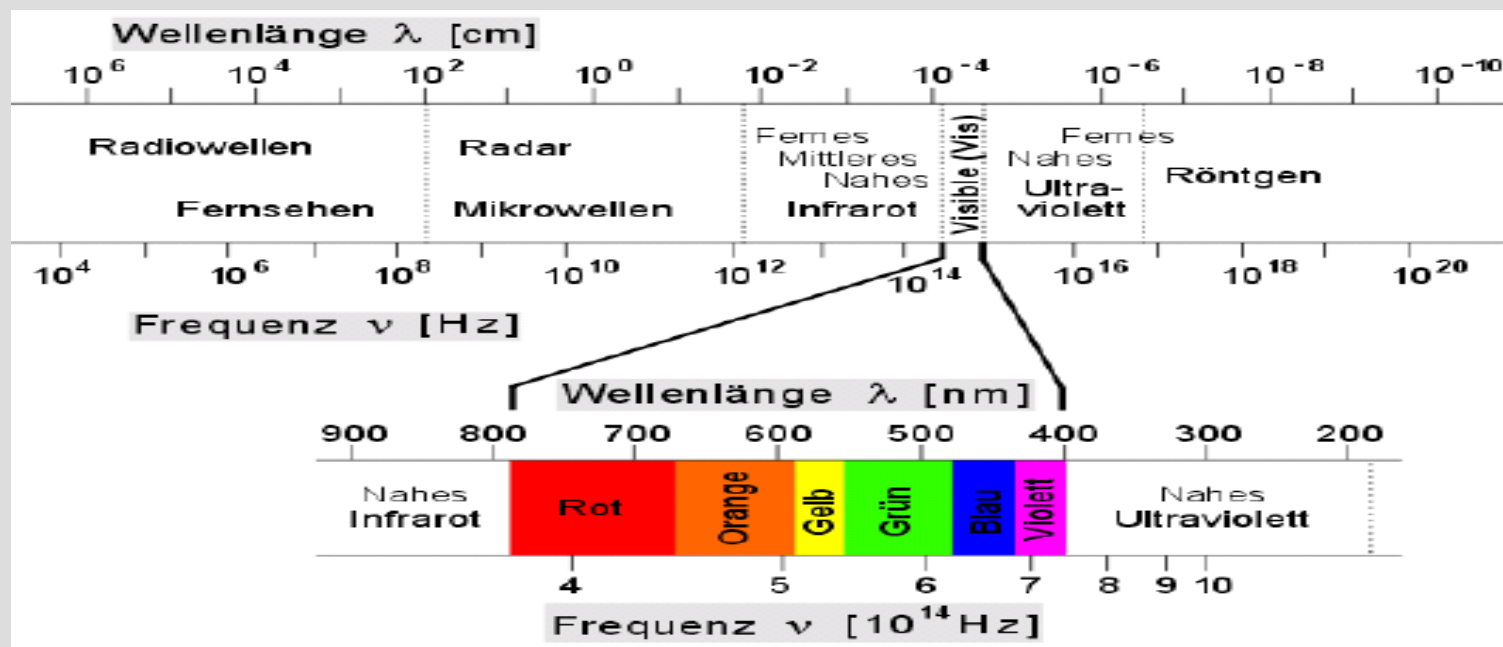
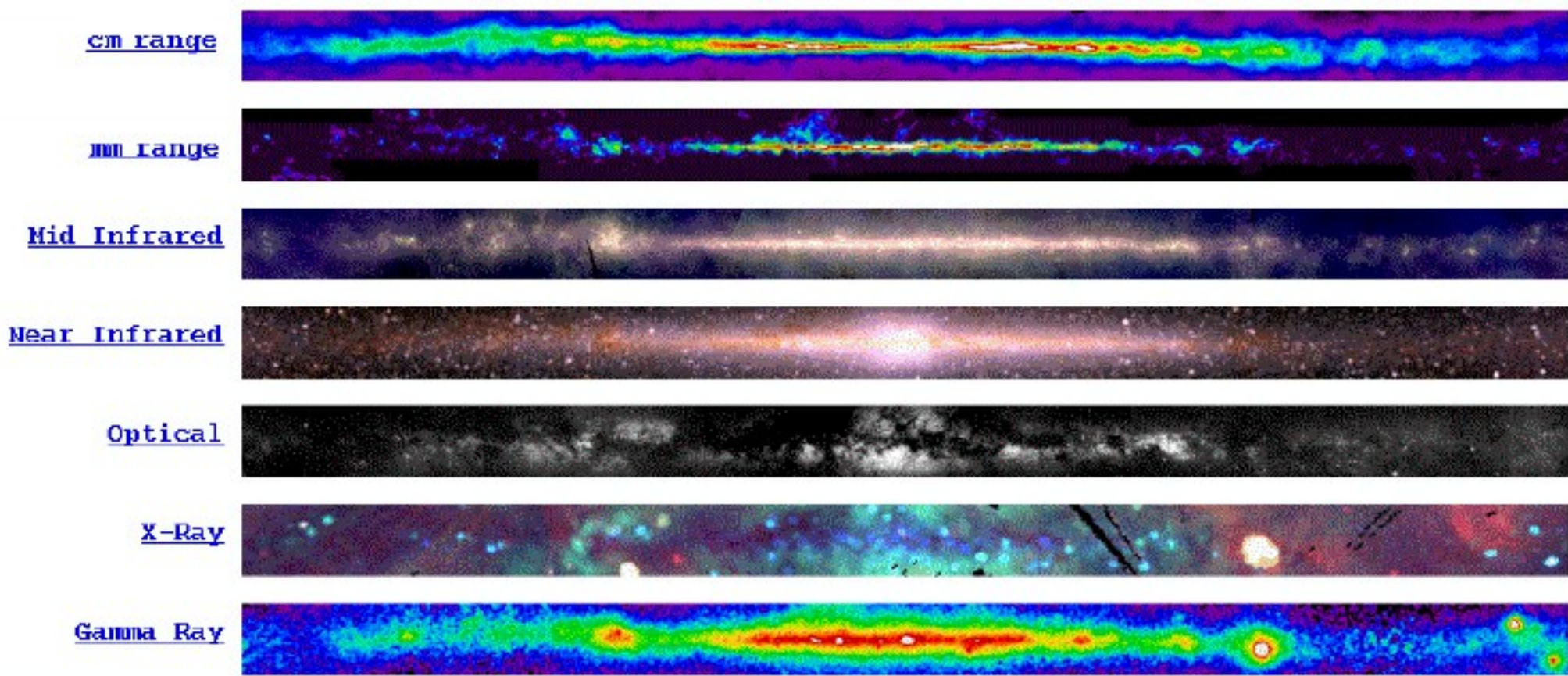


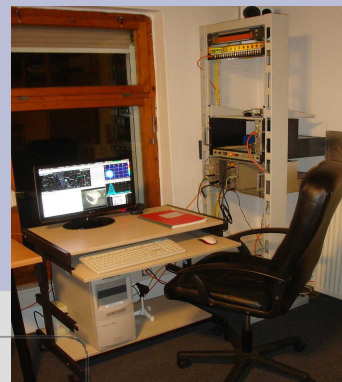
# Radioastronomie an der Volkssternwarte Radebeul



Radebeuler Beobachtertreffen, November 2010



# Steuerung



Control Room PC

Astronomy Program  
(KStars, xephem, dcd...)

INDI Client

INDI Server

RT Driver

LX200-Protocol  
over RS485

## RT Controller

Movements  
Positions  
Coordinate Transforms  
Object Handling (Goto, Guide...)  
LX200-Protocol Engine  
Sensors

INDI Clients  
communicate with INDI-Server  
through XML messages



Observatory Network

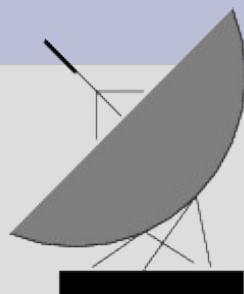
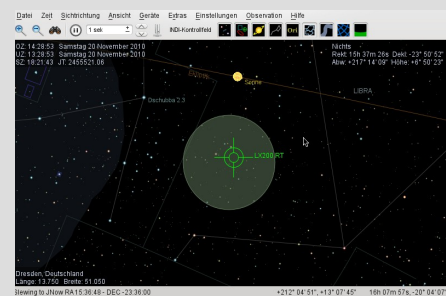
WWW



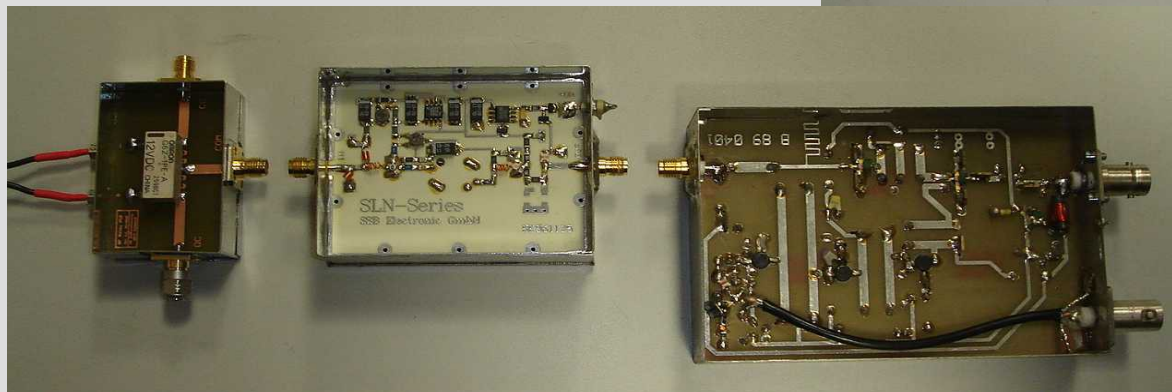
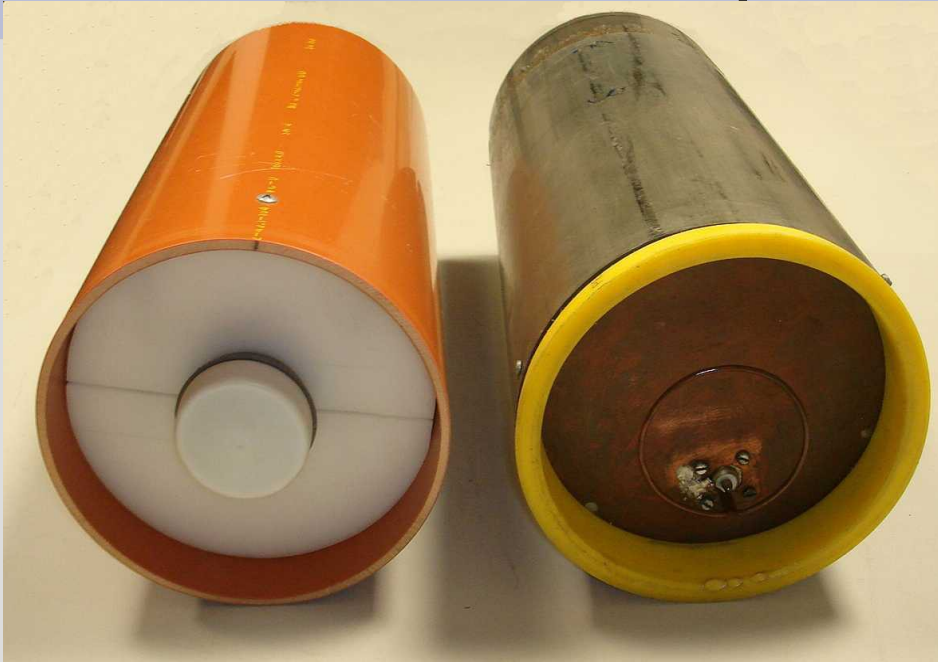
Gateway



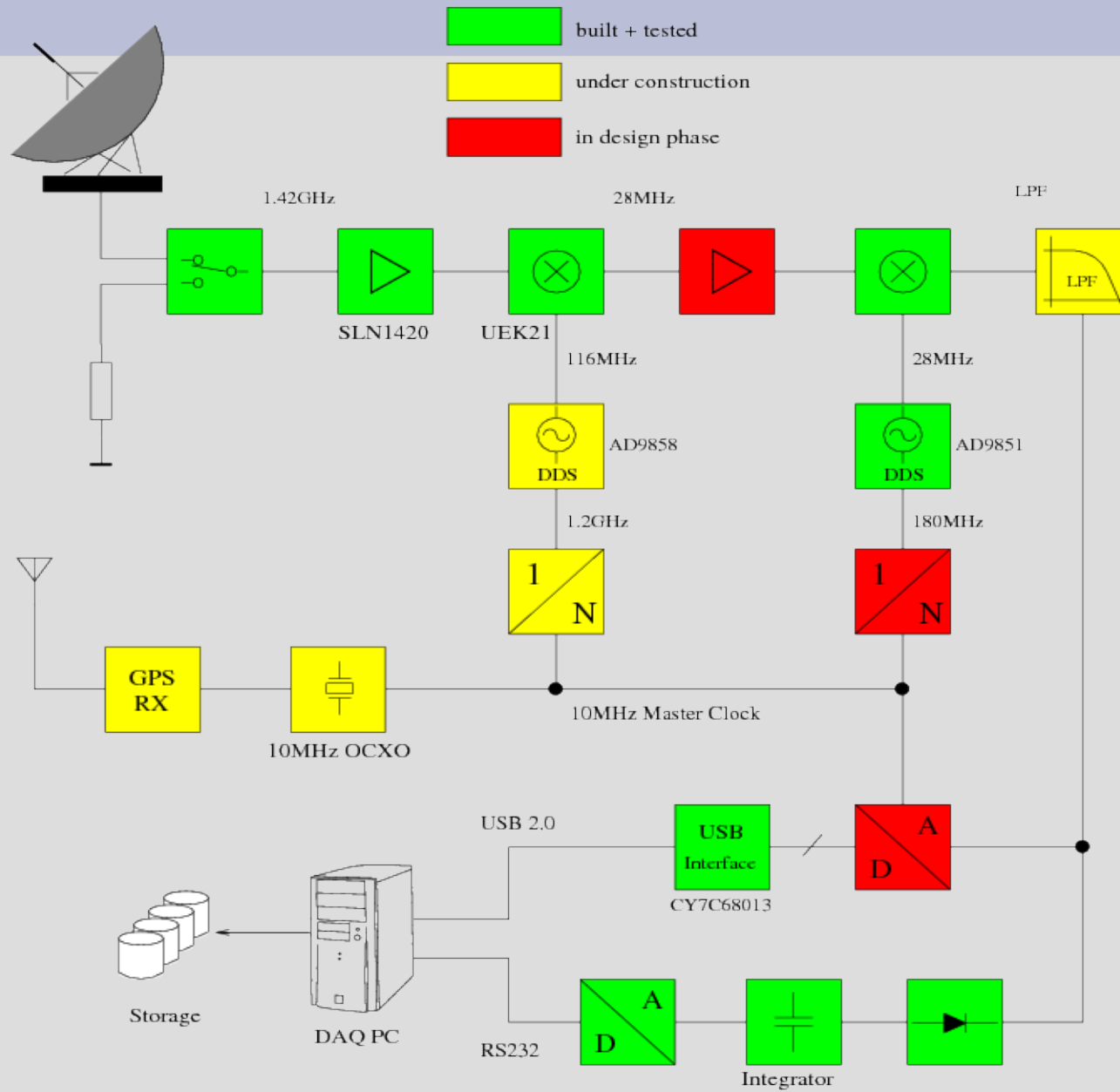
INDI Clients



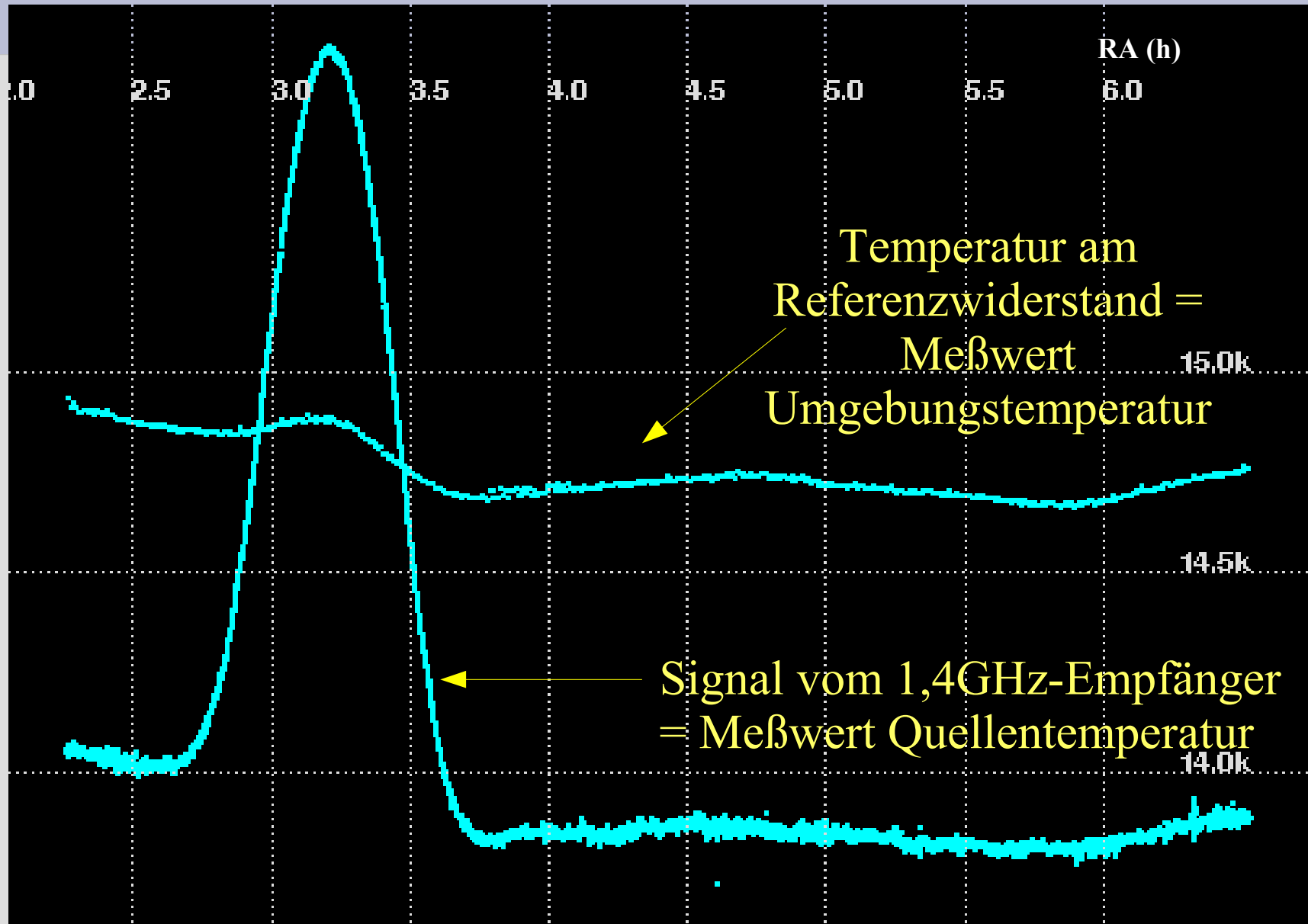
# Beobachtungstechnik 1,4 GHz



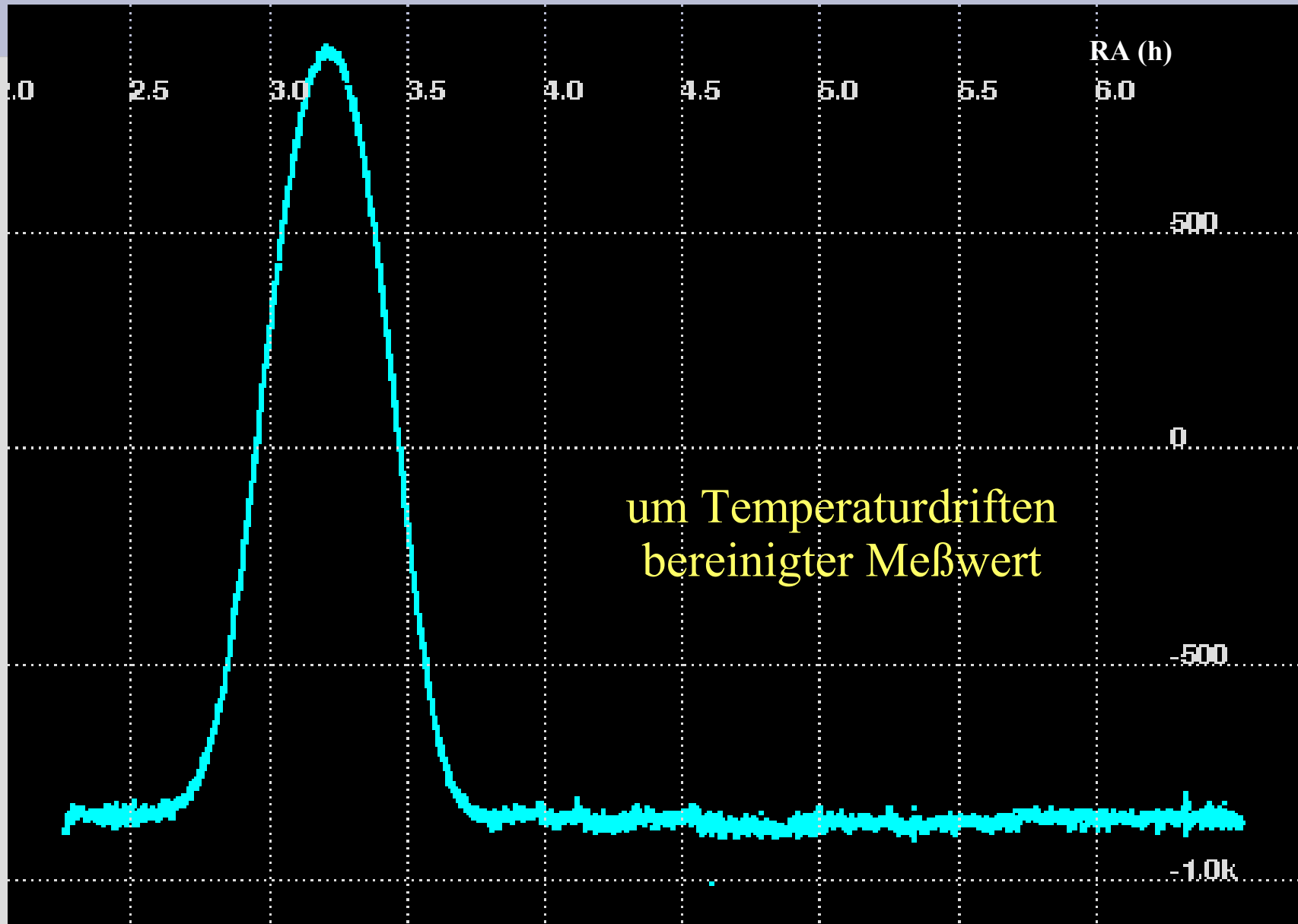
# Signalweg



# Beobachtungen bei 1,4 Ghz

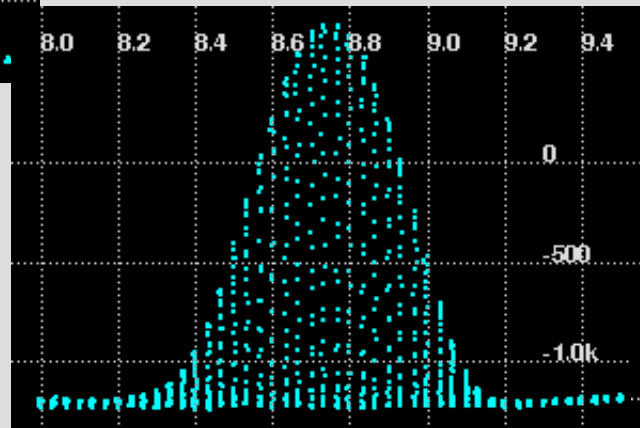
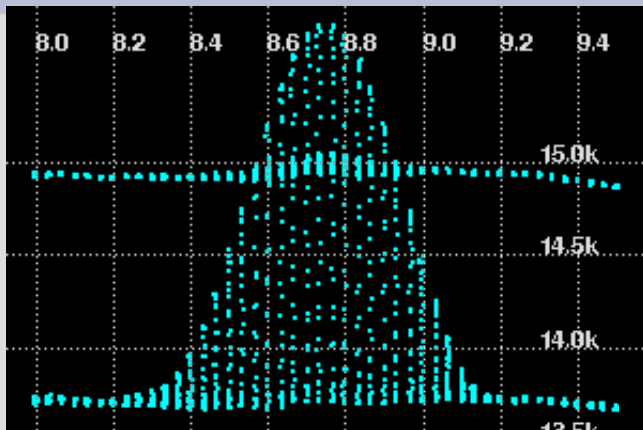


# Beobachtungen bei 1,4 Ghz

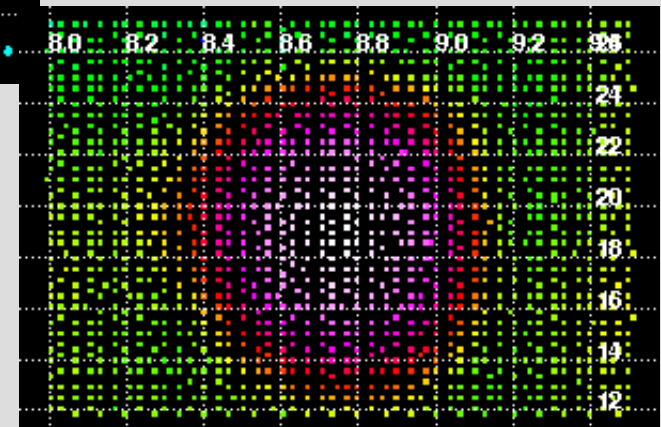


# Beobachtungen bei 1,4 Ghz Sonne 2d-Scan

→ Scan in regelmäßigem Gitter  
(Äquatorial/Horizontalsystem)



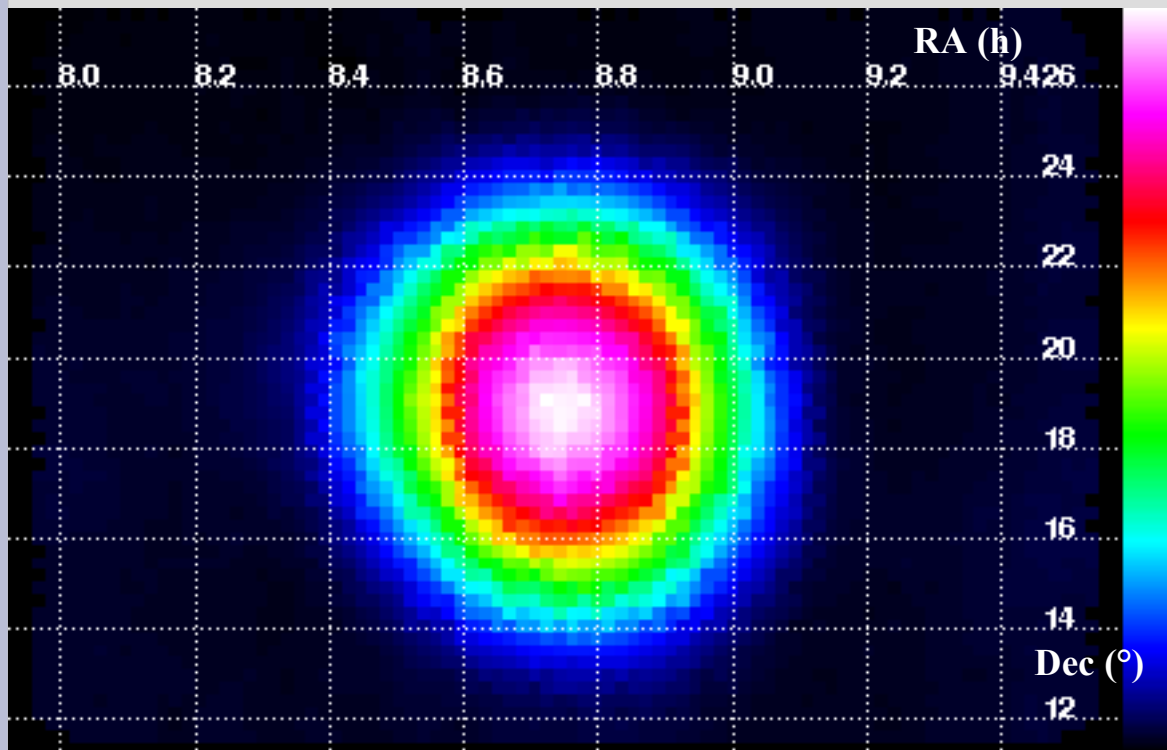
→ Referenz-  
bereinigung



→ Füllen des Raumgitters  
mit Meßwerten

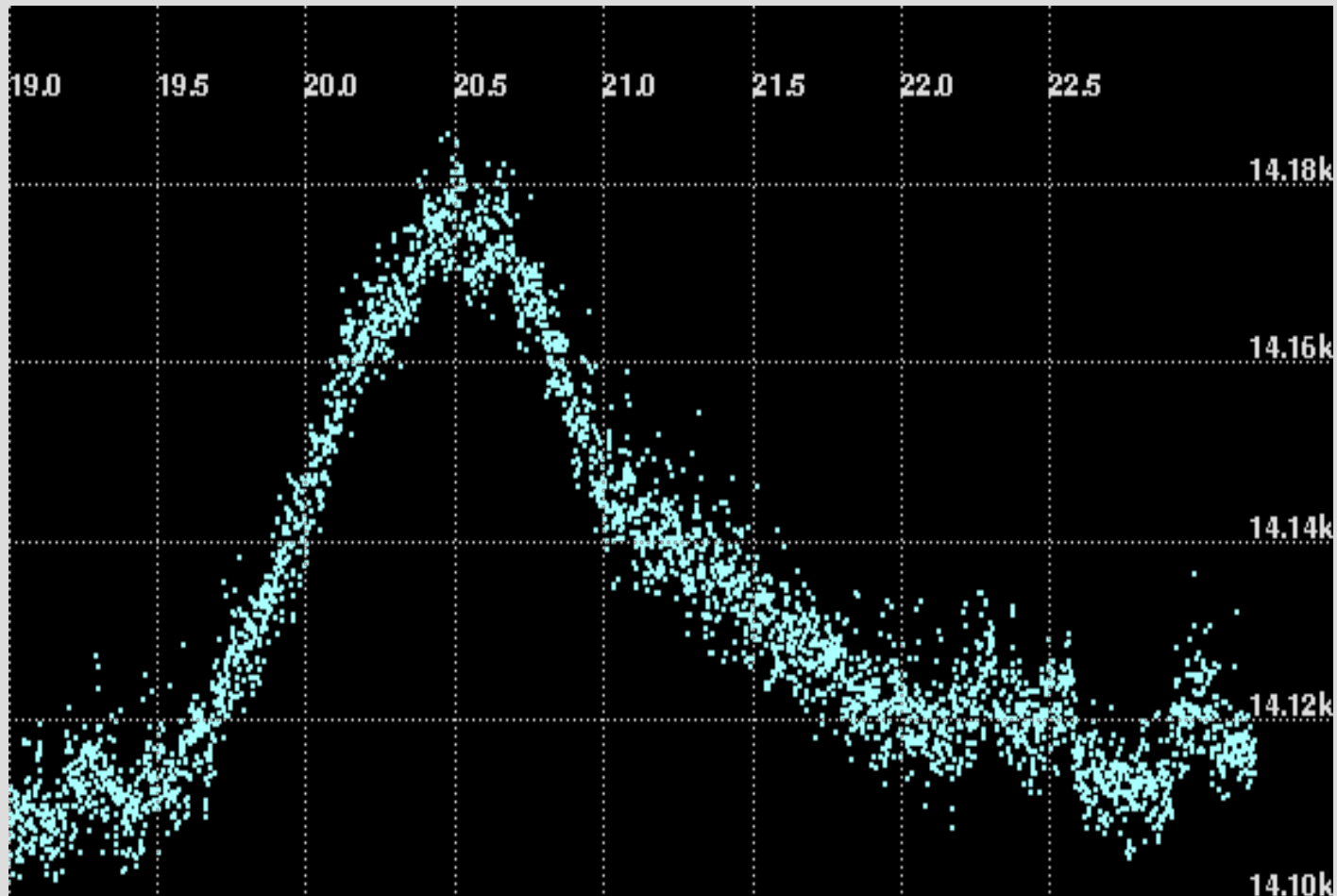
# Beobachtungen bei 1,4 Ghz

## Sonne 2d-Scan

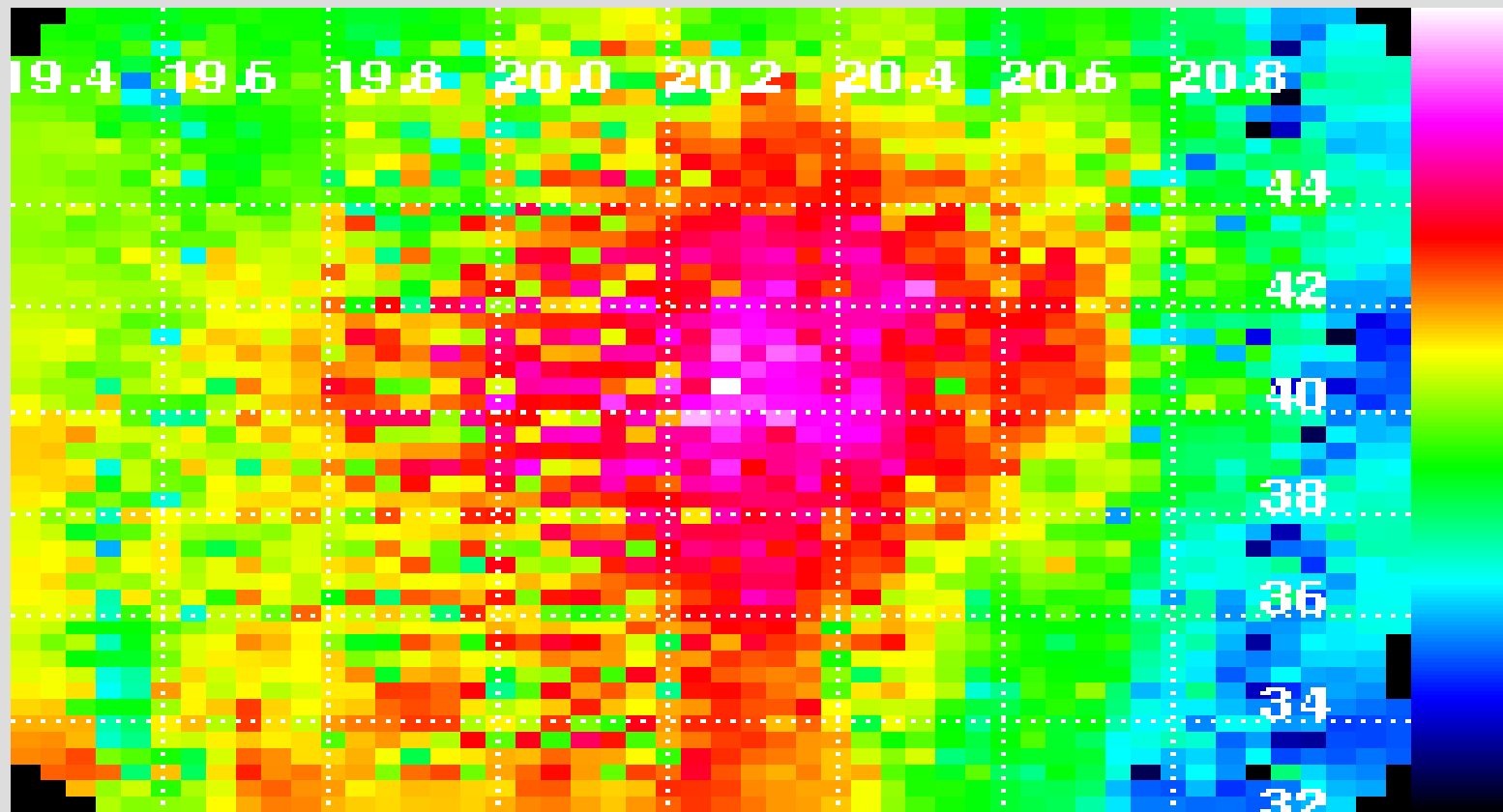


- Anpassen des Binnings
- Interpolation fehlender Gitterpunkte („Löcher“)

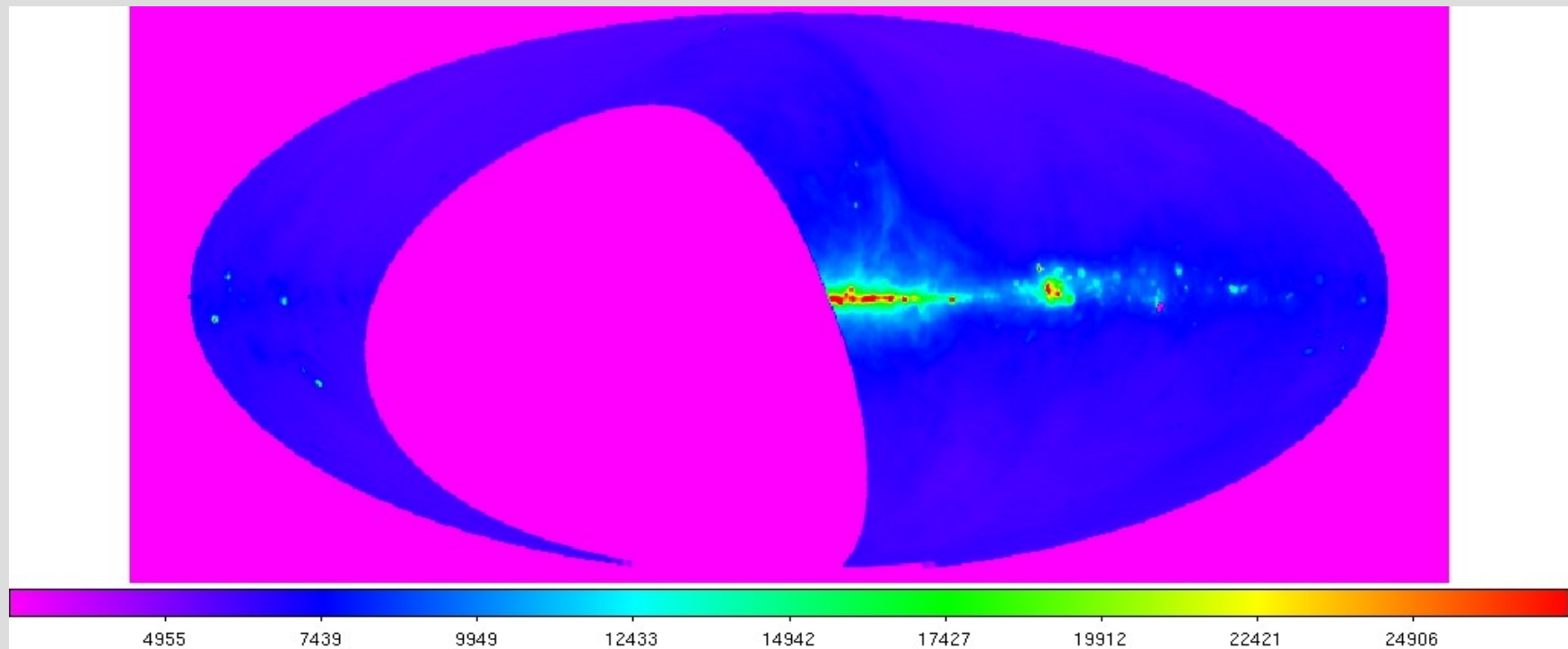
# Beobachtungen bei 1,4 Ghz Durchgang Milchstrasse



# Beobachtungen bei 1,4 Ghz Cyg A / Cyg X-Komplex



# Milchstrasse bei 1,4 GHz



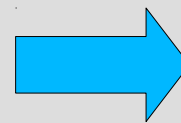
# Beobachtungstechnik 11 GHz

kommerzielle Satelliten-Empfangstechnik



# Beobachtungstechnik 11 GHz

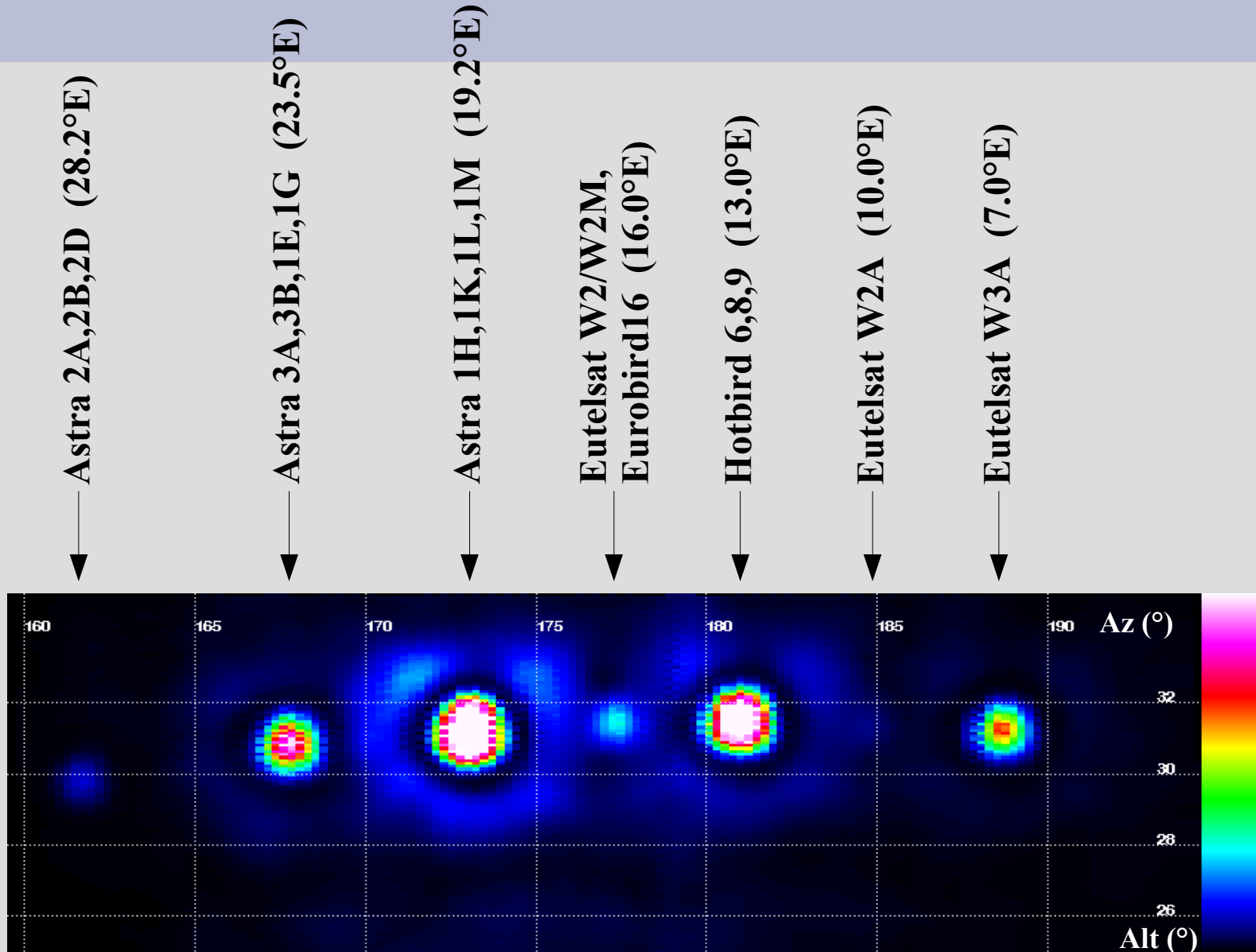
kommerzielle Satelliten-Empfangstechnik



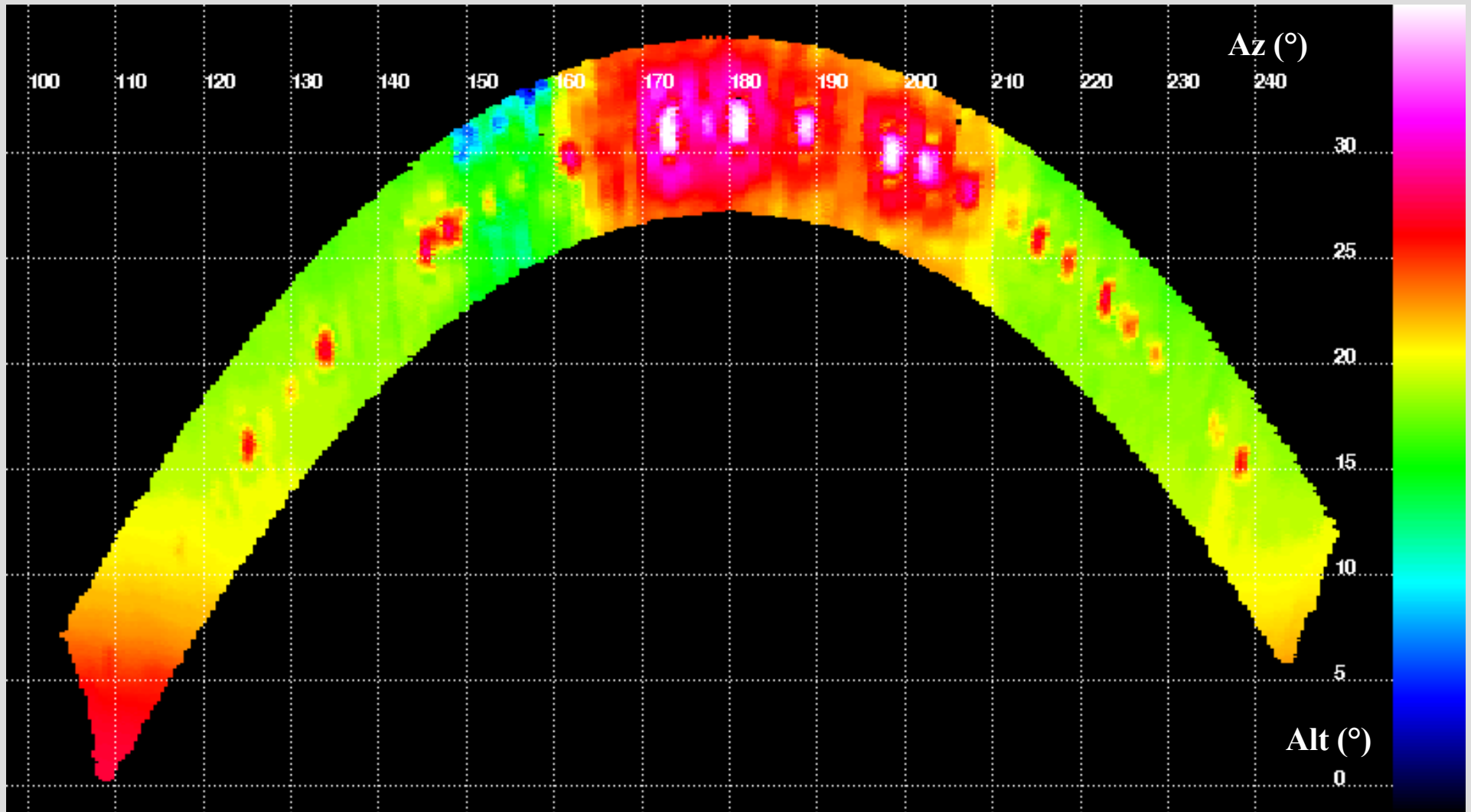
Exzellente Hardware für  
Radioastronomie

**Sat-LNB (Preis: 5€)**  
**Rauschmaß: 0.1dB**

# Beobachtungen bei 11GHz

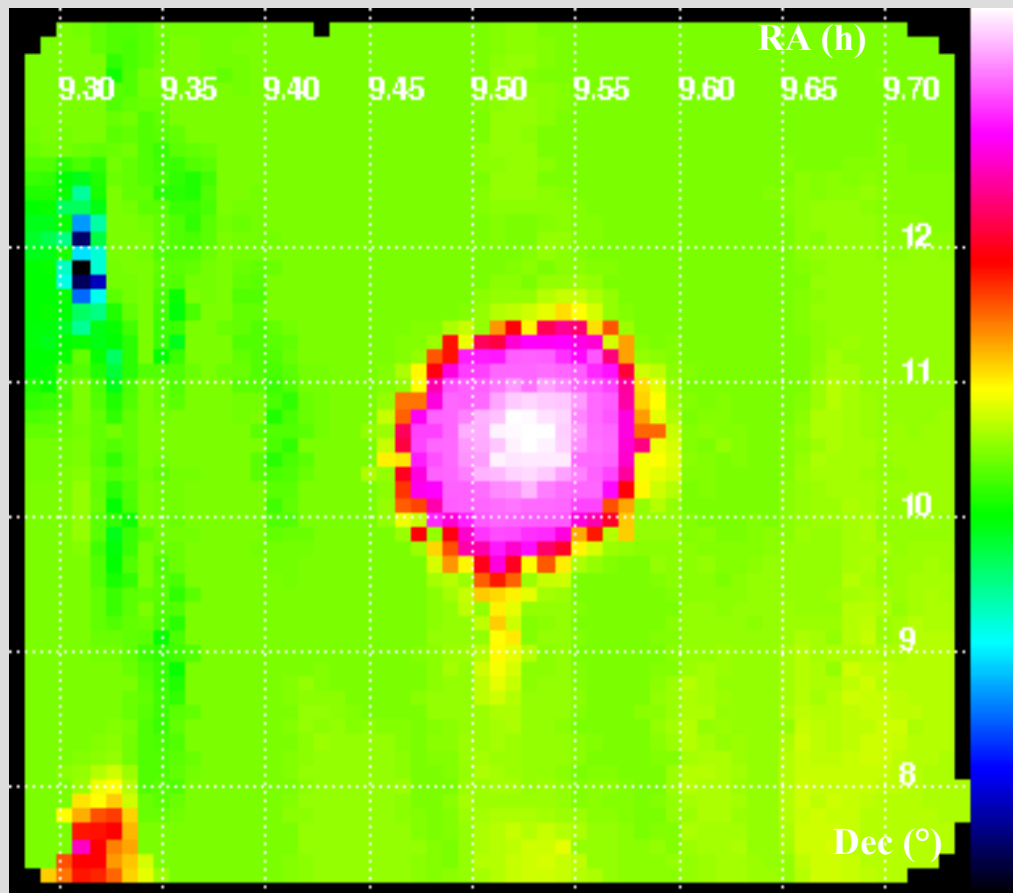


# Beobachtungen bei 11GHz



# Beobachtungen bei 11GHz

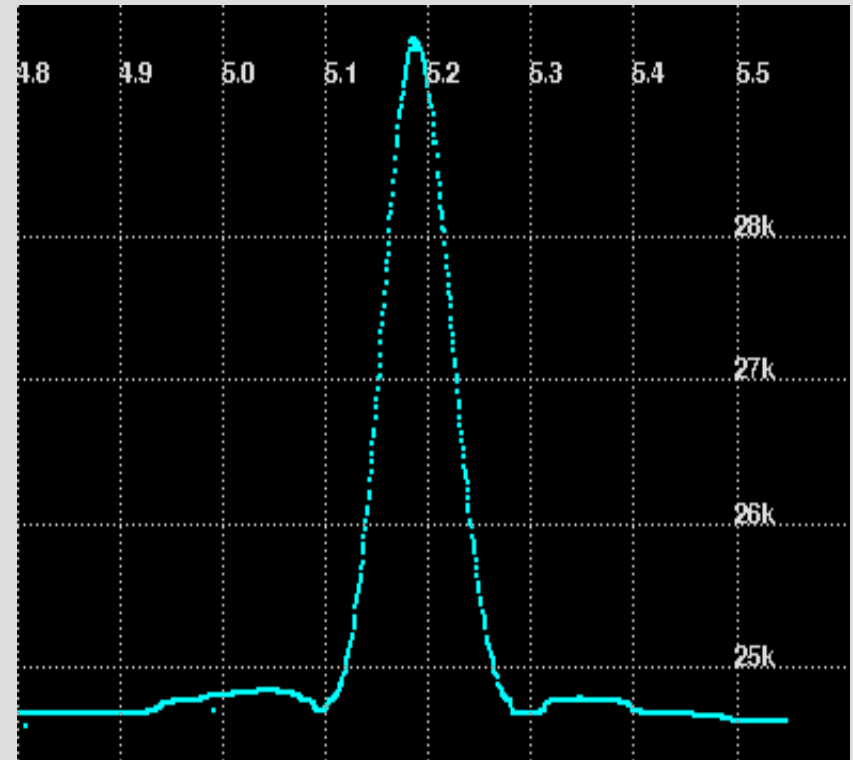
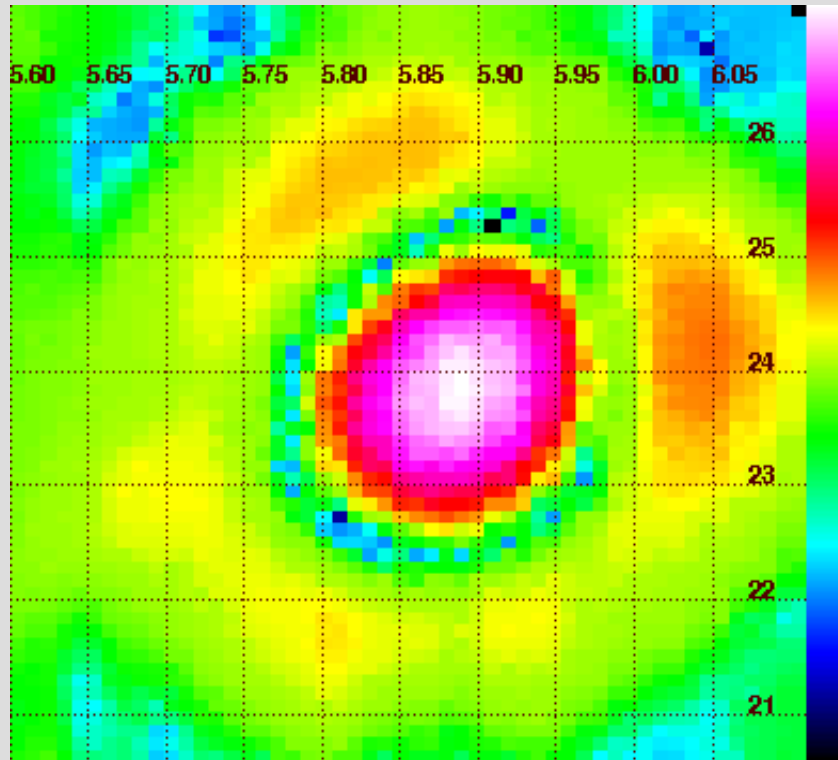
Mond



20%  
Beleuchtung

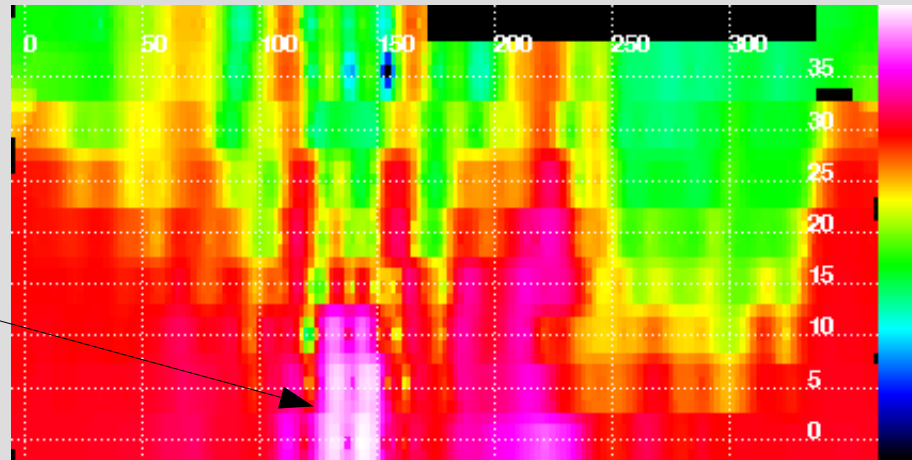
# Beobachtungen bei 11GHz

Sonne

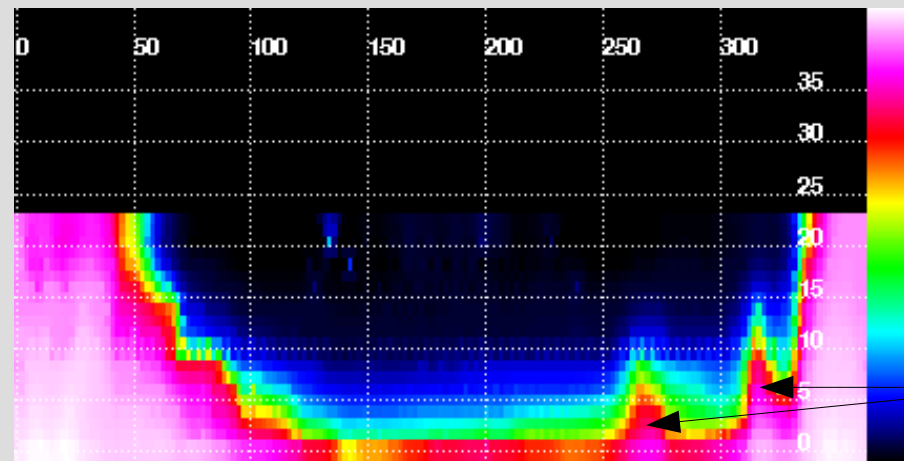


# Horizontscan

Tschechischer  
TV-Sender  
(703,25 Mhz),  
Einmischen als  
Subharmonische  
von 1,4GHz



1,4 GHz



11 GHz

freistehende  
Baumgruppen

Wald Stw-  
Gebäude SPH Wald

# Vergleich verschiedener Feedsysteme

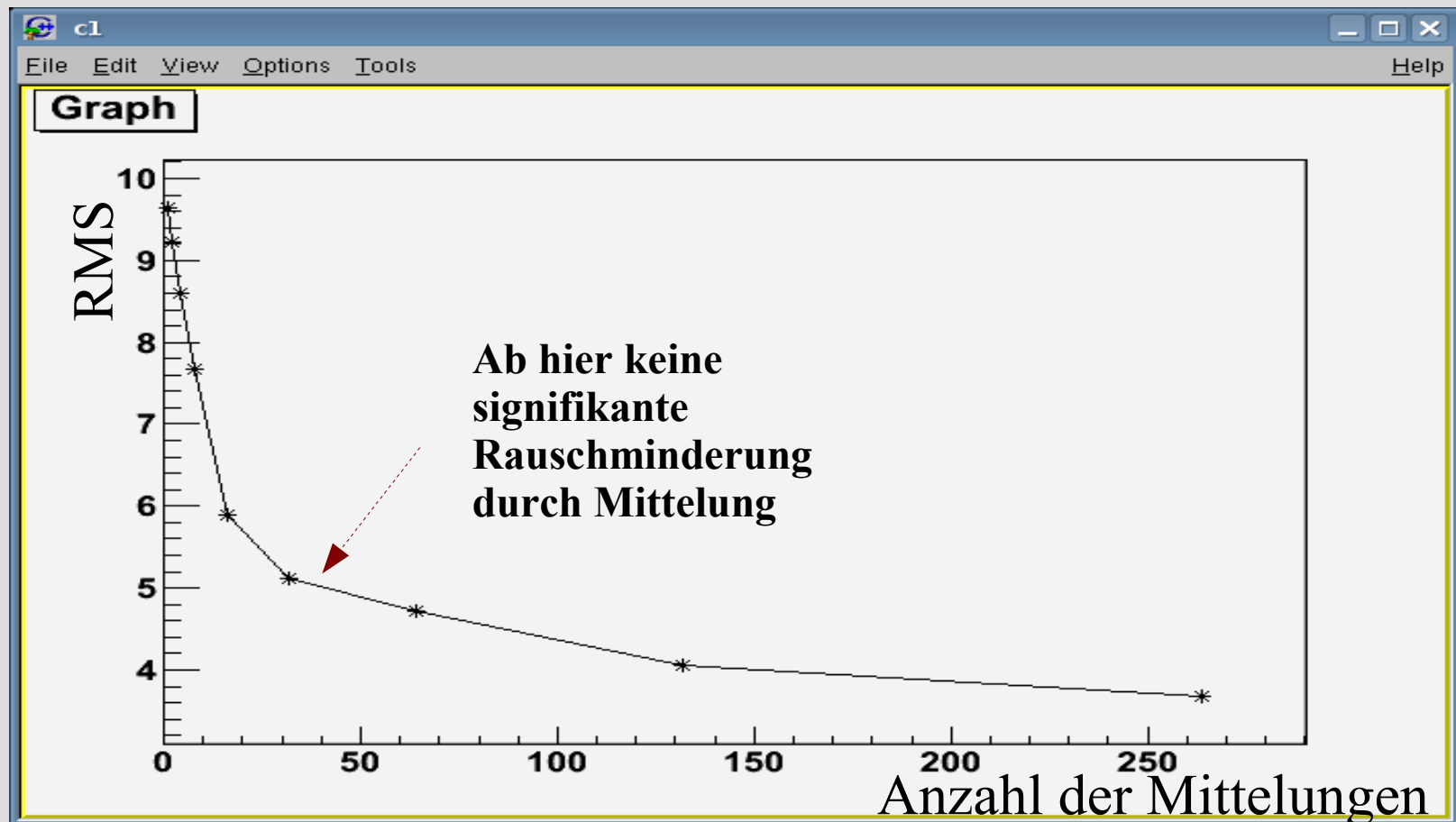
Beobachtungs-frequenz (GHz)	Feedsystem	Rauschzahl (dB)	Gain an Sonne (dB)	Theoret. Auflösung (°)	Gemessene Auflösung (°)
11	Sat-LNB	0,3	k.A.	0,64	1,0
1,4	Ringdipol	0,5	6	5	7,8
1,4	Rillenhorn	0,5	10,5	5	5,45

$$\sin\alpha = 1.22 \frac{\lambda}{D}$$

# Fluktuation der Meßwerte

## Allan-Plot

- Fluktuation des Signals (Rauschen) in Abhängigkeit von der Zeitkonstanten (Mittelungsintervall)



# Die Radio-Guys

