WinCAP 3

Software para previsão de propagação

by KU5S – James L. Tabor

Apresentação: PY2YP

WinCAP 3

- Introdução
- Conceitos Fundamentais
- Configuração
- Análise dos Circuitos
- Interpretação dos Resultados

Modelos usuais

- **IONCAP**
  - Ionospheric Communications Analysis and Prediction
- **ICEPAC**
  - Ionospheric Communications Enhanced Profile Analysis and Circuit Prediction Program
- **VOACAP**
  - The Voice of America Coverage Analysis Program

IONCAP

Ionospheric Communications Analysis and Prediction Program (IONCAP).

O IONCAP calcula:

- Intensidade de campo;
- Confiabilidade do modo;
- MUF;
- LUF.

IONCAP

Permite especificar:

- Ganho da antena;
- Ângulo de irradiação;
- Potência de saida;
- Hora universal;
- Coordenadas;
- Número de manchas solares;
- Fluxo;
- Índices A & K.

http://elbert.its.bldrdoc.gov/hf.html

ICECAP

IONCAP:

- Baixa performance relativamente às regiões polares;
- Utiliza perfis de estrutura de densidade de eletrons superados.

Foi desenvolvido um novo modelo considerando a condutividade da ionosfera e a densidade de eletrons.

Novo modelo:

Ionospheric Communications Enhanced Profile Analysis and Circuit Prediction Program.

- Considera diferenças entre as regiões da ionosfera;
- Contém algoritmos para circuitos através de regiões de sub-aurora, aurora e da capota polar.

VOACAP

Em 1985 a rádio Voz da América adotou o algoritmo Ionospheric Communications Analysis and Prediction Program

Após as modificações o nome foi alterado para Voice of America Coverage Analysis Program (VOACAP)

O desenvolvimento do VOACAP foi acompanhado pela VOA e pelo Naval Research Laboratory and the Institute for Telecommunication Sciences (Department of Commerce, NTIA).

http://elbert.its.bldrdoc.gov/hf.html

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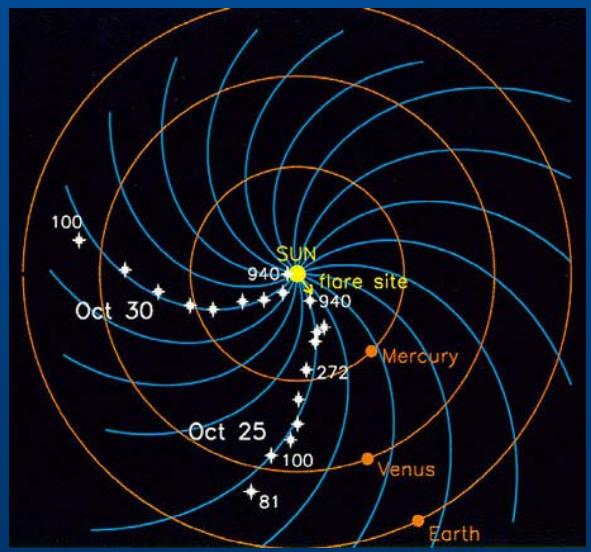
Conceitos Fundamentais

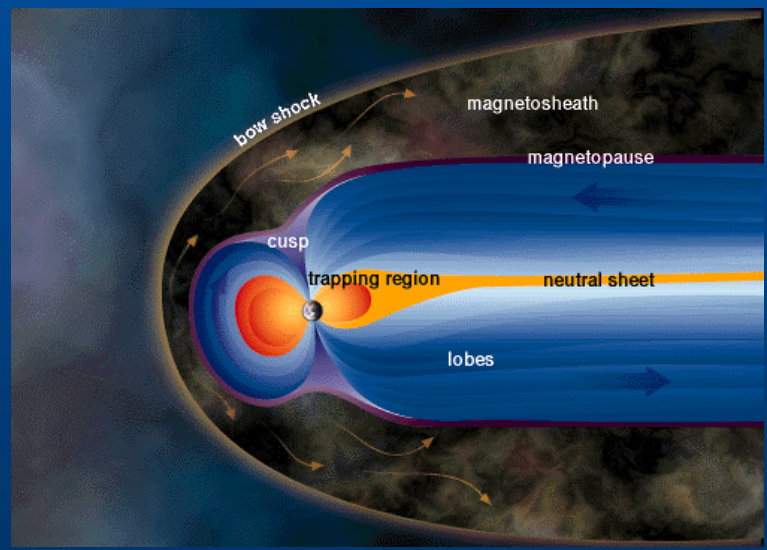
- IMF – Interplanetary Magnetic Field
- Bz
- Manchas solares (sunspot)
- SFI (fluxo solar)
- Indices A & K
- SSN – Smoothed Sunspot Number

Interplanetary Magnetic Field

IMF – Interplanetary Magnetic Field é um outro nome do campo magnético do Sol.

O campo magnético do Sol vai além do sistema solar e por isso é também chamado de Interplanetary Magnetic Field





Bz

- O IMF é uma grandeza vetorial Bx, By e Bz
- Bx e By são paralelos ao plano da elíptica
- Bz é perpendicular à elíptica.
- Bz é criado por ondas ou outros disturbios no vento solar.
- Se Bz < 0 ocorrem mudanças na magnetosfera.
- Bz varia de –200 a +200 nT
- Próximo a Terra -37 < Bz < +37.
- Se Bz < -7 procure um bom livro para ler.

www-ssc.igpp.ucla.edu/personnel/russell/papers/Initial_Polar/

Indices

Fluxo solar

$$SFI = 63,75 + 0,728\,N + 0,00089\,N^2$$

Onde N = média do número mensal de manchas solares

Índice A é uma medição diária da atividade do campo geomagnético variando de 0 a 400. Se:

A < 10	Bons DX. Verifique para onde está aberto.
10 < A < 20	Condições desfavoráveis, insista.
A > 20	Desista, vá pescar.

Índice K é igualmente a medição da atividade do campo geomagnético para um período de 3 horas e varia de 0 a 9. Se K aumenta, aguarde aumento de A.

WWV

Date	Hour	SFI	A	K			Forecast					
29-Oct-2003	18	274	20	7	R=230	Ext	G5	S4	R3=>Sev	G4	S2	R3

G	R	S	Intensidade
5	5	5	Extrema
4	4	4	Severa
3	3	3	Forte
2	2	2	Moderada
1	1	1	Fraca

G = Tempestade Geomagnética

R = Blackout de Rádio

S = Tempestade da Radiação Solar

Labaredas (flare)

Classe	W/m^2 entre 1 e 8 Angstroms
B	**$I < 10^{-6}$**
C	**$10^{-6} <= I < 10^{-5}$** ***Causam poucos transtornos***
M	**$10^{-5} <= I < 10^{-4}$** ***Causam breves blackouts de rádio***
X	**$I >= 10^{-4}$** ***Causam longos blackouts de rádio***

Smoothed Sunspot Number

- O número diário de manchas solares não tem relação com a variação da ionosfera;
- O índice Ionosférico, R12, é derivado do número diário de manchas solares.
- R12 é o valor da média suavizada do período de 12 meses de manchas solares.

  [(n1/2) + (n2 + n3 + ...n11 + n12) + (n13/2)] / 12

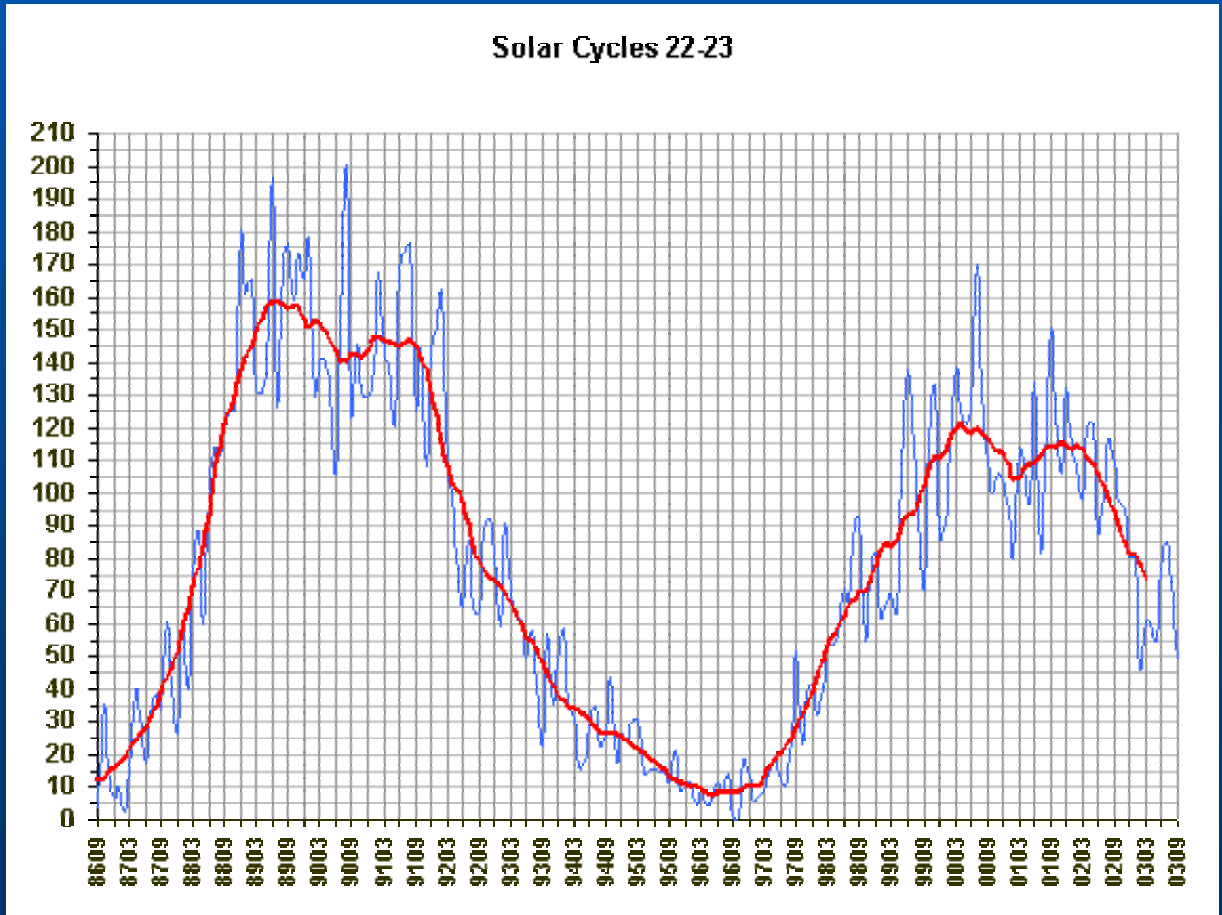
  Onde:

  n1 = Jan 1980, n7 = Jul 1980 e n13 = Jan 1981

http://www.ngdc.noaa.gov/stp/IONO/sunspot.html

http://www.sec.noaa.gov/info/glossary.html

Gráfico do SSN



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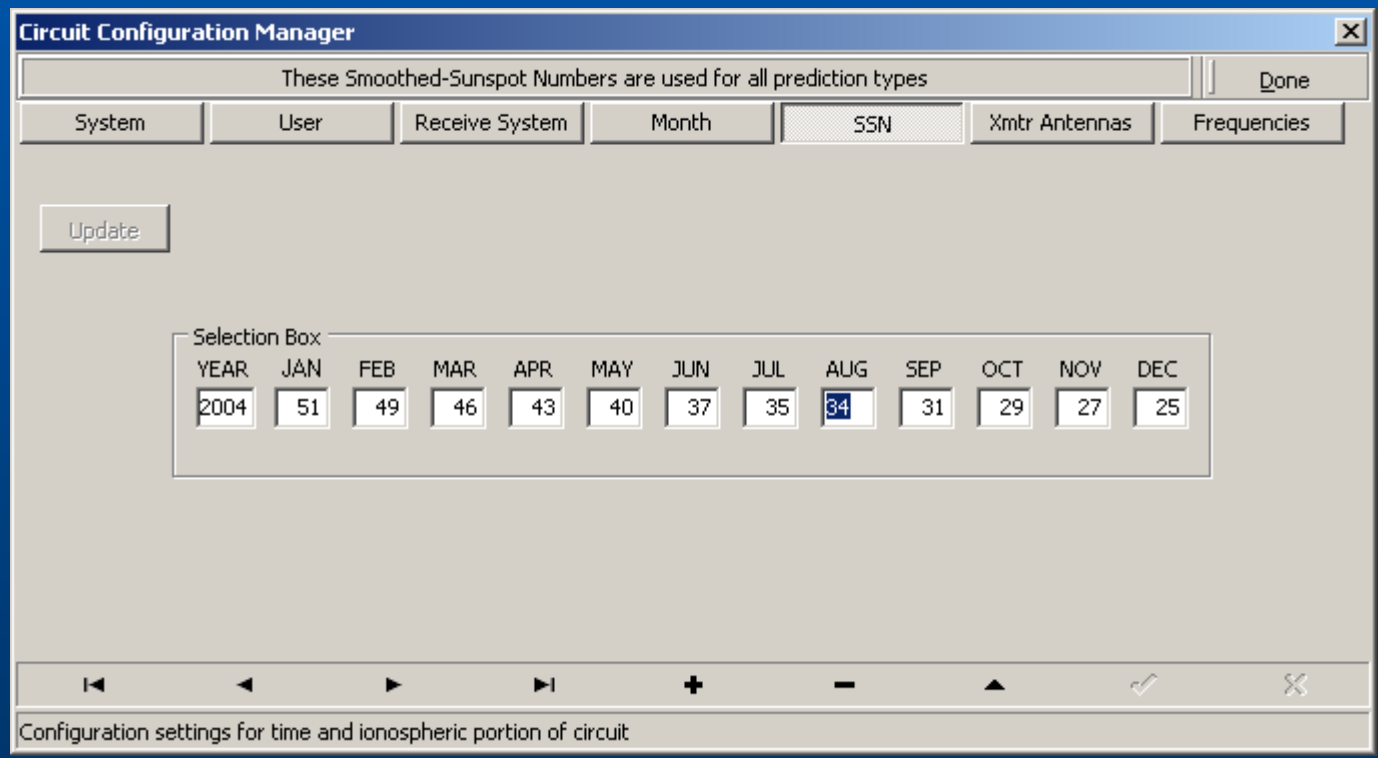
Configuração

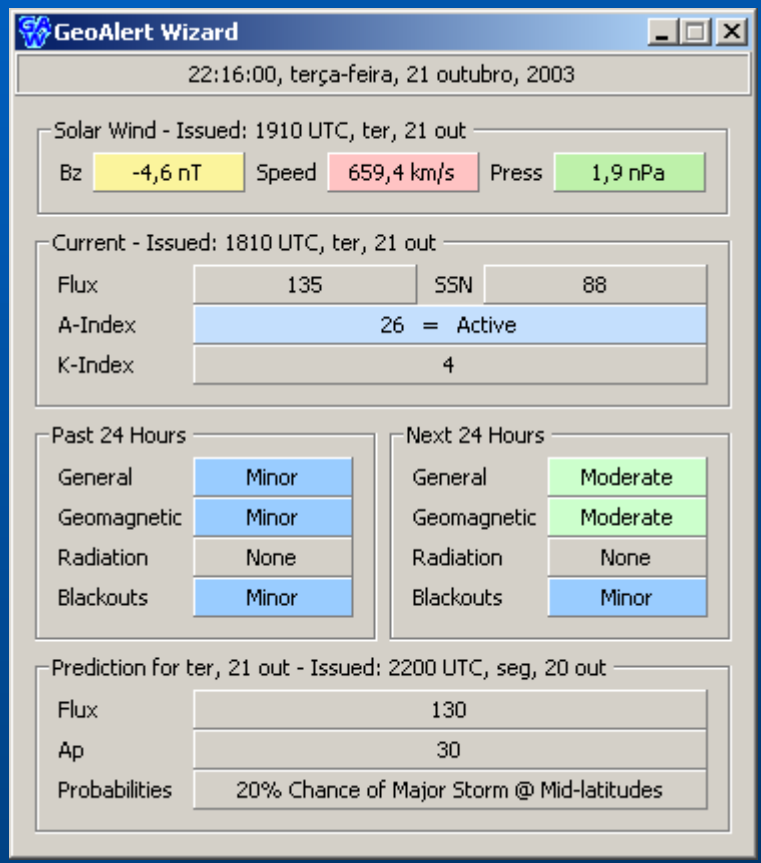
- Localização (coordenadas e hora)
- Integração com o GeoAlert
- Antena
- Local de recepção
- Frequências de trabalho
- Grupos

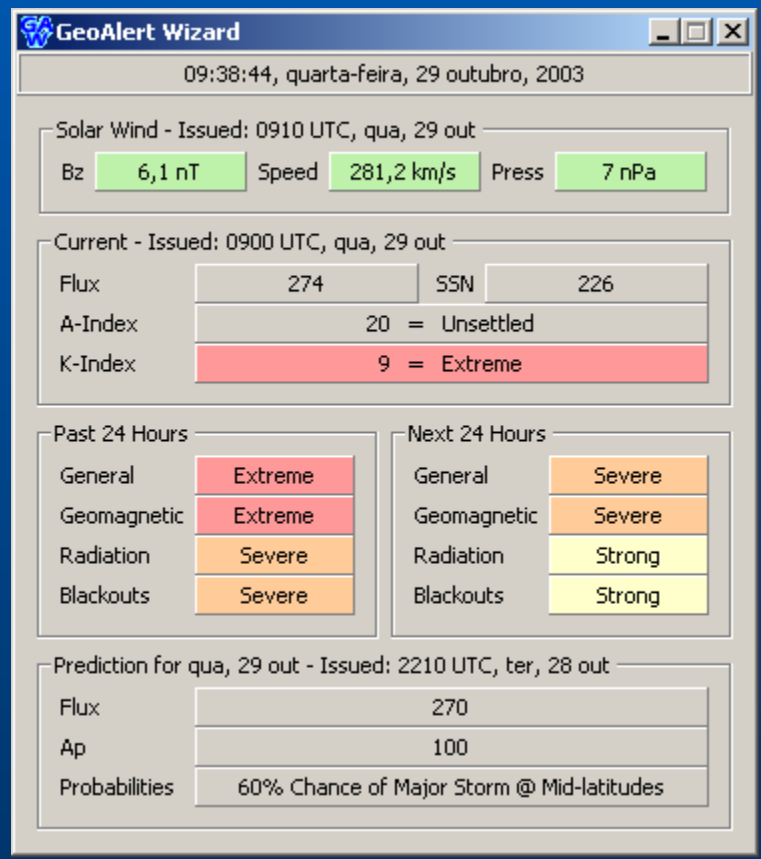
Localização

Integração com o GeoAlert

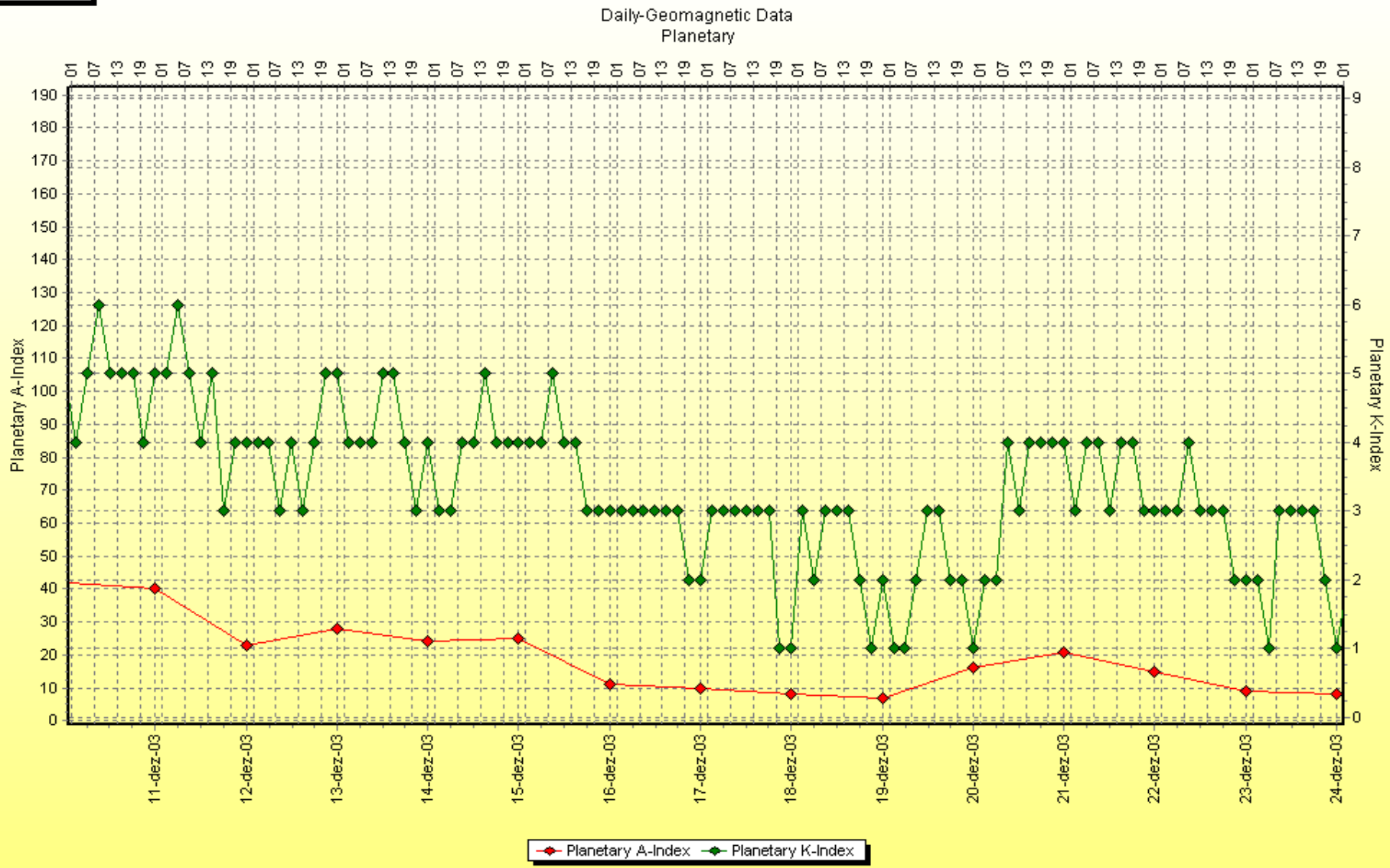


Integração com o GeoAlert

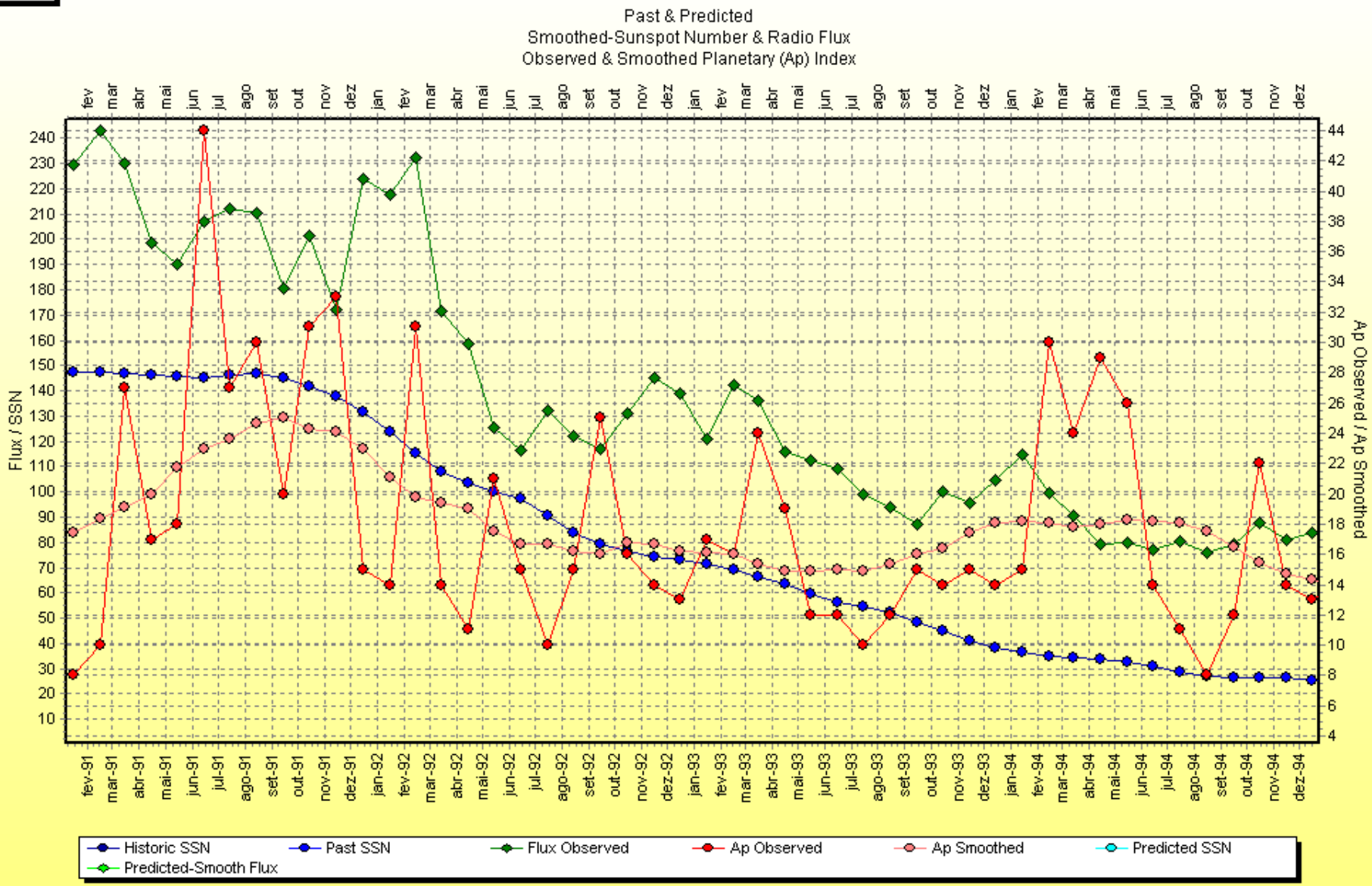




Atividade Geomagnética



Passado e Previsto

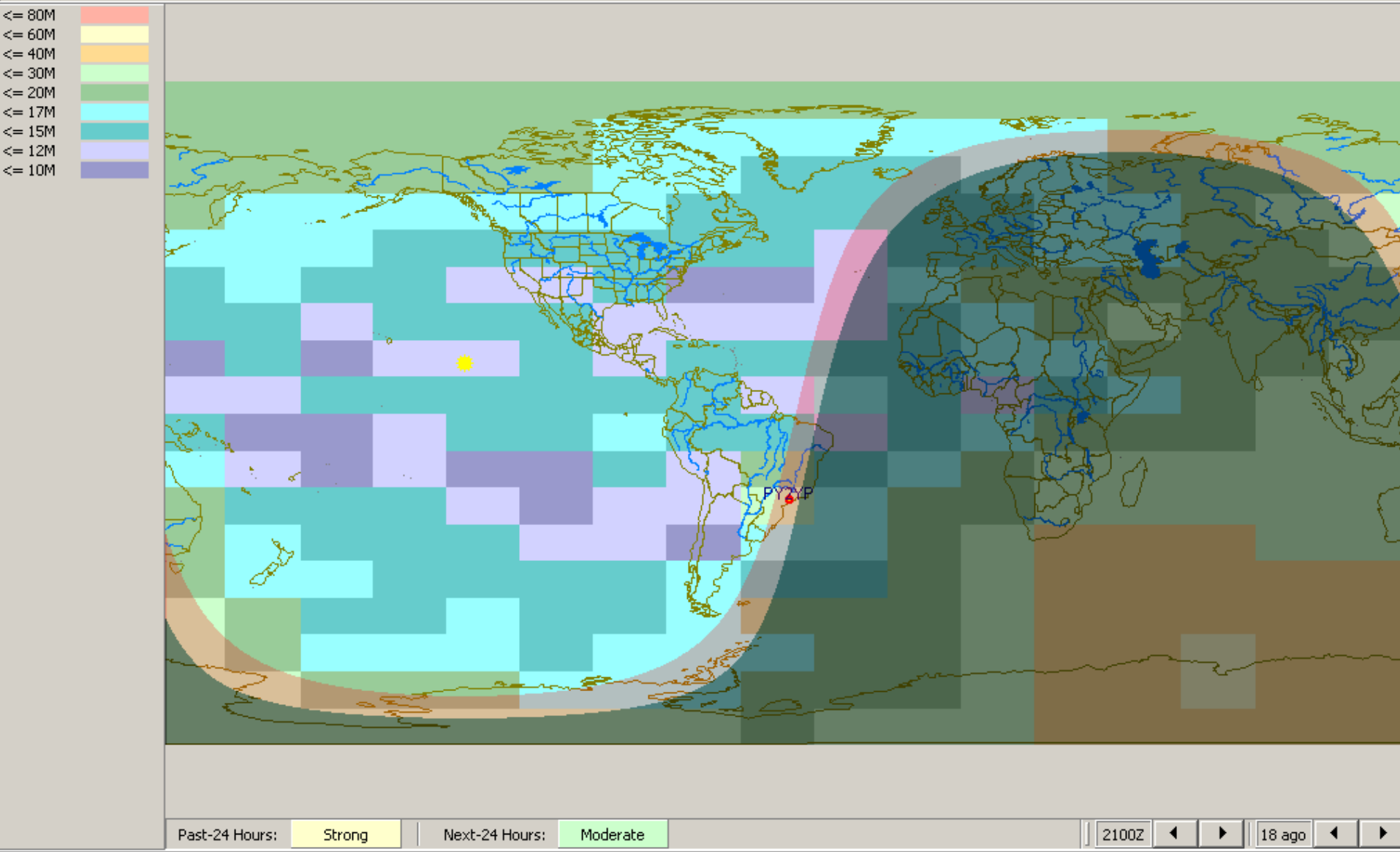


GeoAlert MUF Map - Station : PY2YP - 23.56º S, 46.66º W, Grid sq: GG66qk

21:40:45, quarta-feira, 18 agosto, 2004

Activate | Fields | Squares | Names | Values | Amateur | Contest | Selector | Menu | Done

ago, SSN: 34, URSI, Short, PY2YP, Brazil



Past-24 Hours: Strong | Next-24 Hours: Moderate | 2100Z | 18 ago

Prediction is for current month and the hour is in sync. Actual HF propagation may be affected by current solar activity.

Display predicted MUF or FOT for each grid field

Start | Inbox - Outlook Express | GeoAlert-Extreme Wi... | 18:40

GeoAlert MUF Map - Station : PY2YP - 23.56º S, 46.66º W, Grid sq: GG66qk

13:02:51, quinta-feira, 19 agosto, 2004

Activate | Fields | Squares | Names | Values | Amateur | Contest | Selector | Menu | Done

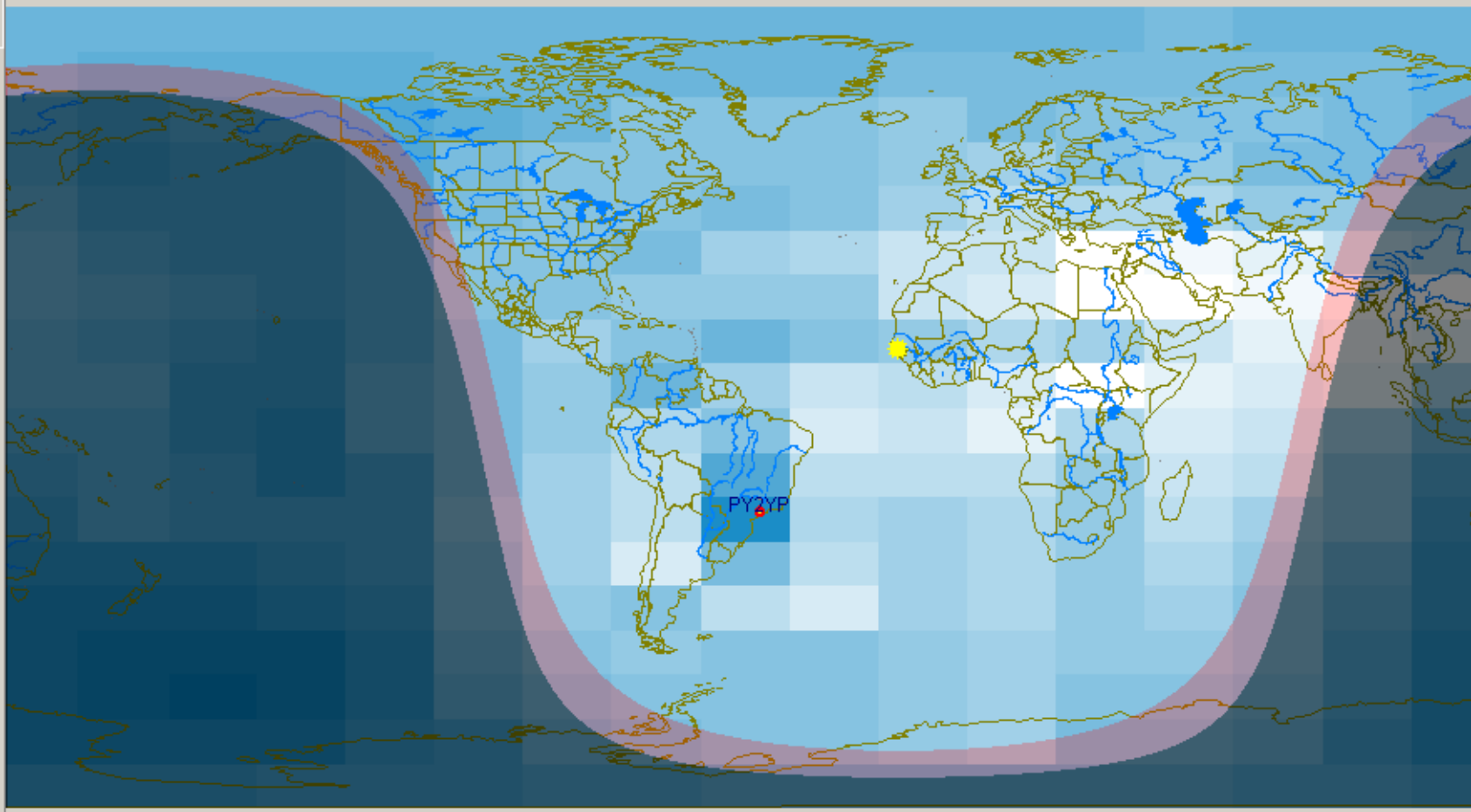
ago, SSN: 34, URSI, Short, PY2YP, Brazil

Ranges 20

Lower Freq:

Higher Freq:

<= 7.32
<= 8.49
<= 9.67
<= 10.84
<= 12.01
<= 13.18
<= 14.36
<= 15.53
<= 16.70
<= 17.87
<= 19.05
<= 20.22
<= 21.39
<= 22.56
<= 23.74
<= 24.91
<= 26.08
<= 27.25
<= 28.43
<= 29.60

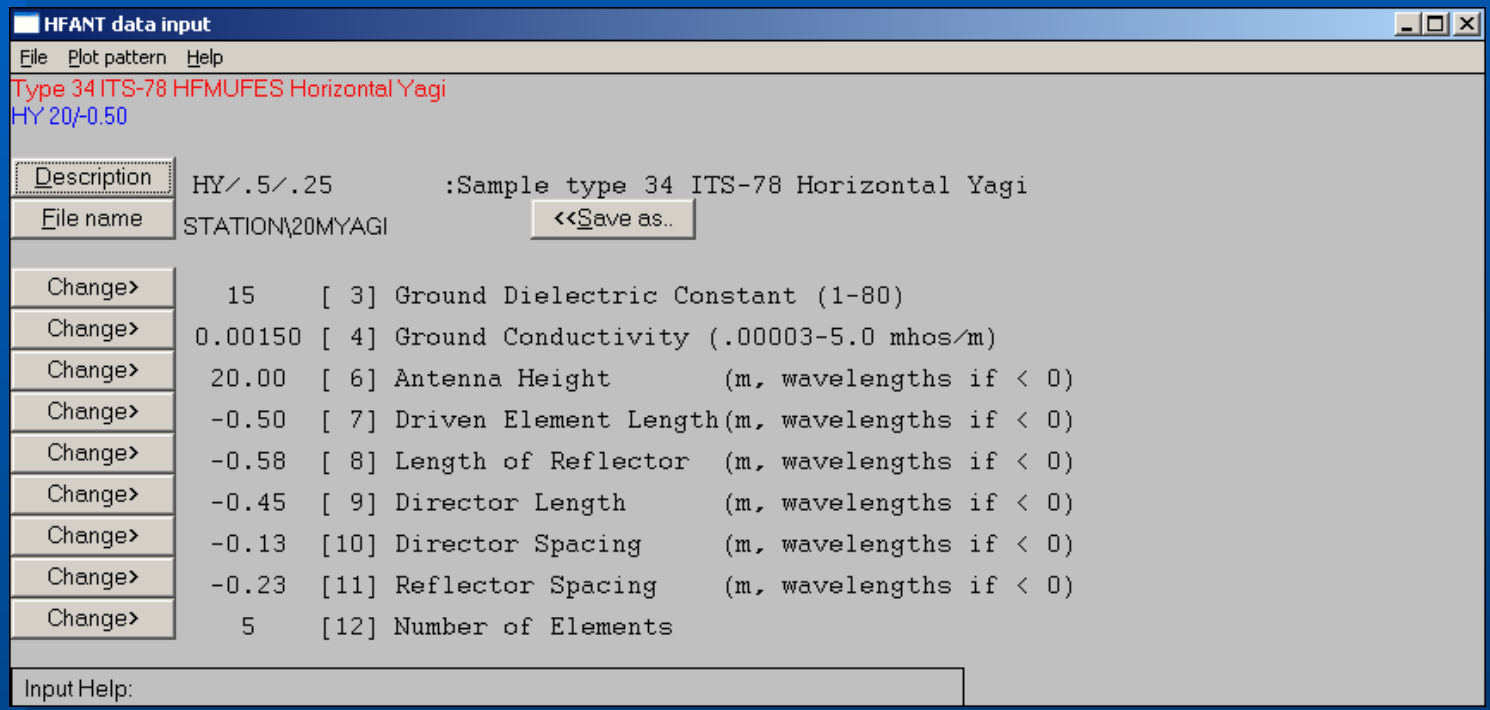


Past-24 Hours: Strong | Next-24 Hours: Minor | 1300Z | 19 ago

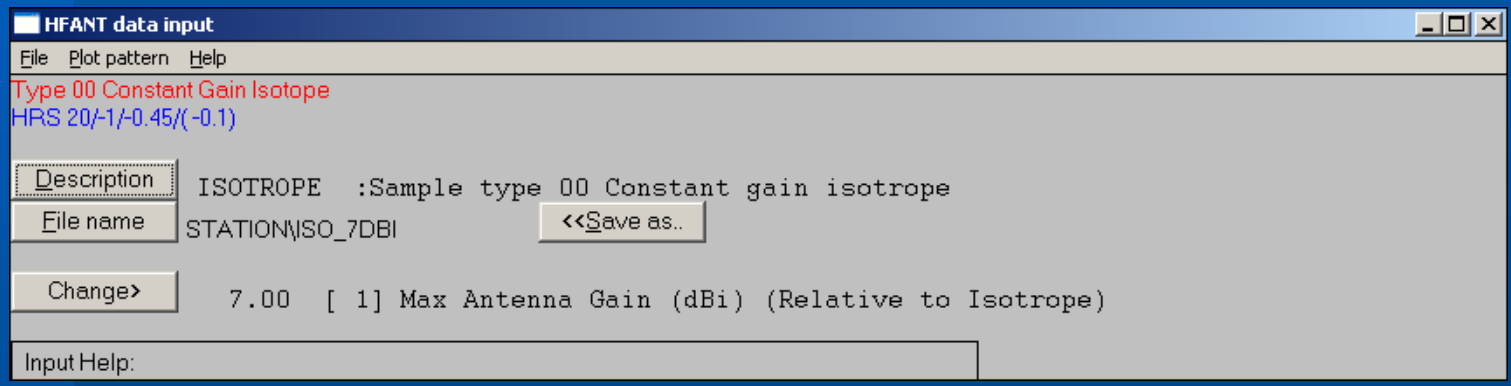
Actual HF propagation may be affected by current solar activity. Prediction is for current month and the hour is in sync

MUF: 20.57 MHz, 15 M, EH09rc, 10.91 S, 98.58 W - Distance from Station: 5649.17 km, 3512.47 miles, Az: 275.1

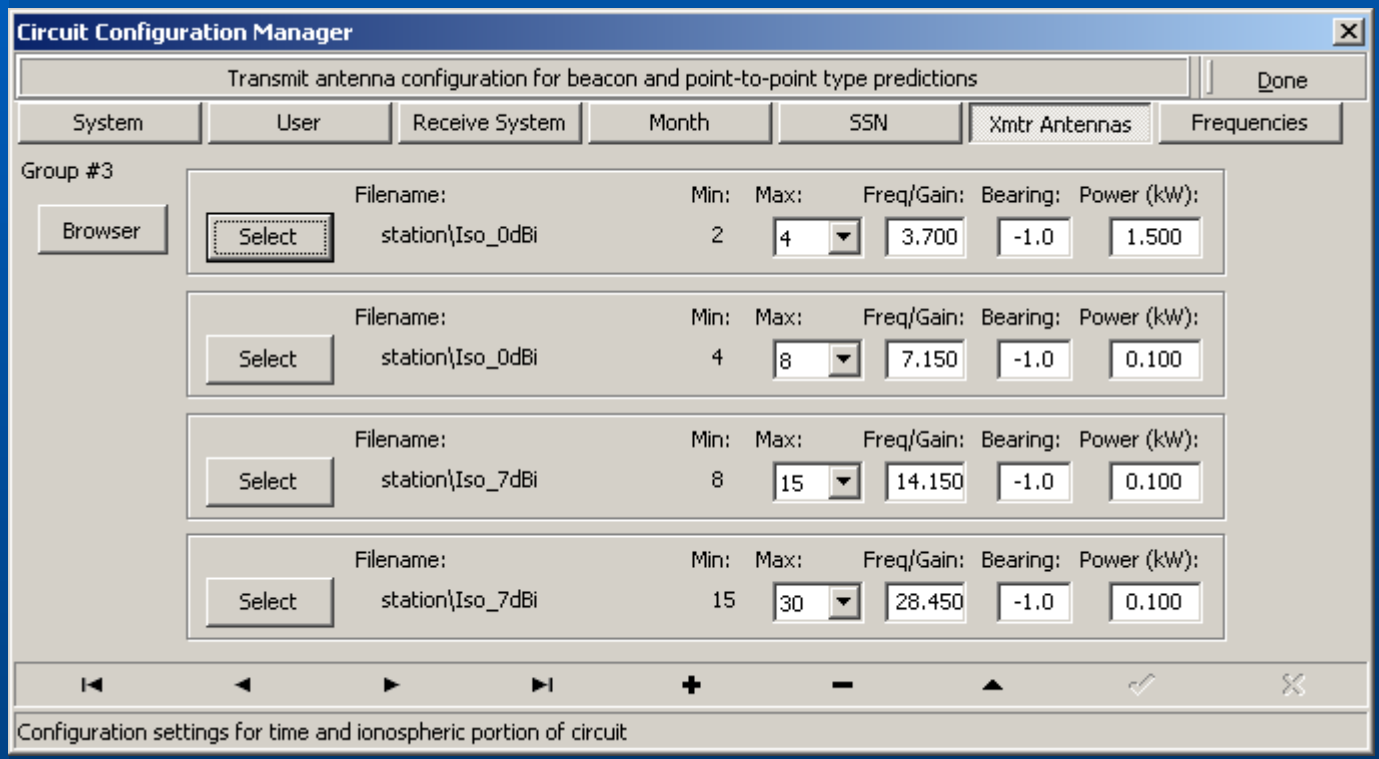
Antena Yagi


HFANT data input
File Plot pattern Help
Type 34 ITS-78 HFMUFES Horizontal Yagi
HY 20/-0.50
Description
HY/.5/.25 :Sample type 34 ITS-78 Horizontal Yagi
File name
STATION\20MYAGI
<<Save as..
Change> 15 [3] Ground Dielectric Constant (1-80)
Change> 0.00150 [4] Ground Conductivity (.00003-5.0 mhos/m)
Change> 20.00 [6] Antenna Height (m, wavelengths if < 0)
Change> -0.50 [7] Driven Element Length (m, wavelengths if < 0)
Change> -0.58 [8] Length of Reflector (m, wavelengths if < 0)
Change> -0.45 [9] Director Length (m, wavelengths if < 0)
Change> -0.13 [10] Director Spacing (m, wavelengths if < 0)
Change> -0.23 [11] Reflector Spacing (m, wavelengths if < 0)
Change> 5 [12] Number of Elements
Input Help:

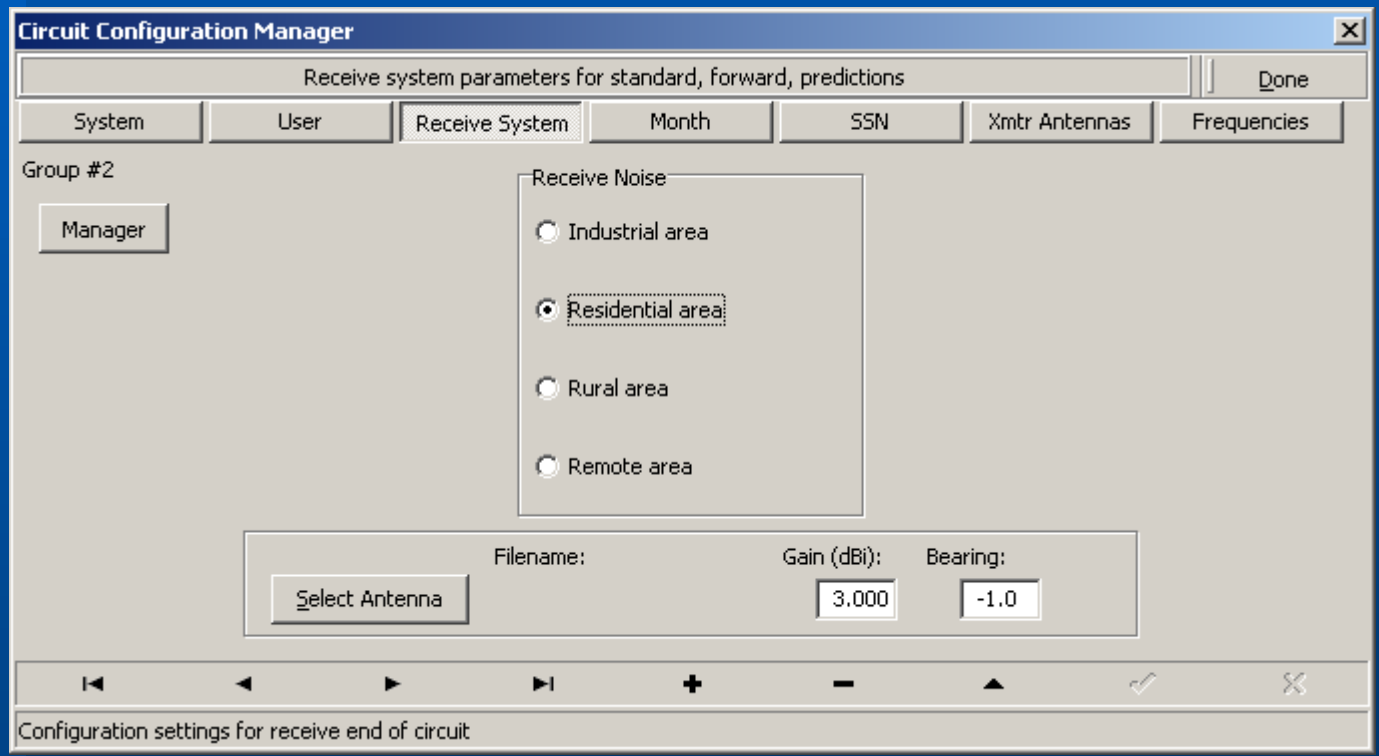
Antena isotrópica



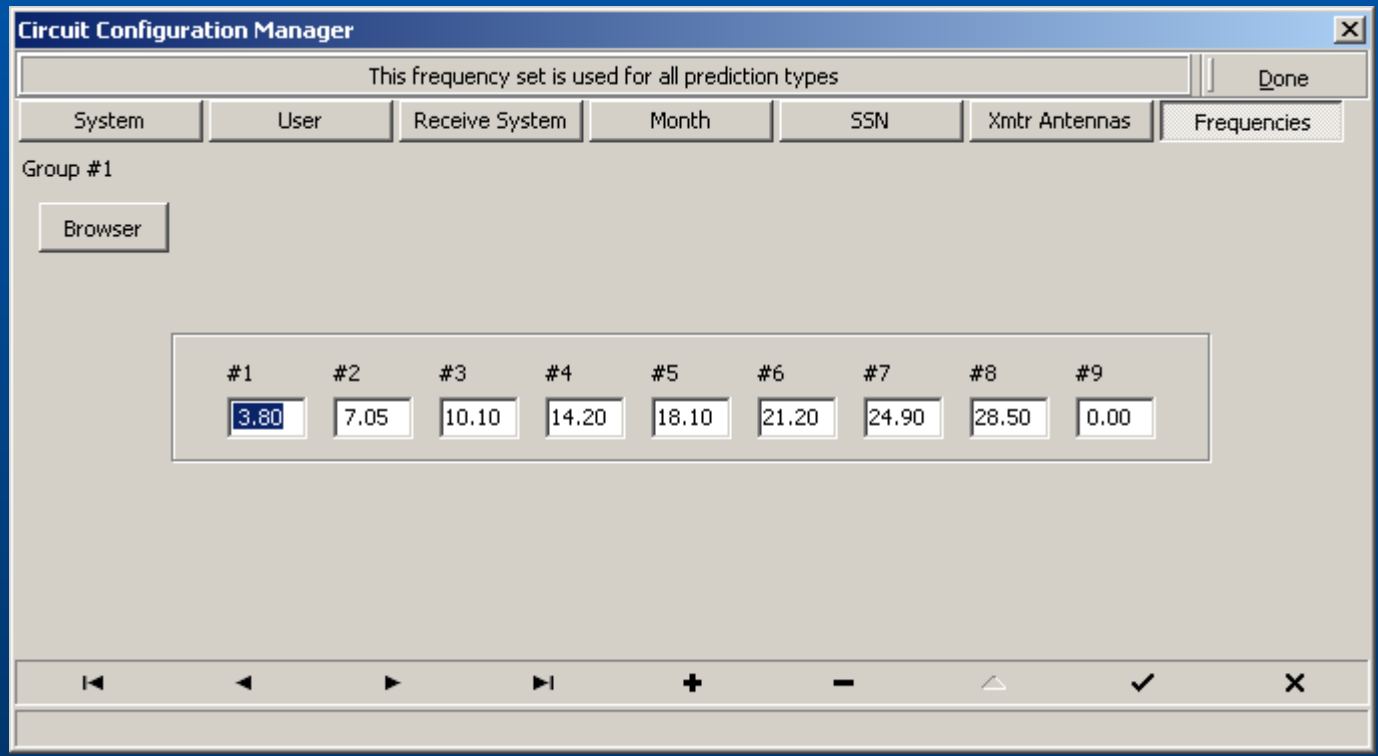
Dados das antenas



Local de Recepção



Frequências de trabalho



Grupos

- Diferentes antenas
- Diferentes usuários
- Diferentes sistemas de recepção
- Diferentes frequências
- Diferentes circuitos

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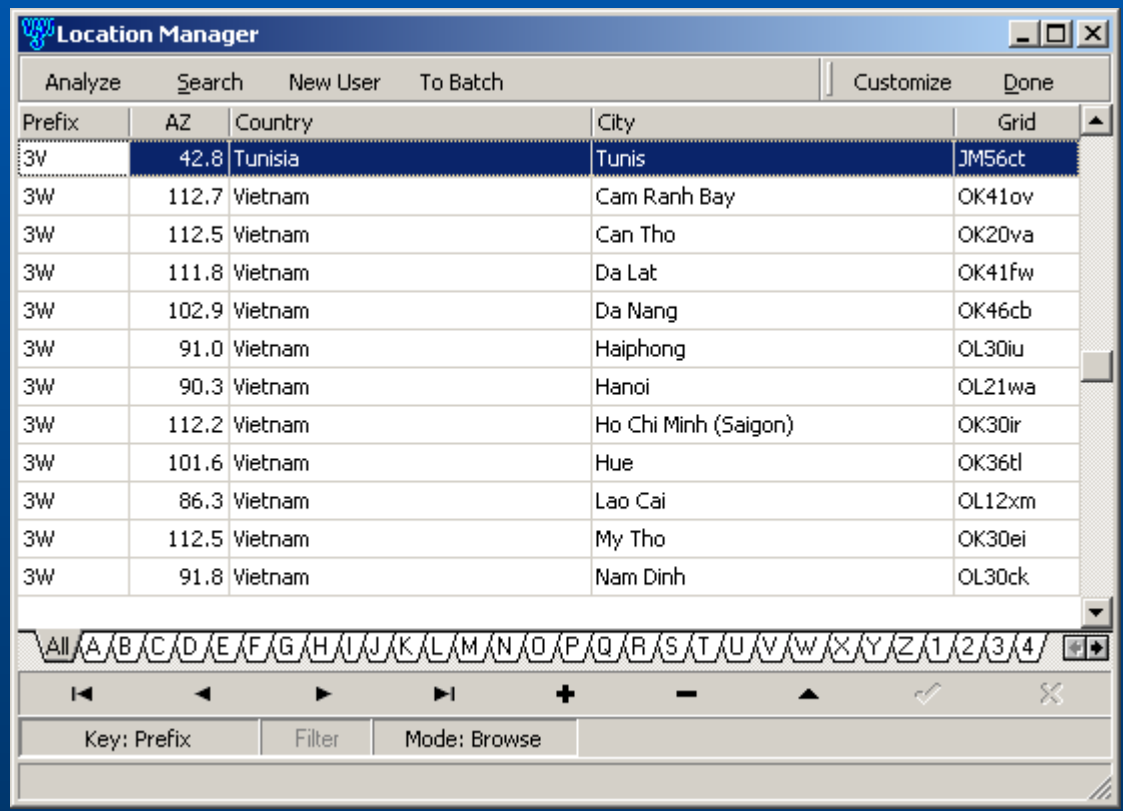
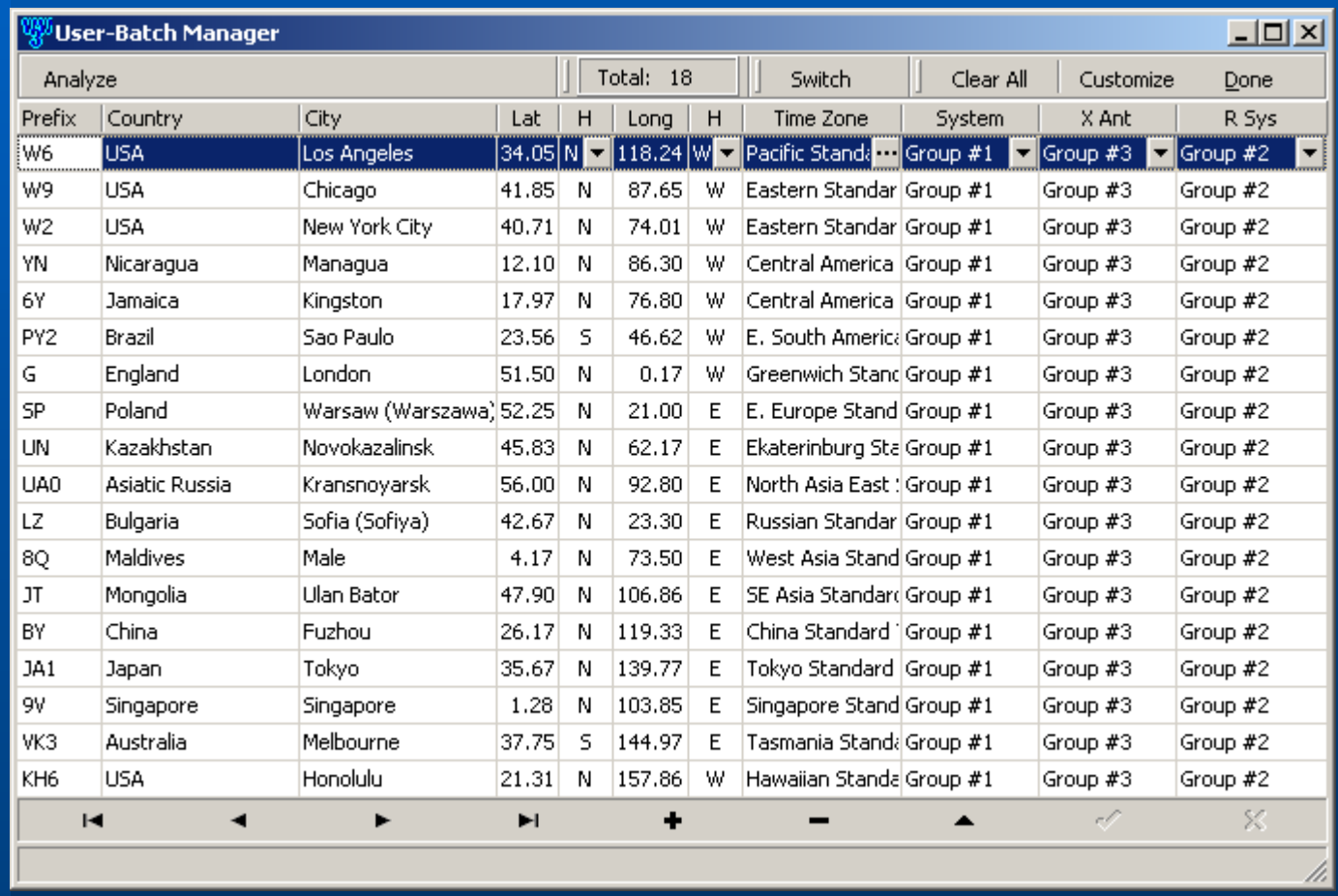
Análise dos Circuitos

- Ponto a ponto
- Pacote com 18 pontos por grupo
- Beacons da NCDXF
- Integração com o Beacon Wizard

Ponto a ponto

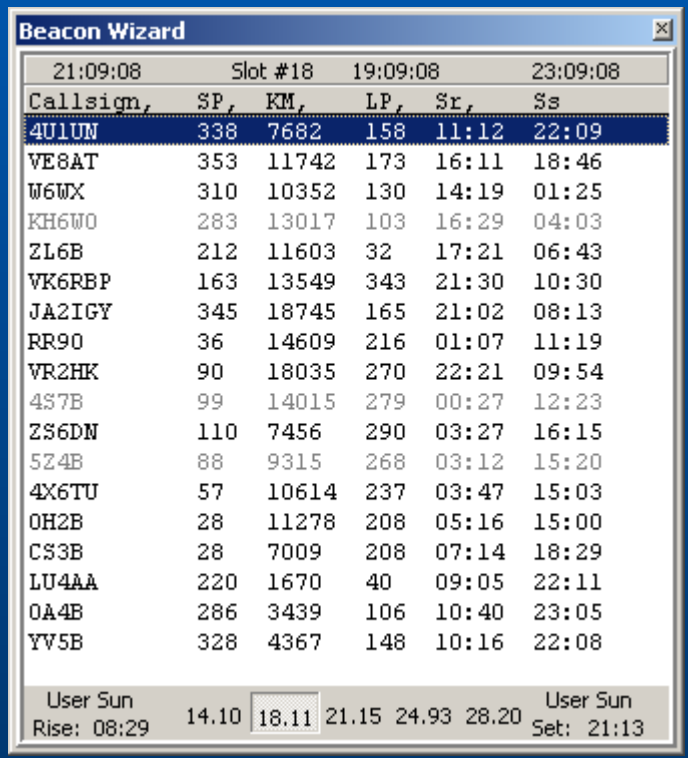


Pacote de 18 circuitos



Prefix	Country	City	Lat	H	Long	H	Time Zone	System	X Ant	R Sys
W6	USA	Los Angeles	34.05	N	118.24	W	Pacific Standa	Group #1	Group #3	Group #2
W9	USA	Chicago	41.85	N	87.65	W	Eastern Standar	Group #1	Group #3	Group #2
W2	USA	New York City	40.71	N	74.01	W	Eastern Standar	Group #1	Group #3	Group #2
YN	Nicaragua	Managua	12.10	N	86.30	W	Central America	Group #1	Group #3	Group #2
6Y	Jamaica	Kingston	17.97	N	76.80	W	Central America	Group #1	Group #3	Group #2
PY2	Brazil	Sao Paulo	23.56	S	46.62	W	E. South Americ	Group #1	Group #3	Group #2
G	England	London	51.50	N	0.17	W	Greenwich Stanc	Group #1	Group #3	Group #2
SP	Poland	Warsaw (Warszawa)	52.25	N	21.00	E	E. Europe Stand	Group #1	Group #3	Group #2
UN	Kazakhstan	Novokazalinsk	45.83	N	62.17	E	Ekaterinburg Sta	Group #1	Group #3	Group #2
UA0	Asiatic Russia	Kransnoyarsk	56.00	N	92.80	E	North Asia East	Group #1	Group #3	Group #2
LZ	Bulgaria	Sofia (Sofiya)	42.67	N	23.30	E	Russian Standar	Group #1	Group #3	Group #2
8Q	Maldives	Male	4.17	N	73.50	E	West Asia Stand	Group #1	Group #3	Group #2
JT	Mongolia	Ulan Bator	47.90	N	106.86	E	SE Asia Standarc	Group #1	Group #3	Group #2
BY	China	Fuzhou	26.17	N	119.33	E	China Standard	Group #1	Group #3	Group #2
JA1	Japan	Tokyo	35.67	N	139.77	E	Tokyo Standard	Group #1	Group #3	Group #2
9V	Singapore	Singapore	1.28	N	103.85	E	Singapore Stand	Group #1	Group #3	Group #2
VK3	Australia	Melbourne	37.75	S	144.97	E	Tasmania Standa	Group #1	Group #3	Group #2
KH6	USA	Honolulu	21.31	N	157.86	W	Hawaiian Standa	Group #1	Group #3	Group #2

Beacons da NCDXF



Beacon Wizard

Resultados

- **Relatórios**
- **Gráficos**

PY2YP Brazil maio 1980 SSN: 232

0200Z Prefix	80M S	80M TOA	40M S	40M TOA	30M S	30M TOA	20M S	20M TOA	17M S	17M TOA	15M S	15M TOA	12M S	12M TOA	10M S	10M TOA
W6	< 1	3.0	4	8.1	7.5	12.0	7.5	3.2	9+7	3.7	9+7	4.2	9+5	5.1	9+5	3.0
W9	5.5	3.0	7	20.0	7.5	12.0	7.5	5.9	9+6	6.4	9+6	7.1	9+7	16.0	9+7	3.0
W2	6	3.0	8	20.0	9	10.0	8.5	8.0	9+9	8.6	9+10	14.0	9+6	16.0	9+4	3.0
YN	4	6.7	8	5.0	9	5.1	9	5.4	9+13	6.0	9+13	6.6	9+11	7.9	9+5	11.0
6Y	4.5	7.2	8	5.3	9	5.3	9	5.6	9+14	6.0	9+14	6.6	9+12	7.5	9+10	9.1
G	5.5	18.0	7.5	15.5	8	10.8	8.5	5.3	9+11	5.8	9+10	6.4	9+8	14.0	9+3	19.1
SP	3	18.0	7	3.5	7.5	3.3	8	3.4	9+8	4.0	9+7	4.6	9+5	12.0	9	16.0
R3	< 1	18.0	5.5	7.9	7.5	10.0	8	10.0	9+7	10.0	9+4	10.0	8.5	3.0	7	3.0
UN	< 1	3.0	< 1	3.5	4	8.0	6	8.0	8.5	4.4	8.5	10.0	8	3.0	6	3.0
R0	< 1	3.0	< 1	3.3	< 1	3.6	< 1	10.0	7	12.0	7.5	12.0	6.5	3.0	1.5	3.0
8Q	< 1	4.8	4.5	8.0	6.5	10.0	6.5	5.9	9+1	3.0	8.5	3.0	6.5	8.7	3.5	8.7
BY	< 1	3.1	< 1	3.3	< 1	3.3	< 1	3.5	2.5	8.0	4.5	8.0	4.5	4.9	7	12.0
JA1	< 1	3.0	< 1	10.0	< 1	10.0	< 1	12.0	< 1	12.0	3.5	3.0	6	3.0	1.5	3.0
9V	< 1	6.0	< 1	6.2	< 1	3.0	2	5.2	< 1	5.2	< 1	5.2	< 1	5.2	< 1	5.2
KH6	< 1	5.5	< 1	6.7	< 1	6.7	3	6.9	8	12.0	8.5	3.4	9	3.0	9+1	3.0
FO	< 1	3.4	< 1	5.1	4.5	5.0	7	10.0	9+2	5.3	9+4	5.5	9+4	5.8	9+4	6.2
CT3	3	8.6	8	12.6	9	12.8	9+2	7.7	9+16	8.3	9+14	9.1	9+10	10.6	7	18.8
6W	6.5	5.6	9+6	4.6	9+5	4.7	9+6	5.0	9+20	5.4	9+18	5.9	9+15	6.7	9+13	8.1

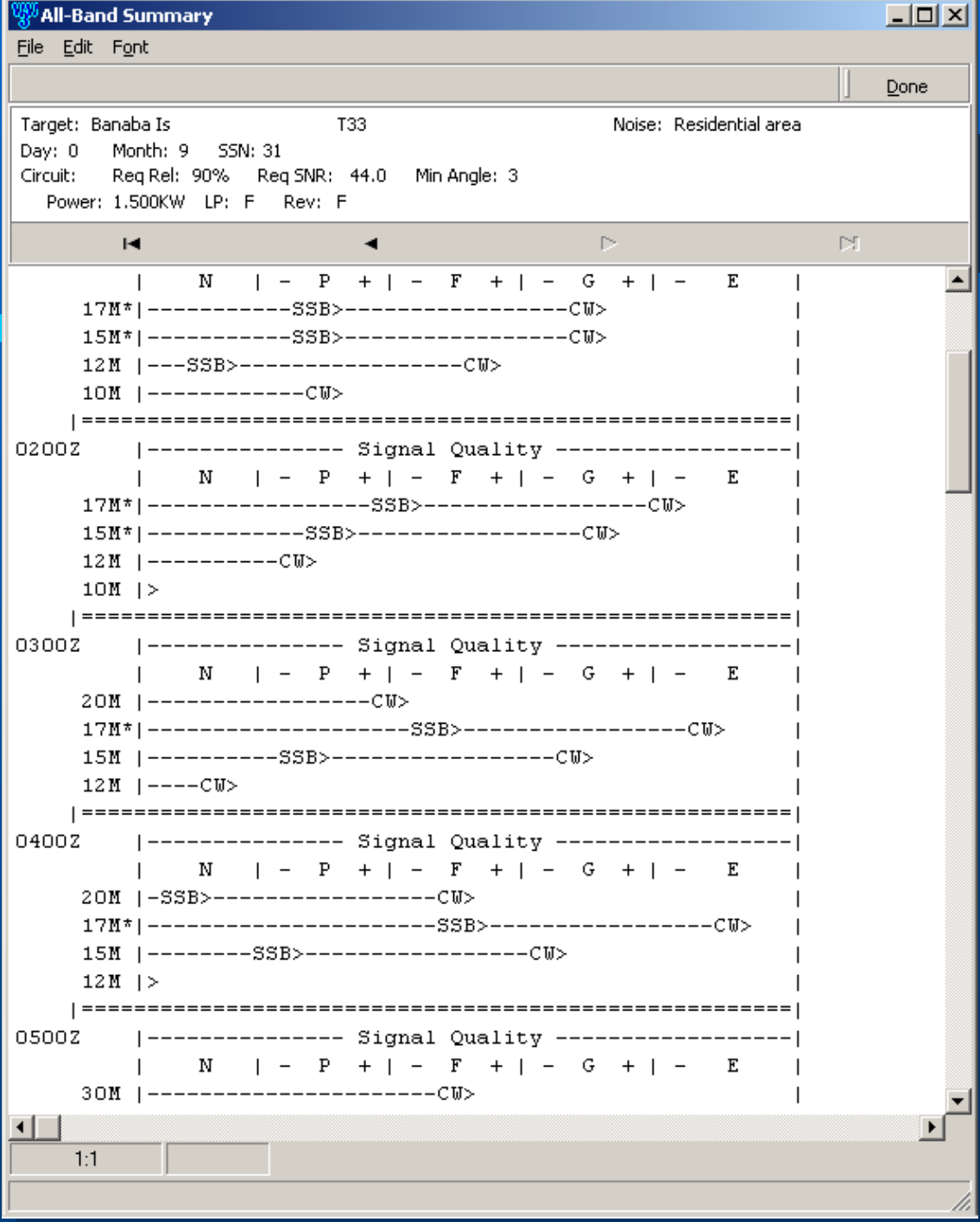
Target: Banaba Is T33 Noise: Residential area
Day: 0 Month: 9 SSN: 31
Circuit: Req Rel: 90% Req SNR: 44.0 Min Angle: 3
Power: 1.500KW LP: N Rev: N

View Done

1 100 %

setembro 2004 **SSN:** 31 PY2YP Brazil **Reverse:** N **LP:** N
T33 **Banaba Is** **Man-Made Noise:** -144.7 Residential area
Power 1.500KW **Min Angle:** 3 **Required Reliability:** 90% **Required SNR:** 44.0

		80M		40M		30M		20M		17M		15M		12M		10M	
Hour	Prefix	S	TOA	S	TOA	S	TOA	S	TOA	S	TOA	S	TOA	S	TOA	S	TOA
0000Z	T33	< 1	4.6	< 1	4.1	< 1	4.2	< 1	8.0	4.5	12.0	6	3.0	5	6.8	4	6.8
0100Z	T33	< 1	4.7	< 1	4.5	< 1	4.8	< 1	10.0	6.5	3.0	6	3.0	4	7.3	2	7.3
0200Z	T33	< 1	4.9	< 1	4.8	< 1	5.1	2.5	10.0	7.5	3.0	6	3.0	2	7.6	< 1	7.6
0300Z	T33	< 1	4.8	< 1	8.0	< 1	5.1	4.5	10.0	8	3.0	6	7.5	< 1	7.5	< 1	7.5
0400Z	T33	< 1	4.5	< 1	8.0	4	8.0	5	12.0	8	3.0	5.5	7.1	< 1	7.1	< 1	7.1
0500Z	T33	< 1	8.0	3.5	8.0	6	8.0	6	10.0	8.5	3.0	5.5	6.6	< 1	6.6	< 1	6.6
0600Z	T33	< 1	8.0	4.5	8.0	5.5	8.0	6	12.0	8.5	3.0	5.5	6.3	< 1	6.3	< 1	6.3
0700Z	T33	< 1	4.9	5.5	8.0	6.5	8.0	6.5	3.0	6.5	6.3	2.5	6.3	< 1	6.3	< 1	6.3
0800Z	T33	< 1	10.0	5.5	8.0	6	10.0	5	6.4	< 1	6.4	< 1	6.4	< 1	6.4	< 1	6.4
0900Z	T33	< 1	3.0	5.5	10.0	6.5	3.0	2	6.5	< 1	6.5	< 1	6.5	< 1	6.5	< 1	6.5
1000Z	T33	< 1	5.0	4.5	8.0	5.5	10.0	4	6.3	< 1	6.3	< 1	6.3	< 1	6.3	< 1	6.3
1100Z	T33	< 1	3.0	< 1	3.0	4.5	8.0	6	10.0	8	6.3	4.5	5.7	< 1	5.7	< 1	5.7
1200Z	T33	< 1	3.7	< 1	3.6	2.5	3.9	4.5	8.0	8	8.0	7	9.4	3.5	6.2	< 1	6.2
1300Z	T33	< 1	4.0	< 1	3.9	< 1	4.4	3.5	8.0	6.5	8.0	4	12.0	< 1	8.0	< 1	6.4


All-Band Summary
File Edit Font
Done
Target: Banaba Is T33 Noise: Residential area
Day: 0 Month: 9 SSN: 31
Circuit: Req Rel: 90% Req SNR: 44.0 Min Angle: 3
Power: 1.500KW LP: F Rev: F
| N | - P + | - F + | - G + | - E |
17M*|----------SSB>----------CW>
15M*|----------SSB>----------CW>
12M |---SSB>----------CW>
10M |----------CW>
0200Z |---------- Signal Quality ----------|
| N | - P + | - F + | - G + | - E |
17M*|----------SSB>----------CW>
15M*|----------SSB>----------CW>
12M |----------CW>
10M |>
0300Z |---------- Signal Quality ----------|
| N | - P + | - F + | - G + | - E |
20M |----------CW>
17M*|----------SSB>----------CW>
15M |----------SSB>----------CW>
12M |----CW>
0400Z |---------- Signal Quality ----------|
| N | - P + | - F + | - G + | - E |
20M |-SSB>----------CW>
17M*|----------SSB>----------CW>
15M |--------SSB>----------CW>
12M |>
0500Z |---------- Signal Quality ----------|
| N | - P + | - F + | - G + | - E |
30M |----------CW>
1:1

Prediction Result Viewer

File Clipboard Search

Done

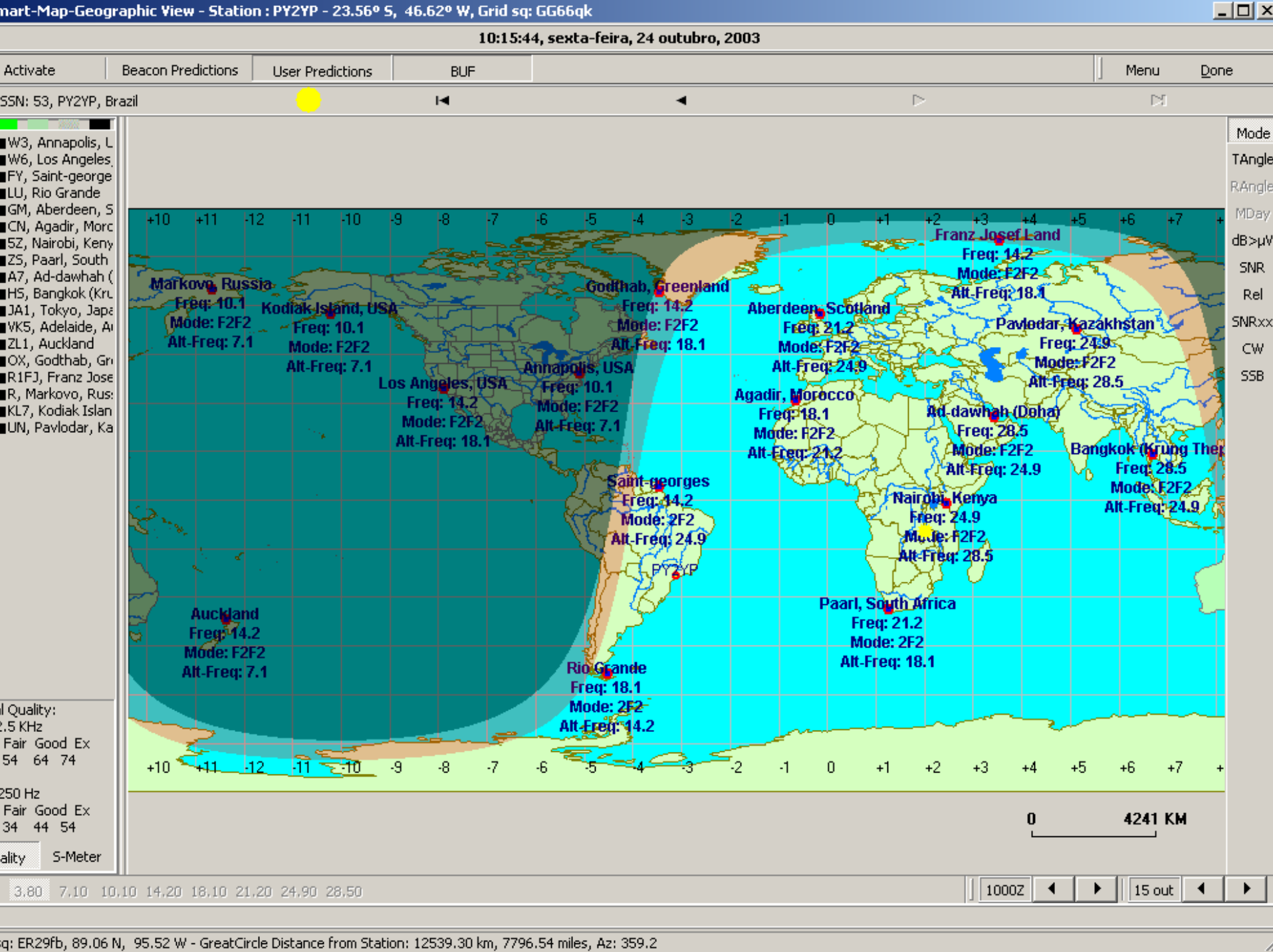
```
   Apr    2004          SSN =  43.                Minimum Angle= 3.000 degrees
   PY2YP, Brazil              T33, Banaba Is  AZIMUTHS          N. MI.      KM
   23.56 S   46.62 W -  1.00 S  170.00 E    240.55  127.03    8211.1  15205.8
   XMTR  2- 4 +  3.8 dBi[station\Iso_0dBi     ] Az=240.5 OFFaz=  0.1   1.500kW
   XMTR  4- 8 +  7.1 dBi[station\Iso_0dBi     ] Az=240.5 OFFaz=  0.1   1.500kW
   XMTR  8-15 + 14.2 dBi[station\Iso_7dBi     ] Az=240.5 OFFaz=  0.1   0.100kW
   XMTR 15-30 + 28.5 dBi[station\Iso_7dBi     ] Az=240.5 OFFaz=  0.1   0.100kW
   RCVR  2-30 +  9.0 dBi[samples\SAMPLE.00    ] Az=127.0 OFFaz=  0.0
   3 MHz NOISE = -144.7 dBW     REQ. REL = 90%    REQ. SNR = 44.0 dB
   MULTIPATH POWER TOLERANCE = 10.0 dB   MULTIPATH DELAY TOLERANCE =  0.850 ms
```

1:1 | Total: 619 | Top: 32 | Bytes: 43098

2.0	22.9	3.8	7.2	10.1	14.2	18.1	21.2	24.9	28.5	0.0	0.0	0.0 FREQ
	F2F2	F2F2	F2F2	F2F2	F2F2	F2F1	F2F2	F2F2	F2F2	F2F2	-	- - MODE
	3.0	4.8	4.6	4.8	10.0	12.0	3.0	3.0	7.5	-	-	- TANGLE
	3.0	4.8	4.6	4.8	9.8	6.1	3.0	3.0	3.0	-	-	- RANGLE
	53.0	52.5	52.4	52.5	52.8	53.5	53.1	53.4	53.4	-	-	- DELAY
	305	241	235	239	252	348	310	357	342	-	-	- V HITE
	0.50	1.00	1.00	1.00	0.99	0.89	0.67	0.31	0.08	-	-	- MUFday
	137	460	282	212	170	137	134	142	162	-	-	- LOSS
	8	-319	-135	-71	-29	6	11	4	-15	-	-	- DBU
	-117	-428	-250	-190	-150	-117	-114	-122	-142	-	-	- S DBW
	-169	-148	-155	-159	-163	-166	-168	-170	-172	-	-	- N DBW
	52	-281	-95	-31	12	49	54	48	29	-	-	- SNR
	19	335	150	85	43	22	17	22	41	-	-	- RPWRG
	0.65	0.00	0.00	0.00	0.00	0.59	0.69	0.58	0.23	-	-	- REL
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-	-	- MPROB
	0.29	0.00	0.00	0.00	0.01	0.26	0.31	0.26	0.11	-	-	- S PRB
	25.0	1.0	6.2	4.4	5.9	25.0	25.0	25.0	25.0	-	-	- SIG LW
	23.3	4.2	16.4	8.6	4.6	8.8	15.7	25.0	25.0	-	-	- SIG UP
	26.8	9.7	11.5	10.5	11.1	26.8	26.8	26.8	26.8	-	-	- SNR LW
	24.0	7.3	17.4	10.3	7.2	10.4	16.8	25.7	25.7	-	-	- SNR UP
	28.5	3.8	7.1	14.2	14.2	28.5	28.5	28.5	28.5	-	-	- TGAIN

6:77 | Total: 619 | Top: 67 | Bytes: 43098

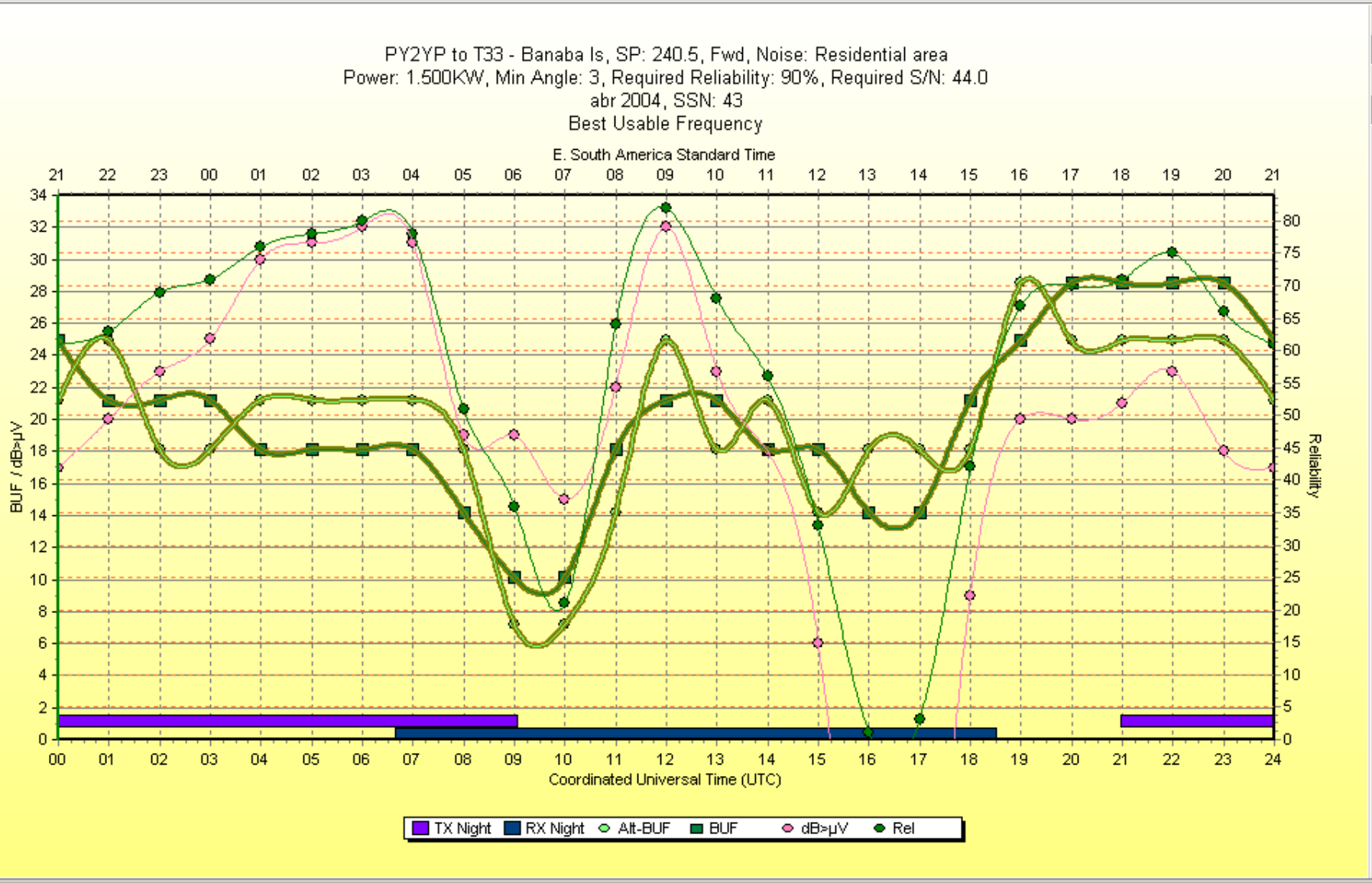
This is the lower viewer


mart-Map-Geographic View - Station : PY2YP - 23.56° S, 46.62° W, Grid sq: GG66qk
10:15:44, sexta-feira, 24 outubro, 2003
Activate
Beacon Predictions
User Predictions
BUF
Menu
Done
SSN: 53, PY2YP, Brazil
W3, Annapolis, L
W6, Los Angeles
FY, Saint-george
LU, Rio Grande
GM, Aberdeen, S
CN, Agadir, Morc
5Z, Nairobi, Keny
ZS, Paarl, South
A7, Ad-dawhah (
HS, Bangkok (Kru
JA1, Tokyo, Japa
VK5, Adelaide, A
ZL1, Auckland
OX, Godthab, Gr
R1FJ, Franz Jose
R, Markovo, Rus
KL7, Kodiak Islan
UN, Pavlodar, Ka
Mode
TAngle
RAngle
MDay
dB>µV
SNR
Rel
SNRxx
CW
SSB
Markovo, Russia
Freq: 10.1
Mode: F2F2
Alt-Freq: 7.1
Kodiak Island, USA
Freq: 10.1
Mode: F2F2
Alt-Freq: 7.1
Los Angeles, USA
Freq: 14.2
Mode: F2F2
Alt-Freq: 18.1
Annapolis, USA
Freq: 10.1
Mode: F2F2
Alt-Freq: 7.1
Godthab, Greenland
Freq: 14.2
Mode: F2F2
Alt-Freq: 18.1
Franz Josef Land
Freq: 14.2
Mode: F2F2
Alt-Freq: 18.1
Aberdeen, Scotland
Freq: 21.2
Mode: F2F2
Alt-Freq: 24.9
Pavlodar, Kazakhstan
Freq: 24.9
Mode: F2F2
Alt-Freq: 28.5
Agadir, Morocco
Freq: 18.1
Mode: F2F2
Alt-Freq: 21.2
Ad-dawhah (Doha)
Freq: 28.5
Mode: F2F2
Alt-Freq: 24.9
Bangkok (Krung Thep
Freq: 28.5
Mode: F2F2
Alt-Freq: 24.9
Saint-georges
Freq: 14.2
Mode: 2F2
Alt-Freq: 24.9
PY2YP
Nairobi, Kenya
Freq: 24.9
Mode: F2F2
Alt-Freq: 28.5
Auckland
Freq: 14.2
Mode: F2F2
Alt-Freq: 7.1
Paarl, South Africa
Freq: 21.2
Mode: 2F2
Alt-Freq: 18.1
Rio Grande
Freq: 18.1
Mode: 2F2
Alt-Freq: 14.2
+10 +11 -12 -11 -10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7
0
4241 KM
l Quality:
2.5 KHz
Fair Good Ex
54 64 74
250 Hz
Fair Good Ex
34 44 54
ality
S-Meter
3.80 7.10 10.10 14.20 18.10 21.20 24.90 28.50
1000Z
15 out
sq: ER29fb, 89.06 N, 95.52 W - GreatCircle Distance from Station: 12539.30 km, 7796.54 miles, Az: 359.2

Best Usable Frequency - Point-to-Point - Chart

00:56:17, terça-feira, 14 setembro, 2004

Customize | Preview | Save | Done



TAngle | dB>µV | SNR | Rel | SNRxx | SSB | CW

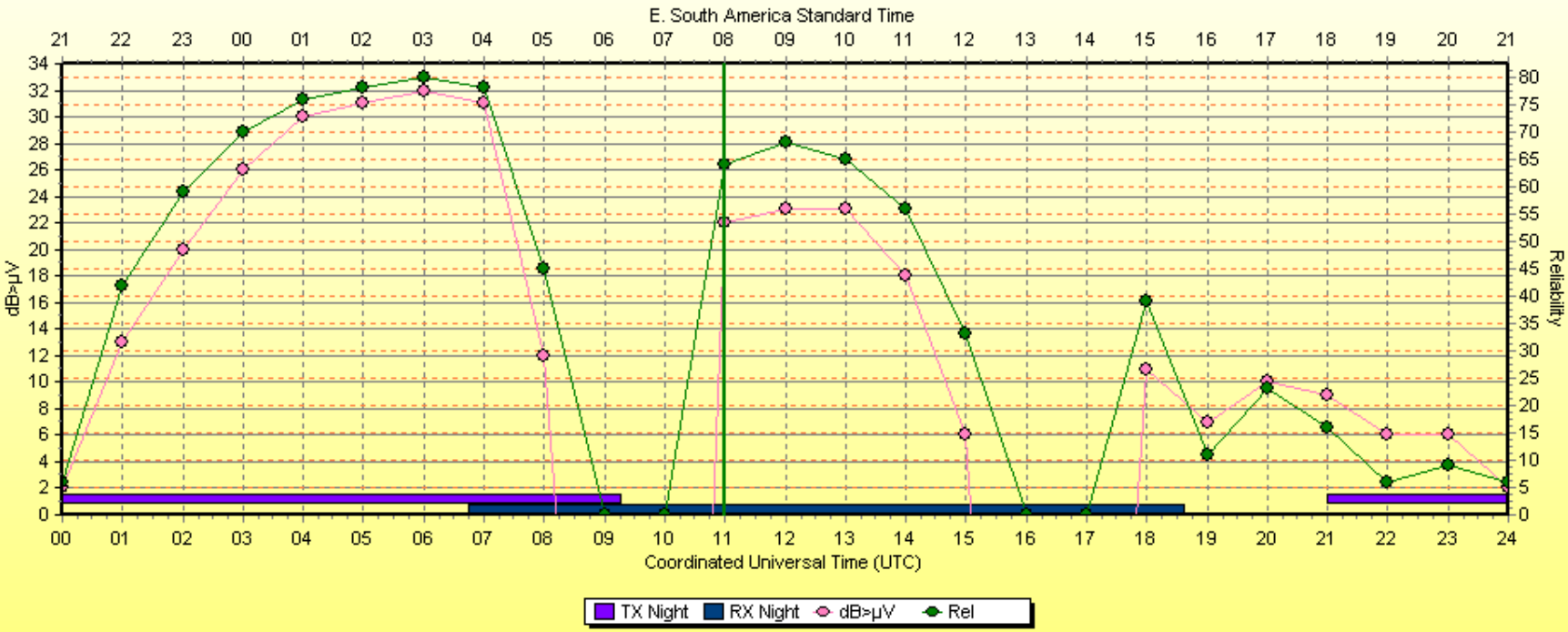
Click a point to display the value. Double click chart to clear all marks

Point-to-Point Chart

08:54:26, quinta-feira, 8 abril, 2004

Grid | Customize | Preview | Save | Done

PY2YP to T33 - Banaba Is, SP: 240.5, Fwd, Noise: Residential area
Power: 1.500KW, Min Angle: 3, Required Reliability: 90%, Required S/N: 44.0
abr 2004, SSN: 43
18.10 MHz



TAngle | RAngle | MDay | dB>µV | SNR | Rel | SNRxx | SSB | CW

MUF | 3.80 | 7.20 | 10.10 | 14.20 | 18.10 | 21.20 | 24.90 | 28.50

Hour	Freq	Mode	TAngle	MUFDay	SNR	SNR-Lw	dB>µV	Rel	S-Units	CW Quality	SSB Quality
01	18.10	F2F2	10.0	89	42	26.8	13	42	5.5	Good-	Poor-
02	18.10	F2F2	12.0	89	49	26.8	20	59	7	Good+	Poor+
03	18.10	F2F2	3.0	82	55	26.8	26	70	8	Excellent	Fair+
04	18.10	F2F2	3.0	72	59	26.8	30	76	8.5	Excellent	Fair+
05	18.10	F2F2	3.0	63	60	26.8	31	78	8.5	Excellent	Good-

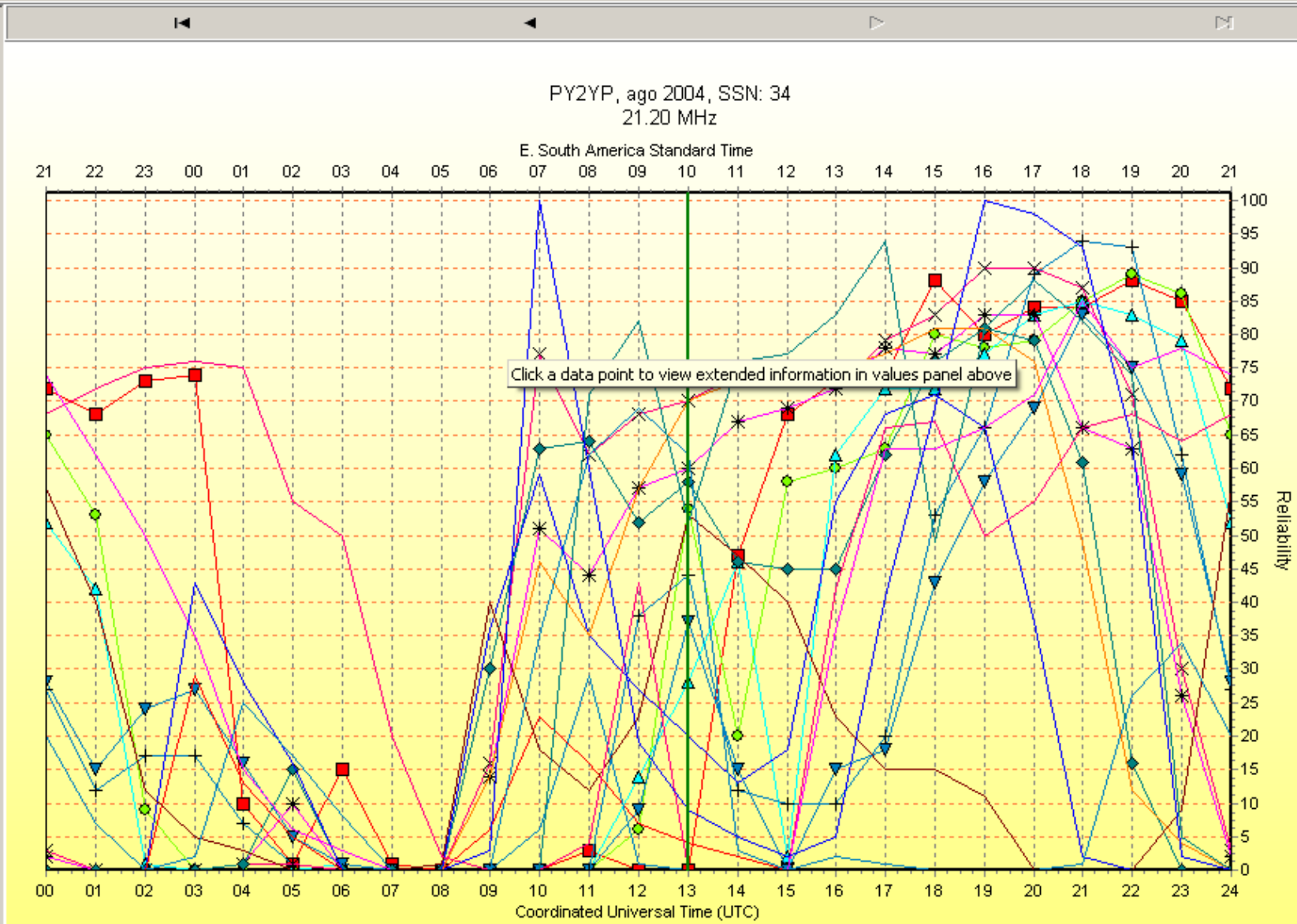
Monthly median signal-to-noise ratio in dB at Required Reliability

Start | Microsoft PowerPoint - [... | WinCAP Wizard 3 | 08:54

Signal Comparison - User Batch - Chart

Legend | Customize | Preview | Save | Done

W6
W9
W2
YN
6Y
G
SP
R3
UN
R0
8Q
BY
JA1
9V
KH6
FO
CT3
6W



TAn
RAn
MD
dB>
SN
R
SNR
SS
CV

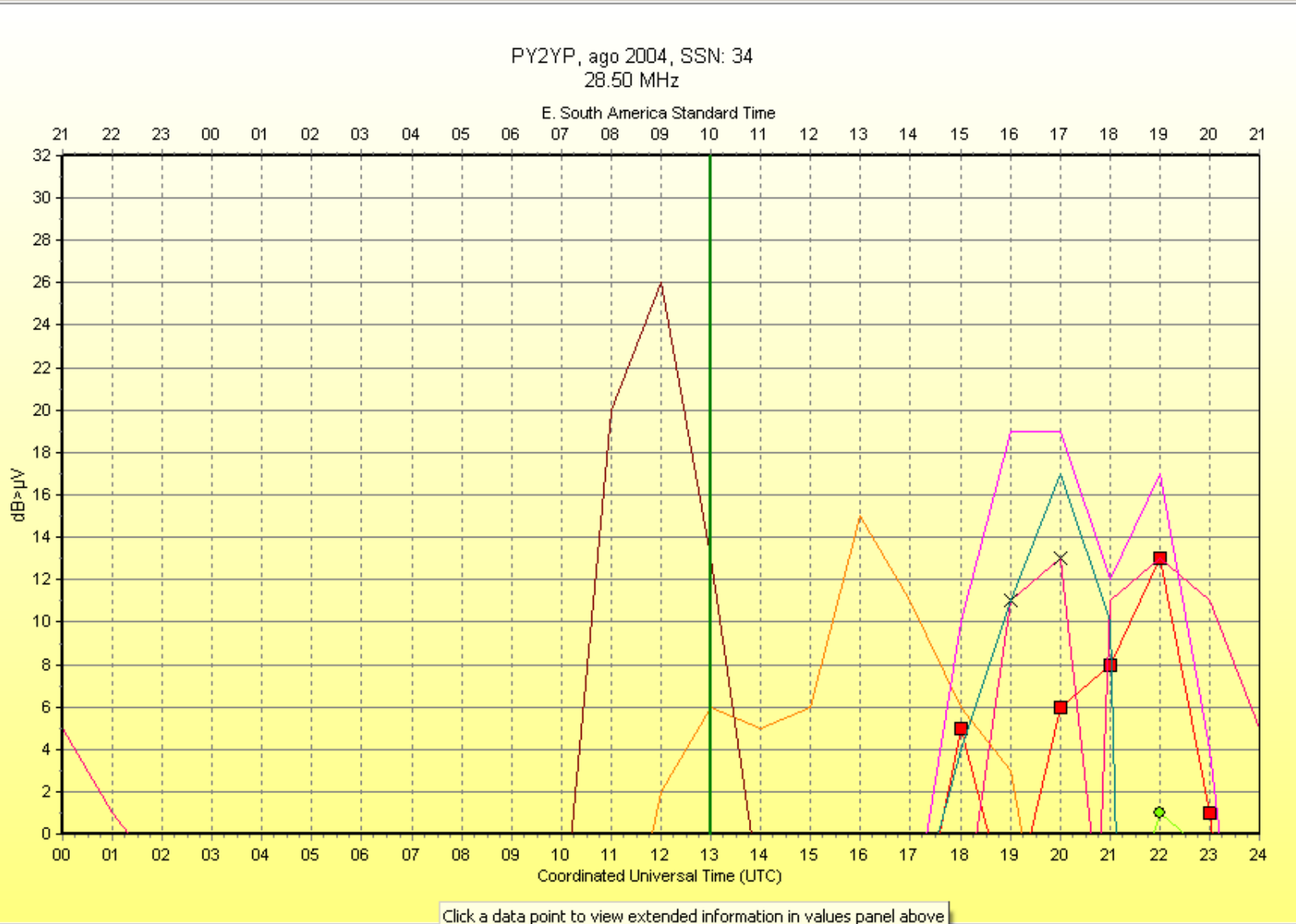
MUF | 3.80 | 7.20 | 10.10 | 14.20 | 18.10 | 21.20 | 24.90 | 28.50

Click a data point to view extended information in values panel above

Signal Comparison - User Batch - Chart

Legend | Customize | Preview | Save | Done

W6
W9
W2
YN
6Y
G
SP
R3
UN
R0
8Q
BY
JA1
9V
KH6
FO
CT3
6W



TAngle
RAngle
MDay
dB>µV
SNR
Rel
SNRxx
SSB
CW

Click a data point to view extended information in values panel above

MUF | 3.80 | 7.20 | 10.10 | 14.20 | 18.10 | 21.20 | 24.90 | 28.50

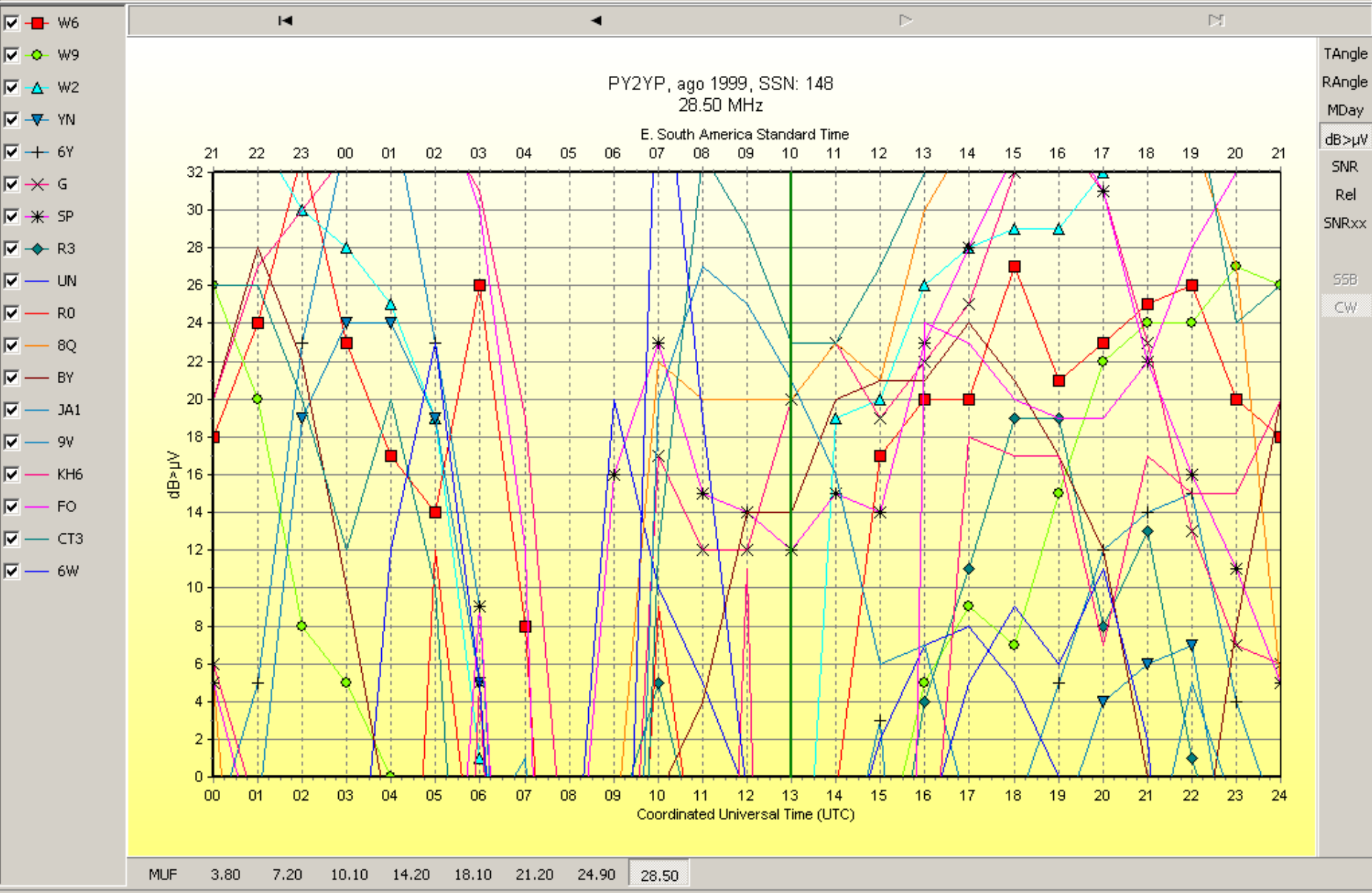
Click a data point to view extended information in values panel above

Start | RealOne Player: Classic ... | WinCAP Wizard 3 | Microsoft PowerPoint - [... | 10:54

Signal Comparison - User Batch - Chart

Legend | Customize | Preview | Save | Done

1800Z, W6 - Los Angeles, USA, SP, Fwd, dB>µV 27, 28.5 MHz, Mode: F2F2, TOA 3, SNR 62, Rel 92



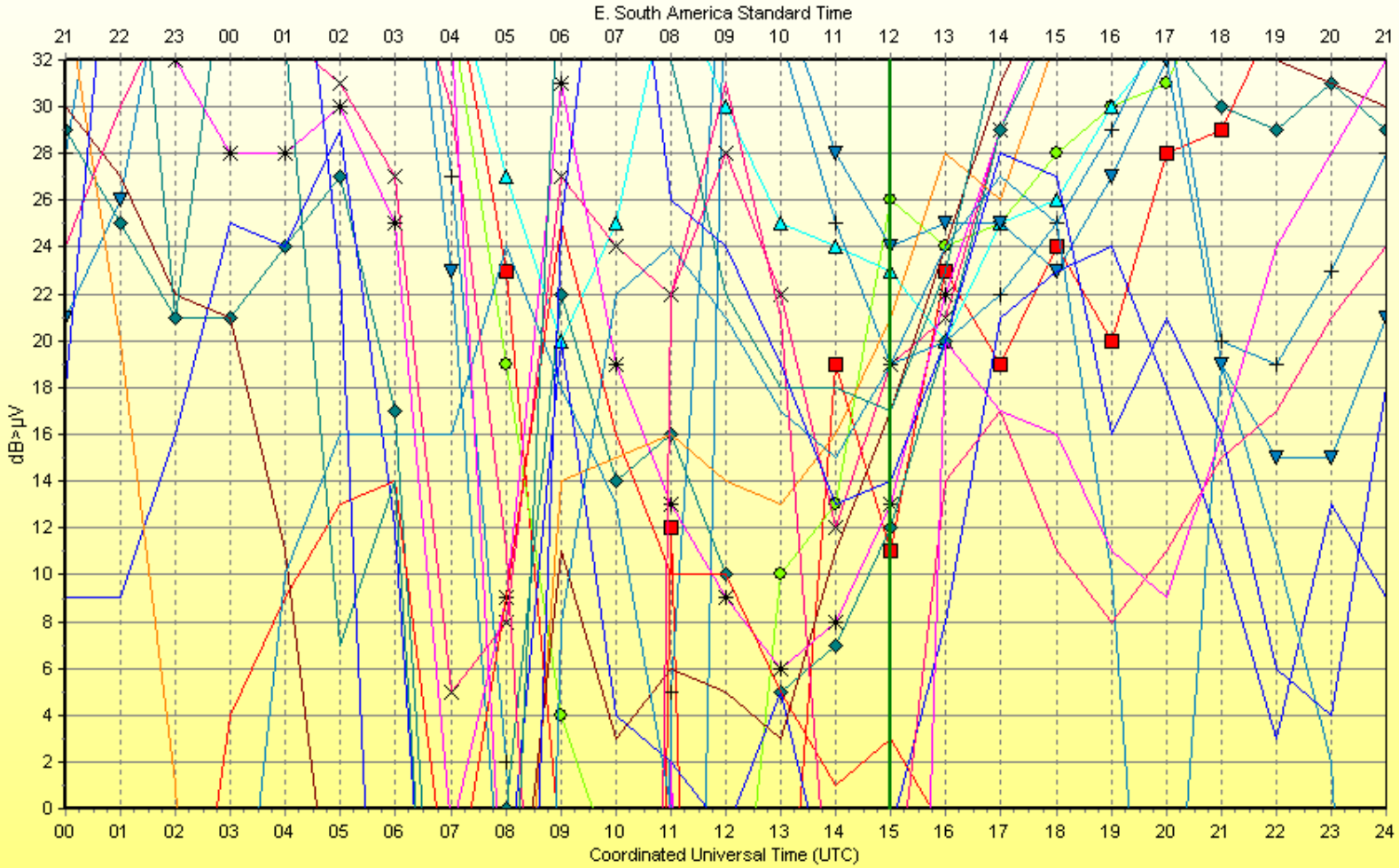
Click a data point to view extended information in values panel above

Start | RealOne Player: Classic ... | WinCAP Wizard 3 | 10:58

Signal Comparison - User Batch - Chart

Legend | Customize | Preview | Save | Done

W6
W9
W2
YN
6Y
G
SP
R3
UN
R0
8Q
BY
JA1
9V
KH6
FO
CT3
6W



TAngle
RAngle
MDay
dB>µV
SNR
Rel
SNRxx
SSB
CW

MUF | 3.80 | 7.20 | 10.10 | 14.20 | 18.10 | 21.20 | 24.90 | 28.50

Values - click a data point to view extended information here

Start | RealOne Player: Classic ... | WinCAP Wizard 3 | Microsoft Excel - Zone.xls | 12:11

WinCAP 3

- ✓ Introdução
- ✓ Conceitos Fundamentais
- ✓ Configuração
- ✓ Análise dos Circuitos
- ■ Interpretação dos Resultados

Interpretação dos resultados

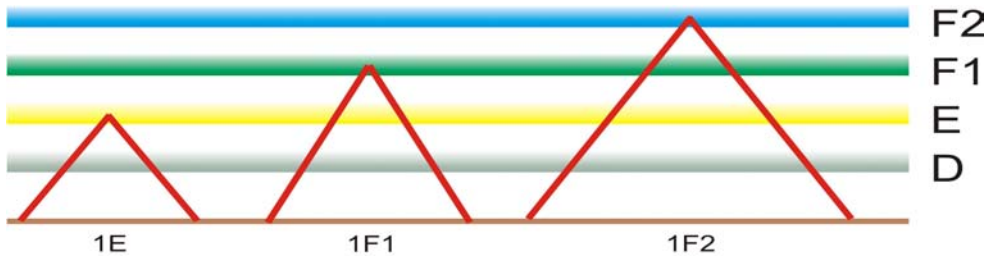
- Tangle = Ângulo de disparo do transmissor
- Rangle = Ângulo de chegada no receptor
- Rel = Confiabilidade da previsão
- SNR = Relação sinal/ruído
- BUF = Melhor frequência utilizável
- MUFDay = Percentual de dias do mês em que a frequência de operação estará abaixo da MUF

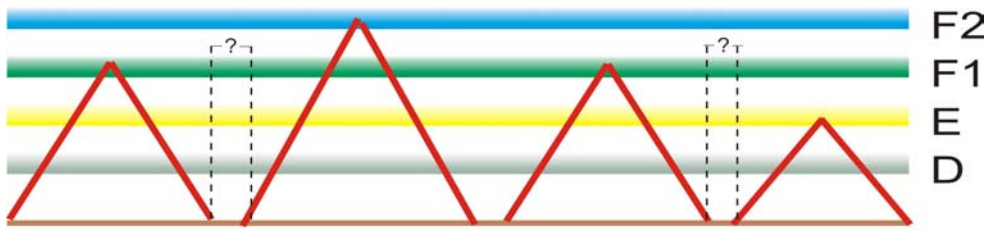
Interpretação dos resultados

- dB > Uv - dB maior do que 1 microvolt, em uma carga de 50 ohms.
- +34 dB > µV é S9 = 50 uV em 50 ohms

  ou -103 dBW em 50 ohms.
- SNRxx é o valor da relação sinal/ruído em xx % dos dias

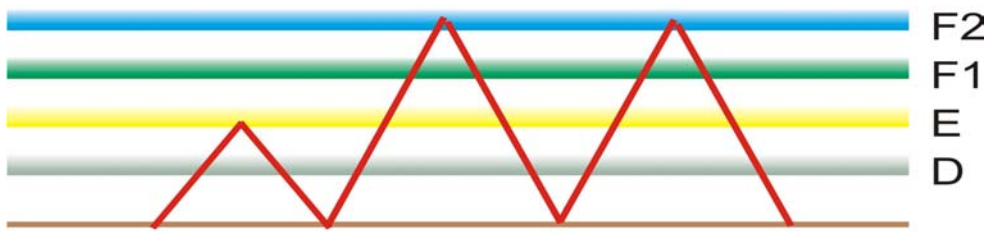
Tipos de Saltos (hops)





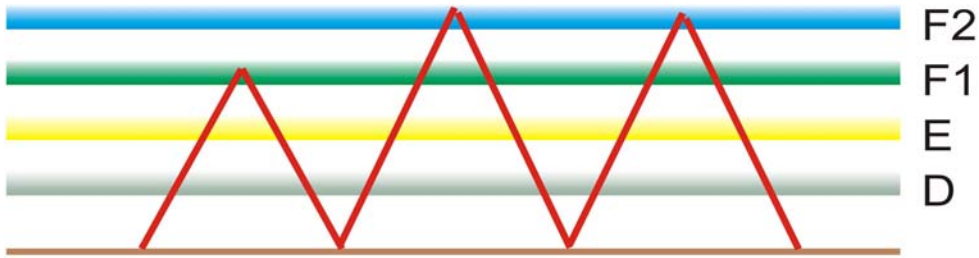
F1 F2 mode F1 E mode

? Não considerado entre o 1º e o 2º salto no modo

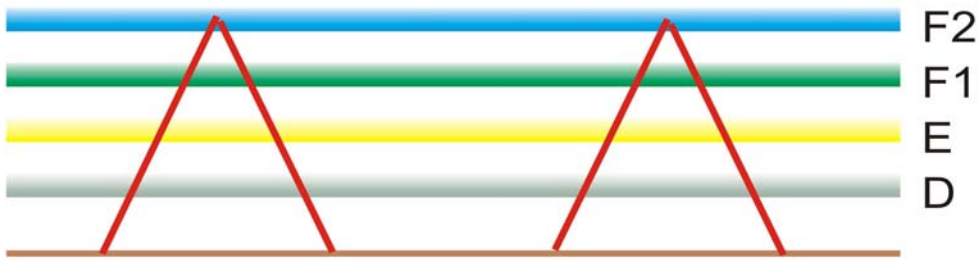


1E 2F2

Tipos de Saltos (hops)



1F1 2F2



F2F2

Nota: *O modo 2F2 é diferente de F2F2. Este último refere-se ao cálculo de long path; significa que o modo da ponta transmissora está em F2, e que o modo na ponta receptora também está em F2.*

Créditos

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www.taborsoft.com

73 de PY2YP - Cesar