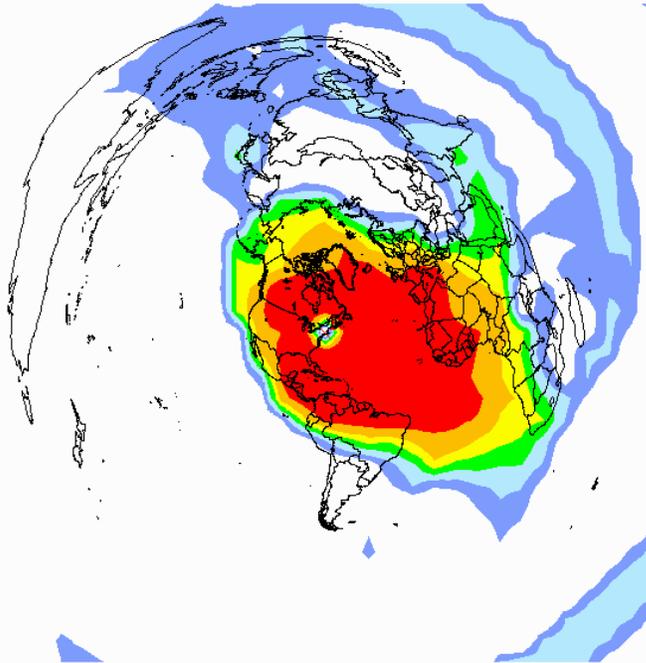
Noise level: Part 15 limits at 14 MHz. Date: Oct 01 Time: 1600 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\q-10-20.V11

Version 03.0408W



NTIA/ITS

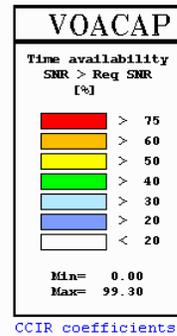
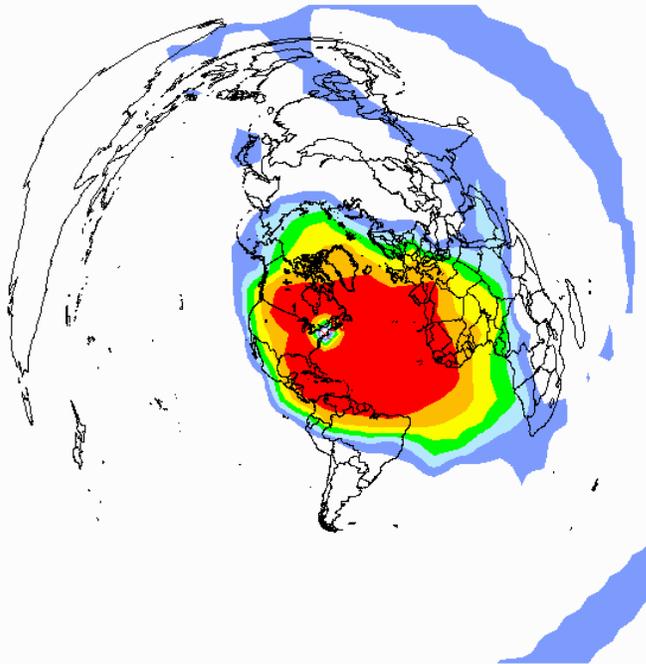
Noise level: -170 dBW/Hz at 14 MHz. Date: Oct 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\r-10-20.V11

Version 03.0408W



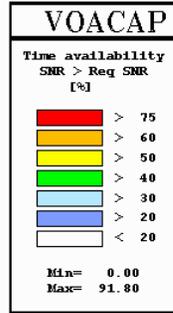
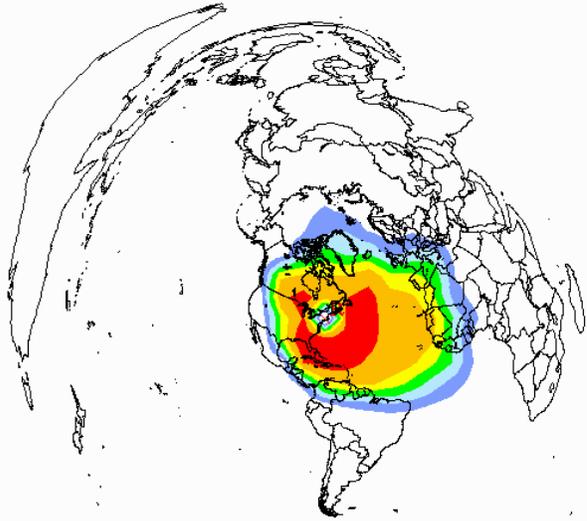
NTIA/ITS

Noise level: Residential at 14 MHz Date: Oct 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-20.V11
Version 03.0408W



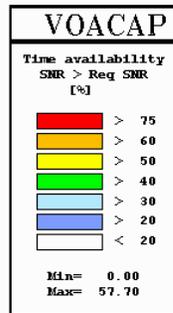
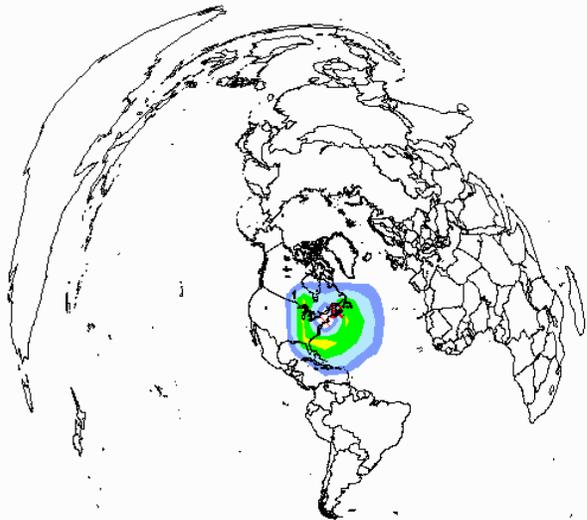
NTIA/ITS

Noise level: Residential + 10 dB at 14 MHz. Date: Oct 01 Time: 2000 UTC SSN = 50

NEWINGTON [ISOTROPE] 1kW 1deg 20out 14.000MHZ Oct.01 50ssn

Rx location from grid of Tx

REL
AREA_INV\default\n-10-20.V11
Version 03.0408W



NTIA/ITS

Noise level: Part 15 limits at 14 MHz. Date: Oct 01 Time: 2000 UTC SSN = 50