

*The Stephan's Quintet*

*in*

# **RUN SILENT, RUN DEEP**

A LOFAR – OAUJ – POLFAR PRODUCTION

RELEASED THRU  LOFAR COMMUNITY SCIENCE WORKSHOP

Ever since we were born, we looked at the sky with awe.



# Our interest was lasting on...





... and on, as we were growing up.



At some point, it became sure that surveying the sky is what we want to do.



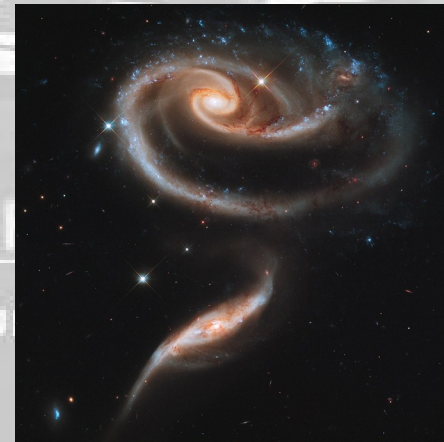
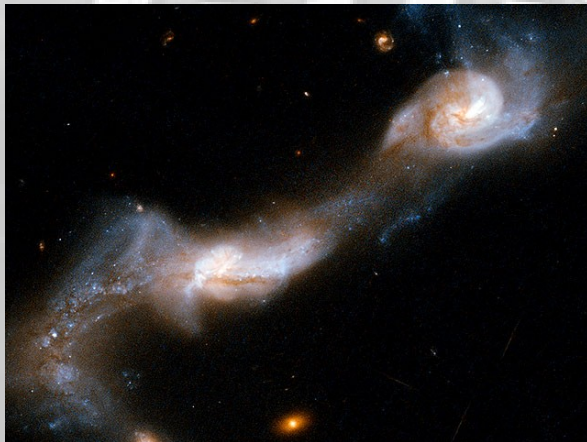
„his remorse was that he could not survey the sky”

*SOAD, Jet Pilot*

AUJ – POLAR PRODUCTION  
LOFAR COMMUNITY SCIENCE WORKSHOP



# Set sails'n conquer!



UJ – POLFAI  
LOFAR COMMU

ORKSHOP

# Expectations vs. reality





# Interacting galaxies are not friendly targets

- Low surface brightness
- Small angular scale: distant and spatially small
- Decaying electron population
- (Usually) we don't have any sensible model



Photo # NH 61236 USS Maine explodes

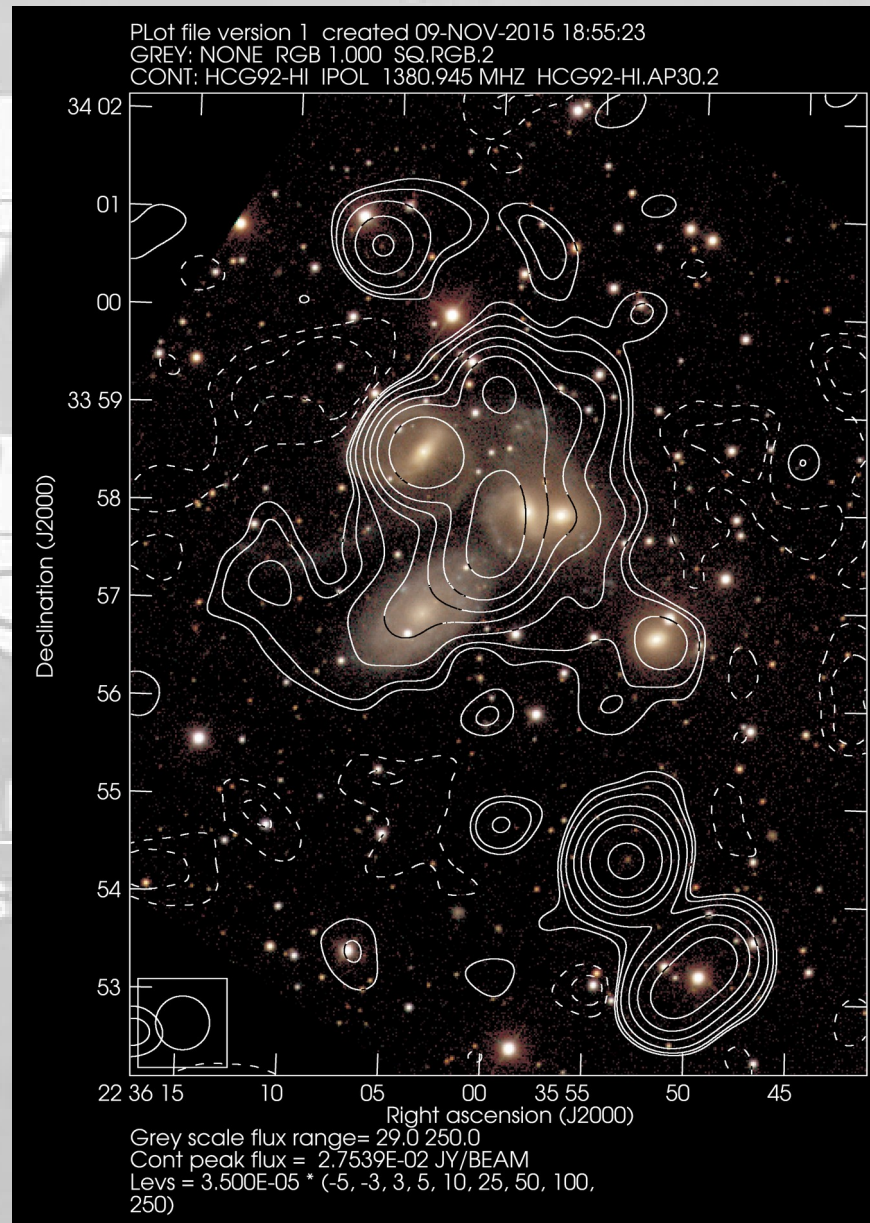


# Why should we do so?

(There are better things to do...)



# Well, because of that.





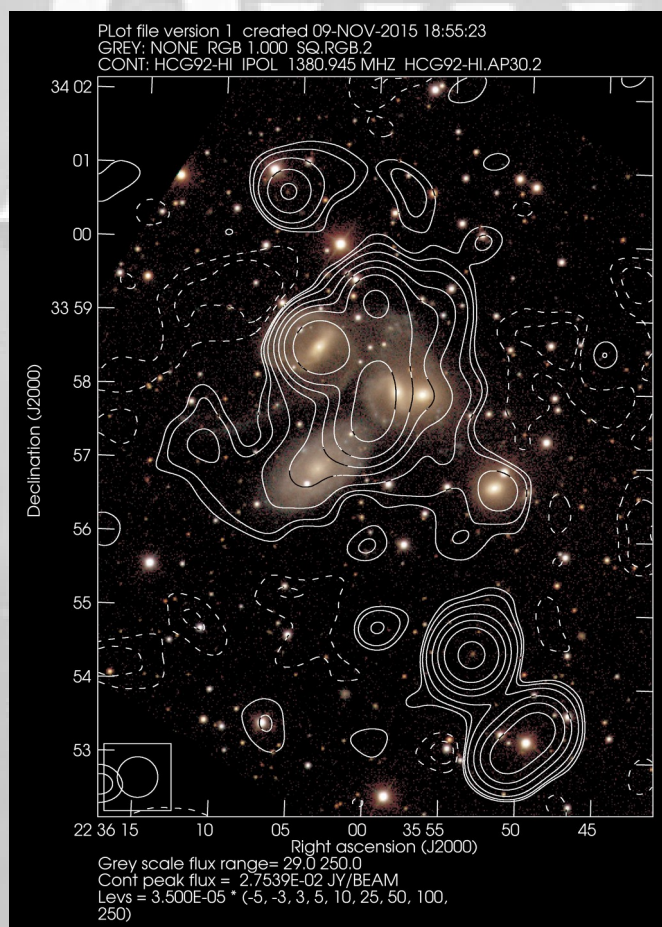
# Let's go LOFAR.



WORKSHOP



# Remember, we expect this



# SILENT,

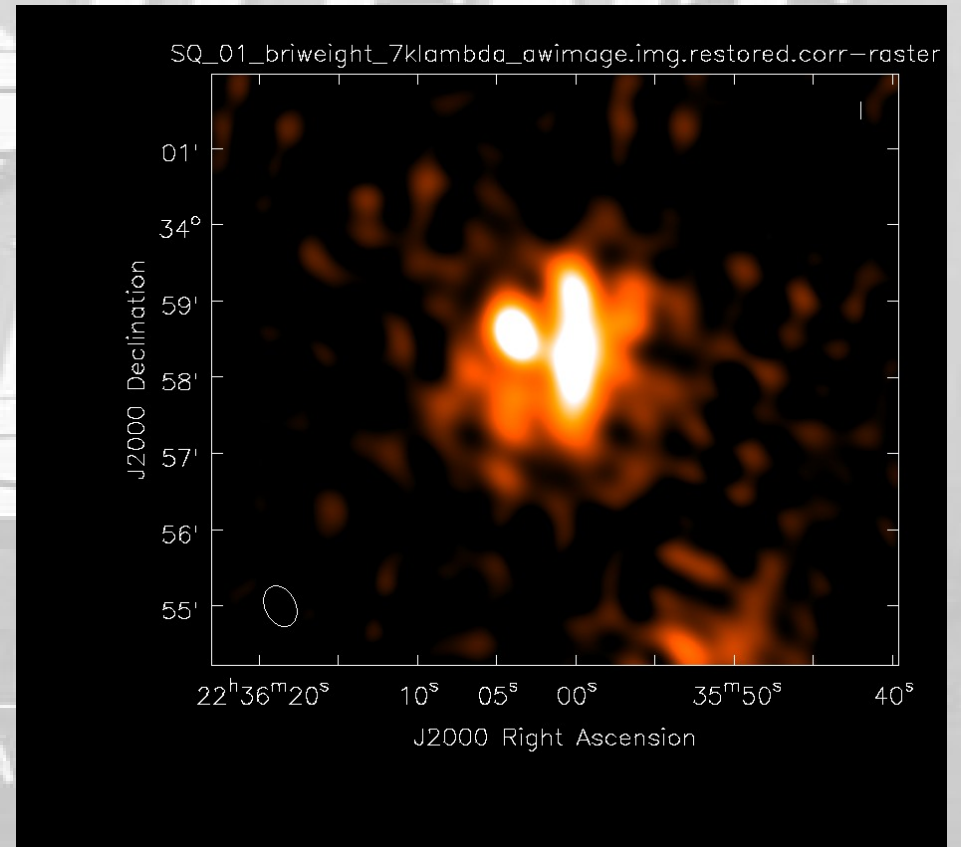
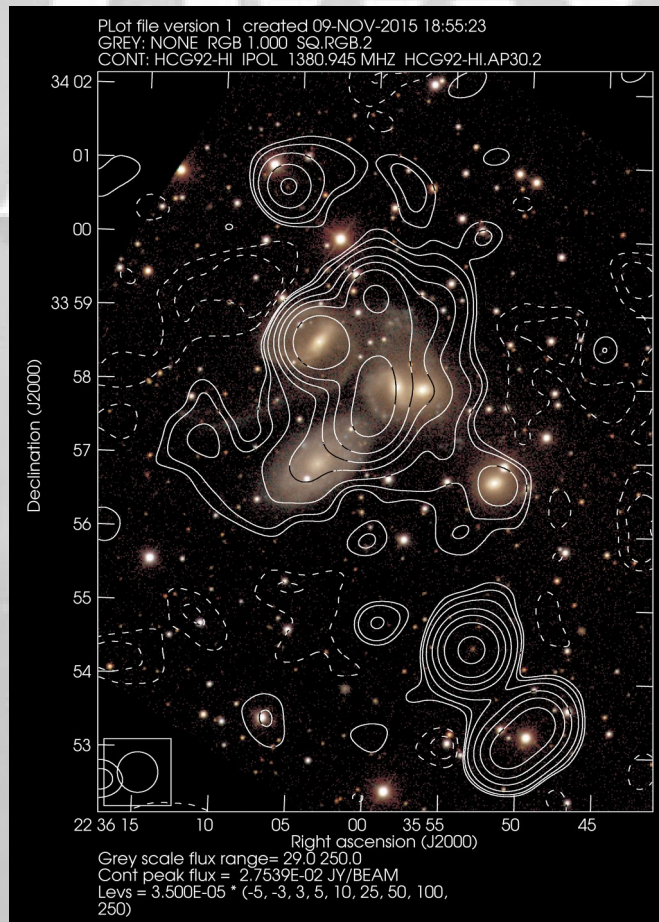
# IN DEEP?



JJ - POLFAR PRODUCTION

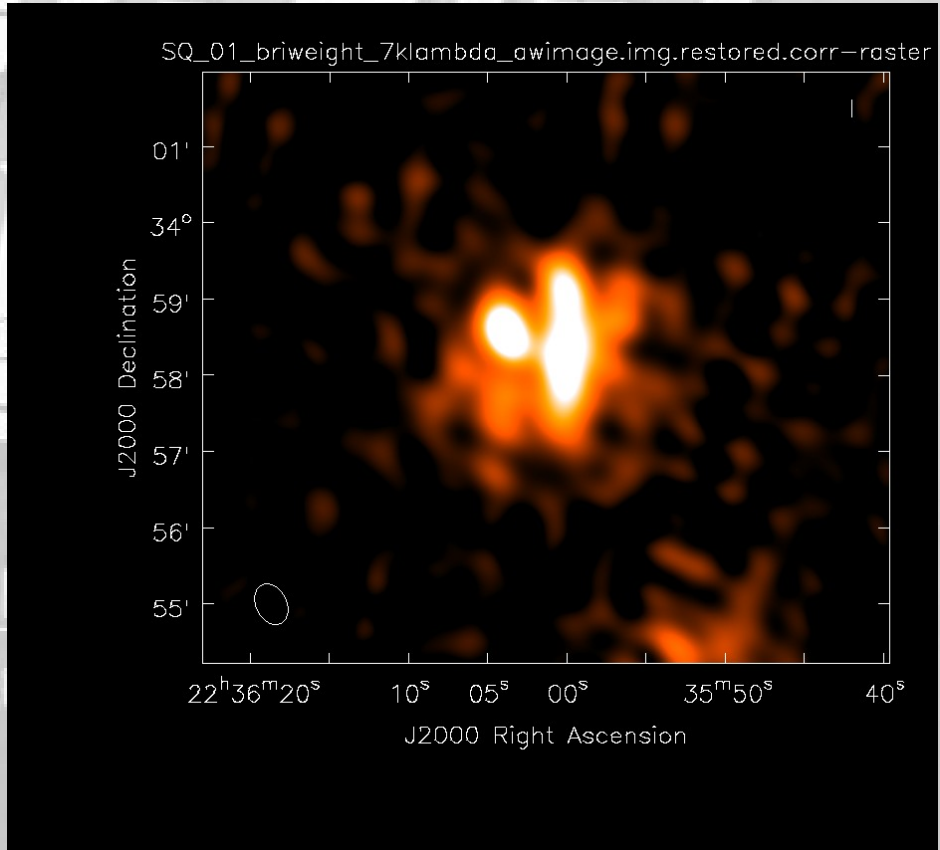
LOFAR COMMUNITY SCIENCE WORKSHOP

# And we get this.



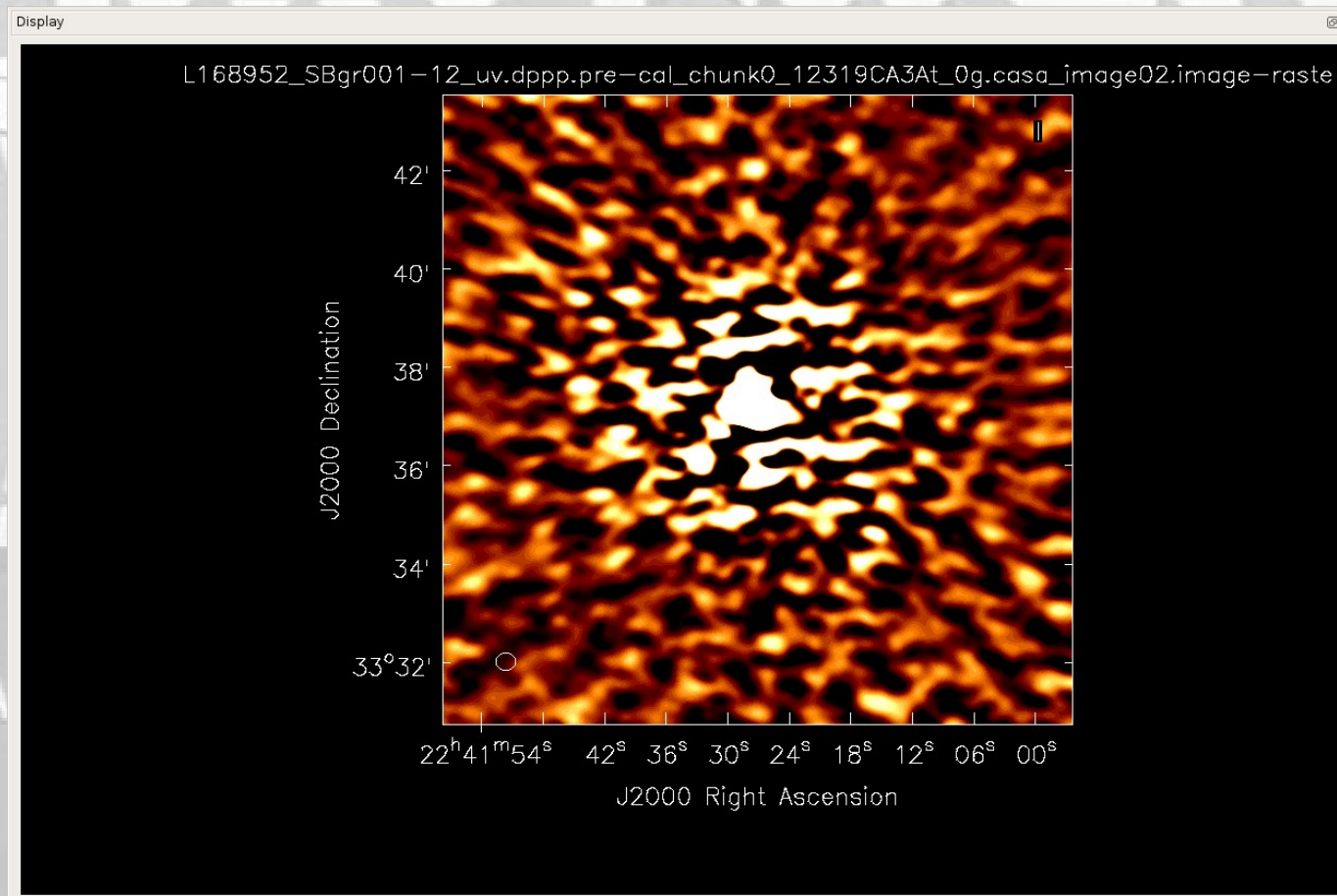
# PIIN SII ENIT

...

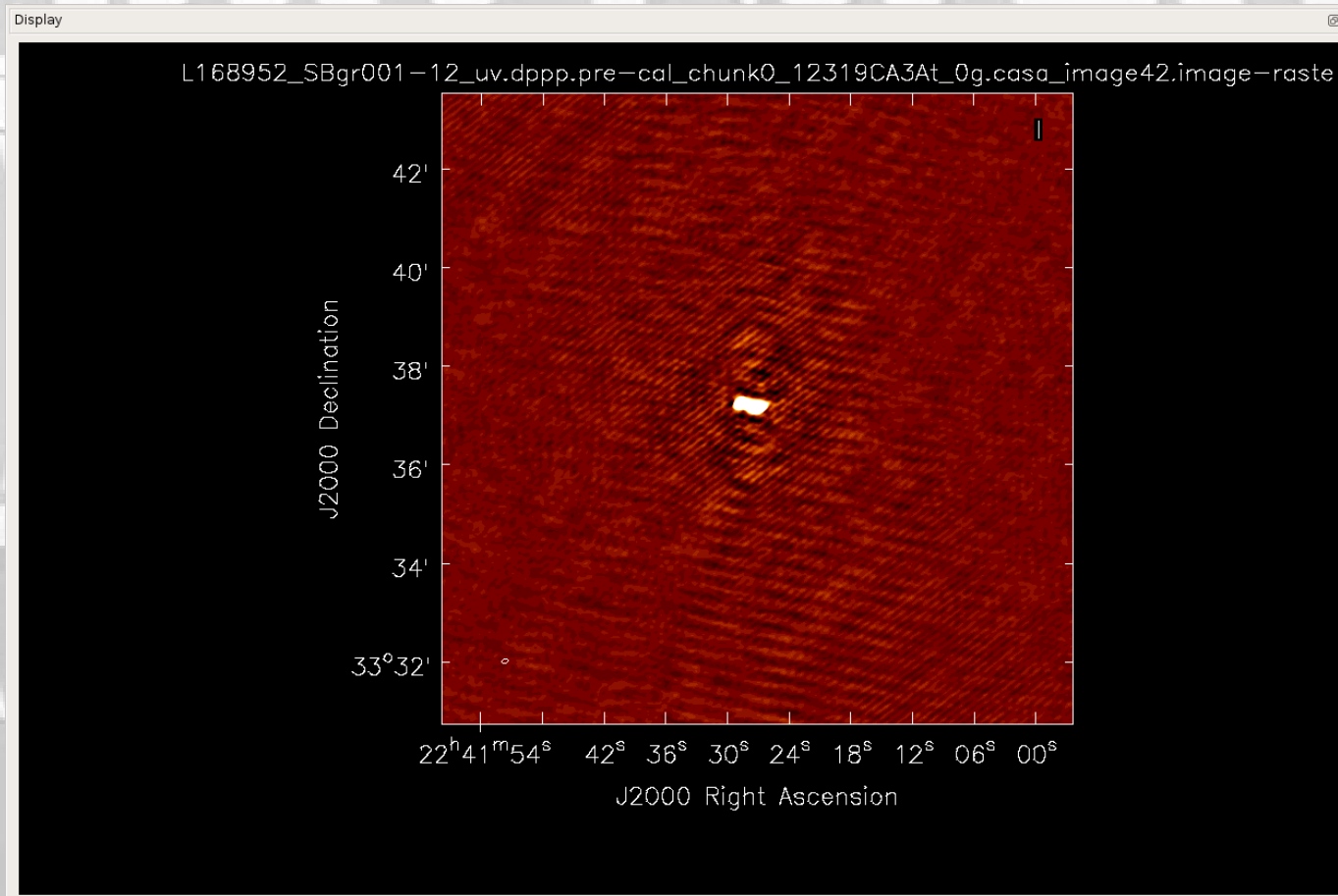




# Let's take a look at one of the sources.



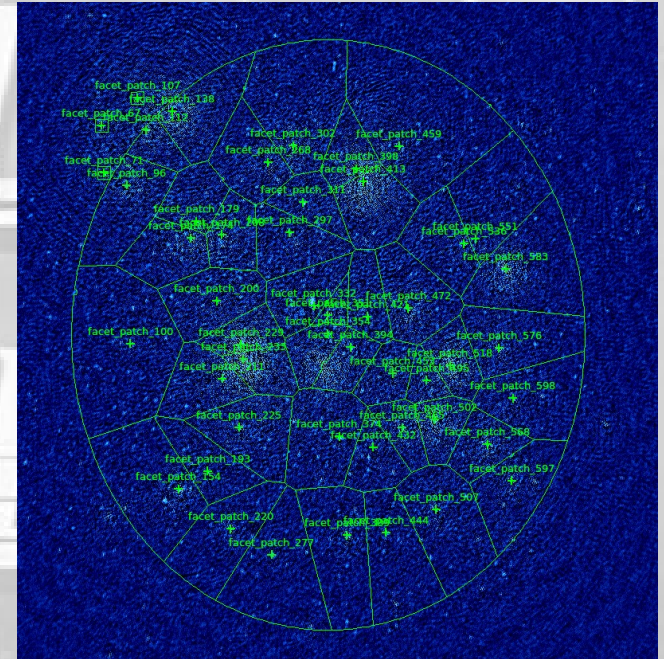
But we can improve it to look like this...



ORKSHOP

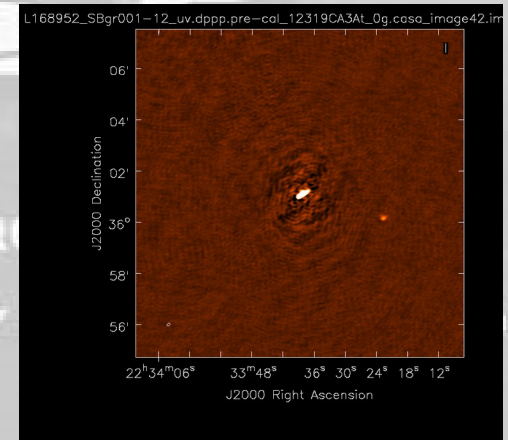
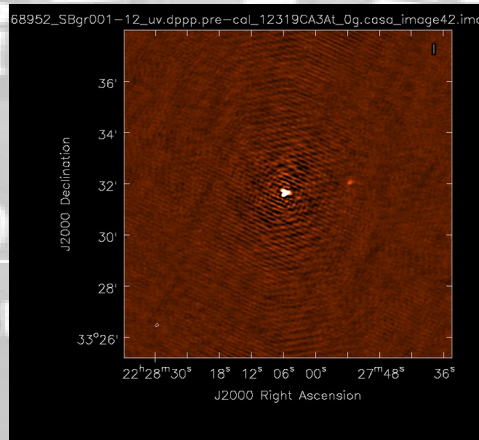
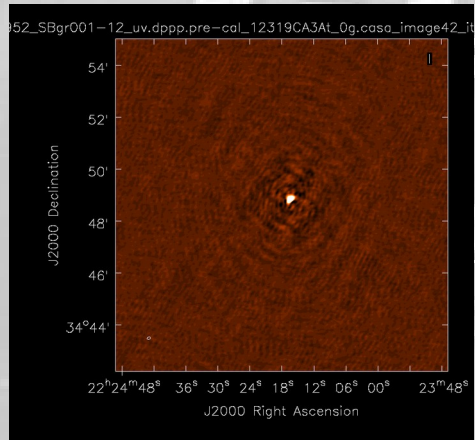
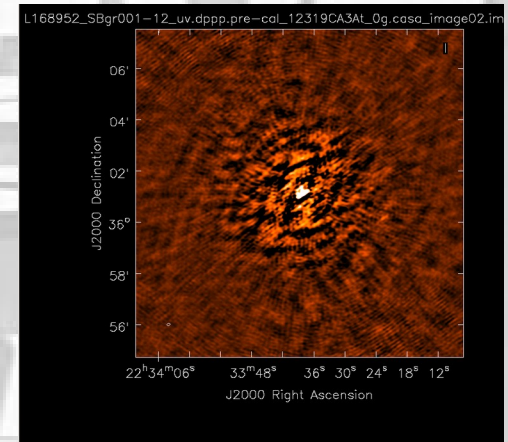
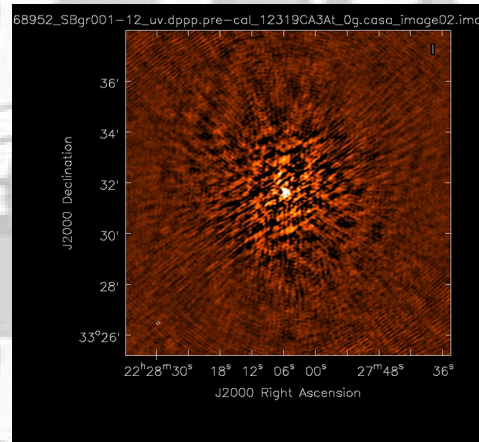
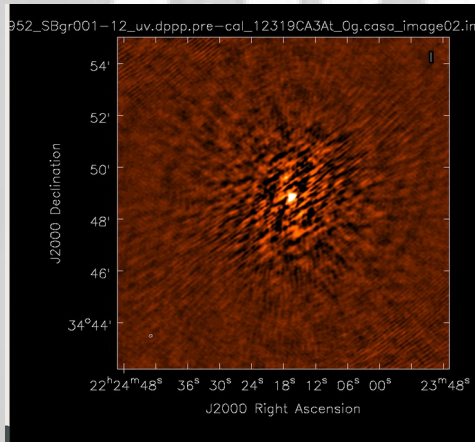
# How come? How to do that?

- It's LOFAR:
- Lots
- Of
- Facets
- And
- RUM

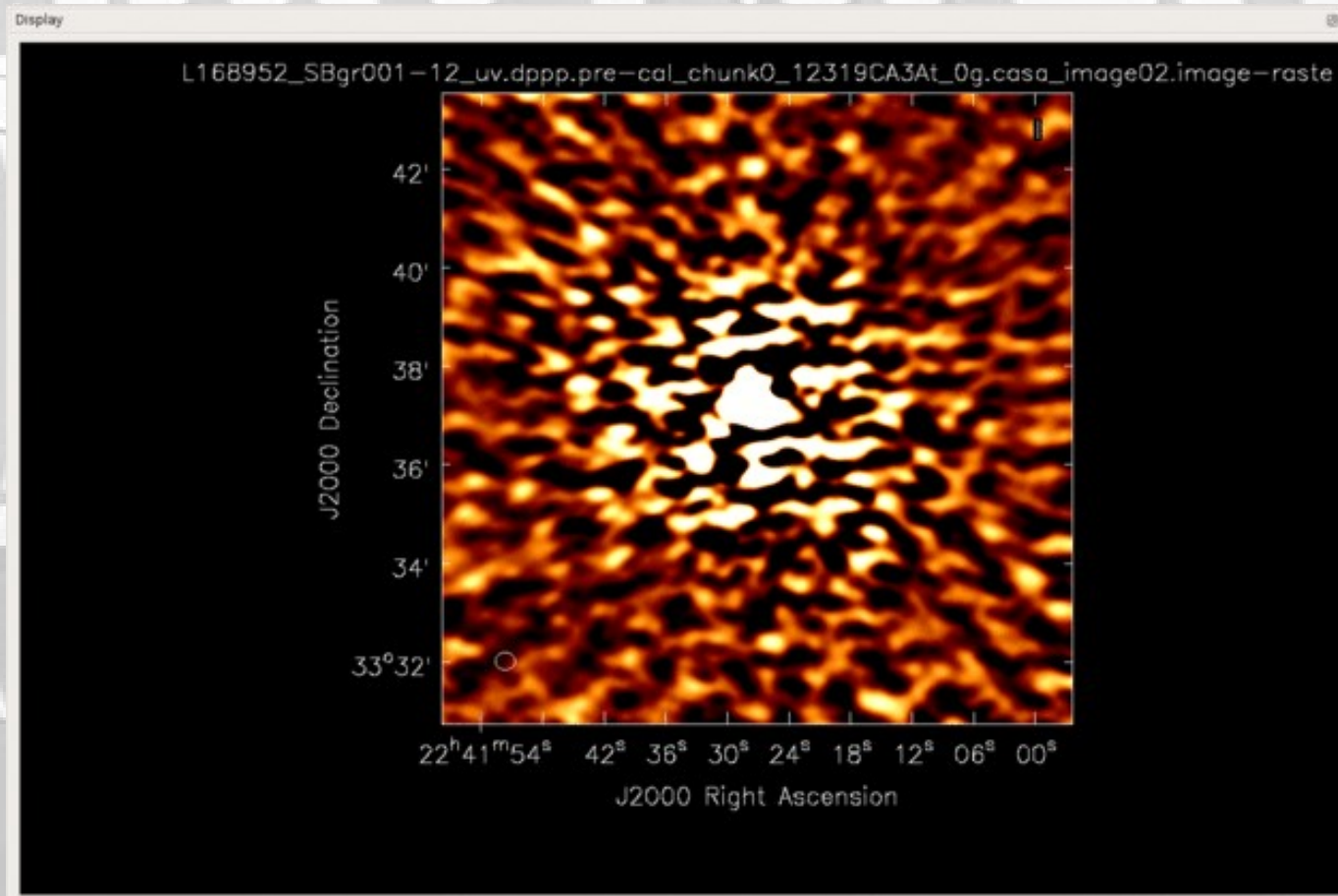




# Let's look how it improves different objects...



# Can we improve the SQ itself using this method?



# Well... not yet.

```
iwan@lof6: /storage/iwan/work/ALLDATA/iwan/images/PCKGO7
Plik Edycja Widok Wyszukiwanie Terminal Pomoc
INFO - factor:parset - Using the following groupings for directions: 1:0
INFO - factor:parset - Self calibrating up to 30 direction(s)
INFO - factor:parset - Processing up to 30 direction(s) in total
INFO - factor:parset - Using up to 30 CPU(s) per node
INFO - factor:parset - Using up to 80.0% of the memory per node for WSClean
INFO - factor:parset - Processing up to 1 direction(s) in parallel per node
INFO - factor:parset - =====
INFO - factor:parset - Working directory is /data/scratch/iwan/factor_run_03_out
INFO - factor:parset - Input MS directory is /data/scratch/iwan/factor_run_03_in
INFO - factor:parset - Working on 104 input files.
INFO - factor - Setting up cluster/node parameters...
INFO - factor - Using cluster setting: "local" (Single node).
INFO - factor - Checking input bands...
INFO - factor - Building local sky model for source avoidance and DDE calibrator selection (if desired)...
INFO - factor:directions - Found 679 sources through thresholding
INFO - factor:directions - Removing sources beyond a radius of 5.54485642773 degrees (corresponding to a diameter of 2.0 * FWHM of the primary beam at 125.486755371 MHz)...
INFO - factor - Setting up directions...
INFO - factor:directions - Reading directions file: /data/scratch/iwan/factor_directions_modified.txt
INFO - factor:directions - Adjusting facets to avoid sources...
INFO - factor:directions - Including target (22h35m59.100, +33d57m31.00) in facet adjustment
INFO - factor - Determining imaging parameters for each direction...
INFO - factor - Processing 1 direction(s) in Group 1
INFO - factor - Processing 1 direction(s) in Group 2
INFO - factor - Processing 1 direction(s) in Group 3
INFO - factor - Processing 1 direction(s) in Group 4
INFO - factor - Processing 1 direction(s) in Group 5
INFO - factor - Processing 1 direction(s) in Group 6
INFO - factor - Processing 1 direction(s) in Group 7
INFO - factor - Processing 1 direction(s) in Group 8
INFO - factor - Processing 1 direction(s) in Group 9
INFO - factor - Processing 1 direction(s) in Group 10
INFO - factor - Processing 1 direction(s) in Group 11
INFO - factor - Processing 1 direction(s) in Group 12
INFO - factor - Processing 1 direction(s) in Group 13
INFO - factor - Processing 1 direction(s) in Group 14
INFO - factor - Processing 1 direction(s) in Group 15
INFO - factor - Processing 1 direction(s) in Group 16
INFO - factor - Processing 1 direction(s) in Group 17
INFO - factor - Processing 1 direction(s) in Group 18
INFO - factor - Processing 1 direction(s) in Group 19
INFO - factor - Processing 1 direction(s) in Group 20
INFO - factor - Processing 1 direction(s) in Group 21
INFO - factor - Processing 1 direction(s) in Group 22
INFO - factor - Processing 1 direction(s) in Group 23
INFO - factor - Processing 1 direction(s) in Group 24
INFO - factor - Processing 1 direction(s) in Group 25
INFO - factor - Processing 1 direction(s) in Group 26
INFO - factor - Processing 1 direction(s) in Group 27
INFO - factor - Processing 1 direction(s) in Group 28
INFO - factor:scheduler - <-- Operation facetselfcal started [direction: facet_patch_598]
log4cpus:ERROR No appenders could be found for logger (LCS.Common.EXCEPTION).
log4cpus:ERROR Please initialize the log4cpus system properly.
```

Additionally, SQ is ~40th on the target list...



# But, keep calm!

- Finally, it will reach the desired field... maybe.
- Re-run factor with only these fields, which really look better
- Re-run whole pipeline using data that haven't been averaged so extensively



**KEEP  
CALM  
AND  
COMMIT  
SUICIDE**

# Thank you for listening.

