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# VHF/UHF – An Expanding World

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David Smith VK3HZ

## Weak Signal

David Smith - VK3HZ

The summer season started off slowly but has picked up in recent days producing some excellent conditions. There has been so much activity that it is impractical to try to report it all so I'll try to summarise the highlights.

On the morning of November 20<sup>th</sup> at 1600Z, Nick ZL1IU reported hearing his old friend the VK2RSY 2 m beacon. Two hours later, he worked Steve VK2ZT in Sydney on 2 m with a 5x5 report. A number of other contacts were also made. Conditions were improving and at 1949Z, he worked Ross VK2DVZ on 70 cm with 5x5 reports. VK4 stations were also getting into the action with John VK4JMC working Nick at 2045Z at 5x2. At 0349, after several attempts, Ross and Nick worked on 23 cm at 5x1 – the first VK-ZL 23 cm contact for the season. The opening continued strongly into the following day with VK2DVZ and VK2AMS working Steve ZL1TPH on 23 cm. Many more VK2 and VK4 to ZL contacts were made before the band closed during the day on November 22<sup>nd</sup>.

On the morning of November 23<sup>rd</sup>, the band opened across the Bight from VK5 to VK6. Brian VK5BC was getting particularly strong signals from Wally VK6WG with a 5x9+ report on 2 m and 5x9 on 70 cm. At 2217Z, they succeeded on 23 cm with 5x1 reports over a distance of 1910 km.

The first 2 m E's contact occurred on at 0250Z on November 29<sup>th</sup> between John VK4FNQ and Brian VK5BC. Over the next hour, a number of VK4 to VK5 contacts were made. Alan VK3XPD also worked John VK4FNQ to put another "angle" on the E's path.

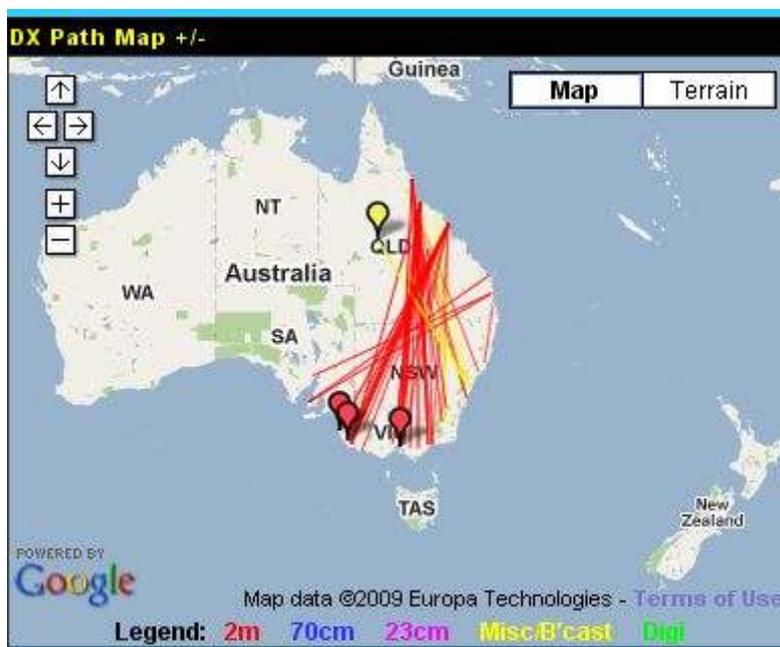
Early on December 22<sup>nd</sup>, Brian VK5BC reported that the VK6 2 m beacons from Esperance, Albany and Bunbury were all pounding into Adelaide, but no VK6 stations could be raised. Signals from VK3 were also very strong. At 2248, Alan VK3XPD worked Wayne VK6JR in Yallingup on 2 m at 5x1 over 2745 km. Beacons continued to be heard for some time.

On the evening of December 28<sup>th</sup>, another strong opening appeared across the Bight. At 1206Z, Rob VK6LD in Denmark worked Nick VK3VFO on 2 m at 5x1 over 2620 km. Following this, Rob worked David VK3AUU and Mike VK3KH, both on 2 m.

December 30<sup>th</sup> brought a repeat of conditions of the previous year with a tropo opening from ZL1 into central VK3. This path had previously been considered next to impossible with the Victorian Alps blocking the VK3 end of the path. However, this year has shown that last year was not a fluke! At 0230Z, ZL1IU reported hearing the VK3RGI 2 m beacon in Gippsland at 5x5. At 0420Z, he worked VK3UCQ (2435 km) followed at 0745Z by Norm VK3DUT (2338 km) up to 5x5. At 0902Z, it was VK3ALZ (2454 km) on 2 m and later on 70 cm, at 0941Z VK3EK (2350 km), and at 1100Z VK3AUU (2505 km), VK3EBQ (2454 km) and VK3AKK (2650 km) – the longest distance contact. David VK3AUU, a veteran of 55 years operating on the VHF/UHF bands was very pleased to work his first ZL on 2 m. VK3VFO operating portable in Gippsland worked Nick on 2 m using just 500 mW. The following morning, Nick worked Rex VK7MO on 2 m SSB at 5x9 and then on 70 cm CW at 4x1 over 2431 km.

After being fairly quiet for most of the month (for E's, that is), the last few days of December also saw the 2 m band jumping with E's openings. A large E cloud formed in central NSW and there were contacts criss-crossing the area from FNQ to VK3,

VK5 to VK4 and VK2 and many other combinations. The map of Spots on the VK Logger taken at 0230Z on December 31<sup>st</sup> gives an indication of what was happening and where the cloud seemed to be located.



### 2m Sporadic-E Paths – 31/12/2009

On the afternoon of December 31<sup>st</sup>, David VK4ZDP located near Innisfail in FNQ worked many stations in southern VK3 over distances of greater than 2250 km.

On the morning of January 5<sup>th</sup>, a high-pressure cell had settled over Bass Strait producing good conditions between VK7 and VK5. Norm VK7AC worked many stations in Adelaide on 2 m and 70 cm. At 2152Z, he worked Brian VK5BC/P at Corny Point on 70 cm (5x8) and 23 cm (4x2) over a path of 1127 km.

At 0135 on the 5<sup>th</sup>, Nick ZL1IU worked Phil VK5AKK (3182 km) at 5x3 and Jeff VK5GF (3179 km) at 5x5 in an E's opening – either double-hop or possibly tropo-enhanced as he later worked into VK3 via strong tropo enhancement.

The tropo enhancement across to ZL continued the following day. At 2046Z, Ross VK2DVZ worked Stephen ZL1TPH on 23 cm at 5x2 over 1902 km.

On January 8<sup>th</sup>, once again there were good tropo conditions, this time from the ZL4 to VK2. ZL4TAE/P had set up portable on the mountains in the middle of the south island and was getting signal reports up to 5x9 from stations along the VK2 coast. He even managed to work inland to Mark VK2EMA at Tottenham over a path of 2293 km. Mark was very pleased to work his first ZL since 1985.

January 9<sup>th</sup> saw a good tropo opening across the Bight from VK3 and VK7 to VK6. At 0325Z, Norm VK7AC worked Wally VK6WG on 2 m at 5x1 over a distance of 2633 km. At 0520Z, Phil VK5AKK worked Wally on 23 cm at 5x1 over 1897 km. At 1030Z, Mike VK3BDL worked Wally on 2 m (5x2) and 70 cm (5x2) over a path of 2447 km. Wally was also worked on 2 m by Jim VK3II (5x3 at 2483 km) and Graeme VK3GL (5x1 at 2476 km).

The following morning, conditions were good up along the VK2 coast. At 2040Z, following a JT65 contact, Steve VK2ZT worked Rex VK7MO on 70 cm SSB at 5x6

over 1196 km.

So, a bumper start to 2010 and I'm sure there's plenty more to come.

### **VK9NA Norfolk Island DXpedition**

The VK9NA effort is currently underway, and Mike VK3KH has sent a brief note on their achievements to date:

*We have had a total of 229 contacts including:*

- 6 m: 203 contacts including A35, E51, 3D2, VK1,2,3,4,5,6,7 and ZL1,2,3,4*
- 2 m: 21 contacts including SSB with VK4 and ZL1, plus M/S with VK2 and 4*
- 70 cm: 3 contacts all CW with ZL1*
- 23 cm: 2 contacts both SSB with ZL1TPH*
- 13 cm: No contacts but CW heard both ways with ZL1TPH*

*The last few days have been very hard work as the promise of tropo has not yet eventuated.*

As I write this, the propagation has finally opened up for them back to VK. In the last two days, they have managed SSB contacts with VK2DVZ, VK2MAX, VK2AMS, VK2ZT, VK2KOL, VK2IDM, VK2IJM, VK2BCC, VK2HN and VK4JMC. The longest distance SSB contact has been to Rex VK7MO over a path of 2403.3 km.



**VK9NA Team (L-R: Alan VK3XPD, Michael VK3KH and Kevin VK4UH)**

## **Northern VK6**

We don't hear very much, if anything, about weak signal activity in northern VK6. Steve VK6HV located in Wickham, approximately 1600 km north of Perth sent in a brief report on recent activity in the area:

*VHF tropospheric ducting has arrived to the Pilbara region in the North West of Western Australia as usual and on schedule. In my 12 years in the townships of Karratha and Wickham, I can't say I remember NOT having numerous openings during the hot and humid summer months. And again, the beginning to this summer has been no different. I've just seemed to take a bit more interest in it this year.*

*The ducting is usually quite extreme in the summer months here in the North West. I think it's one of the "hot spots" for tropo around Australia. But since there are only 2 active hams here in my area - including me - and none active along the coast within 500 miles of me, neither north nor south, it usually goes unnoticed. Sometimes the ducting gets so extreme that we have to shut our local repeater off when the Indonesians hammer our repeater "input" with singing and music.*

*Some highlights so far:*

*27-10-09 - From my location in Wickham, W.A. (OG89nh) I was able to key up 11 different unknown repeaters presumed to be in Indonesia. Notable repeaters with S9 signals that evening were, repeaters on 147.860(-), 146-660(-) and 146780(-). I also had a QSO with "Wan" through the 146.780 repeater. Unfortunately, Wan didn't really speak any English and I don't speak any Indonesian but I was able to extract his location as Jakarta.*

*28-10-09 - I was able to key up the Exmouth repeater VK6REX on 146.800(-) with only a moderate signal strength of S5. This repeater is located about 350 km down the coast from my location.*

*30-10-09 - Four repeaters presumed to be in Indonesia were again keyed up on this evening with 147.860(-) and 146.660(-) having S9 signal strengths. It's interesting to note that I worked Michael VK6BHY in Karratha approximately 25 km away from my location through the 146.660(-) repeater presumed to have a location somewhere in Indonesia. That's a long haul to talk to someone only 25 km away - probably well over a 1000 km!*

*16-11-09 - Again multiple stations heard from what I assume to be Indonesia. This time there seems to be numerous stations on simplex too. Signal strengths did not appear to be as strong as previous, but there appeared to be more stations heard.*

*Also on this evening, the Exmouth repeater was S9. I called and called CQ but no answer.*

Thanks Steve, and it sounds like there could be some interesting possibilities for long-distance contacts if only there were some weak-signal enthusiasts at the other end.

Please send any Weak Signal reports to David VK3HZ

## **Digital DX Modes**

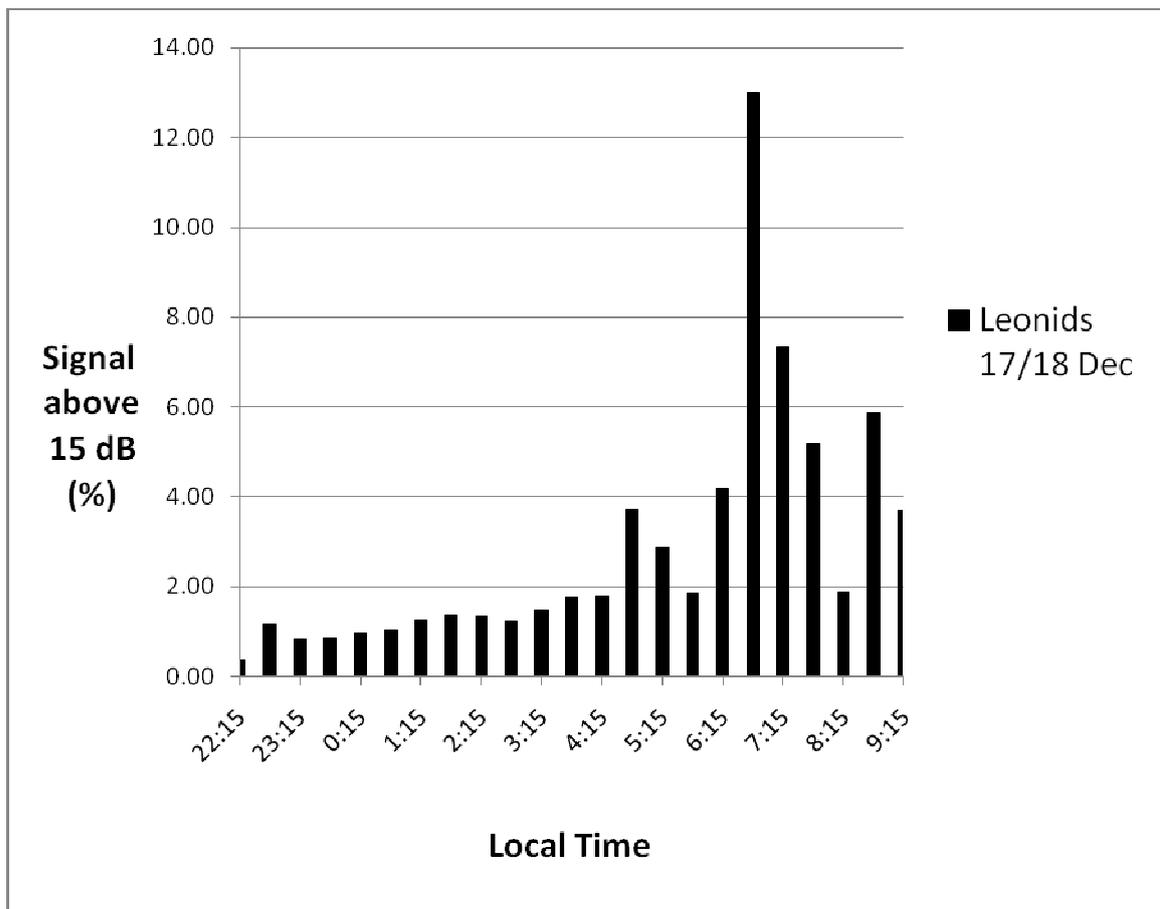
Rex Moncur – VK7MO

**Leonids 2009**

NASA had forecast a sub storm at 1943 on 17 November - a time when the Leonids would be above the horizon in VK-ZL. This would be 0843 local on the morning of 18 November and a number of 2 metre operators were keen to take advantage of the opportunity for SSB contacts and others for longer distance FSK441 contacts

John VK4JMC was up early and after some two hours completed his first meteor scatter QSO with Bob ZL3TY using FSK441 over a distance of 2362 km. Waldis VK1WJ also completed with Bob on FSK441 over 2076 km.

As it turned out the Leonids peaked about an hour and a half early as shown on the following chart below which was produced by Rex VK7MO who monitored the video carrier of Newcastle TV on 138.275 MHz using Spectrum Lab to measure signal to noise ratio at 0.2 second intervals. There was a second minor peak around the predicted time.



The best burn monitored during this period was just after 7:00 am local and was more than 15 dB above the noise for just over 2 minutes.

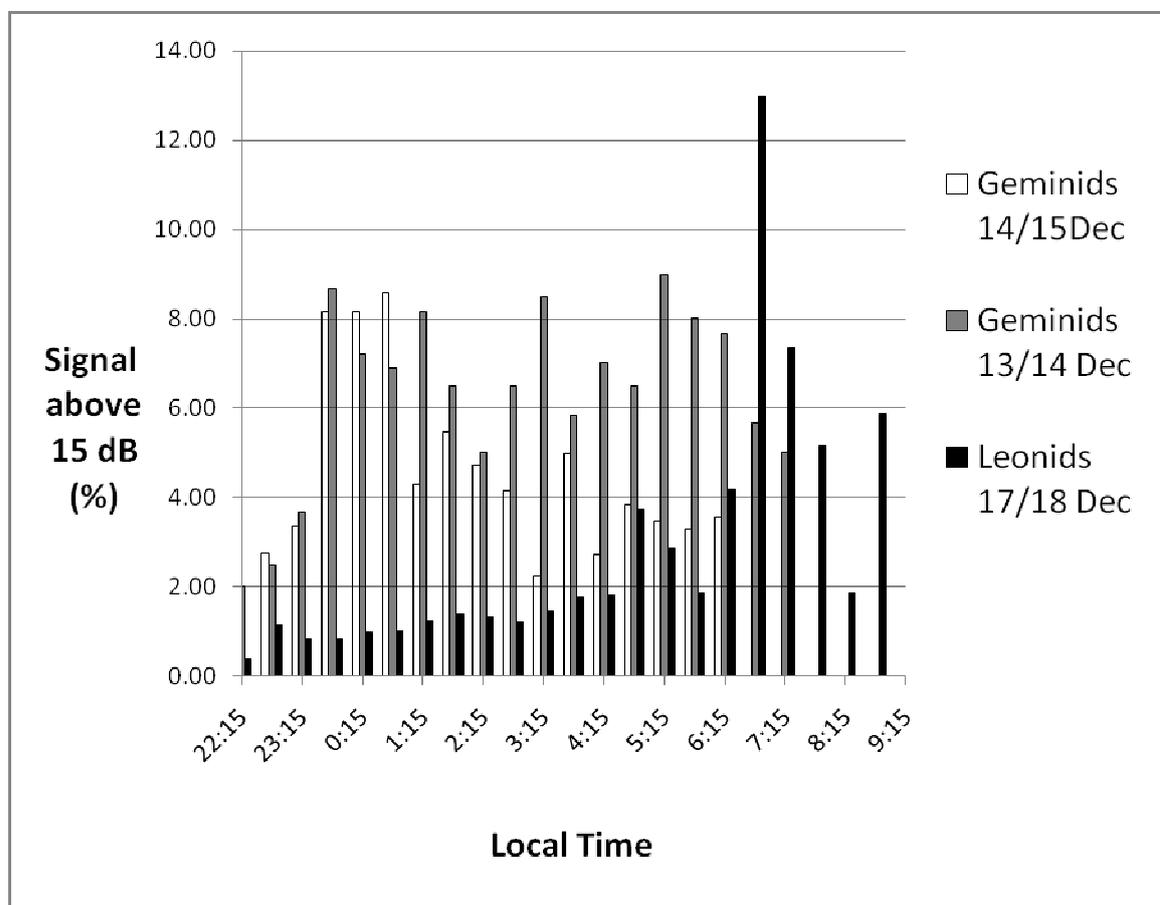
Around the time of the predicted peak time, 2 metre SSB operators were rewarded with some good contacts as follows:

- VK4DD VK3II 1410 km
- VK3AXH VK4NWH 1404 km
- VK3II VK4NWH 1392 km
- VK4DD VK4BEG 1340 km
- VK2XQ VK4NWH 1291 km
- VK4DD VK3DUT 1253 km
- VK2QO VK5BC 1102 m

VK4DD VK4FNQ 1050 km

### Geminids 13 to 15 December

During the Geminids from 13 to 15 December, Rex VK7MO, again monitored Newcastle Channel 5A TV and compared the results with those found earlier with the Leonids in the graph below. Data was not gathered after 7:30 am on the 13/14<sup>th</sup> or after 6:15 am on the 14/15<sup>th</sup> due to standing skeds. It is interesting to see that while the Leonids produced a much stronger peak, the Geminids were much more consistent over a full evening.



### VK9NA Norfolk Island DXpedition

At the time this report was prepared, the DXpedition by Michael VK3KH, Alan VK3XPD and Kevin VK4UH was still underway. Initial attempts at 2 metres FSK441 from their accommodation produced QSOs with John VK4JMC (1525 km) Adrian VK4OX (1504 km) and Steve VK2ZT (1587 km). However, results towards Sydney and further south were disappointing. A move to a better location on Mt Pitt produced a significant improvement in pings but now the pings were reported as distorted and undecodable. The longest distance undecodable pings reported were from Rhett VK3VHF at 2127 km. After investigation it was found that the FT817 being used at Mt

Pitt was set to narrow bandwidth digital modes which took out some of the transmitted tones in FSK441 which requires a bandwidth from 600 Hz to 2400 Hz to cover the four FSK441 tones of 881, 1323, 1764 and 2205 Hz as well as the sidebands from these tones. On adjusting the FT817 for the wider bandwidth, the Mt Pitt operation produced much better results with QSOs being completed with Colin VK2KOL (1712 km), Starr ZL3CU (1660 km), Chris ZL2DX (1519 km), Ross VK2DVZ (1512 km) and Mike VK2FLR (1677 km). The longest distance completed contact was with Mark VK2EMA at 1999 km. Peter VK3PF copied two pings at 2236 km and the VK9NA team copied one single ping from Rex VK7MO at 2403 km on a day when there was good tropo providing an extension in that direction.

By 10th of January, a large high had moved into the Tasman and JT65a came to the fore with tropo ducting contacts on two metres: Mark VK2AMS (1516 km), John VK4JMC (1525 km), Steve VK2ZT (1587 km), Matt VK2DAG (1645 km), Colin VK2KOL (1707 km) and Rex VK7MO at 2403 km. Steve VK2ZT (1587 km) then completed on 70 cm on JT65c for the first VK9N to VK mainland 70 cm contact.

## **FSK441**

Welcome to Wayne VK5APN who made his first FSK441 meteor scatter contact with Waldis VK1WJ on 10 January 2010 on 2 metres. Wayne is just north of Adelaide and runs 100 watts to a 10 element yagi. He says that thanks go to Peter VK5ZPG for mentoring him and getting him across FSK441 techniques and in particular the Australian FSK441 format. While he is a shift worker he says his appetite has been wet and that he will be on during the FSK441 activity sessions as much as can.

Please send any Digital DX Modes reports to Rex VK7MO

## **The Magic Band – 6 m DX**

Brian Cleland – VK5BC

November and December turned out to be very exciting on 6 m. The local summer E's seemed to be down on the last couple of years but this was well and truly compensated for by some exciting overseas contacts. Countries worked from VK and ZL included North and South Cook Islands, Willis Island, Tonga, Fiji, New Caledonia Singapore, West Malaysia, Japan, Philippines and highlighted by a great contact by Scott VK4CZ into Peru.

On the morning of the 13th December Scott VK4CZ worked Jack OA4TT in Peru over a distance of approx 13108 km and Scott reports:

*I was outside building a new retaining wall, covered in dirt and concrete dust I walked past the shack to see my 6 year old daughter had left the laptop running. So before turning it off I quickly checked VK LOGGER (as you do, even when spreading dirt and dust everywhere) and Jack had just logged in. He mentioned that he was calling CQ on 110... so turned my yagi to 125 degrees. With my expectations set at zero I certainly didn't any hope. But all of a sudden I heard '4TT' come from nothing to RST419. I was in complete shock... for a moment I thought it was a ZL responding, but then Jack called again. This time a very clear 'CQ CQ de OA4TT' at RST519. I responded and Jack answered immediately. A couple of attempts to get call signs correct and we were complete. Jack's signal rose from nothing and stayed at RST519 during the contact with a very definite slow rolling QSB. By the time we finished (albeit 30 - 40 seconds later) the signal was declining and for about the next 5 -10 minutes Jack remained at about RST419, then nothing. In hindsight we should*

*have called on SSB for two modes, but I was still buzzing on an absolute adrenaline high.*

Well done Scott. The same morning, a little after when Scott had worked Jack, Jack was also heard/worked by Neil ZL3ADC and Duncan ZL3JT. Then on the 27th December Bob ZL1RS worked Jack OA4TT 10949 km on CW and SSB (5/5)

There has been much discussion about what propagation mode allowed these contacts to be completed as there had been very little solar activity...Is it SSSP (Short-path Summer Solstice Propagation), multipath E's or a combination of E's and high level ionization? Certainly interesting no matter what and since these contacts took place South American FM stations have been heard in ZL and VK.

Another significant event occurred in the early hours of the 6th December when Gary VK4ABW worked Mick W1JJ on CW via EME and broke the existing 6m CW EME world record. Distance for the contact was 15,653 km, breaking the old record set in 1993 by almost 3,000 km. Congratulations go to Gary who has gone to the trouble of constructing and erecting an enormous array (13 element 3 wavelength yagi with full elevation control) as well as obtaining a special permit from the ACMA to run high power.

Meanwhile from Raratonga in the south Cook Islands Victor E51CG has had a major impact on the VK/ZL summer season. Victor has been heard and worked by stations in all states of VK except VK6 on many days during November and December. First contacts occurred into VK2 and 3 on the 20th November and continued regularly into the eastern states and VK5 through November/December. Victor was heard by John VK6JJ on the 18th December but unfortunately a contact was not completed on the 18th December worked VK8MS and VK8RR in Darwin over a distance of approx 7400 km.

Warwick E51WL located on the island of Tongareva (Penrhyn) in the North Cook Islands has also been worked from VK/ZL and reports:

*After a quiet period of 6 years and with the solar cycle coming up again, I decided to get back on the air. Spurred along by Bob ZL1RS with whom I have been friends with for many years, I was prompted to have a go at EME on 6 metres. I recently moved QTH by about 100 metres and set up shop in a shipping container used for storage. My 15 metre mast was erected and a rotatable short 5 element Nagara Yagi was fastened.*

*In November, I listened successfully for Lance W7GJ on the moon and tried but unsuccessfully, to work him using JT65A with my IC706Mk2G. We tried on a number of occasions but I didn't make it. Just not enough ERP. November 10th saw Bob ZL1RS on the island of Raratonga. We worked on 6 Metres using JT65C, JT6M and FSK441 by direct path and by MS. At times, the direct signal was knocked out by big burns of MS.*

*On 14 Nov, ZLTV Video was received from most of the high power sites at 0519 UTC  
On 15th Nov., I worked 5W0 with a good solid signal @ 58*

*On 17th worked Bob and Victor E51CG on Raratonga with very big signals, and we exchanged SSTV pictures using various SSTV modes. Over the next few days, A35A and 5W0KY were worked.*

*21st Nov met up with an old contact from years gone by, Kerry ZL2TPY popped up one morning with a solid 59 and that day, worked ZL2 and 3 stations plus a few VK2s and one VK7 which was a pretty good distance from North Cook.*

*On 22nd, VK4 seemed to be the flavour and I worked a few of them plus a ZL3 and a ZL4.*

23rd at 0100 thru 0300, I worked 17 VK from areas 2, 3, 4 and 5.

It then went quiet for 7 days but I did find a Television transmitter broadcasting from American Samoa on 55 MHz which quite often pinged with MS and often came in by Es very strong. We watched pictures off it one afternoon. The quiet spell broke, I worked ZL3NW one afternoon on 30th Nov .followed by a couple of VK2s.

On 4th Dec, worked Paul A35A a couple of times, once off the back and once off the front of his beam! Another 10 days of quiet and again, worked Rod but much later in the day than usual. Also worked ZL1RS on CW that evening.

18th Dec, some very fluttery SSB at 0630 UTC, then worked a VK4 and a VK7

20th Dec, Finally heard a beacon, the FK8SIX just came out of the noise about 2130 That day, I worked ZL1RS and he was 20 over 9.

21 Dec, a couple of ZL3s and then out of the noise came an old friend, Ron ZL1AMO.

Worked a VK2 and VK3 crossmode and SSB when I finally found the microphone!

23 Dec., I worked a dozen VK4s between 03 and 0400 UTC. With good signal reports.

25th Dec I heard the ZL3SIX beacon and on 26th the FK8SIX beacon again.

To top it all off, just before Christmas, our interisland supply boat arrived and dropped off component parts for a YU7EF Yagi which Bob ZL1RS built up, tested with 2 EME QSOs from New Zealand then shipped to me broken down. I reassembled and put it up where the 5 element Nagara was at 15 metres height and the tower is about the same distance away from the lagoon which is in the East. Great for ground gain.

On 02 January 2010, I listened for Lance W7GJ off the moon, and at 0640, I received the confirmation that I made my First EME QSO from North Cook on 6 metres. Consequently, that was DXCC # 100 for Lance.

On the drawing board, a bit more power for 6 metres with a home brewed amp using recycled (and a few new) parts.

Thanks for the report Warwick; you have certainly helped to make it an interesting summer in VK/ZL.

Not to be left out of the action Paul A35A (ex A35RK) in Tonga has also been regularly heard and worked from VK/ZL but propagation to Paul has not been as consistent as last season. A particularly good opening was on the 21st December to VK2, 3, 4 and 5 reaching S7 in VK5 and on the same day Paul also worked ZL's, both sides able to be copied in VK3 and 5. Paul also managed to work into VK6 again this season on the 19th and 23rd December, working John VK6JJ, a distance of approx. 7000 km.

Good openings from VK to Singapore occurred during December. On the 13th December Andrew 9V1TT (ex VK8AH) in Singapore worked Gary VK5ZK, Norm VK3UT, David VK3AUU, Norm VK7AC, Frank VK3OP, Tony VK3CAT and Steve VK3SIX. Then on the 14th December Gary VK4ABW worked Selva 9V1UV and on the 18th December Selva worked several stations in VK3, 4, 5 and VK8GB. Andrew 9V1TT again worked Norm VK7AC on the 1st January.

Willem DU7/PA0HIP in Lapu-Lapu City, Philippines has been regularly looking for VK contacts and was rewarded with several contacts. On the 10th December Willem worked Norm VK7AC, 13th December Peter VK6KXW and then on the 15th December worked several VK3, 5 and 7 stations. Further contacts followed on the 17th December with several contacts into VK3 and 5 and again on the 18th with

signals up to S9 into VK5 and 3. On the 22nd December John VK6JJ worked Willem.

On the 20th December the first of 2 good openings to West Malaysia with Masa 9M2IDJ working VK6IQ(SSB), VK6ADI(SSB), VK6ZWZ(SSB), VK5ZK(SSB), VK3OT(SSB and CW), VK5PJ(SSB), VK6IA(SSB and CW), VK6YS(SSB), VK6RO, (CW), VK6JJ(CW and SSB), VK6KXW(SSB), VK6SIX(SSB), VK6ZIZ(SSB). The second opening occurred on the 23rd December with Masa again working many several VK3, 5 and 6 stations but this time Rizal 9W2RZL also worked several VK stations and reported the following SSB contacts; VK3OT, RST 55, 07.38H UTC, VK8MS, RST 55, 07.39H UTC, VK5ZK, RST 55, 07.45H UTC, VK5BC, RST 57, 07.46H UTC, VK5MH, RST 55, 07.49H UTC, VK5ACY, RST 55, 07.50H UTC, VK3ADE, RST 55, 07.52H UTC, VK8RR, RST 57, 07.55H UTC, VK5ZBK, RST 56, 07.58H UTC, VK5NZ, RST 55, 07.59H UTC, VK3LY, RST 55, 08.04H UTC, VK5CC/P, RST 55, 08.05H UTC, VK5ZPS, RST 55, 08.07H UTC, VK6KXW, RST 55, 08.11H UTC.

The FK8 beacon from Noumea has again been regularly heard in all states but again very little activity from FK8 this season. The only reported contacts being on:

4th December - Mike VK2ZQ and Philip VK2HN with FK1TK

29th December – Gerry VK2APG with FK1TK

4th January – Ron VK4DD with FK1TK

On the 25th November there was an opening to Japan with several JA stations being worked by northern VK4's. The opening extended south to VK3 and 5 with JA beacons being heard and Brian VK5BC and Steve VK3SIX working JE6AZU.

Dave VK9WBM has been active from Willis Island and was first worked by Adam VK4CP on the 15th December which was followed a little later with further contacts into VK2, 3 and 4. Dave's first ZL contact was with Peter ZL4LV on the 18th December and in between his work commitments, Dave has regularly worked into the eastern states. On the 7th January Dave was very strong into VK5 and managed several contacts into VK6. Well done Dave and thanks the northern VK4's who assisted in getting Dave active from Willis Island.

Meanwhile the local VK/ZL summer E's continued on most days but probably not as intense or as regular as the past couple of seasons, perhaps a good indication of this being far fewer opening extending to 2m. The 4th December was good day with the band open from ZL to VK5 all day and extending to VK6 late in the afternoon. Brad VK2QO reports good VK6 contacts during December including on the 13th Graham VK6RO 519, 16th Jack VK6KDX 52, VK6IQ 41, Laurie VK6GL 52, Phil VK6ZKO 52, John VK6JJ 53, Peter VK6KXW 55, 17th Alan VK6ZWZ 55, Laurie VK6GL 53, John VK6JJ 55, Jack VK6KDX 53, Graham VK6RO 53, Igor VK6ZFG 53,

Noel VK6BJ 57, and 22nd Ken VK6AKT 55. John VK4FNQ also reports good VK6 contacts on the 18th December reporting contacts with VK6's JR, BJ, GL and ZSB. The 17th December was an exception day with the band open from most states to all states and ZL and including a good short skip opening from VK3 to VK5.

Please send any 6 m information to Brian VK5BC