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# VHF/UHF – An Expanding World

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David Smith VK3HZ

## Weak Signal

David Smith - VK3HZ

The summer propagation period ended with a bit of a fizzer. March, which can be a hot period in the south of the country, was actually quite mild and propagation followed the same trend.

Overall, the conditions this summer were fairly unspectacular. There were a number of tropo openings across the usual paths from VK3 to VK6 and from VK2/4 to ZL but none of the extended or “huge” openings of a few years ago. For Sporadic E, there were a few openings, unlike last year’s almost total drought.

A highlight of the season would have to be the new 10 GHz World Record set by Rex VK7MO and Derek VK6DZ. A lot of effort was put into the preparation and planning for that contact over a number of years. Conditions at the time were exceptional, but not one-off, showing that, with the right equipment, operators, location and timing, great contacts are possible. Of note, the VK to ZL path is yet to be crossed on the higher microwave bands, but I believe it is only a matter of time (and all the other factors!)

The John Moyle Field Day was held in late March. The weather in the south was good and a number of VHF/UHF operators participated. For their efforts, some of them were rewarded with mildly enhanced conditions from VK5 into VK1 and VK2. Andrew VK1DA/P on Mt Ginini managed to work Peter VK5PJ on 23 cm. On 70 cm, a number of contacts were made from the Adelaide area into Canberra. The VK5 to VK1 path is fairly difficult being over land with a few significant hills in the way.

## Guy Fletcher VK2KU - SK

Sad news during the month that Guy VK2KU succumbed to a long illness. Guy was a very understated achiever on the VHF/UHF scene. He was active on VHF/UHF during his working career from a location in Sydney, and on his retirement he moved to mid-central NSW where he set up a very capable EME station. He recently achieved the 2m EME DXCC. Vale Guy.

## Gridsquares Table

One thing that Guy VK2KU was quite passionate about was the Gridsquares League Table that he set up and managed for many years. The table is a tally of gridsquares worked for the bands 2 m and up. It is completely honorary – no proof of contacts is required – and is intended as an incentive for people to be active on the VHF/UHF and Microwave bands.

Unfortunately, with Guy’s passing, the web site on which the table was hosted has become an orphan – nobody seems to know how to access it and the site administrator doesn’t respond to emails.

As a result, I’ve offered to take over the running of the table. As well, I’ve proposed that it be renamed to the Guy Fletcher Gridsquares Table. To overcome the web site problem, I have moved the pages to: [www.vk3hz.net/gridsquares](http://www.vk3hz.net/gridsquares)

The table is updated 3 times per year – the next being in mid April, before this column appears. If you are interested in participating, register on one or both of the

following email reflectors:

- VK-VHF : <https://lists.ozlabs.org/listinfo/vk-vhf>
- VK-Microwave : <https://groups.yahoo.com/neo/groups/VK-Microwave/info>

and you will receive notification of the next update.

Please send any Weak Signal reports to David VK3HZ

## Digital DX Modes

Rex Moncur – VK7MO

### New Version of WSJT for Microwave Tropo-ducting

10 GHz tests between VK6DZ, VK5KK, VK5DK and VK7MO have shown that on tropo-ducting as opposed to tropo-scatter there is little if any spreading of the signal but ducting does come with rapid QSB of up to 20 dB over just a second or so. To date we have been using JT4f which copes well with the spreading that is typical of tropo-scatter but have now concluded that JT65a might be a better mode for tropo-ducting as it has around 2 dB better sensitivity on un-spread signals and also over twice as much error correction to cope with QSB. A disadvantages of previous versions of WSJT for JT65 is that they did not provide the integrated single tone "Yellow" graph which has proved to be useful for identifying weak evidence of propagation from 1270 Hz single tones and also for completing marginal QSO's using single tone RRR (1500 Hz) and 73 (1700 Hz). Joe Taylor, K1JT, has responded to our suggestions and produced a new version of WSJT10, r5046, with a number of improvements.

- The "Yellow" graph can now be implemented for all modes including JT65 by going to "Setup", "Plot average spectrum (yellow)". To use single tones for 1270 Hz (tune), 1500 Hz (RRR), and 1700 Hz (73) it is necessary to first set these up by going to "Setup", "Options" and changing the messages in Tx4 to TX6 to @1500, @1700 and @1270.

- The "Yellow" tag associated with the "Yellow" graph has been changed to read "frequency" rather than "frequency difference" so it can now be used to directly identify the single tones. ( Note: the Red ticks on the waterfall provided with JT4f for reading single tones are not yet implemented of JT65 so it is necessary to use the Yellow tag method)

- A bug that gave an error of 0.75 seconds DT on JT65 has been fixed.

- A bug with JT4 that caused it to send OOO as well RRR and 73 when using the long-form format has been fixed

- A bug that caused JT4 to revert to the long-form format after sending double clicking on the other stations callsign to pick up the signal report has been fixed.

Note: Long-form format provides for sending both callsigns and RRR or 73 where-as short-form format gives single tones for both RRR and 73 which are 6 to 8 dB easier to detect on the "Yellow" spectrum graph but must be read by eye. The short-form format is recommended for marginal EME and terrestrial operations on both 10 and 24 GHz.

The new version of WSJT10 r5046 is available on K1JT's web site at: <http://www.physics.princeton.edu/pulsar/K1JT/wsjt.html>

Please send any Digital DX Modes reports to Rex VK7MO

# Meteor Scatter

Dr Kevin Johnston – VK4UH

Normally the summer period, following the Christmas and New Year holidays, is associated with the best of the year's conditions for tropospheric, Sporadic E (Es) and Meteor Scatter (M/S) propagation on 2 m. We have been disappointed by all three this year. In general the weekend Meteor Scatter activity periods have been well populated by stations across VK1 to 5 and 7. There have even been some new calls appearing including VK2EMA (QF37qs), VK3DUT (QF32vf) VK2IUW (QF56if) and VK1DJA (QF44mr), which is great to see. Most stations however reported M/S conditions as being poor to average at best over this period. The number of random meteors has been lower than expected and most pings have been both shorter and weaker than hoped for. The number of hyper-dense "Burns" lasting more than 10 seconds has been low. Conditions have also deteriorated rapidly after dawn, which is a problem at this time of year as the sessions are probably starting too late in the day to take full advantage of what meteors there are. Further there have been no major Meteor Shower events since the Geminid Shower last December. From VK4 I have felt lucky to complete with even 2-3 stations during each session, indeed on some occasions I have failed to complete with any. Stations further south appeared to be having better luck than I but still well below previous year's conditions.

Since 2 m meteor scatter conditions have been disappointing, during the weekend sessions this month, a number of operators have been QSY'ing to 50 MHz at the completion of the normal 2 m sessions. From 21:00 UTC onwards, activity has been occurring on 50.230 FSK441. Active stations over the month have included VK1DJA, VK2BLS, VK2EMA, VK2IUW, VK3HY, VK3DUT, VK3AMZ, VK3II, VK3AXF, VK4UH, VK4CZ, VK4NE, VK4JMC, VK5RM, VK5PJ, VK7JG and VK7XX.

Although I have completed a small number of MS QSOs on 50 MHz in the past, a number of interesting differences are apparent when a large number of stations are on air at this time. As has been well discussed in previous articles, 50 MHz pings are much stronger and of much longer duration than their 144 MHz equivalents. More importantly the period of "useful" meteor activity continues for much longer after the pre-dawn peak on 50 MHz as compared to on 144 MHz. Useful Meteor Scatter propagation is still present long after 2 m has dried up

The long 50 MHz pings however can be a mixed blessing. WSJT/FSK441 does sometimes fail to decode effectively where the signal returns continue for many seconds or tens of seconds. This is well recognised if for example decodes are attempted on FSK signals from local stations or arriving via propagation other than meteor scatter. It is apparent however that MSR<sub>X</sub>, the alternative receive-only software, decodes very well indeed under these conditions. I have strongly recommended having MSR<sub>X</sub> running in the background behind WSJT for serious MS operation and am now even more convinced of its usefulness for operation on 50 MHz where the received pings are so prolonged and often coming from multiple sources in the same frame.

The next major Meteor showers this year include:

LYRIDs	Class 1, Peak expected on or around 23 April 2015	ZHR	15-90/hour
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Eta AQUARIDS	Class 1, Peak expected 6 May 2015	ZHR	70/hour
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Thanks to all who have provided positive feedback on my recent "Getting Started" articles. It was particularly gratifying to hear from operators who have successfully completed their first M/S QSOs as a result. As spotted by some eagle-eyed readers

a typo unfortunately crept into the "Surviving your first M/S contact" article. That's code of course for my having made a mistake.

In the last steps of the stylised MS contact the stations and callsigns were inadvertently reversed and I apologise for any confusion caused. The paragraph on AR March 2015 P45 should read:

VK4UH/RRR VK1ABC

The same format confirms who is transmitting. "RRR" (Roger Roger Roger) indicates that all required information has been exchanged i.e. both callsigns and reports in both directions. When the RRR string is decoded by VK4UH the QSO is actually complete. However VK1ABC cannot know that and would keep on transmitting the same RRR report. Once RRR is received by VK4UH he would then, as a courtesy, change his string to:

VK1ABC/73 VK4UH

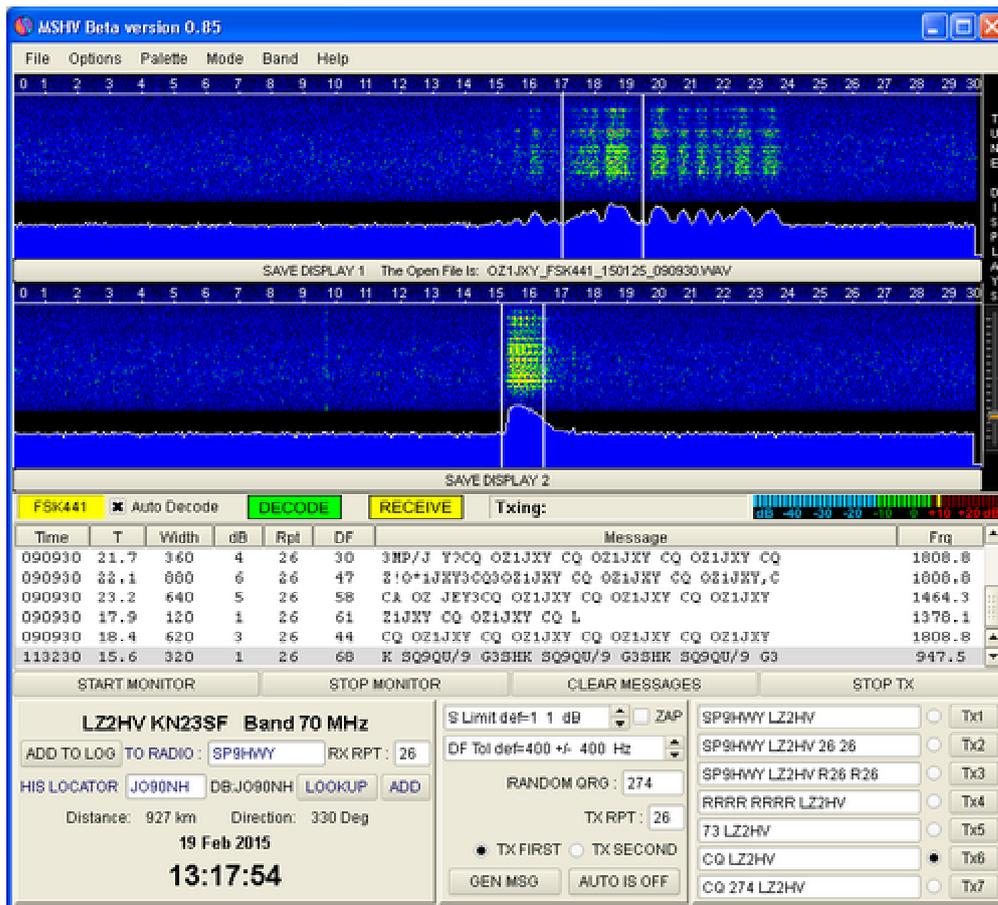
When VK1ABC sees his 73 report he would then go back to CQ or to call another station.

### **New Software available**

There have been some new Meteor Scatter software applications released this month.

A beta version of MSHV is available for download (MSHV Beta Ver. 0.86) at <http://www.lz2hv.host.sk>

Developed by Christo LZ2HV, MSHV is specifically tailored to Meteor Scatter operation and supports JTMS, FSK441, ISCAT and JT6M modes. The software is free to the amateur community and successfully installed here with the minimum of heartache. The user manual is available from the same site and downloading this is recommended. Christo has based the programme around K1JT's open source software and added a very functional User Graphical Interface (UGI).



I have started using the application in parallel with WSJT and MSRX during the weekend activity sessions and will report more information when operating conditions improve sufficiently to make a valid comparison at least with FSK441. First impressions are favourable however, the software is easy to use and the GUI is appealing. The pre-populated Tx windows are however set up for European/US operating formats but can be easily changed to the usual VK/ZL format without trouble. The ST (Short text) format is not however supported in this beta version. I have been in contact with Christo LZ2HV who is amenable to suggested changes and is open to all feedback.

Being fully compatible with WSJT, MSHV also writes .wav files containing all the received audio at the end of each receive period, which can be read by MRSX for second-look decoding as described last month.

There has also been a new revision of WSJT (WSJT-10 Ver. 5046) released. The new version is mainly to help with 10 and 24 GHz EME and tropo-ducting (see separate item by VK7MO). There have been no changes to M/S modes and I have found the new version to be fully functional.

Please send any reports, questions or enquiries about Meteor Scatter in general or the digital modes used to Kevin VK4UH