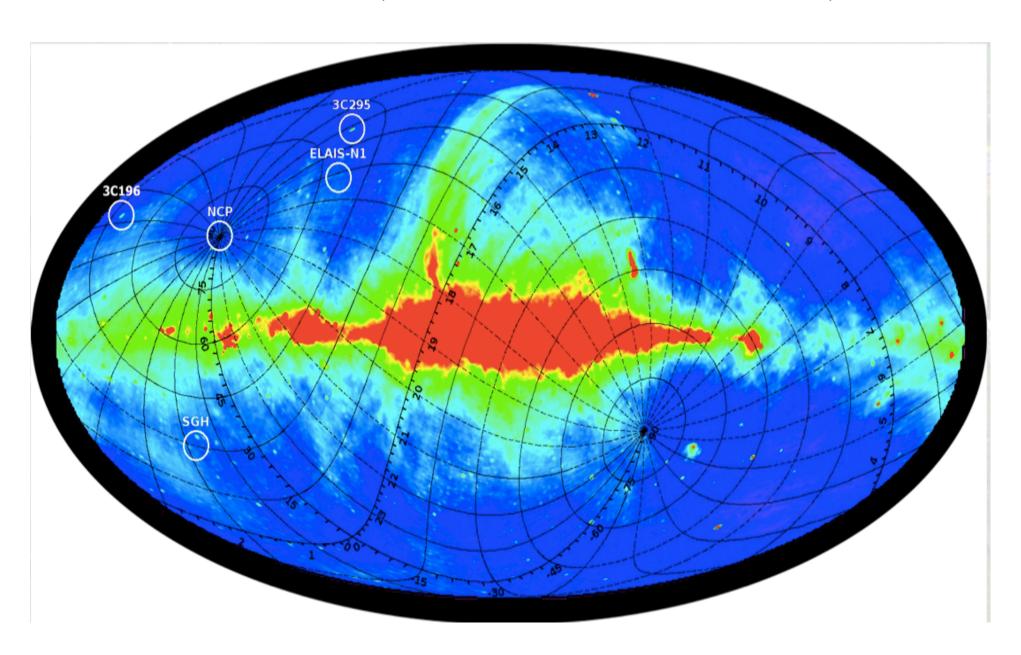
EoR 3C196 Field

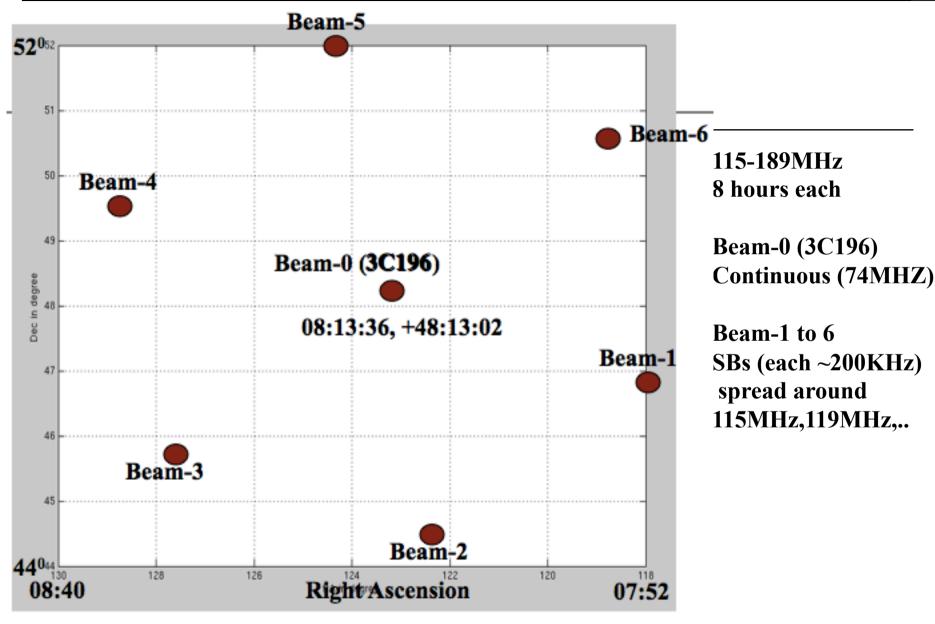
Processing Status Overview LCE019

V.N.Pandey (on behalf of EoR Group) LSM, Feb 20, 2013

EoR Fields (NCP, 3C196, 3C295, ELAIS)



Observations

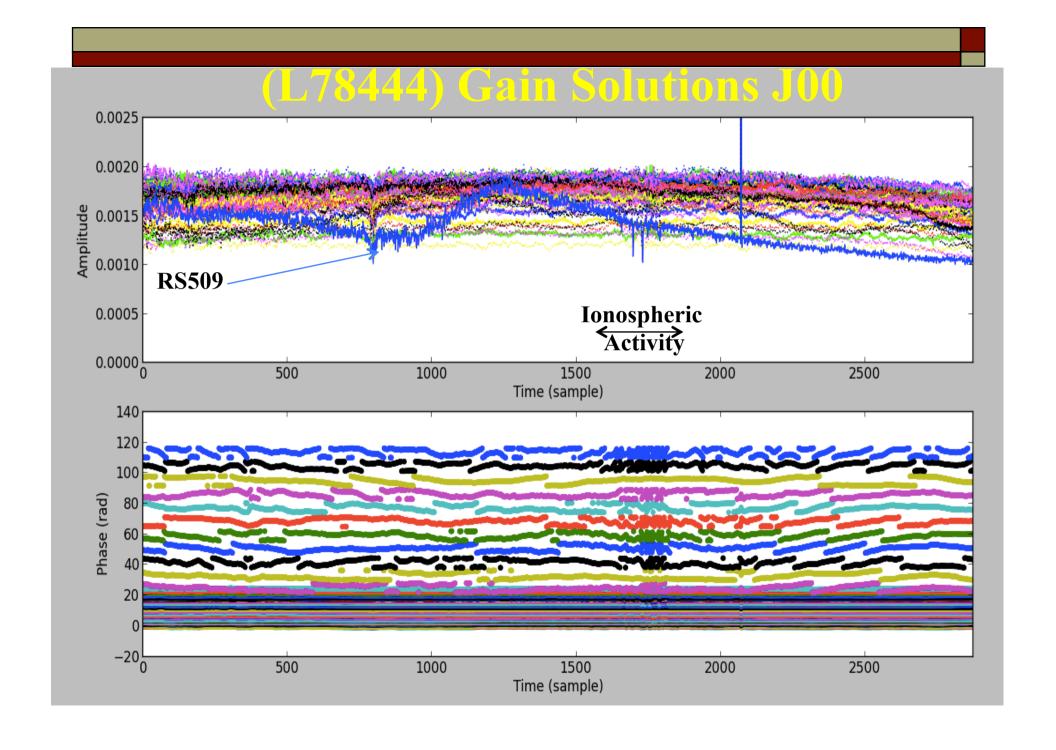


MSID	Duration (Hour)	No Stns	RFI Excision + Data averaging+ Transfer to Target	Processing V0 (BBS*, Casa)	Rms noise	~30SBs bad on average in each obsvn Most of the data has some ionospheric activity ~6-7 stns show reduced sensitivity
L76768	7	58	Complete	Complete	145	Slightly Different processing for each data set.
L78444	8	57			130	Each Raw data ~ 25TBytes
L79324	8	59			125	Total Data Processed: ~ 550 TBytes
L79344	8	59			115	
L80273	8	57			120	
L80508	8	61			135	
L80891	8	61			135	
L80895	8	61			125	
L80897	8	61			110	
L80898	8	59			135	
L82609	8	60			120	
L83991	8	60			?	
L84999	8	61			110	
L82655	8	60				
L80892	8	61		Calibration Done		
L80893	8	61				
L85001	8	61				
L83987	8	61				
L83988	6	58				
L80893	8	61				
L86766	8	61				
L86767	8	61				
Total	169 hours		161	161/103		Still to be transferred: L94157, L94158 (Total 16 hours)

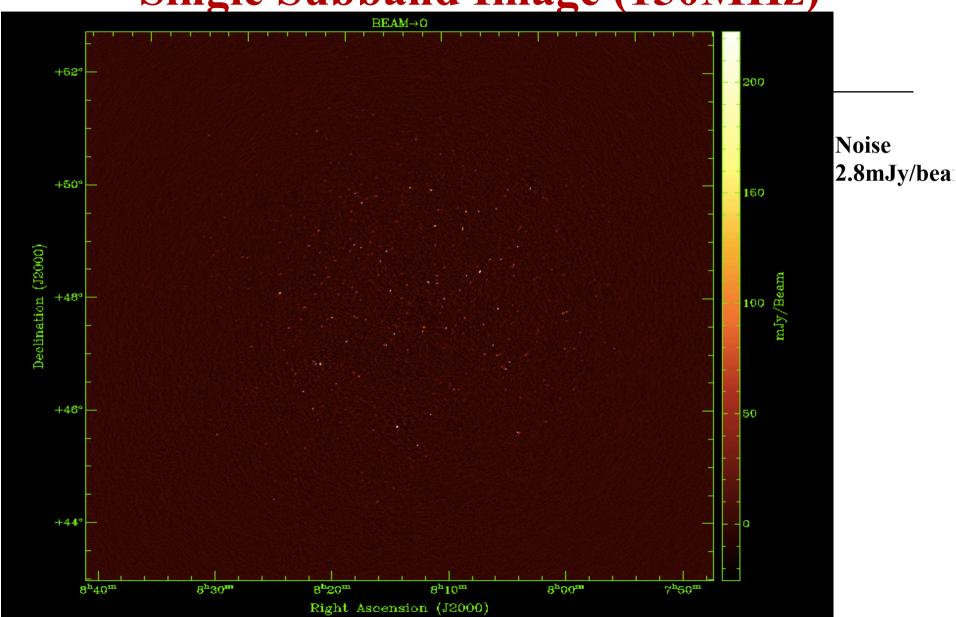
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Data Analysis: Brief Overview

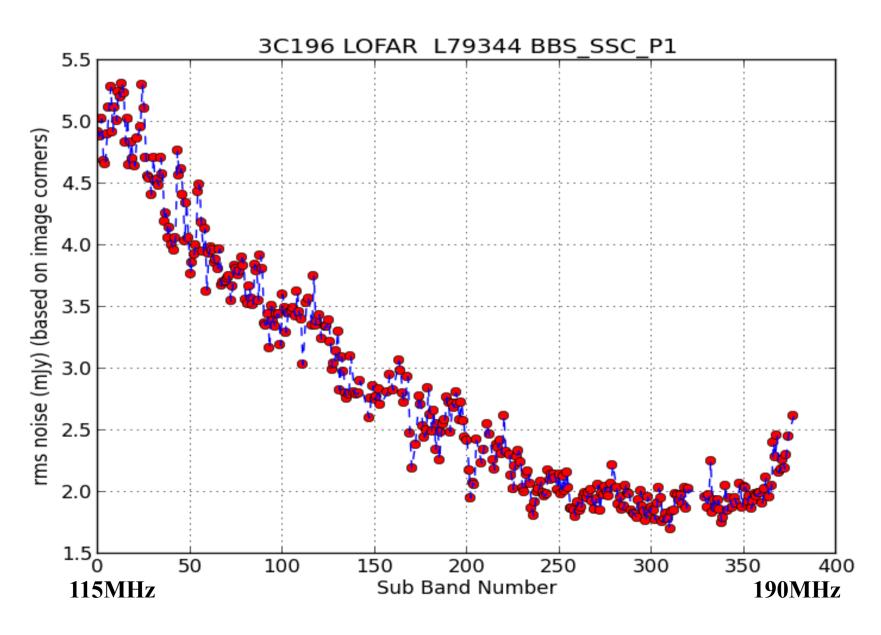
- Each SB processed separately
- □ 64CH, 2s → NDP³ (Flagging, averaging) → 15CH, 2s → NDP³ → 3CH, 2s → NDP³ → 1CH, 10s (Data archived)
- Current processing on 1Ch, 10sec
- Version 0:- Calibration:- BBS (Full Polarization, dipole and array beam on); Sky model:- 4 component model of 3C196, solve, subtract, correct.
- Filter bad solutions, Casa Imager (no Pbeam) 15"x15" images
- Combine images of each SB with natural weights

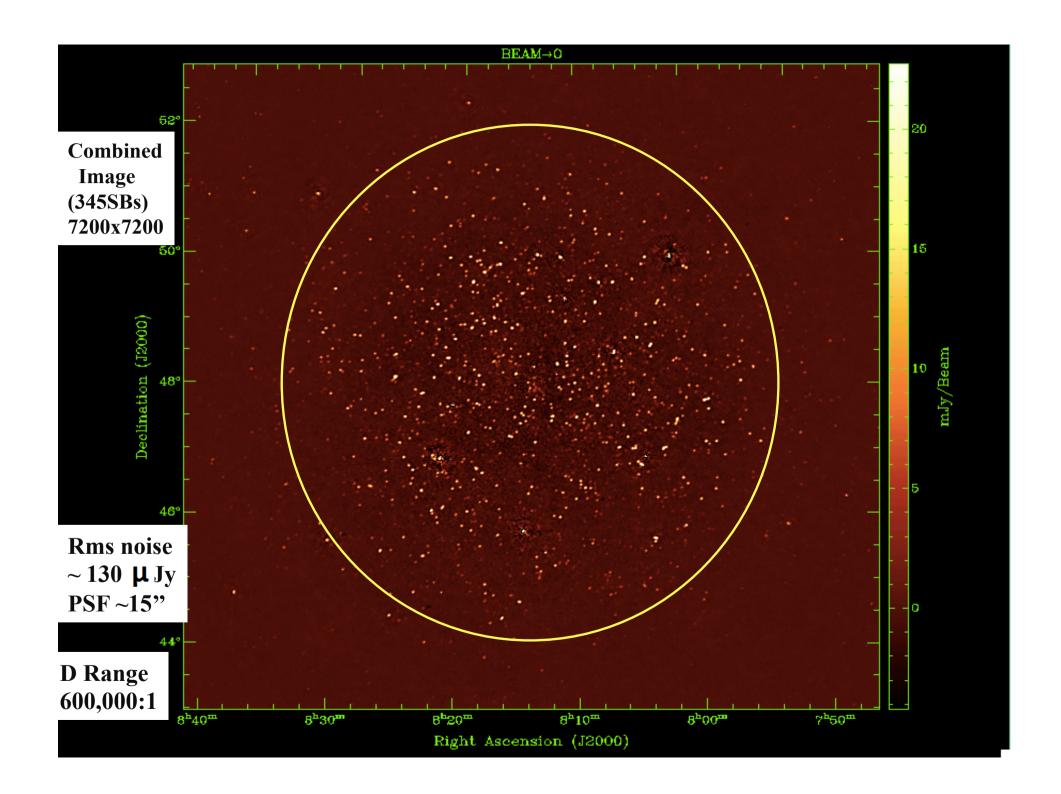


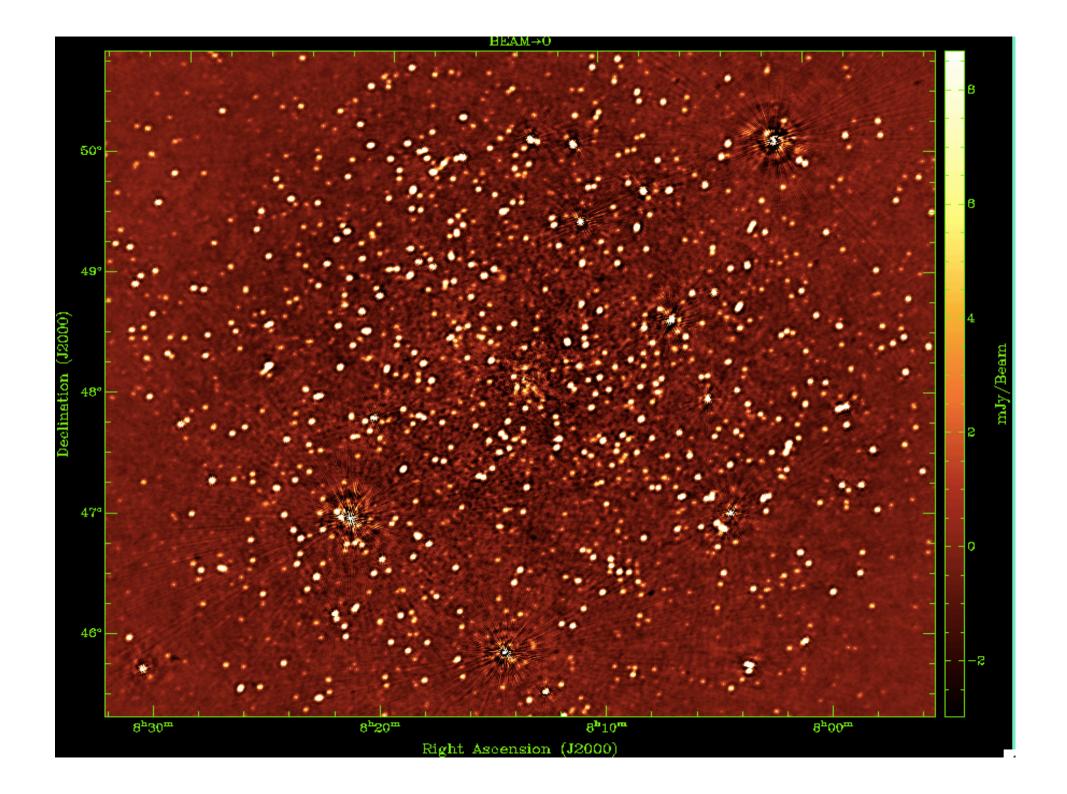
Single Subband Image (150MHz)

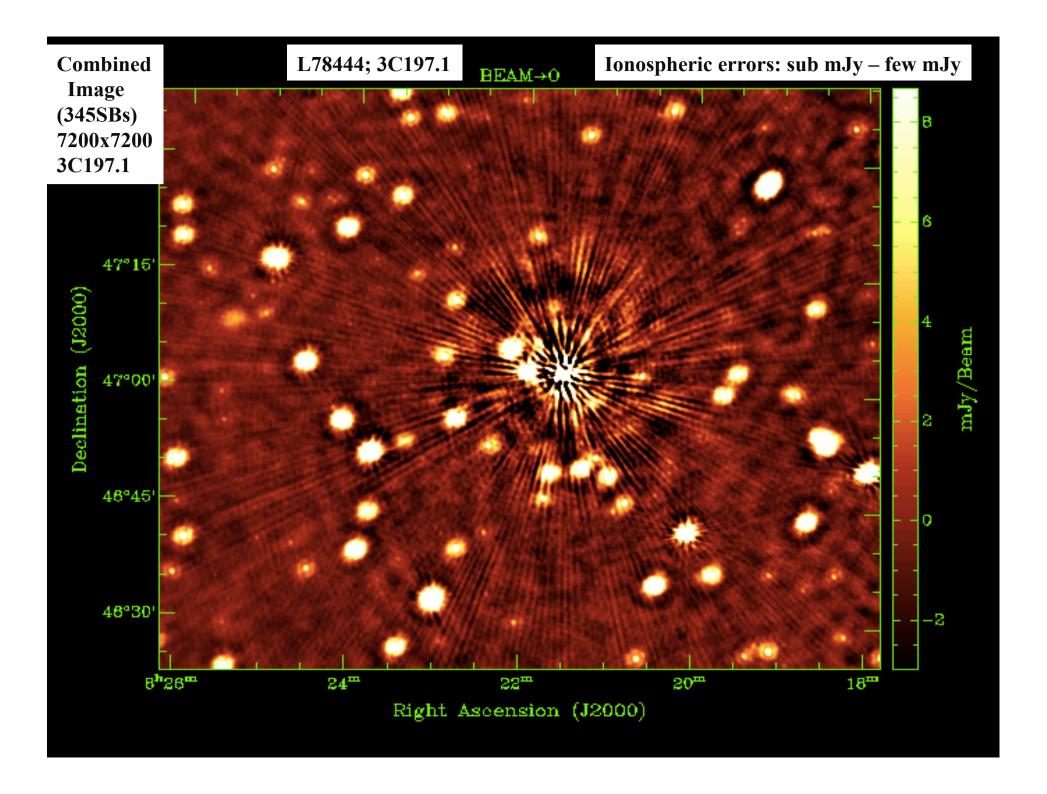


Noise variation with frequency



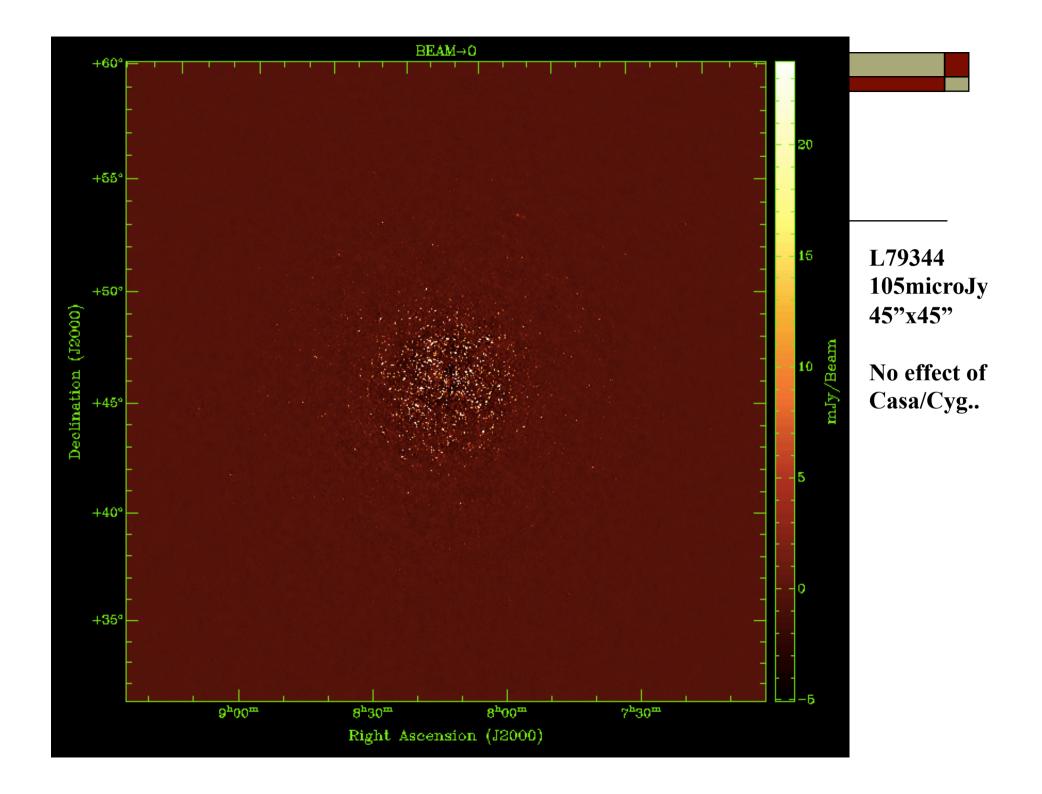


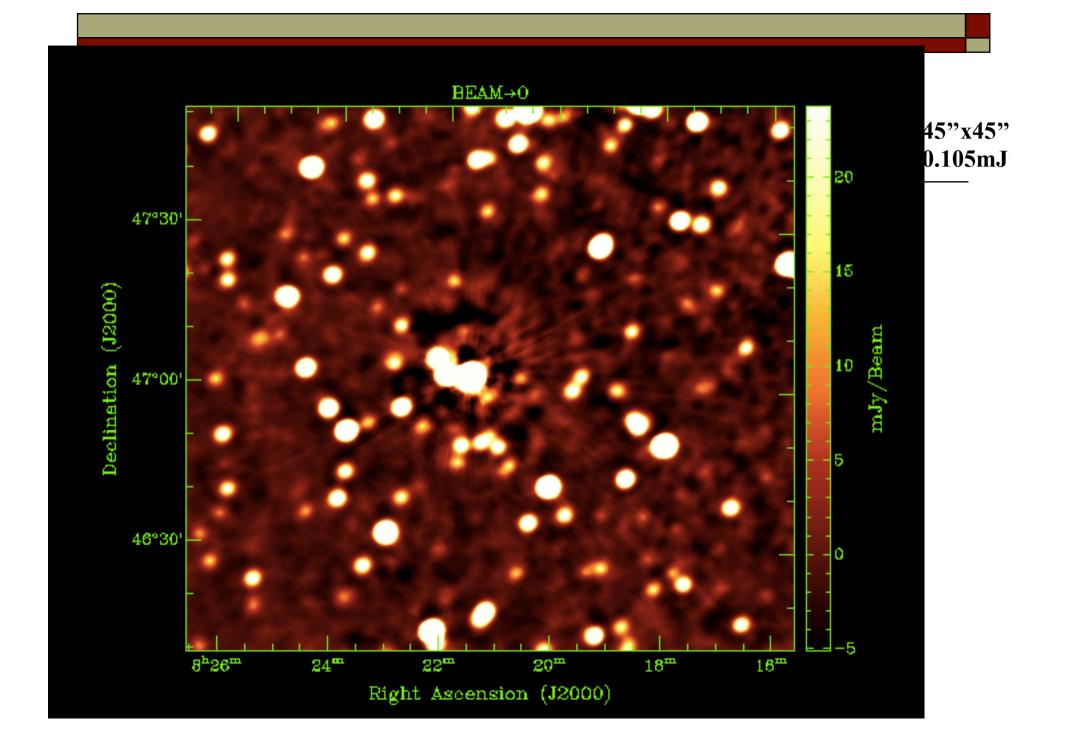




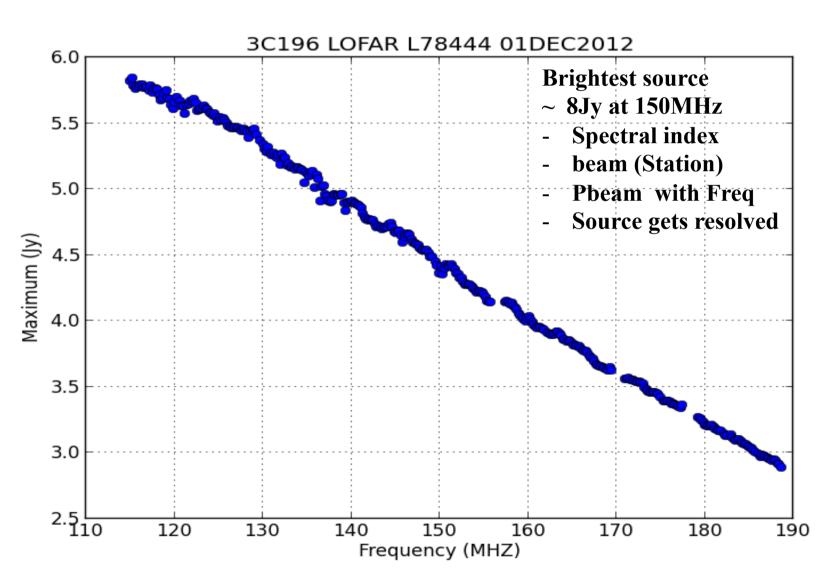
Ionospheric effects:

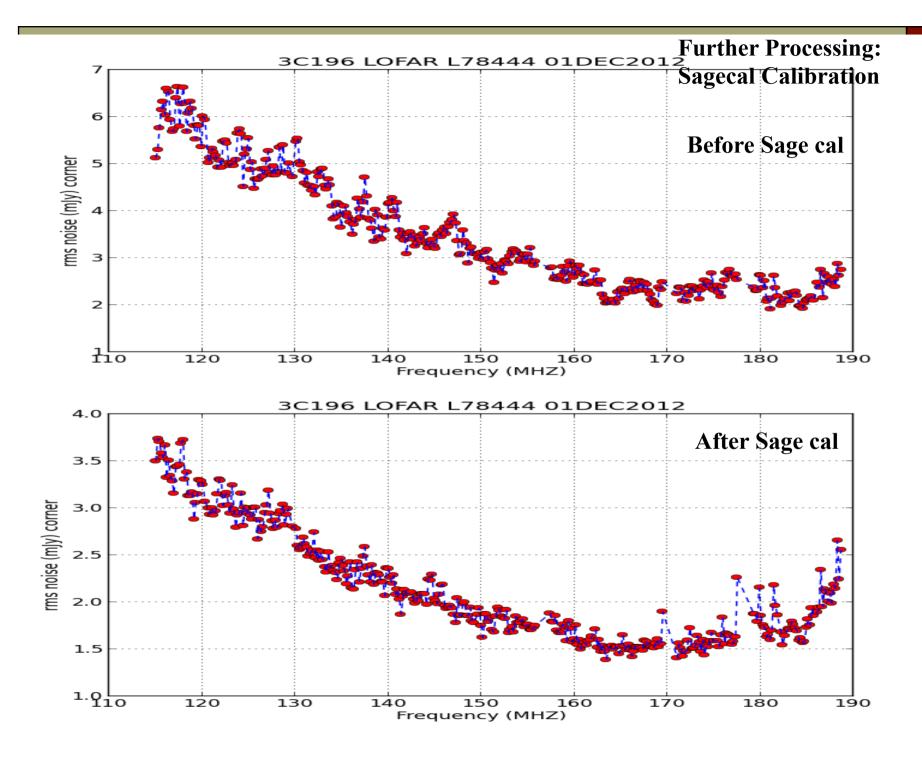
- □ Between sub mJy few mJy
- Hardly visible in each SB image
- After combining a few images, these are more clearly detectible
- If we combine any 50SBs, these errors are easily seen.
- Lower resolution images, these effects are significantly reduced as expected.

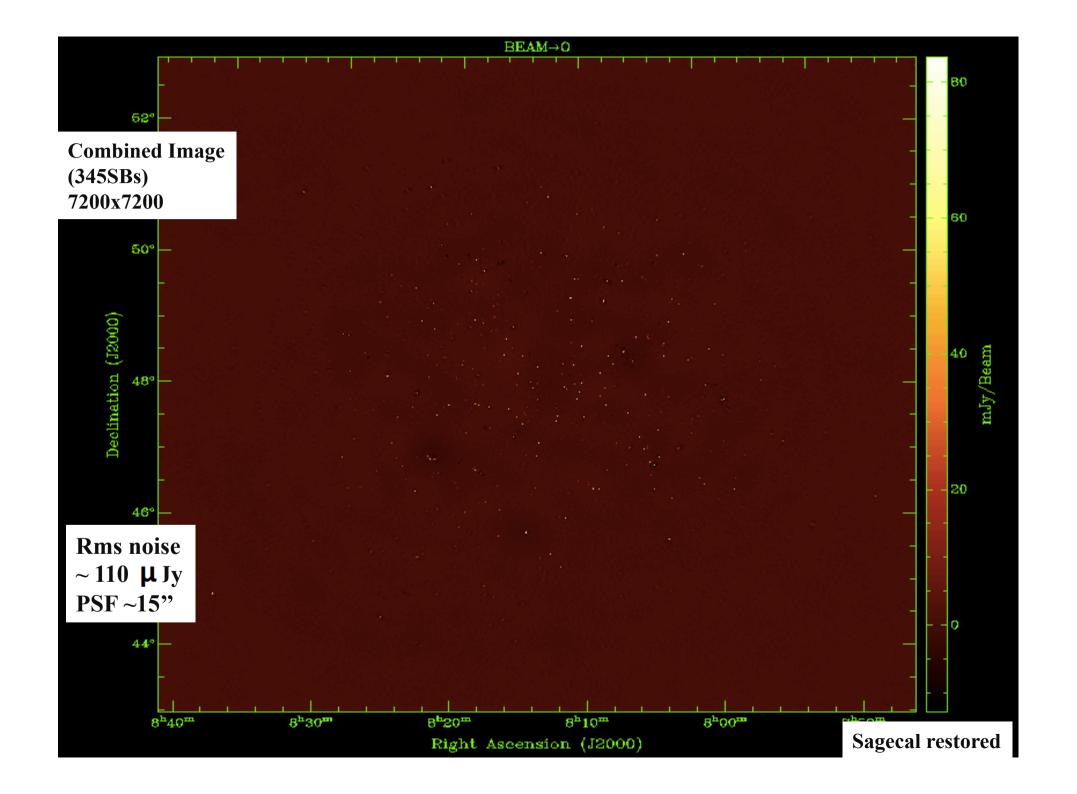


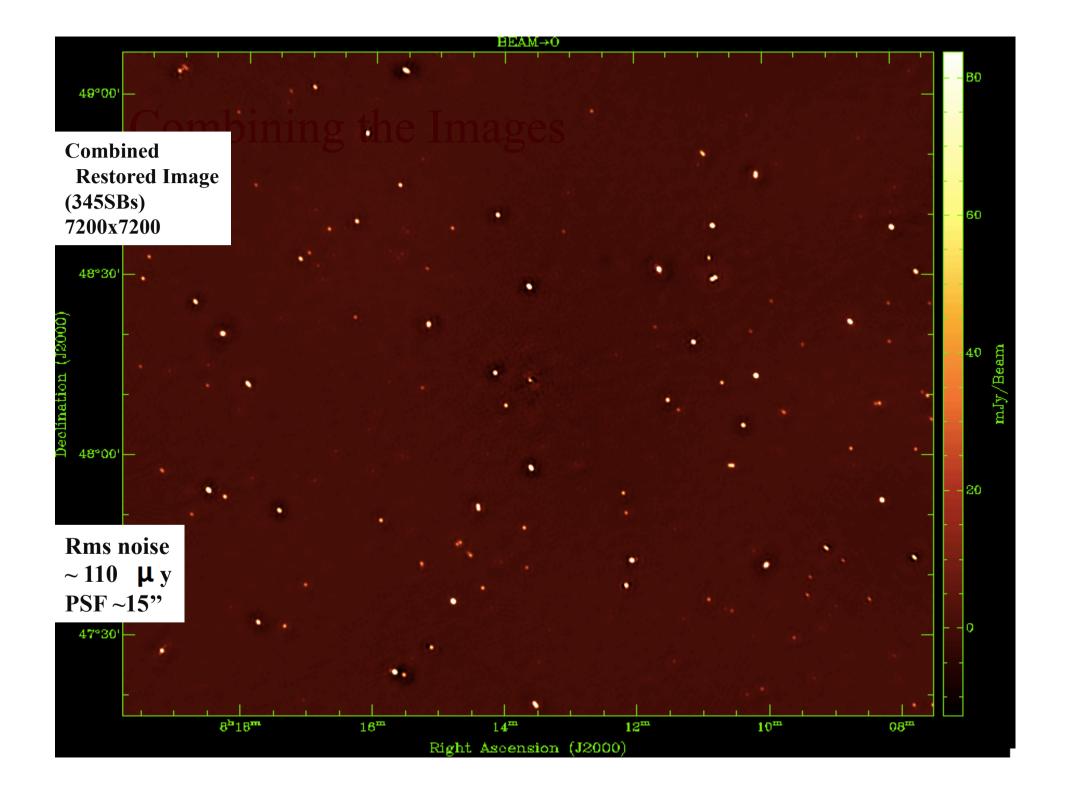


Maximum (in images) with frequency Source properties in each Subband images

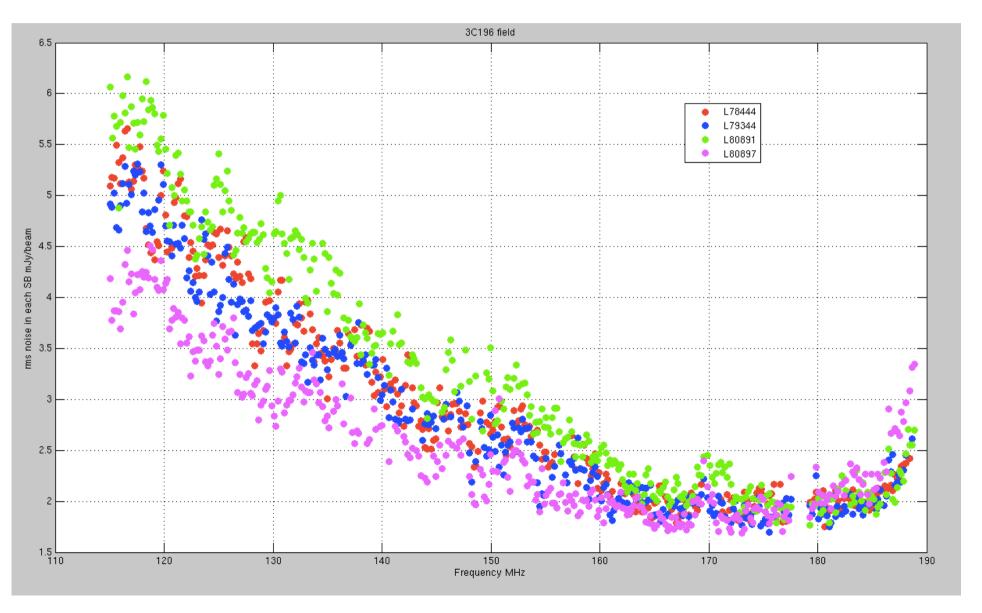








Comparison with different days



Conclusions

- Data Stability from night to night comparable.
- Each night, we can obtain ~110-125 μJy/beam in the continuum images.

Aim : <100 **\mu**Jy/beam

- Flux variation with frequency is smooth with no significant deviations.
- □ 3C196 Residuals:50-200mJy/SB (1/1600 1/400); Reduced further by a factor of 2;

Aim: < 5-20mJy

Steps

- □ Improvement of Sky model* + 3C196 Model
- Need Long Baselines (Important)
- Ionospheric Work
 - Mevius Ionospheric Phase screen
 - Soobash- Sage cal solutions interpretation
- Other beams (1-6) processing
- Sagecal calibration to be continued.
- Flux calibration, Theoretical Noise estimation

