DX corner

Had an interesting tropospheric dx catch up at Sacandaga Lake last night. While sitting in the car, I started dialing around the weatherradio frequencies when I noticed I was picking up KHA53 on 162.400 from Rochester in very clearly with minimal fading. I was also hearing WXL31 on 162.55 from Syracuse up over the top of the local station here in Albany.
About that same time, I was also hearing the evening traffic net on 147.240 from a repeater in Oneida, west of Utica quite well. Now mind you, I was down at lake level, not on a hill. So some good tropo conditions to the west last night.

While I'm thinking about it, the National Weather Service transmitter in Stamford, Delaware County on 162.400 is currently out of service and off the air.

In other news – we're hearing of yet another Canadian radio shutdown, and one that most of us are familiar with. Time signal station CHU in Ottawa Ontario will be ceasing operation at the end of June. CHU operates on 3330 and 14670khz with 3kw of power, and 7850khz with 5kw. CHU has been in operation since 1923, though it has history going back to the earliest days of wireless. The National Research Council of Canada claim the station can no longer maintain time as accurately as online Network Time Protcol servers.

break

So in our VHF DX discussion last week we were talking about troposperic ducting which allows high frequency radio signals to be refracted in the atmosphere, allowing reception from well beyond normal line of sight propagation.

This week, we're going to talk about another mode of VHF DX called Sporadic E, or simply 'E-Skip'. This is when VHF signals reach a part of the atmosphere that normally does not reflect radio signals at all above 15mhz. But in certain circumstances when lower levels of the ionosphere become charged, VHF radio waves can be reflected back to earth at great distances away from the transmitter, due to the e-layer of the ionosphere being approximately 60 miles above the surface of the earth. This mode of DX is most commonly seen during the summer months, especially if there is hot, clear weather in the region of the transmitter location. Now we must remember that Sporadic E skip differs from the usual F-Layer skip that us Hams regularly use on HF frequencies, in that it occurs much lower in the atmosphere, and typically results is lesser distances covered.

My fist run in with E-skip was out in Niagara County in western NY. Back before my grandparents had cable TV, they relied on the typical rooftop antenna with a rotator, since signals came from three different cities. Toronto and Hamilton were line of sight over Lake Ontario, and were the strongest TV signals, very easy to get. Buffalo's main VHF channels – ch 2, 4, and 7 came from well south of Buffalo, and were mildly terrain blocked at that location. Well, I'd be watching TV in the morning and would notice channel 2, and channel 4 would be getting massive co-channel interference. I asled my grandmother why this was happening and she said it was the "atmosphere heating up, it happens every summer". I didn't realize those interfering signals were coming from places like Florida, Alabama, Arkansas and Iowa.

While E-skip is most commonly occurs in the summer time, it can also be seen in the winter right around the winter solstice.

E-skip typically results in reception of signals in the 700-1200 mile range, although shorter and longer distances can result. Double hop E-skip has also been noted, where the reflected signal is reflected back up to the E-layer, and reflected down again to earth.

It was double hop E-skip that netted me my longest TV Station reception, that being KOB-TV Channel 4 in Albuquerque NM back in the summer of 2003. A distance of 1820 miles. Double hop E-skip is rare, as it requires two areas of ionization along the signal path in the E-layer to happen. While TV E-skip reception was most commonly seen on VHF low band, 50-88 mhz, it has been seen on VHF high band above 170mhz on rare occasion during intense atmospheric ionization events. And my catches were not relegated to southern stations, though those were the most common. I've seen E-skip on multiple occasions from like Winnepeg, Manitoba as well as Newfoundland. Reports of transatlantic Sporadic E have also been reported, going back as far as the 1950's.

DX'ers often will scan the FM band during E-skip openings to hear distant signals fading in above the noise floor to near full quieting. It's quite something to hear a station in Florida come in with full stereo separation one minute, and be gone the next minute, or better yet, replaced with another DX catch.

Back when I was member of the WFTDA some 20+ years ago, I had a set up of long range TV antenna with a pre-amp, and also an FM yagi outside where both could be rotated to any direction. My TV was simple Zenith console, and I had a few FM tuners in my arsenal, including a Mitsubishi DA-F10, a Pioneer TX-9800II, and a Kenwood KT-515 modified with 110 khz filters, making it a very sharp and selective rig. With these units, not only was I hearing a plethora of tropospheric signals but also hearing E-skip signals with ease.

Some of my FM catches included a multitude of stations in Florida, Georgia, Alabama, Mississippi, and up through the plains states including Kansas, Nebraska, Iowa and Minnesota. I've also heard the Bahamas several times, Bermuda a few occasions, and my furthest catch – on the Mitsubishi tuner – was 88.1 in Santo Domingo in the Dominican Republic, a distance of 1700 miles using a simple 6 element yagi mounted 10 feet above my deck.

But you don't need expensive equipment to hear Sporadic E. I've heard it in the car while driving down the Northway. One Saturday morning about 15 years ago, I was listening to 99.9 FM out of Birmingham Alabama, even at full quieting for a short period. In fact, car radios have a great advantage over traditional analog receivers, and one I take advantage of. If I expect to hear e-skip, or of an opening is occurring, I'll park on an empty frequency, and kick on the RDS display. So when a station fades up, and the signal is strong enough, the RDS information will display and you immediately identify what you're hearing. Even though the FM dial has been heavily populated in recent years, it's still possible to hear Sporadic E, sometime strong enough to be heard over weaker local or semi-local signals.

Since the conversion from analog NTSC television to ATSC digital TV, I ended my TV Dx'ing efforts, although there has been success in decoding digital TV via Spradic E on VHF low band, despite there being very few full-power targets left operating in that frequency range. But FM E-skip is heard most every summer, so why not give it try for yourself on that next hot humid summer day!