The World Below 400 GHz

The Periodical Newsletter of the
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WAIKATO VHF GROUP EXECUTIVE

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General Meeting September 2018

A General Meeting of the Waikato VHF Group
will be held on

Sunday, 9th September, 2018 at 1:30pm

at the Silver Fern Farms Event Centre, (aka Te Aroha Events Centre), 44 Stanley Ave., Te Aroha.

Click HERE for a location map of the Te Aroha Events Centre.

The speaker for the meeting will be Vaughan Henderson, ZL1VH, of the Auckland VHF Group.
Vaughan will be giving us an update (with Powerpoint) on the Klondyke repeater site and the current issues and maintenance required.

Non members and visitors most welcome.

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WAIPLENTY NETWORK

Some excellent news from Ian (ZL1TAT) -

I received a phone call from Russell ZL1RWR on Friday 17 August inquiring after the serial number of our Icom repeater stolen from Te Uku in December 2016. Upon being told, he advised "that's the one I'm holding in my hands!"

A chain of coincidences led to that call. Russell's son knows a storage facility owner, who inquired if "some radio equipment remaining unclaimed in one of his sheds might interest him, otherwise he'd throw it out, because "the previous renter hadn't paid for ages and seemed to have disappeared off the face of the earth". All efforts to contact the renter had failed, including following up with an "employer" he listed as his place of work - they'd never heard of him! Inside that storage shed were several items of radio equipment, and one of those turned out to be our VHF Group's missing Icom FR5000 repeater, along with items identified as belonged to TeamTalk. Police were advised, and uplifted all items, then a week later I was contacted by them to arrange return of our repeater equipment. Had it not been for this VHF Group Life member's son knowing that storage shed owner, our missing equipment might still be languishing there hidden from us.

After the break-in at Te Uku was discovered on 11 January 2017, I compiled a list of missing equipment with photos and serial numbers provided by its various owners. Through that period, I was in frequent contact with Chorus, Police and a Private Investigator engaged by Chorus. The suspected perpetrator was arrested, however failed to appear in Hamilton District Court when summoned on 22 March 2017, and Police subsequently found that 27 year old had skipped NZ by using another of his several aliases. Much of the equipment stolen was sold on eBay (several items were sold more than once!), with most according to Police's forensic examination of the alleged perpetrator's five computers, sold to buyers in the USA. Two items were sold into Australia, and have since been recovered after NZ Police had search warrants executed on their behalf over there. Throughout that time, several people continued to monitor eBay and TradeMe, but our VHF Group's Icom repeater was never seen being offered for sale, - we now know why, it was hidden away in a storage shed in Hamilton

after the renter had escaped from NZ. They say good things come to those who wait, and we've been waiting!

Reinstatement of Te Uku '5675 is awaiting installation of a replacement antenna feeder in conjunction with other commercial rigging work to be carried out there later this year. It will be a nice Christmas present to have it back on the air?

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NATIONAL SYSTEM

The Taupo node is back on air.

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Repeaters/Beacons

The Waikato VHF Group owns and maintains a number of repeaters and beacons in the greater Waikato and Bay of Plenty area. These are available for sponsorship for a period of 1 year. Please see http://zl1is.info/sites.html for a list of repeaters, beacons & links that are currently available for sponsorship. If you are interested in sponsoring one of them, please contact our Secretary (ZL1GWP) or Treasurer (ZL1TAT).

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Development of newly designed VHF interferometer system for observing earthquake-related atmospheric anomalies

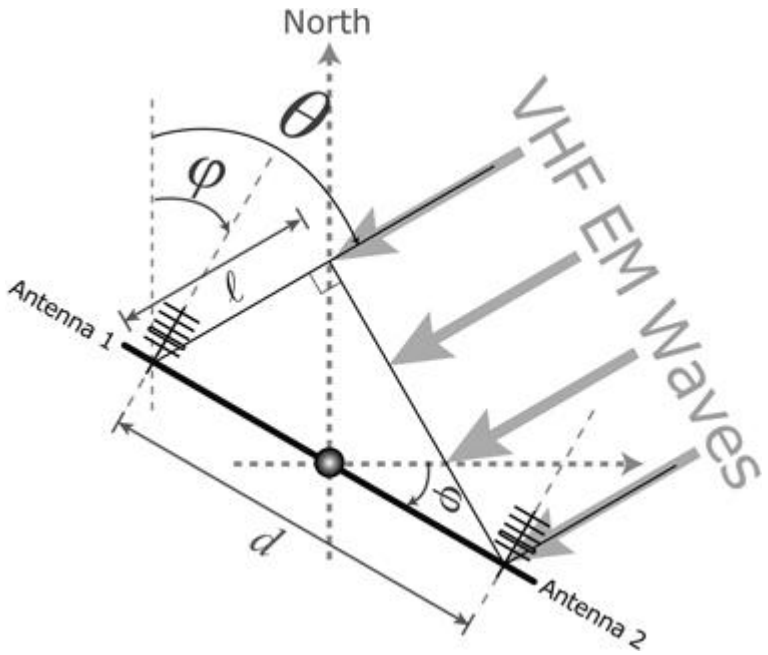
Abstract

Temporal correlation between atmospheric anomalies and earthquakes has recently been verified statistically through measuring VHF FM radio waves transmitted beyond the line-of-sight. In order to locate the sources of such atmospheric anomalies, we developed a VHF interferometer system (bistatic-radar type) capable of finding the arrival direction of FM radio waves scattered possibly by earthquake-related atmospheric anomalies. In general, frequency modulation of FM radio waves produces ambiguity of arrival direction. However, our system, employing high-sampling rates of the order of kHz, can precisely measure the arrival direction of FM radio waves by stacking received signals.

Introduction

Pre-seismic anomalous phenomena in the atmosphere and ionosphere as well as those in the telluric currents and ultra-low frequency electromagnetic (EM) waves have been reported since the 1970s. Gufeld *et al.*[1)] explicitly pointed out the existence of pre-seismic sub-ionospheric anomalies by transmission observation of VLF electromagnetic waves propagating

through the earth-ionosphere waveguide. This line of study has further been developed mainly in Russia, Japan, and Italy. Kushida and Kushida[2] reported anomalous transmissions of VHF FM radio waves before earthquakes. They measured the FM radio waves from broadcast stations located beyond the line-of-sight. Also from the observation of VHF transmissions, pre-seismic atmospheric anomalies were statistically verified by Fujiwara *et al.*[3] In their paper, it was shown that the appearance of atmospheric anomalies lasting for a few minutes to several hours was significantly enhanced within 5 days before $M \geq 4.8$ earthquakes. Spatial identification of such atmospheric anomalies is considered important in clarifying their causal relationship with impending earthquakes. For this purpose, an electromagnetic wave interferometer has been constructed to observe the arrival direction of electromagnetic waves scattered or reflected at the atmospheric anomalous region. When we observe FM radio waves by a VHF interferometer, frequency modulation of radio waves produces ambiguity of arrival direction as discussed later. Furthermore, according to Fujiwara et al.,[3] the intensity of relevant signals is very low, i.e., only several decibel (dB) enhancement from the background ranging from –105 to –95 dBm. In the present work, we have tried to construct a VHF interferometer system which can detect arrival direction of FM radio waves at very low level of intensity.



{More at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3621553/}

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