

## February 1998: ZL7DK - Chatham Is. DXpedition by the German Team.

*Analysis by Luis IV3PRK*

Following their double DXpedition to Bangladesh and Papua New Guinea in February 1997, the German team expanded from four to six members and, one year later, headed to Chatham Island, which is located 19,200 km away, on the other side of the world, almost antipodal.

Trying to manage a 19 thousand km. contact on 160 meters was really challenging but, before any comment or analysis, let me copy here the well detailed report posted by one of the operators, Joerg YB1AQS/DL8WPX, posted on Topband Reflector. His words are very enlightening and instructive.

ZL7DK 2/23/98 - 3/08/98

### The location.

Chatham Islands, some 800 km (500 miles) east of New Zealand, 44 S 176 W (not East !!), 13.75 hours' time difference ahead of UTC (not 10.25 hours behind). There antipodes are located somewhere in Southern France just north of Andorra (C3).

We were fortunate to choose the probably best spot on the island, the Chatham Island Lodge, run by Denise and John Sutherland. Fortunate into two directions:

- Exceptionally good accommodation and perfect meals for a reasonable price.
- Situated just below a small hilltop with perfect take-off covering East to West via North and nobody to cause RFI/TVI to (Except their own FM radio receiver and us working on 30 meters – nothing possible to do about).

### The crew.

Falk, DK7YY; Mar, DL3DXX; Jan, DL7UFN; Manfred, DK1BT; Tom, DL2OAP; Joe, YB1AQS.

Falk, Mar, Manfred and Joe know each other since their time at university in the early 80's. Jan and Falk met in Berlin after Falk moved there in the mid 80's and Tom met Falk and Mar on their trip to D44BC.

### The stations.

2x TRX Icom IC-736

1x TRX Kenwood TS-50

1x PA Tokyo-Highpower HL1K

1x PA Yaesu FL2100Z

1x RTTY/Pactor SCS PTCplus

3x Notebooks various

8x BP-Filters Dunestar series

1x Preselector Bavarian Contest Club

### The antennas.

- Titanex V80 (20.5m / 67ft) with 2-wire topload (10m / 33ft each), 4 elevated radials (2.5m / 8ft high, 40m / 131ft long). This antenna is matched in the feedpoint via a homebrew matchbox, transforming first to 12.5 Ohms followed by LC-coupling. It works with reasonable results from 160 at least up to 15 meters (Reasonable means better than things we've tried in the past like R7000, R5, Titan, Voyager e.t.c.), whereby so far unbeaten by anything else we've tried on 80/160.

- 500m / 1600ft of Beverage wire - waste of baggage (cause never used) !!

### The goal.

Knowing about various activities in the past (with the major ZL7AA/ZM7A DX-ped just successfully finished last October) our goal was again to serve mainly the Lowbands, CW and RTTY.

The big curiosity for us was to hear how Europe ultimately sounds like from the other end of the world.

### Day 1 (Monday, 2/23) - SF/SSN=99/45, A/K=6/3:

Interesting - we've booked a flight back in Germany with Chatham Airways from Christchurch to the island - which in fact didn't exist anymore. Nevertheless, thanks to Air New Zealand it was re-arranged on short notice and we've arrived on Chatham via Wellington just with a 4-hour delay and - without paying for any excess baggage

(in total we've carried some 280 kg / 600 pounds). Time was running out to put up antennas, so the Butternut had to be enough for the first night.

First QSO was made with JA6PSP at 0852Z (10:37pm local) on 30m.

Unfortunately, no 160m activity.

Day 2 (Tuesday, 2/24) - SF/SSN=99/45, A/K=3/1:

Stormy weather and lots of rain delayed the erection of our other antennas. At least we've managed just before sunset to put the V80 up, no loss of possible openings on 160 anymore...

First listening on 160 and - where was all the noise? All we've got was a moderate S3 level of noise - in AM wideband mode and with the preamplifier switched on!! Something out of order? We started calling after dinner at 0620Z. 0631 the first return S9+20: ZL2RDJ.

Then at 0652 the first European: G3PQA with a crystal clear S5 signal (over a narrowband S0 noise level), unbelievable!! Prior departure we've expected anything, but not this. Shortly afterwards GW4VEQ, G3FPQ, G3TJW, G3XRJ and EI5HE joined in and finally this first opening finished with ZL4WA. What a take-off!!

In parallel we were starting an endless run of Northern and more Eastern Europeans on 15m ...

Still nothing from Europe at our sunrise, in total 34 QSO's on 160.

Day 3 (Wednesday, 2/25) - SF/SSN=95/41, A/K=4/1:

Fine weather and all antennas are up. The daily routine is starting with Mar and Joe (as always) taking the lowband nightshift and sleeping during daytime in the back of the shack.

160m - 93 QSO's. No sunset peak into Western Europe, but first better run into the USA and finally first short opening into central Europe at our sunrise (7 QSO's, 1710...1735Z).

Day 4 (Thursday, 2/26) - SF/SSN=93/38, A/K=3/1:

Condx poor into USA, but good opening into Northern and Eastern Europe prior sunrise (34 QSO's in 70 minutes). 46 QSO's in total.

Day 5 (Friday, 2/27) - SF/SSN=90/34, A/K=4/1:

G3RPB and GW3YDX at sunset, else poor condx, only 26 topband QSO's. No Europe at sunrise.

Day 6 (Saturday, 2/28) - SF/SSN=94/40, A/K=12/3:

SSB-Contest on 160 - the worst you can imagine being at such a remote location. Tried to call many US stations we've heard with S7..9 after being unsuccessfully calling in CW.

Only contact - Ron ZL2TT, as frustrated as we... Mainly Japan during contest, 57 QSO's. Only European HA8BE at 1625Z, nil at sunrise.

Day 7 (Sunday, 3/01) - SF/SSN=98/45, A/K=12/3:

In total 43 QSO's, 36 of them JA. Only 3x OH at their sunset. Heard a lot of "funny" pseudo-QSOs from EU running with whomever on the wrong split frequency at our sunrise.

Day 8 (Monday, 3/02) - SF/SSN=92/37, A/K=14/3:

Best opening so far, 176 QSO's. America begins to realize that there is also a first good opening after our sunset (0700Z). Worked mainly Northern North America (VE1..3, W1..3). During sunset in Europe (1630Z) short opening for 20 min with 8x OH, 1x OM, 1x HA. Nil at our sunrise one hour later.

Day 9 (Tuesday, 3/03) - SF/SSN=97/44, A/K=4/1:

60 QSO's, best day for W4,5,0, propagation not reaching as far North as yesterday. Europe at sunset with F6BKI the first French station, at sunrise nil except OM5XX at his sunset (1636Z).

Day 10 (Wednesday, 3/04) - SF/SSN=102/50, A/K=8/2:

55 QSO's, again a good run into OH/SM for 25 minutes at sunrise.

Day 11 (Thursday, 3/05) - SF/SSN=97/44, A/K=9/2:

Only 3 QSO's in total - condx nil after sunset. At least still got EA3VY and heard ON4UN for the first time at sunset without him copying us.

Day 12 (Friday, 3/06) - SF/SSN=92/37, A/K=6/2:

36 QSO's with an excellent opening into Europe at both – sunset and sunrise. John finally could copy us and ON4UN went into the log, the station furthest east worked at our sunset. Sunrise has brought a great opening starting from OH/SM, crossing DL down into Italy to IV3PRK and lasting continuously for one hour from 1630 until 1730 (past our sunrise). Heard and called much more stations than were able to copy us.

Day 13 (Saturday, 3/07) - SF/SSN=92/37, A/K=5/2:

ARRL-DX contest with lot of QRM. Nil responses from USA or JA at either 1100..1145Z or 1400..1445Z. One QSO with HA0DU prior sunrise (at his sunset 1630Z). He was readable here just for 5 minutes... Then a SP5 was heard, not copying us. Only 4 QSO's at sunrise, crossing Europe from DL down to IT9... (didn't copy us) and finally reaching 4X4NJ for a solid QSO.

Day 14 (Sunday, 3/08) - SF/SSN=92/37, A/K=2/0:

Similar situation as yesterday, nil responses during nighttime to our CQ's. The sunset period (1630Z) brought again the weak SP5, unfortunately not hearing us. Again only 5 QSO's at sunrise into DL. Condx reaching down into IT9, unfortunately again no copy there. Final shutdown with DK0EE on 160m at 1734Z (after in total 31.335 QSO's). We left the Lodge at 1930Z flying back to Christchurch.

Summary.

1. We've found excellent receiving conditions and didn't have to worry about Bev's and any kind of receiving enhancements. We only had to stay calm and wait until you were able to copy us.
2. Europe much easier than expected prior departure. But - of course - you had to have the 'big' ears in Europe. Somebody without Beverage in Europe has IMHO had nearly no chance.
3. Forget about the usual "JA you can work all the time". The path into JA was as difficult as the one into the Midwest.

4. 615 QSO's on 160m (plus additionally 47 dupes):

North America - 330

South America - 0 (even trying hard on our side for you, Egon)

Asia - 138

Europe - 120

Oceania - 27

Africa - 0 (sorry Bernie, I guess this path works only end of July for maybe 2..3 days, like

KH6 for Europe end of December; OTOH no copy from EA8AK at his sunrise).

5. Again, a lot of thrill and excitement on our side. Congrats to everybody who made it, we know it wasn't easy at all.

6. As we've found all the years - the 160m antenna has, if possible, to be the first one up and the last one down. During our stay we got at least one good opening into all possible directions, but in average not more than two per destination. So, somebody dedicated to work a rare DX must be there every day and the DX-pedition should try the best not to miss any opening. But OTOH - nobody is perfect, as we've learned missing probably one good opening too, on 12 and 10m into Europe.

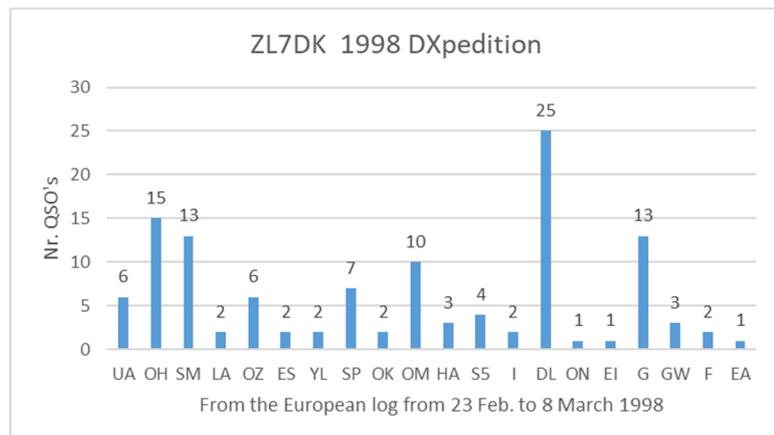
9. Where do we go next ....

vy73,

Joerg YB1AQS for the ZL7DK team (except me, still enjoying the wonderful landscape of South Island).

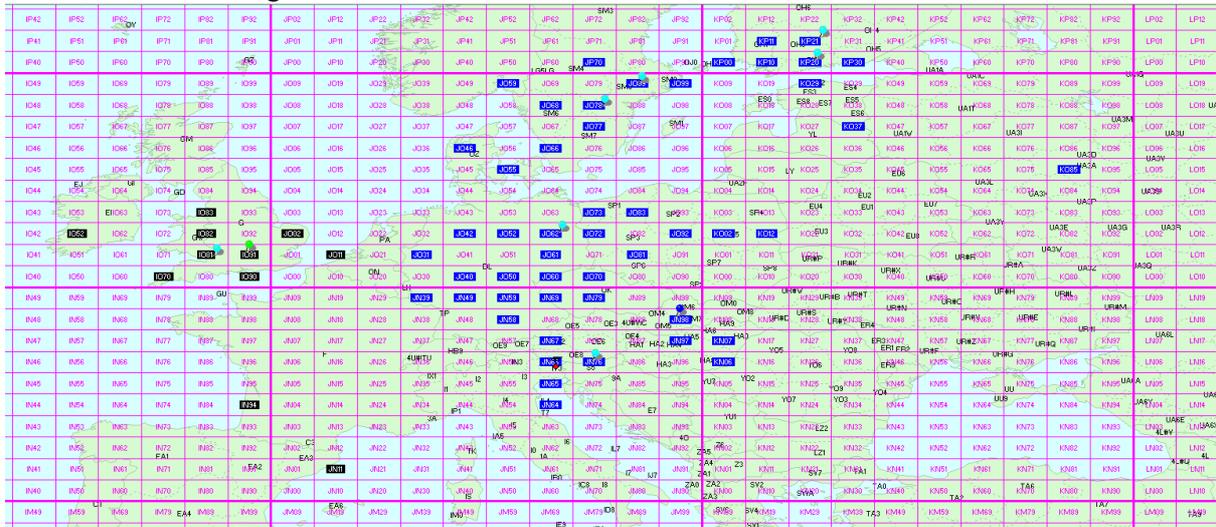
From other posts on Topband Reflector, I found all the 120 European stations on 160 m. log, ordered them and produced this graph with the number of QSO's in each country, from East to West.

Then, I assigned each station his grid locator and filled



this page on DX Atlas, with the coloured pins in the squares of three or more stations logged, the highest being JN98 – in Slovakia – as usual.

I recall that in the last year’s P29VXX DXpedition, I was the only station in Italy (JN66) – and the most western in Europe – to make the contact. Now, the signal from ZL7DK has just travelled 200 km. more into JN64 with I4EAT and DJ2BW in JN39 being the westernmost stations worked over the short path. Fausto made his contact on February 26, and, at that time, I was not copying at all... It was better the previous day, February 25, when I heard them about 449 from 17.20 to 17.35, peaking 559 at 17.25 (transmitting on 1823.5 and listening 7 up – I called on 1830.5, but no luck). Not a whisper in the following days, so I had to wait and suffer until Friday, March the 6<sup>th</sup>, my last day of holidays – yes, for chasing this DXpedition I took a holiday period, and have been rewarded. My QSO was at 17.02z, right at sunset, and also this time they were often changing split frequency (from a note on my paper logbook, they sent “up 8”, and I jumped on 1831.5 for a solid 569/579). In Italy, only the two of us, me and Fausto, made in the log!



Unlike the Papua New Guinea DXpedition, several Western European stations—mainly British—contacted ZL7DK at sunrise via the long path, with ON4UN and EA3VY being the most easterly. But the map shows that much of Europe did not receive Chatham signals on either the short (blue marked squares) or long path (black marked squares).

Anyway, short path and long path are not the correct definition, as pointed out by prof. Brown, NM7M, in his “Long Path Propagation” book revisited in the year 2000. In chapter IV, after commenting the P29VXX paths (that already we know), Bob went into ZL7DK paths analysis:

The DXpedition to Chatham Island, ZL7DK, is even more interesting with regard to 160-meter propagation as its antipodal point was in southern France, some 100 km west of Marseille, as shown in Figure 29. While there was a “dead zone” at that time of year, it was only about an area of 1,000 sq. km., shown in Figure 30, and much smaller than was the case during the VK0IR DXpedition.

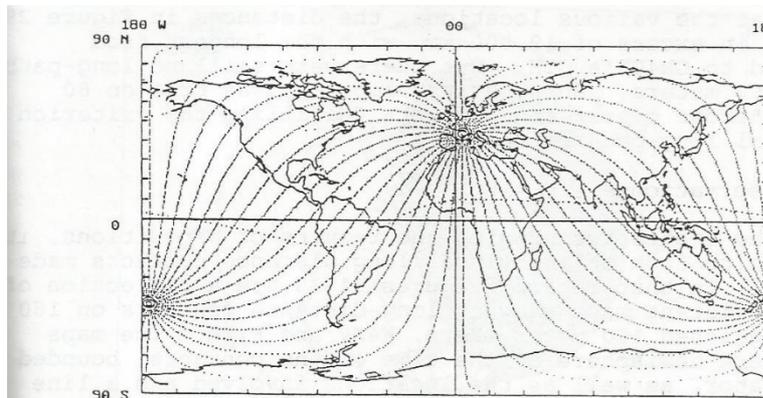


Figure 29 - Great-circles paths from Chatham Island, New Zealand

It is of interest to note that contacts with Chatham Island were made during a period of magnetic quiet and with stations to the west and east of the dividing meridian through the antipodal point. Thus, signals sent to the east from Chatham Island reached as far as England and Ireland, while signals sent west of Chatham Island reached western Europe. The distribution of 160 meter contacts shown in Figure 30 shows a division along the meridian through the antipodal point, stations in Ireland and England contacted ZL7DK in the morning hours near dawn, while a few hundred km to the east, contacts were made with ZL7DK in early evening.

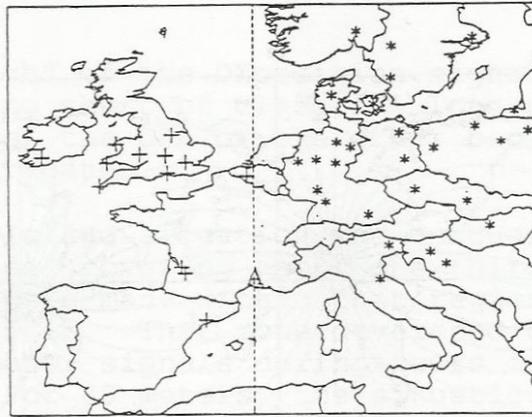
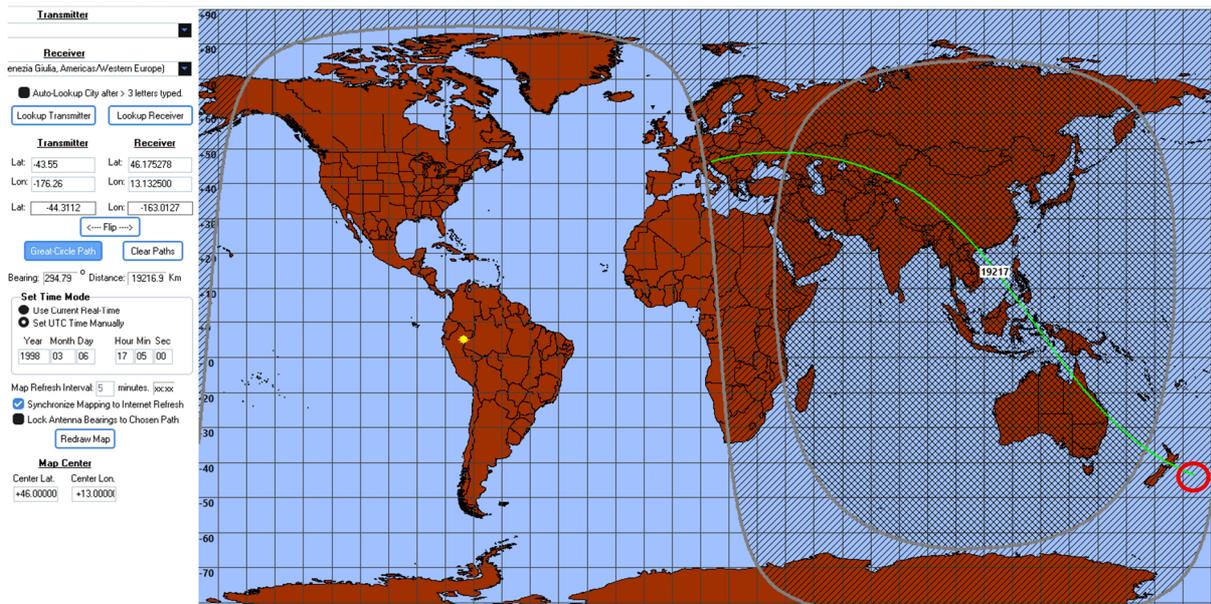


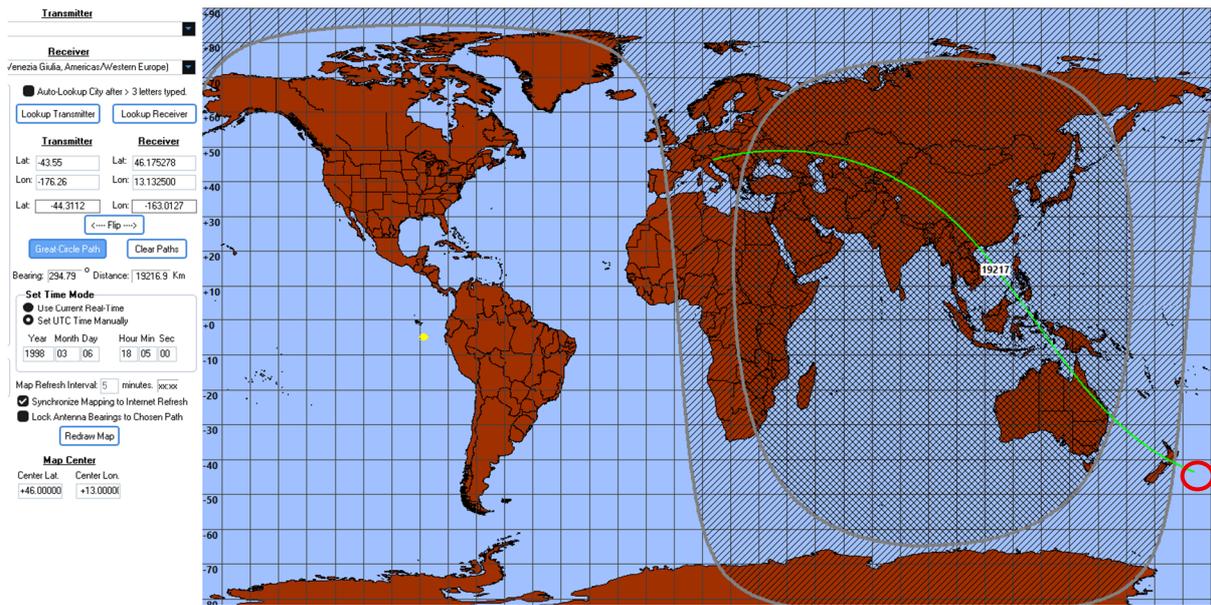
Figure 30 - Morning (+) and evening (\*) contacts with ZL7DK.

In point of fact, the times of contacts differed by 13 hours for stations separated by as little as 200 km. in E-W directions. But there weren't "cross over" or classical long-path contacts on 160 meters, with no stations in western Europe contacted in the morning hours, nor stations in the U.K. region contacted during the evening hours. In fact, frustrations were often expressed when one group of stations heard the other group contacting Chatham Island, but Chatham Island was not to be heard by the first group. Looking at the various locations, the distances in Figure 29 were somewhat in excess of 19,000 km, with the longest from Chatham Island to ON4UN's QTH. But there were still no long-path contacts on 160 meters. Just the opposite was true on 80 meters, with "cross overs" and contacts fulfilling the criterion for a classical long-path contact.

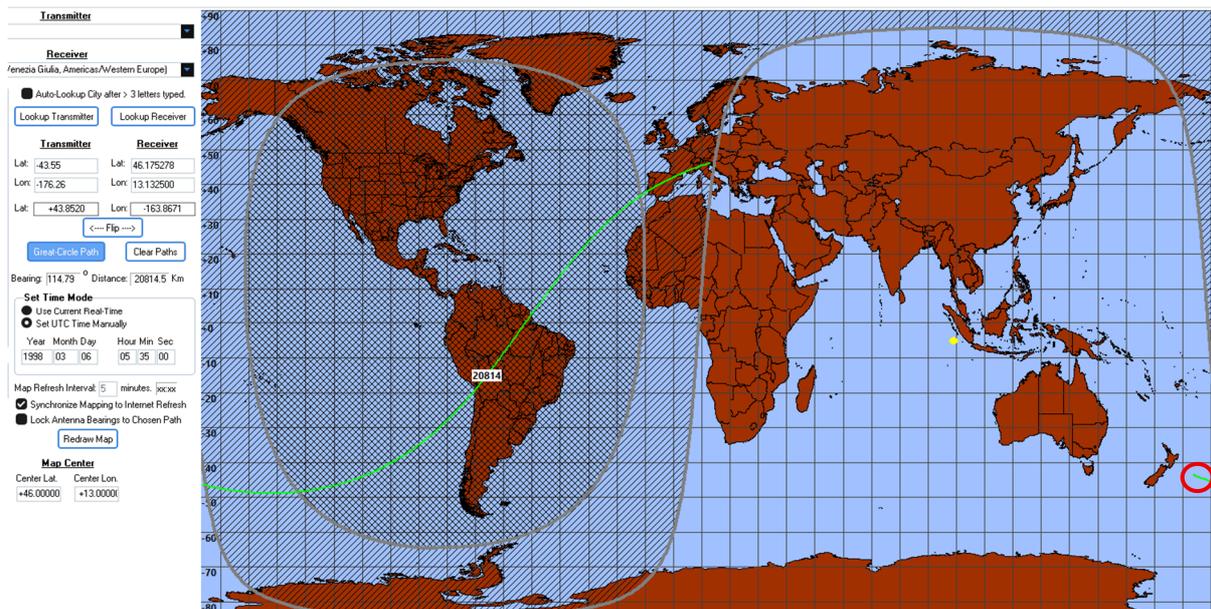
Figure 30 of NM7M matches exactly with my previous DX Atlas map. Now let's check with PropLab-Pro the paths from ZL7DK to Europe at different times. The first screenshot is referred to the time of my QSO, 17.05z of March 8, when my location just entered in the dusk, and Chatham Island was in the dawn. France and Great Britain were still under sun.



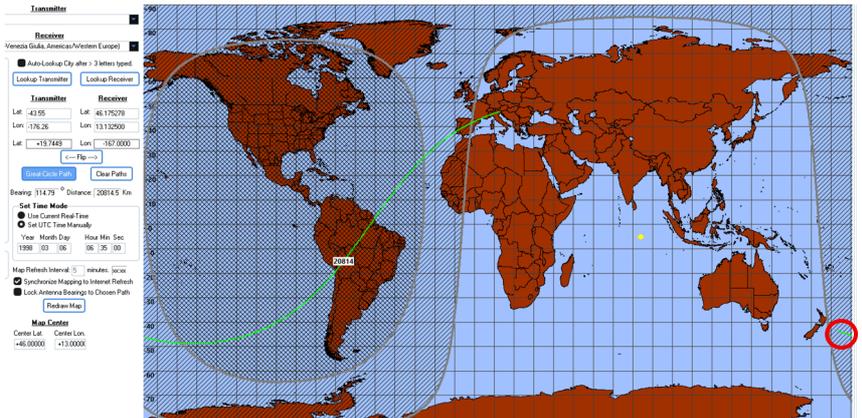
One hour later, at 18z, the dusk reached England, but Chatham Island went in the sun and no chance for 160 meters anymore.



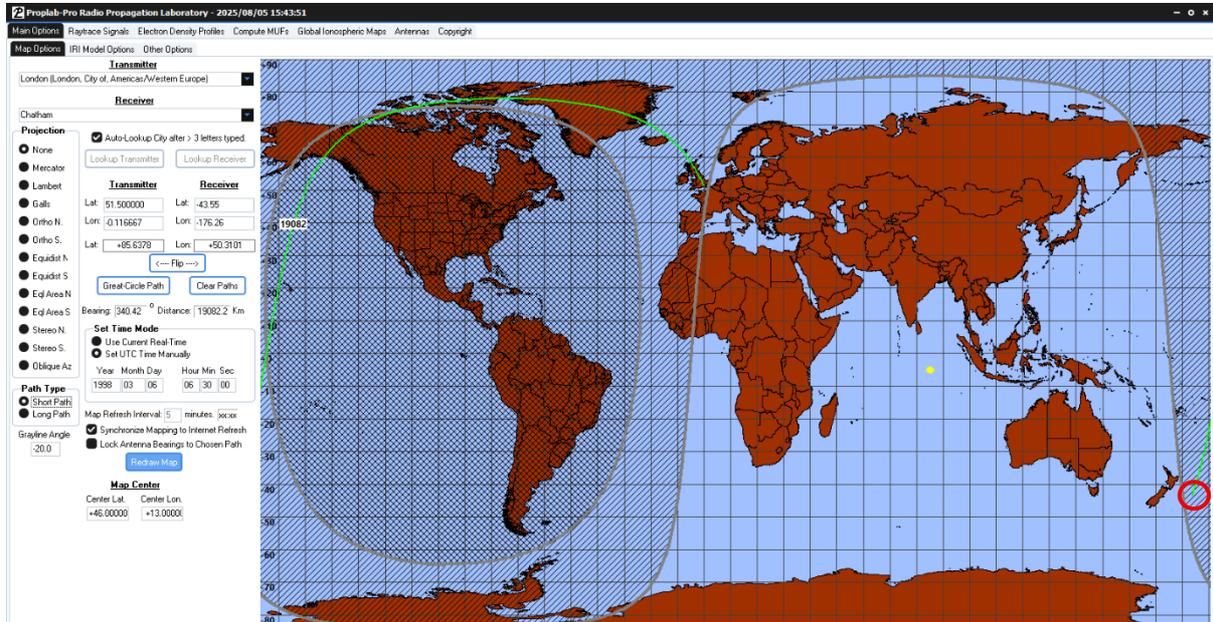
Now, let's see what could happen in the morning, in Europe. The last possible time for trying a long-path contact, could be at my sunrise, 05.35z, but Chatham Island is still under sun.



We must wait until the island gets into the dusk (their sunset), but at that time I am in daylight, and the band is definitely closed for me and for the rest of Europe to the east of the dividing meridian through the antipodal point (drawn by NM7M). No long-path for anybody!



Keeping fixed the time, let's see the route from ZL7DK to London: it's a short path, 19,082 km, almost the same length of that to IV3, but on the opposite direction and 12.30 hours later. But there is a significant difference between the two routes: the western one, at European sunset, has all its reflection points below 50 degrees of latitude, while the eastern one, of the same length, travels much further north, across the auroral oval: thus it can work only without aurora, in a quiet geomagnetic field (like it was during this DXpedition).



In the morning hours logs, besides the majority of British, we find also a couple of French stations on the Atlantic coast, and ON4UN (19,178 km) and EA3VY (19,739 km) being the easternmost, but still within the short path. Funny to watch their great-circle paths, one bordering the southern polar cap, and the other crossing the North Pole. Of course, these were not the true ray routes but supposed to have been skewed upwards or downwards not far from the ray journey to Great Britain.

Maybe for this reason John, ON4UN, a few days before the DXpedition wrote that it could not have been possible for him to work Chatham Island.

