

October 2009 : 3D2KJ DXpedition by Jacek SP5DRH.

by Pierluigi "Luis" Mansutti, IV3PRK

In October we had so many DXpeditions in rare islands which gave a lot of new ones to everybody: FT5GA and TO7RJ in Africa, ZY0T in South America, but specially 3D2KJ, 3D20CR, H44MY, TX5SPA, YJ0CCC and the big one from Midway, K4M.

Most, but not all, European Topbanders, with good receiving antennas, successfully worked these stations on such long and tough paths. On my side, after 20 years of 160 m. experience, I didn't believe it could be possible to work Fiji is. without real good Beverages or...a miracle! But on 160 meters anything unexpected sometimes may happen: you have to trust and be there luckily at the right time.

A well experienced 8-man crew of German/Dutch operators activated for 9 days, as 3D20CR, Conway Reef, which is 450 km. SW of Fiji; the path from my QTH is 16.800 km. and 38 degrees. Meanwhile, but for almost all the month, Jacek SP5DRH and Jacek SP5EAQ operated from the main island of Fiji, respectively as 3D2KJ on 160 m. and 3D2MJ on 80 m.; this path is a little bit shorter, 16.500 km., but higher in latitude at 28 degrees, and so a tougher one.

The first day, Oct. the 3rd, I heard both CR and KJ peaking 449, not enough to call; on Oct. 5, I had an easy QSO with 3D20CR at 17.40z, while 3D2KJ was still 449.



On Oct. 6, 3D20CR was peaking 579 at 16.30, but 3D2KJ still only 449 - in and out of the noise. While suffering, in the last three days I heard all the Italian friends in the fourth call area making it (I4EAT, I4EWH, IK4MGP, I4AVG, IK4GME, IK4WMA, I4IKW, IZ4BEZ). On Oct. 8, at 17.30 I gave a call on a QSB peak and Jacek came back to me - and put me in the log - but I didn't hear him.

All the next days, until Oct.27, Jacek has been active from EU sunset to his sunrise, working Europeans and sometimes CQing without any answer: I was there, almost two hours each evening, without hearing a peep.

Finally on the last day, Oct.28, luckily, I could hear 3D2KJ coming back to me at 16.57; a quarter of an hour later, between 17.15 and 17.20, his signal jumped completely out of the noise for a solid Q5 copy: ONLY 5 minutes after almost 50 hours of listening!



At 22z of the same day, after dismantling antennas and packing everything, Jacek and Jacek were boarding on the airplane: I will always remember SP5DRH as "my Topband Hero"! His and my perseverance gave me the most thrilling 160 m DX in my life.



The location of 3D2KJ was on the northern coast of the main island, Viti Levu – Grid Loc RH92cq. The TX antenna was close to the beach, but low tide was moving water some 300 meters away. In high tide water was sometimes around TX antenna, as shown on the above pictures.

On the Topband Reflector Jacek wrote: « and I do like 160m very much. Having most of the nights 160 meters open somewhere, I didn't like to waste time for 80m. 80 meters band is pretty easy, TB needs lots more efforts, dedication, space and luck. So, I stayed on TB. Secondly, I did not expect such good conditions, allowing to work so many Europeans! ».

From 3D2KJ Log	Zone 16 Rus./Ukr.	Z. 14-15 Scandinavia	Zone 15 East Eu.	Zone 20 South Eu	Zone 15 Balkans	Zone 15 Italy	Zone 14 West Eu	Total Europe
2-Oct-09	7	2	1					10
3-Oct-09	6	4	13	1	4			28
4-Oct-09								0
5-Oct-09	12	3	11		4	3	2	35
6-Oct-09	18	12	7		4	4		45
7-Oct-09	6	6	10		6	2		30
8-Oct-09	3	8	9			1	2	23
9-Oct-09								0
10-Oct-09	3							3
11-Oct-09								0
12-Oct-09	2	2					1	5
13-Oct-09	7	4	2		1		1	15
14-Oct-09	11	9		3	3		5	31
15-Oct-09	5	3	2		1		1	12
16-Oct-09								0
17-Oct-09	3	6	2					11
18-Oct-09	8		6		1			15
19-Oct-09	2	2	8		2		1	15
20-Oct-09		7	3	3	2	2	6	23
21-Oct-09	3	9	9		1		1	23
22-Oct-09	2							2
23-Oct-09	1						1	2
24-Oct-09	2		6	3	3			14
25-Oct-09	1							1
26-Oct-09	8	1	8		3		3	20
27-Oct-09	7		6		1			17
28-Oct-09	5	2	6	1	2	1	2	19
Totals	122	80	109	11	38	13	26	399

A total of almost 1900 QSO's were made, and among them, 360 valid QSO's have been with Europe.

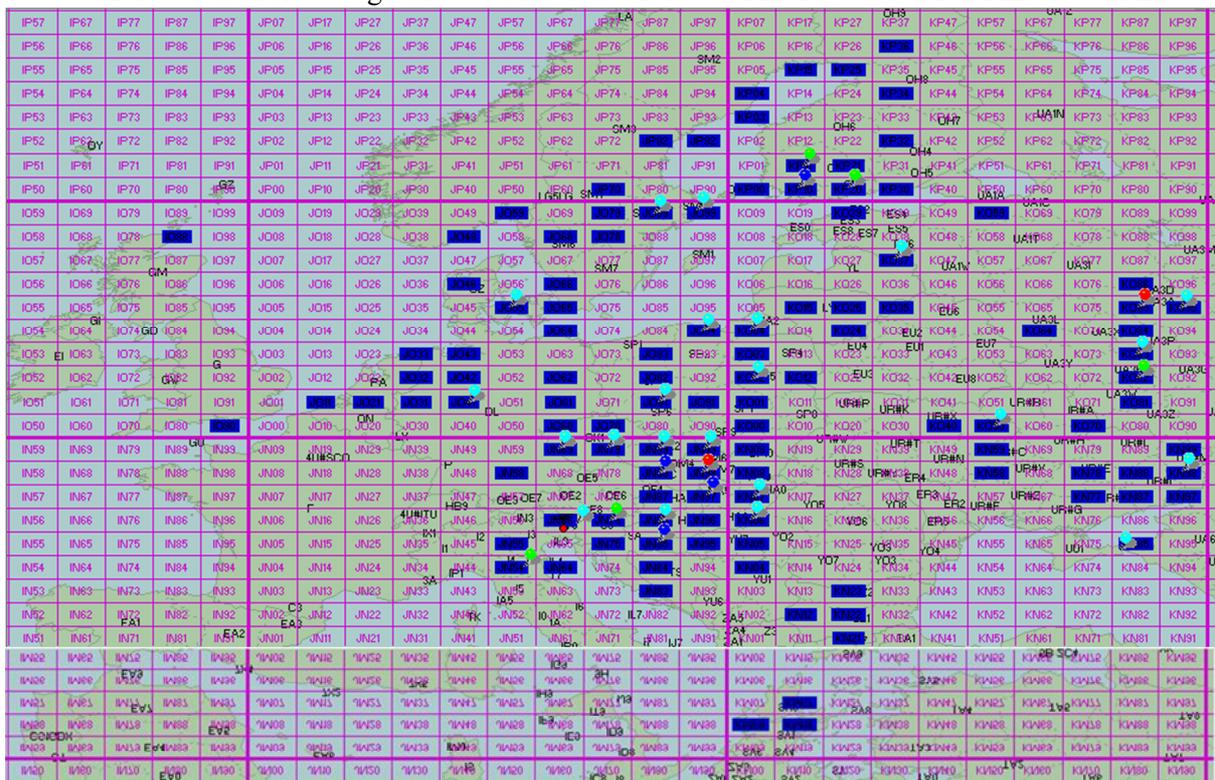
Actually, from the log Jacek sent me, I extracted 399 Eu contacts (but almost 40 are dupes), and at first, I ordered them in geographical zone groups, in order to see the conditions development, day after day, in each area, as shown on this table.

Then, I assigned all stations their grid locator, ordered them in each grid square, and filled on DX Atlas the map below.

All the grid squares reached by 3D2KJ signal are blue noted. I also added a coloured stick pins in the squares where more QSO's have

been made, with the following code indicating the number of stations worked in that grid square:

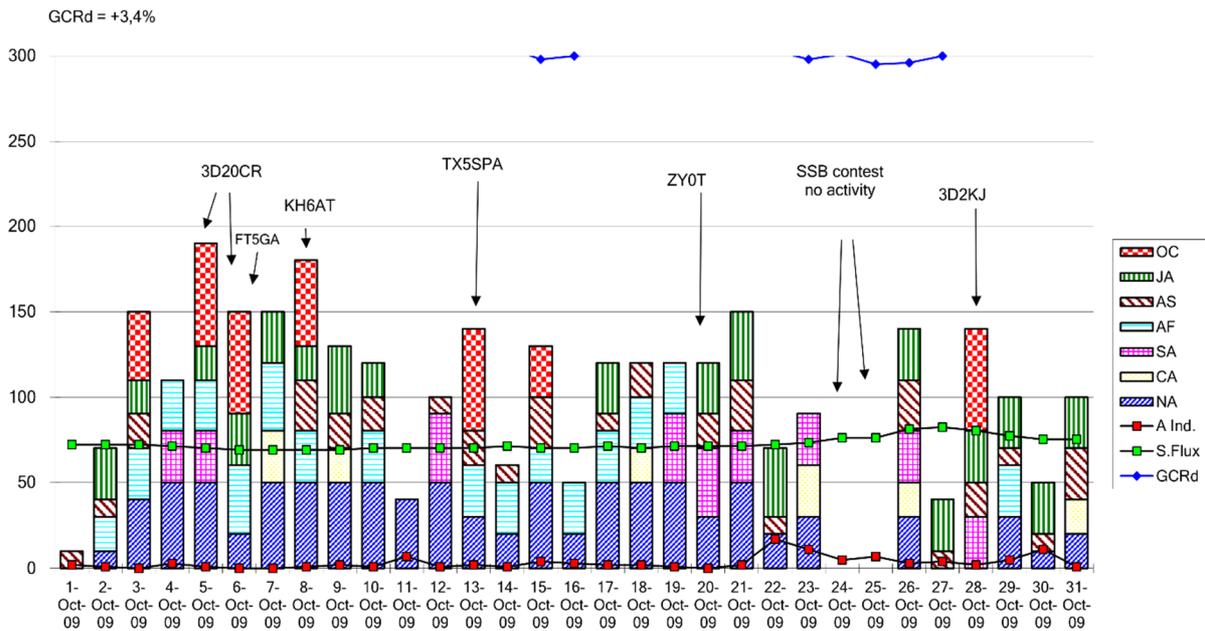
- azure = 3 or more
- green = 5 or more
- blue = 7 or more
- red = 10 or more stations.



So, the more populated grid squares have been KO85 (15 stations worked in Moscow area) and JN98 (10 OM stations). Interesting to see the West Europe coverage: only two stations in UK: GM3POI and G3SED; ON4UN and ON4WW and a few big ones in Netherlands and northern Germany (only DF3CB and DJ0MDR in Bavaria); then myself in JN66 (shared with Slovenia), and the I4/IK4 group in JN54, JN64. Nobody else to the west or the south of those squares (with the exception of Greece in zone 20).

Having said at beginning that I would not bet on the possibility of working Fiji is. on 160 meters, propagation conditions have been outstanding, thanks to the low sun activity and the quiet geomagnetic field. The well-known SF and A/K numbers have been low as desired.

Daily 160 m. DX conditions from IV3PRK - October 2009



At this point we realize that a new propagation theory by Bob Brown, NM7M, based on the Galactic Cosmic Rays (I read carefully his article on the last issue – November 2009 – of CQ Magazine)

does not match. Taking prof. Brown formula and graphs, we see that for a distance above 15.000 km. a GCRd of at least 13% is required. In the last month (see the graph above) the GCR decrease is exceptionally low - around zero and does even not enter in the graph! Under such

In his ongoing series on 160-meter propagation, Bob Brown, NM7M, continues to study the use of galactic cosmic rays (GCR) as a predictor of long-range propagation openings, and believes the data now show it is a reliable and groundbreaking method for making DX predictions.

A Comparison of 160-Meter DXing at Widely Separated Locations

BY ROBERT R. BROWN,* NM7M

Under such conditions and theory, “ducting” between the nighttime E and F layers should not be supported, and thus propagation could not go beyond 10.000 km. but, in the fact, it did it well!

So, in this case, the claim was incorrect, and another factor must be involved. The 16,600 km distance between Fiji and Italy can't be covered by standard multi-hop propagation on 160 meters due to excessive loss from 15 or more F and E hops, indicating that a "ducting mode" is likely responsible.

With PropLab-Pro I was unable to find a ducting mode on this path, but I found it with my old DOS propagation program Prop7R written by Rod Graves, VE7VV, which gives some possibility at 17.00 and 17.15 z with 25 degrees skewing and 7 reflections in the “duct”.

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CA PROP7R3.EXE
                                UE7UU
                                PROP7R3 PROPAGATION PROGRAM
PREDICTING SHORT PATH FOR: 15 OCT 2009   FREQ: 1.8 MHz   SOLAR FLUX: 70
      QTH          N.LAT      W.LONG      SUNRISE      SUNSET      GRAYLINE
FROM: iv3prk      46         -13         0518         1632        +/- 24 MINS
TO: Fiji is.     -18         -178        1743         0607        +/- 10 MINS

DISTANCE: 16594 KM      BEARING <TX/RX>: 29 / 339      XMTR PWR: 1 KW
TRANS ANT GAIN: 0 DBd   ANT HT: 0 MTRS      POLARIZATION: VERTICAL
RCUR ANT GAIN: 0 DBd   ANT HT: 0 MTRS      POLARIZATION: VERTICAL
PREDICTING BY THE ZONE METHOD, SKEWED BEARING PREDICTION

UTC    RX SKEW    TX SKEW    MODE        DEG    % DAYS    DB>0.5 uU    QI
-----
16
16.25
16.5
16.75      0          25        15F         23/23/23    35        -6
17         25         25        7R          23/ 0/19    11         24
17.25     25         25        7R          19/ 0/23    11         25
17.5
17.75
18

UTC    RX SKEW    TX SKEW    MODE        DEG    % DAYS    DB>0.5 uU    QI
-----
PRESS ANY KEY TO CONTINUE

IF THE % OF DAYS = 0 OR THE SIGNAL < -10 DB RELATIVE TO 0.5 uU,
THEN NO VALUES APPEAR IN THE LAST COLUMNS OF THE PRINT-OUT.
MUF VALUES ARE FOR THE LOWEST POSSIBLE PURE F HOP MODE.
ISOTROPIC RECEIVING ANTENNA GAIN OF 6 DB AT ALL ANGLES IS ASSUMED.
QI <QUALITY INDEX> REFLECTS THE PRODUCT OF SIGNAL STRENGTH AND THE % DAYS.
IN MODE, E AND F MEAN A REFLECTION FROM E OR F2 TO GROUND, R MEANS REFLECTIONS
FROM F2 DOWN TO E, THEN FROM THE TOP OF E BACK UP TO F2.

PRESS ANY KEY TO CONTINUE

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Further supporting this mode are the exceptional signals received from TX3A on Chesterfield Is., which demonstrated an easier propagation path compared to 3D2, despite covering a distance of 15,600 km at 58 degrees - approximately 30 degrees further south and thus farther from the auroral oval.

November 2009

Luis IV3PRK