

Natural Radio

News, Comments and Letters About Natural Radio

May 2001

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Thanks to all who contributed this past couple of months, especially Mike Mideke and Shawn Korgan who kept me posted of all their copious listening activities with many detailed accounts. A hectic work schedule with some traveling and intense projects continues to eat into my available hobby time. I apologize for not answering my E-mail in a timely fashion. It's not due to lack of interest on my part, but at this point I have been holding all non-urgent mail until it's time to put my column together. But like sunspots, life and business move in a cycle and free time should return with summer.

Increased solar activity has presented some interesting listening possibilities over the past few months. Historically the downward slope of the sunspot cycle just after the peak tends to produce lots of flares and CME's so this may be an interesting summer. I was in Florida when the Aurora was visible in March. Unfortunately cloud cover blocked it and local thunderstorms were so strong I couldn't even hear the usual hum!

H.A.A.R.P. At Full Power The controversial H.A.A.R.P. ionospheric research facility near Gakona, Alaska is now running at the full power output of 3.6 million watts. Shawn Korgan's reception of strange tones on April 8 got me to wondering if it could be triggered emissions from H.A.A.R.P. Several media sources are reporting strong signals on 3.39 MHz. Another published frequency is 6.69 MHz. If you hear anything strange in the Natural Radio band, check these SW frequencies and see if there is any correlation.

While browsing the site I found a wonderful source of data at <http://www.harp.alaska.edu/harp/data.fcgi>. This site has all sorts of data useful to the VLF experimenter including magnetometer readings, WWV signal strength plots and plots from a VLF receiver at the H.A.A.R.P. site.

Audio Files I have been receiving a lot of wave files of whistlers and other received phenomenon that might be good to share with the membership. If you send me a file, I will assume that it's OK to publish unless you tell me otherwise. I will also find out if there is an easy way to get these up on the LWCA website for downloading. If that proves difficult, I will put them up in the Natural Radio section of my website at www.realscience.com.

Coordinated Listening Spring coordinated listening was a success, at least for the guys out west. The first weekend here was extremely wet with pouring rain and sleet on the morning of the 17th. Not very conducive to listening. The 18th was drier but still quite cold, listening was pretty dead across the country, but Shawn Korgan and Mike Mideke were able to hear the same whistler at about 1300 UTC.

The next weekend produced some good results for those who were able to get out. Unfortunately, we were on the road to Florida and I was unable to get away from the power lines for either of the two days. Shawn and Mike were in good quiet locations with sensitive equipment. Their results coordinated very well on both days. Jim Mandaville was also in a quiet location in Arizona that weekend.

Please read their accounts, as well as several others in the Correspondence section. Also note that I removed all the logged signal reports from the correspondence and entered them in the Natural Radio Log, so that it would be easier to compare the signals from various listeners.

End of MIR & INTMINS This month's issue of the *INSPIRE Journal* noted the end of the 5 year INTMINS program with the de-orbiting of MIR. It stated, "While this marks the end of an important and historic phase in the life of INSPIRE, it does not mark the end of INSPIRE..." INSPIRE will continue with an expanded Coordinated Observation Program, with the last two weekends of April scheduled.

E-Mail Issues Shawn Korgan has a new E-mail address that is VLFKorgan@aol.com. Mike Mideke is being plagued by slow and expensive internet service. He requests, "I look forward to your reports but please don't e-mail sound files. At downloading rates often falling below 1 kb/sec and expensive intra-state long distance charges to access theriver, I can't afford them! It should all improve when I get moved over to gilnet."

NASA Online Inspire Receiver In February I mentioned that NASA installed an INSPIRE VLF receiver at the MSFC Atmospheric Research Facility in Huntsville, AL. The problems I noted early on are gone and it appears to be working well. This site might offer an opportunity to do some listening for those of you who aren't near a quiet site or can't easily get away. It's broadcasting live on the web 24 hours a day. The web address for the site is: http://science.nasa.gov/headlines/y2001/ast19jan_1.htm

Your Much Appreciated Correspondence

•**Shawn Korgan, Gilcrest, Colorado (korgans@mymailstation.com)** Here is my report from the morning of the March 18. On a scale of 1 to 10 with 10 being the strongest, nothing reached above a level of 3 today. There were a few more whistlers than the ones noted in the log but were way too faint to mention. Hope next week brings better activity for all.

On March 25, I parked on a tall hill approx. 2 miles from powerlines on the open Pawnee Nat'l Grasslands. E-field receiver SK-1. There was sure a lot more activity this time than last time for sure. Nothing reached over a 3 on my scale for this session.

All the activity died after 13:30 or so and I packed up and headed home. I starting looking at Mikes logs for comparison and I thought to myself things are sure off and not matching up this time like last time. I taped on the 25th and was looking at your logs Mike from the 24th. Once I got on the same page there was very high correlation

in what both Mike and I heard on the 25th. There was chorus occurring during the entire night. I noted a few places that the chorus was slightly louder. There were only a few whistlers that I did not have logged that Mike heard. Probably due to a loud lightning crash covering it up. There was a lot of loud lightning occurring on this morning. I see a few places where I can fill in the gaps on whether chorus was being heard or not and possibly that what was heard was chorus instead of a whistler.

All in all nice going. Thanks for the opportunity of the coordinated session. The next recording session I know of is planned for April 21, 22, 28 and 29 for the INSPIRE journal. I hope that everyone has a chance to record a few of these days. If the huge sunspot 9393 rotates back towards the earth again in 27 days we could have some hot recording sessions on these upcoming days!! I plan to record on both Sundays (the 22nd and the 29th) from about 9:00 UT and onward.

Last night (4-8-01) while I was out recording I was hearing some sort of very distinctive VLF signal for around a minute to a minute and a half. What I was hearing sounded like faint downward stepping notes every twenty seconds. The first two events were rather clear and then the signal began to fade off to the point that the following events after the initial two were very weak and hard to hear indeed (much as if a satellite were passing overhead might do).

I have come to two possible conclusions about this signal. Either it was 1.) a real VLF signal from a satellite or other piece of equipment or 2.) it was some sort of radio interference. I'm quite confident that what I heard was not any type of radio interference. The sounds were way too similar to be from a radio station that is bleeding into the equipment (i.e., I would have heard more than just the same repeating notes every twenty seconds). There was no noticeable radio interference throughout the night as is common at the site I'm presently recording at. I would therefore have to assume that what I heard was actually some sort of VLF signal possibly from a satellite.

Has anyone ever heard of any repeating notes being transmitted by a VLF satellite that sound similar to this example? If so, I'm very interested in learning more. Does the sound ring a bell to anyone? Happy listening. K index of 6 right now! This should make for another good night of listening.

• **Michael Mideke, WB6EER , Benson, AZ** I've just stumbled back from 2 chilly days on Sosa Mesa with twin-loop receiver. This was my first test with a minidisk recorder. It seemed to work fine, I haven't put a sample on the computer yet to see what the compression is doing. The new receiver is doing OK. Very enjoyable to listen to the fat liquid tweaks is stereo with bursts of dry static appearing to the left or right... But I would like to try the thing with some real whistlers!

March 24 and 25 were a lot more fun than the previous monitoring mornings! Friday afternoon (23 March, local) I set up camp on a ridge above Rosedale Canyon in the central portion of New Mexico's San Mateo range, about 33 deg. 45 min N, 107 deg 23 min W, elevation around 6500 feet. Two channel loop receiver with 5 turn 14 ga. 58 ft. circumference triangular loops (approximately N-S and E-W orientation) suspended

from a 25 ft. mast. Sony MiniDisk recorder. The nearest power line was a 2 phase rural line about 6 miles to the east. Next nearest AC would be another little one 15 miles or more to the west. Big transmission lines along the Rio Grande were more than 20 miles distant. Hum was nonetheless obnoxious, but lower than I've seen in quite some time.

So there's the report from Rosedale Overlook camp. Lots of activity but quite weak. I suspect latitude was just too low for the prevailing conditions. Also, given my impression of what the orthogonal loops revealed and the presence of whistlers before local nightfall, it seems like the activity was happening to my east. It will be interesting to see what other stations report.

I'm very busy acquiring a piece of property in the Magdalena NM area...and other activities... and it seems better to get this information off to you now than wait for me to find time to relog the recordings. I'm very impressed with the MiniDisk recorder - not least because I did all the above recording along with considerable "paused" monitoring and playback on two AA batteries. Since I was doing 2 tracks of VLF, after the initial announcements and time signals I just inserted top-of-the-minute WWV announcements and beeps on the R. channel. That's it for now.

•**Brian Page, N4TRB, Lawrenceville, GA** Nothin' but sferics! And not many of them. It was extraordinarily quiet this morning. I recorded in a very quiet location in the Appalachian foothills of north Georgia from 5:30 to 6:30 AM local (10:30 to 11:30 UT). I use an INSPIRE RS-4 receiver and whip antenna together with a Radio Shack CTR-117 recorder. My YachtBoy PE-400 was receiving WWVH on the little telescoping antenna sitting on the tailgate of my truck! So propagation was good but there were just no interesting phenomena. I reviewed the tape on Spectrogram just to make sure that I didn't miss anything while listening.

Sorry I didn't hang around for the later designated top-of-the-hours but I was freezing and mother nature was just being too darned quiet! But the sky was beautiful and I had a great view of the star Delta Scorpii, the hot giant star in Scorpius that is undergoing a flare right now that has brought it to a brightness that rival Antares.

Good luck next weekend. It will probably be spectacular -- I know this because I have to miss the observing opportunity. I'll be in New York City as chaperone for a high school orchestra.

•**Jim Mandaville**

I thought I'd send you some notes of whistler observations made during a recent camping trip in southwestern Arizona. Mike Mideke had recently told me of a spot along Interstate 8 (Exit 140, Freeman) that he had tested and found quiet on a WR-3. So driving west from Tucson our first stop was there, about a mile south of the highway. Things were indeed quiet; the only background audible on my E-field receiver (Bill Forgey's MK-III design built some years ago) was a faint buzz from the car clock, which can be disabled by pulling a fuse. My antenna was a 12-ft vertical mag-mounted on the truck cab roof.

The following two nights were inside the Barry Goldwater Air Force practice range (entry by permit obtained in advance). 23 March: In the pass through the Tinajas Altas mountains, not far from the Mexican border, a location that also proved to be free of any power line noise.

• **Dave Laida, Delta Lake, NY.** Following Scott Fusare's excellent article I modified my active antenna design (July 1999 Lowdown) by removing the 12 pF input filter capacitor and one of the two 22 Mohm JFET gate resistors. The remaining 22 Mohm resistor was then connected to the virtual ground point at the output of the source follower. I was pleased to find no rectified AM broadcast signals even without an input LPF. I also changed the amplifier output coupling capacitor from 0.15 uF to 22 nF in an attempt to reduce electrical power interference below 300 Hz.

My home location suffers power line interference even though the houses are widely spaced and electrical utilities are run underground. There are high-voltage transmission lines running cross-county nearby. Unfortunately winter weather has prevented me from scouting quiet locations in grid FN23. Since I can't drive a ground rod into frozen soil, I'll try experimenting with a long wire counterpoise as the ground plane.

I enjoy the From the Archives section and suggest Bill Forgey's "E Field Receivers for Whistlers" (May 1992 Lowdown) as a candidate for republishing. How about a vacuum tube whistler receiver? W. C. Johnson's "Amateur V.L.F. Observation" in the March 1960 (pp. 50-54) issue of QST offers some great historical reading.

• **Jon Wallace (jwallace@mail1.nai.net)** I ordered a KIWA Earthmonitor several weeks ago but it hasn't arrived so I couldn't do the spring observations. I will let you know when I get it and what I can detect with it. Take care!

Natural Radio Log

BP - Brian Page, N4TRB, Lawrenceville, GA Equipment - Inspire RS-4 with whip. Radio shack CTR-117 recorder.

JM - Jim Mandaville Equipment - G.W. Forgey Mark III receiver.

MK - Mark Karney, N9JWF, Barrington, IL. Equipment - WR-3, LF Engineering loop, homebrew receiver with 60" whip and -24db/octave hi-pass active filter, 350 Hz. cutoff.

MM - Michael Mideke, Benson, WB6EER, Benson, AZ Equipment - Twin loop receiver, G.W. Forgey Mark III receiver. Marantz PMD 430 cassette recorder, and Sony DAT recorder.

SK - Shawn Korgan, Gilcrest, CO. Equipment - Homemade e-field receiver I refer to as the SK-1 with 500 feet of antenna wire.

Month Day	Time UTC	What Heard (whistlers/hour where applicable)	ID Grid Sq.
03/17	1030-1130	Sferics, relatively quiet	BP-EM83
	1100-1106	Tweaks & Sferics	MM-DN42
	1200-1206	Tweaks & Sferics	MM-DN42
	1300-1306	Tweaks & Sferics	MM-DN42
03/18	1059-1107	Weak whistlers, faint chorus pieces	SK-DM79
	1100-1106	Tweaks & Sferics	MM-DN42
	1100-1106	Sferics	MK-EN52
	1200-1206	Tweaks & Sferics	MM-DN42
	1200-1206	Few whistlers	SK-DM79
	1300-1315	2 weak, fast whistlers	MM-DN42
	1300-1306	Whistlers, one fairly strong	SK-DM79
	1400-1406	Sferics	MM-DN42
03/23	0515-0530	Long diffuse whistlers 1/min.	JM-DM32
	0830-0915	Diffuse 2 hop whistlers after loud causative sferics	JM-DM32
	1250-1305	Few diffuse long whistlers with causative sferics	JM-DM32
03/24	0134-0141	Weak whistlers	MM-DM63
	0222-0228	Weak long semi-diffuse whistlers from strong sferics	MM-DM63
	0800-0830	Clear discrete whistlers w/o sferics, dense tweaks	JM-DM32
	1006	Nice fat whistler	MM-DM63
	1100-1106	Weak whistlers, 3 or 4 /min.	MM-DM63
	1200-1206	Weak whistlers, 3 or 4 /min. with clusters	MM-DM63
	1215-1240	Weak discrete whistlers 1 or 2 /min.	JM-DM32
	1300-1306	Whistlers 4 or 5 /min.	MM-DM63
	1400-1406	A few whistlers, one loud with echoes	MM-DM63
03/25	0106-0111	Tweaks and faint chorus	MM-DM63
	0240-0246	Bits of chorus, weak	MM-DM63
	0326-0332	Several long multiple whistlers from intense sferics	MM-DM63
	0530-0536	Several nice whistlers	MM-DM63
03/25	0815-0820	Dense tweaks with a few discrete whistlers	JM-DM32
	1000-1005	Fair long semi-diffuse whistlers from sferics 5/min.	MM-DM63
	1000-1007	Weak whistlers 7/min.	SK-DM79
	1100-1105	Fewer weaker whistlers 2/min.	MM-DM63
	1100-1106	Weak whistlers 5/min. bits of chorus	SK-DM79
	1200-1205	Weaker fewer whistlers, faint chorus 2/min.	MM-DM63
	1200-1206	Weak whistlers 6/min. bits of chorus	SK-DM79
	1300-1305	Several nice whistlers, bits of chorus	MM-DM63
	1300-1306	Several weak whistlers, chorus	SK-DM79
	1400-1405	Couple weak whistlers	MM-DM63
04/08		Strange downward stepping tones	SK-DM79
04/12	1345-1400	Bits of chorus right after loud local sferics	MK-EN52