```
MINIPROP (TM) SHORT-PATH PREDICTIONS     01-13-2005     Path Length : 14251 km
Sunspot Number :  47.1   Flux : 100.0   F Hops :  5   Radiation Angle :  5 deg
TERMINAL A : 60.03 N    10.81 E   OSLO                 Bearing to B : 281.8 deg
TERMINAL B : 27.15 S   109.45 W   EASTER ISLAND        Bearing to A :  33.3 deg
Terminal A Sunrise/Set : 0817/1434 UTC  Terminal B Sunrise/Set : 1240/0213 UTC

                          ----------- SIGNAL LEVELS ABOVE 0.5 uV -----------
UTC      FMUF     ECOF     3.6 MHZ    7.1 MHZ   14.1 MHZ   21.2 MHZ   28.3 MHZ

0000      9.3     13.2       3.0 a     19.5 a
0200     10.2      7.3      35.5 a     32.8 a     27.6
0400     10.1      3.6      39.4 a     34.4 A     28.1
0600      8.2      2.0      39.4 A     34.4 A
0800     11.2      4.7      38.6 a     34.1 A     28.0
1000     15.0      8.5      32.8 a     31.7 a     27.2 A     23.5
1200     13.8      9.9      -4.2 a     16.6 a     22.5 B
1400     25.2     12.3                -16.7 a     12.0 A     16.3 A     16.3 B
1600     24.6     15.7                            5.8 a     13.3 A     14.6 B
1800     17.2     17.2                            4.8 a     12.9
2000      9.0     17.3
2200      8.1     16.1                -3.5 a
```

```
SHORT-PATH PREDICTIONS           01-13-2005            OSLO TO EASTER ISLAND
Sunspot Number :  47.1   Flux : 100.0   F Hops :  5   Radiation Angle :  5 deg
          MHZ           X = FMUF         O = ECOF           MHZ
          30 ------------------------------------------------- 30
          28                                                   28
          26                              XXXX                 26
          24                                  XX               24
          22                             X      X              22
          20 ----------------------------------X-------------- 20
          18                              X         XOOOOO     18
          16                        X     X     OOOOO    OOOO  16
          14 O                   X XX  X    OO      X       OOO 14
          12  O                XX    XX    O         X          12
          10 XXOXXXXXXXX----X-----OOOOOOO----------X--------X 10
           8    OO      XXXX   OOO                  XXXXXXXX   8
           6      OO          O                               6
           4        OOO     OO                                4
           2           OOOOO                                  2
           0 ------------------------------------------------   0
             0   0   0   0   0   1   1   1   1   1   2   2   0 U
             0   2   4   6   8   0   2   4   6   8   0   2   0 T
```

```
160 m: 5 – 7 UTC; max. 6 UTC
 80 m: 3 – 9 UTC; max. 5 – 7 UTC
 40 m: 2 – 9 UTC
 30 m: 0830 – 11 UTC
 20 m: 0930 – 10, 13 – (svak)
 17 m: 1330 – (svak)
 15 m: 14 – (svak)
 12 m: 1530 – (svak)
 10 m: ~ 1530 (svakt, mindre enn 50% sannsynlighet)
```

```
MINIPROP (TM) SHORT-PATH PREDICTIONS     01-13-2005     Path Length : 14726 km
Sunspot Number :  47.1   Flux : 100.0   F Hops :  5   Radiation Angle :  5 deg
TERMINAL A : 27.15 S   109.45 W   EASTER ISLAND       Bearing to B :  48.6 deg
TERMINAL B : 47.90 N    15.00 E   Austria            Bearing to A : 275.3 deg
Terminal A Sunrise/Set : 1240/0213 UTC  Terminal B Sunrise/Set : 0652/1526 UTC
```

			SIGNAL LEVELS ABOVE 0.5 uV				
UTC	FMUF	ECOF	3.6 MHZ	7.1 MHZ	14.1 MHZ	21.2 MHZ	28.3 MHZ
0000	11.2	13.2	8.6 a	22.3 a	24.8		
0200	11.8	7.2	37.0 a	33.9 a	28.5		
0400	11.5	3.6	40.4 A	35.3 A	28.9		
0600	11.3	2.9	40.4 A	35.3 A	28.9		
0800	17.4	8.9	31.3 a	31.6 a	27.8 A	24.1	
1000	16.5	12.4	3.3 a	20.2 a	24.2 A	22.4	
1200	15.5	13.3		-6.9 a	15.6 A	18.4	
1400	26.8	12.9			6.4 A	14.0 A	15.3 B
1600	25.8	16.2			2.6 a	12.2 A	14.3 B
1800	17.0	17.6			4.7 a	13.2	
2000	12.2	17.6			10.6 b		
2200	11.1	16.3		1.3 a	18.2		

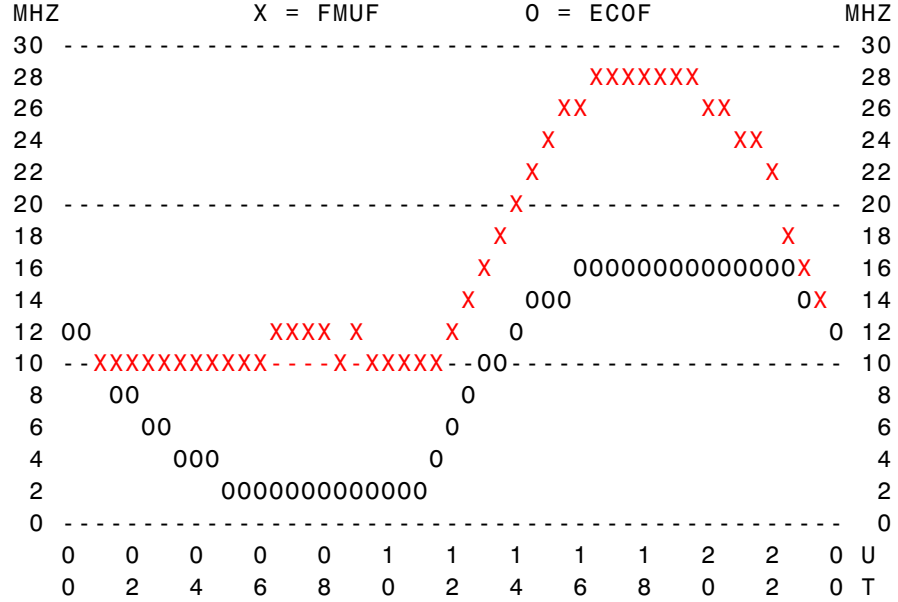
```
SHORT-PATH PREDICTIONS          01-13-2005          EASTER ISLAND TO Austria
Sunspot Number :  47.1   Flux : 100.0   F Hops :  5   Radiation Angle :  5 deg
          MHZ            X = FMUF          O = ECOF             MHZ
          30 ---------------------------------------------------- 30
          28                               XXX                   28
          26                              X   X                  26
          24                             X     X                 24
          22                                   X                 22
          20 -----------------XX-------X--------X-------------- 20
          18                  X  X     X        OOOOOOOOO        18
          16                 X    X   X      OOO         OOOO   16
          14 O                    XXXOOO  OO      XX        OO 14
          12 XOXXXXXXXX  XXX    OOO     OO          XXXXXXXX X 12
          10 --O-------XX-----OO----------------------------X- 10
           8    OO          OO                                 8
           6      OO       O                                   6
           4        OO    O                                    4
           2          OOOO                                     2
           0 ---------------------------------------------------  0
             0   0   0   0   0   1   1   1   1   1   2   2   0 U
             0   2   4   6   8   0   2   4   6   8   0   2   0 T
```

```
160 m: 0430 – 6 UTC; max. 0530 UTC
 80 m: 0330 – 0630 UTC; max. 0330 – 4 og ~ 0630 UTC
 40 m: 0130 – 0730 UTC
 30 m: 0030 – 9 UTC
 20 m: 0730 – 10
 17 m: 1330 – (svak)
 15 m: 1330 – (svak)
 12 m: 15 – (svak)
 10 m: ~ 15 (svakt, mindre enn 50% sannsynlighet)
```

MINIPROP (TM) SHORT-PATH PREDICTIONS 01-13-2005 Path Length : 8256 km
Sunspot Number : 47.1 Flux : 100.0 F Hops : 3 Radiation Angle : 6 deg
TERMINAL A : 27.15 S 109.45 W EASTER ISLAND Bearing to B : 26.7 deg
TERMINAL B : 39.95 N 75.15 W Philadelphia, PA Bearing to A : 211.4 deg
Terminal A Sunrise/Set : 1240/0213 UTC Terminal B Sunrise/Set : 1226/2153 UTC

			SIGNAL LEVELS ABOVE 0.5 uV				
UTC	FMUF	ECOF	3.6 MHZ	7.1 MHZ	14.1 MHZ	21.2 MHZ	28.3 MHZ
0000	11.8	12.9	7.7 a	25.8 a	30.8		
0200	9.9	7.2	43.2 a	40.3 a	35.4		
0400	10.2	3.6	47.4 A	42.0 A	35.9		
0600	10.9	2.0	47.4 A	42.0 A	35.9		
0800	11.1	2.0	47.4 A	42.0 A	35.9		
1000	10.4	2.0	47.4 A	42.0 A	35.9		
1200	11.4	5.2	41.3 a	39.5 A	35.1		
1400	20.1	11.9		11.6 a	26.3 A	27.5 B	26.6
1600	26.3	15.3		-9.5 a	19.7 a	24.4 A	24.8 B
1800	28.4	16.7		-19.0 a	16.7 a	23.0 A	24.0 A
2000	27.0	16.9		-14.9 a	18.0 a	23.6 A	24.3 B
2200	21.1	15.7		1.9 a	23.3 a	26.1 B	25.8

SHORT-PATH PREDICTIONS 01-13-2005 EASTER ISLAND TO Philadelphia, PA
Sunspot Number : 47.1 Flux : 100.0 F Hops : 3 Radiation Angle : 6 deg



160 m: 5 – 11 UTC; max. 6 – 10 UTC
 80 m: 2 – 12 UTC
 40 m: 0130 – 12 UTC
 30 m: 0030 – 1, 0830 – 9, 12 – 13 UTC
 20 m: 13 – 1430
 17 m: 14 – 1530
 15 m: 1430 – 21
 12 m: 16 – 1830
 10 m: 1630 – 1730 (mindre enn 75% sannsynlighet)

MINIPROP (TM)

Ionospheric Propagation Predictions
Version 2.0

A User-Supported Program

The predicted F-layer MUF (FMUF), E-layer cutoff frequency (ECOF), and received signal levels are shown for every two hours UTC.

The predicted signal levels are shown for frequencies in the five primary HF bands. The signal levels are in dB with respect to 0.5 microvolt "behind" 50 ohms, and assume a matched antenna load. On my receiver 0.5 microvolt produces an S3 signal. So 0 dB would be S3. At 5 dB per S unit, 10 dB would be S5, 30 dB would be S9, etc. The signal levels assume 100 watts radiated power with half-wave dipole antennas in free space at both ends of the path, and with the antennas oriented for maximum gain along the path. Add or subtract whatever number of dB you think appropriate for the antennas and power levels in use.

Predicted signal levels are computed independently of the FMUF and ECOF under the assumption that the number of F hops (in this case 5) shown in the header are present at all times and for all frequencies, and that there is no E-layer cutoff. (To take E-layer reflections into account in computing signal levels would be time prohibitive.) This is important to remember: SIGNAL LEVEL PREDICTIONS ASSUME THAT A REFLECTING F LAYER IS ALWAYS PRESENT AND THAT THERE IS NO REFLECTING E LAYER.

The "A", "a", "B", and "b" flags are included in the predictions to flag predicted band openings and to aid in interpreting the predicted signal levels. The table on the next page shows how the flags indicate the relationship that exists between the frequency at the top of a column and the FMUF and ECOF, and also shows the probability that propagation on the path can be supported by the F layer.

"A"s or "a"s in a particular frequency column flag the times that openings are most probable on that frequency. At these times, the frequency at the top of the column is less than the predicted FMUF. Therefore, it is expected that the probability of F-layer propagation is greater than 50 percent. The difference between "A" and "a" is that the frequency is above the ECOF in the first case, but below the ECOF in the second. When the "A" flag is present, the predicted signal levels apply. When the "a" flag is present, usually when one or both of the two terminii is in daylight, E hops are added to, or substituted for, F hops. This causes additional absorption loss, and possibly additional ground reflection loss, that results in weaker signals than the predicted values. The reduction of received signal level can be very large, particularly at the lower frequencies. Transmitter power and high antenna gains may sometimes be used to overcome the increased signal loss.

Frequency at Top of Column	Flag	Probability of F-Layer Support
Below FMUF		
and above ECOF	A	More than 50%
and below ECOF	a	
Between FMUF and HPF		
and above ECOF	B	10 - 50%
and below ECOF	b	
Above HPF	None	Less than 10%

"B"s or "b"s in a particular frequency column flag the times that the frequency at the head of the column is greater than the predicted FMUF, but is predicted to be less than the F-layer HPF. Therefore, the probability of F-layer propagation is expected to be less than 50 percent, but greater than 10 percent. When this possible opening actually occurs, and if the flag is "b", signal levels are expected to be weaker than shown because E-layer cutoff is to be expected; the predicted signal levels apply when the opening occurs and the flag is "B".

Kommentarer:

Har valgt solarfluks = 100 og K-indeks = 0.
Dette er antagelig de optimale forhold som kan tenkes for perioden. Sannsynligvis vil forholdene være dårligere enn beregnet her!

LA4LN's QTH i Oslo er valgt som representant for Skandinavia, Østerrike er valgt som representant for (resten av) Europa, og W3 (Pennsylvania) er valgt som representant for østkysten av USA.

I tabellene er rød farge lagt på de beste forholdene (med stor A etter signalstyrken i dB over 0,5 mikrovolt). I diagrammene er mulige forhold merket med rødt langs F-lagets MUF-kurve. Langs denne kurven er det 50% sjanse for samband (eller samband 50% av tiden). Under nullene i diagrammet er det ikke mulig å få samband, også når 0'ene er over X'ene.

Gi oss i gamlelandet et hint av og til i pile-up'en, f.eks. hvis dere sender "ti opp" på norsk ...

73 og lykke til!

12/12-2004 LA4LN