

close to operation

Daniel Reverte Payá – GTC (IAC)

Ciemat – June 2018

MEGARA

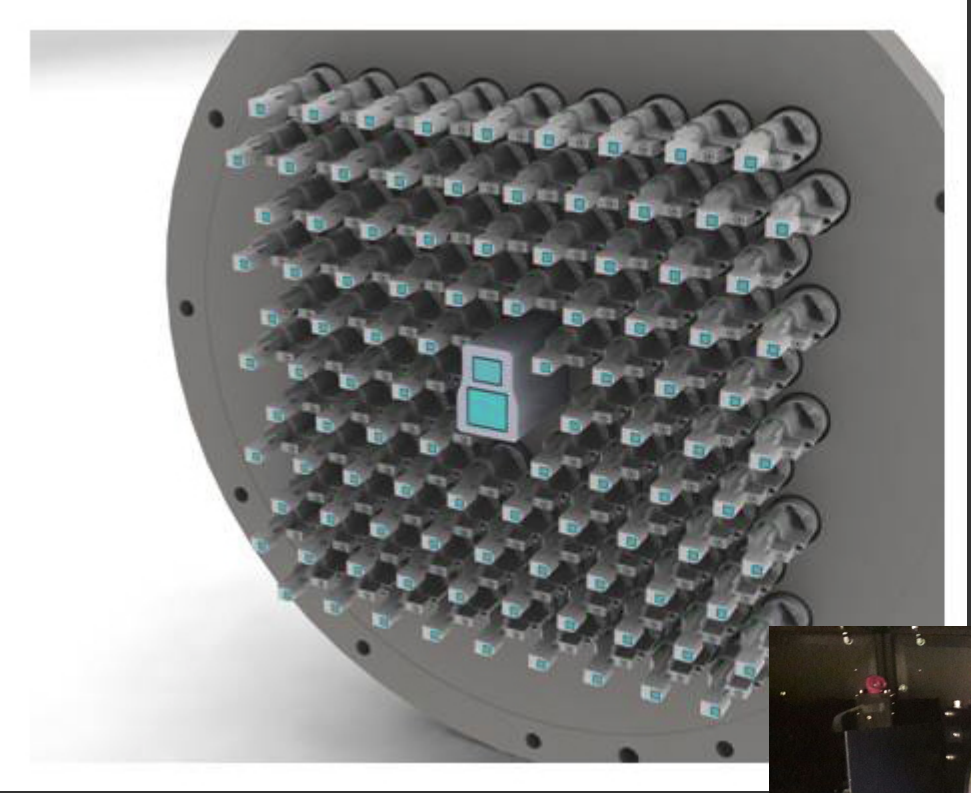
- MEGARA (Multi-Espectrógrafo en GTC de Alta Resolución para Astronomía) designed for the GTC
-> Integral-Field Unit (IFU); and
-> Multi-Object Spectrograph (MOS)

MEGARA

Two modes: IFU and MOS

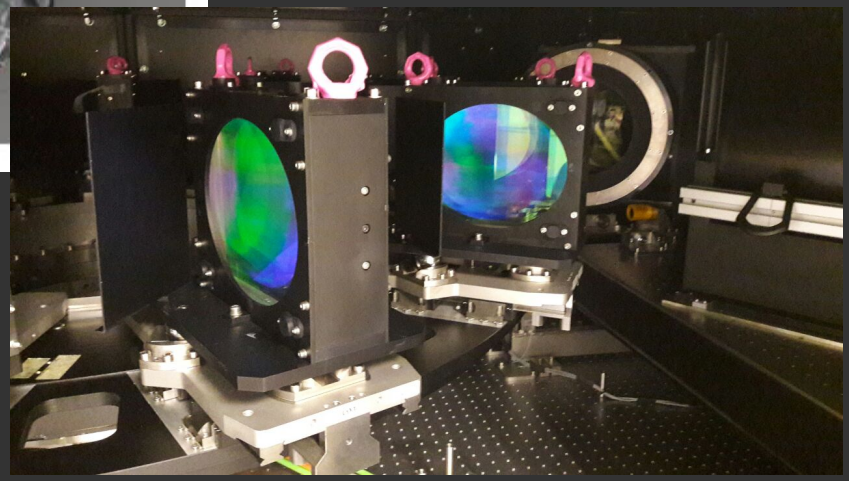
	IFU	MOS
Field of View:	**12.5 x 11.3 arcsec^2**	**3.5 x 3.5 arcmin^2**
Spaxel size:	**0.62 arcsec**	
FWHM sampling:	**3.6 pix**	
LR VPHs:	**R(λ/Δλ) ~ 5500**	
MR VPHs:	**R(λ/Δλ) ~ 12000**	
HR VPHs:	**R(λ/Δλ) ~ 20000**	

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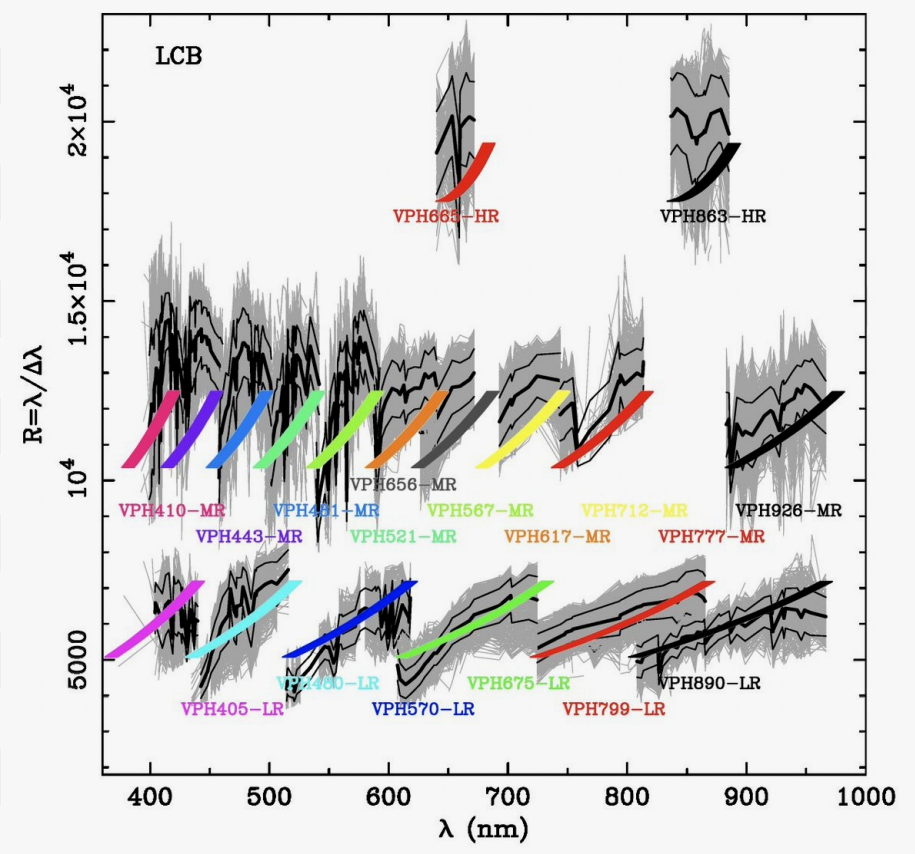
- 92 positioners (patrol area defined) [644 fibres]
- 567 IFU (8 bundles x7 → 56 Sky)

See more on
www.gtc.iac.es/instruments/megara/



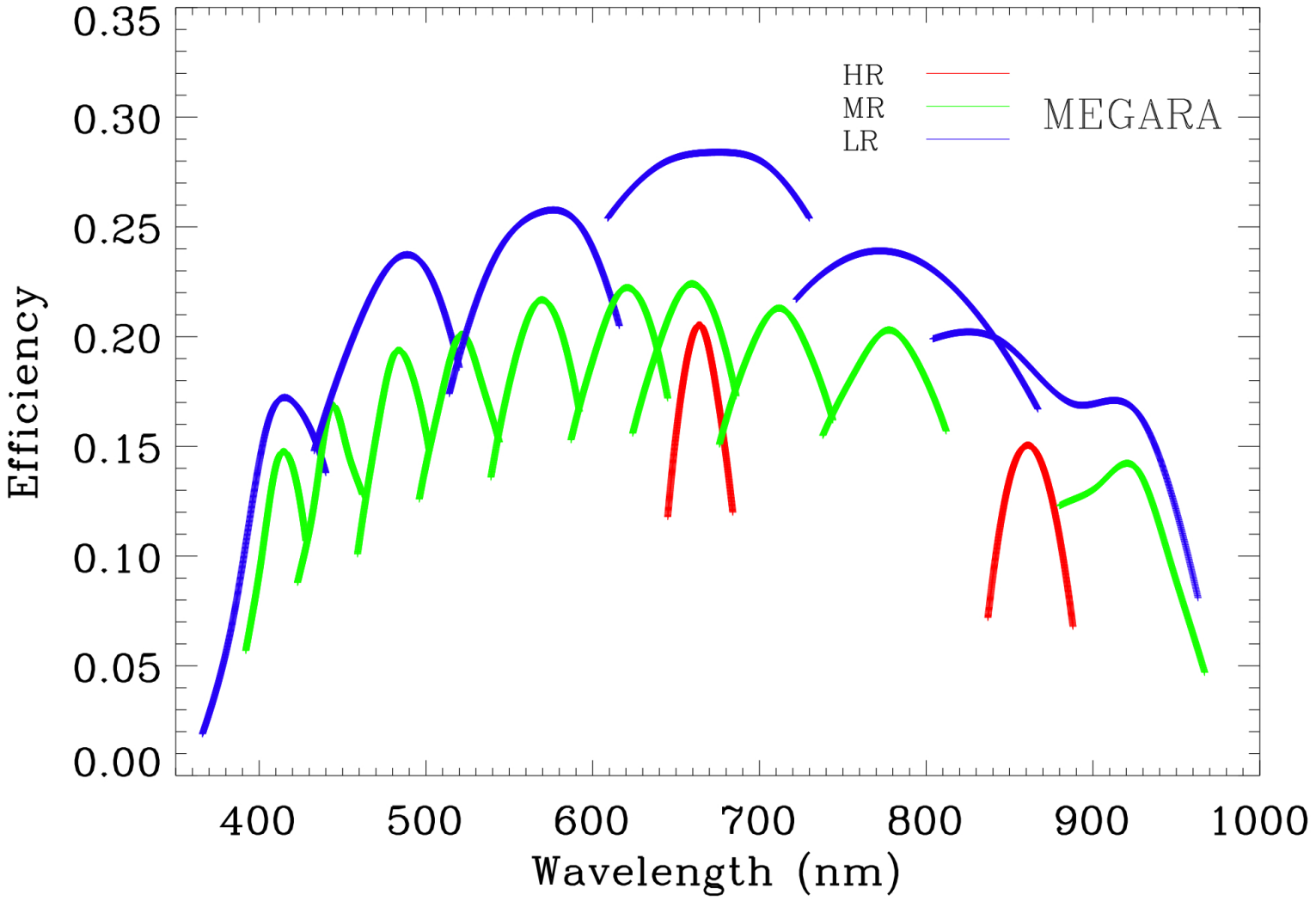
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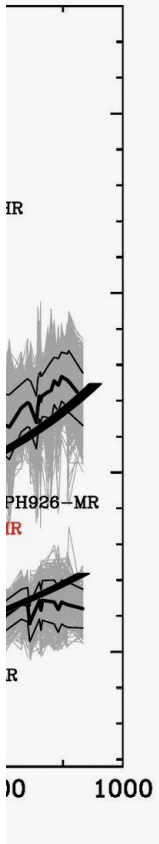
VPH	λmin$_1$ (Å)	λmin (Å)	λc (Å)	λmax (Å)	λmax$_2$ (Å)	Disp (Å/pix)
LR-U	3640,0	3654,32	4025,90	4391,88	4417,33	0,195
LR-B	4278,4	4332,05	4785,32	5199,96	5232,02	0,230
LR-V	5101,1	5143,74	5678,63	6168,19	6206,04	0,271
LR-R	6047,6	6096,54	6729,61	7303,21	7379,88	0,321
LR-I	7166,4	7224,11	7976,31	8640,37	8822,29	0,380
LR-Z	7978,4	8042,74	8873,16	9634,92	9692,58	0,421
MR-U	3911,9	3919,81	4102,87	4282,17	4289,11	0,092
MR-UB	4217,4	4226,38	4429,44	4625,79	4633,65	0,103
MR-B	4575,8	4585,66	4809,46	5025,07	5033,66	0,112
MR-G	4952,2	4963,22	5208,79	5445,00	5454,62	0,126
MR-V	5369,0	5413,11	5664,96	5923,90	5659,56	0,135
MR-VR	5850,2	5894,23	6165,79	6448,52	6468,52	0,148
MR-R	6228,2	6243,10	6560,33	6865,26	6878,27	0,163
MR-RI	6748,9	6764,58	7109,81	7440,85	7454,46	0,172
MR-I	7369,4	7386,53	7765,14	8127,95	8142,75	0,189
MR-Z	8787,9	8810,52	9274,84	9698,97	9740,20	0,222
HR-R	6397,6	6405,61	6602,59	6797,14	6804,87	0,098
HR-I	8358,6	8380,20	8626,01	8882,38	8984,87	0,130



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VPH
LR-U
LR-B
LR-V
LR-R
LR-I
LR-Z
MR-U
MR-UB
MR-B
MR-G
MR-V
MR-VR
MR-R
MR-RI
MR-I
MR-Z
HR-R
HR-I





MEGARA

- Best instrument attached to the best telescope in the world
- Same philosophy, and calibration policy as for OSIRIS
- PHASE III is close to be offered [a helpdesk service for reduction consulting]



PHASE II

- 2008 creation date
- Small database
- Contrained capabilities

- Controlled increase of capabilities
- 6 instruments offered OSIRIS, CanariCam, Hipercam, EMIR, CIRCE and MEGARA

- Natural paths for growing
- New functions based on user experience and feedback
- We listen to recommendations, suggestions, queries...

MEGARA MODES

- Integral Field Unit
- Multi-Object Spectroscopy

Phase 1 constraints:

Allocated time	Seeing	Night Type	Cloud cover	Water Vapour
15 hours	0 arcsec	Any	Any	

To create a new Observing Block select an observing mode:

OSIRIS	CanariCam	EMIR	CIRCE	MEGARA	HiPERCAM
Direct Imaging	Imaging	Imaging	Imaging	IFU Spectroscopy	Imaging
Tunable filter imaging	Spectroscopy	Long Slit Spectroscopy	Polarimetry	MOS Spectroscopy	
Tunable filter Scan	Polarimetry	Long Slit Spectr. Sky			
Long slit spectroscopy	Spectropolarimetry	Multi-obj spectroscopy			
Multi-obj spectroscopy					

MEGARA MODES

- Integral Field Unit
- Multi-Object Spectroscopy

Phase 1 constraints:

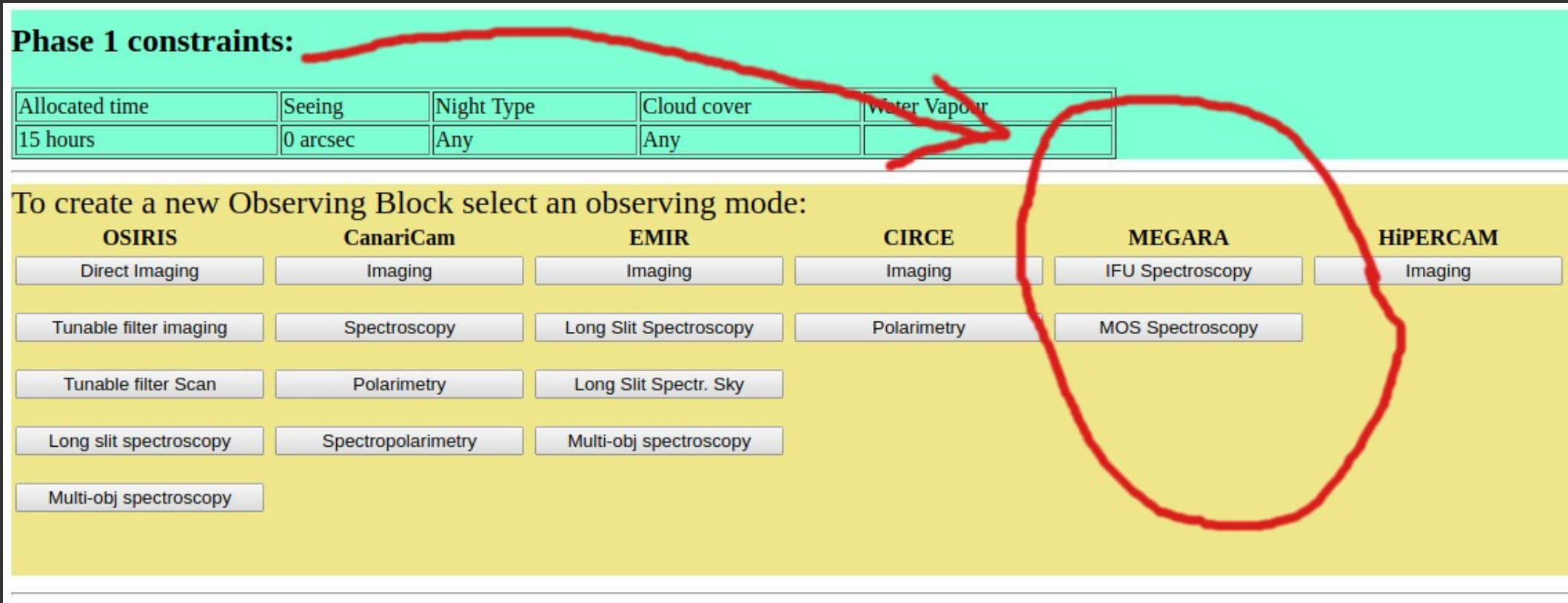
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Long slit spectroscopy	Spectropolarimetry	Multi-obj spectroscopy			
Multi-obj spectroscopy					

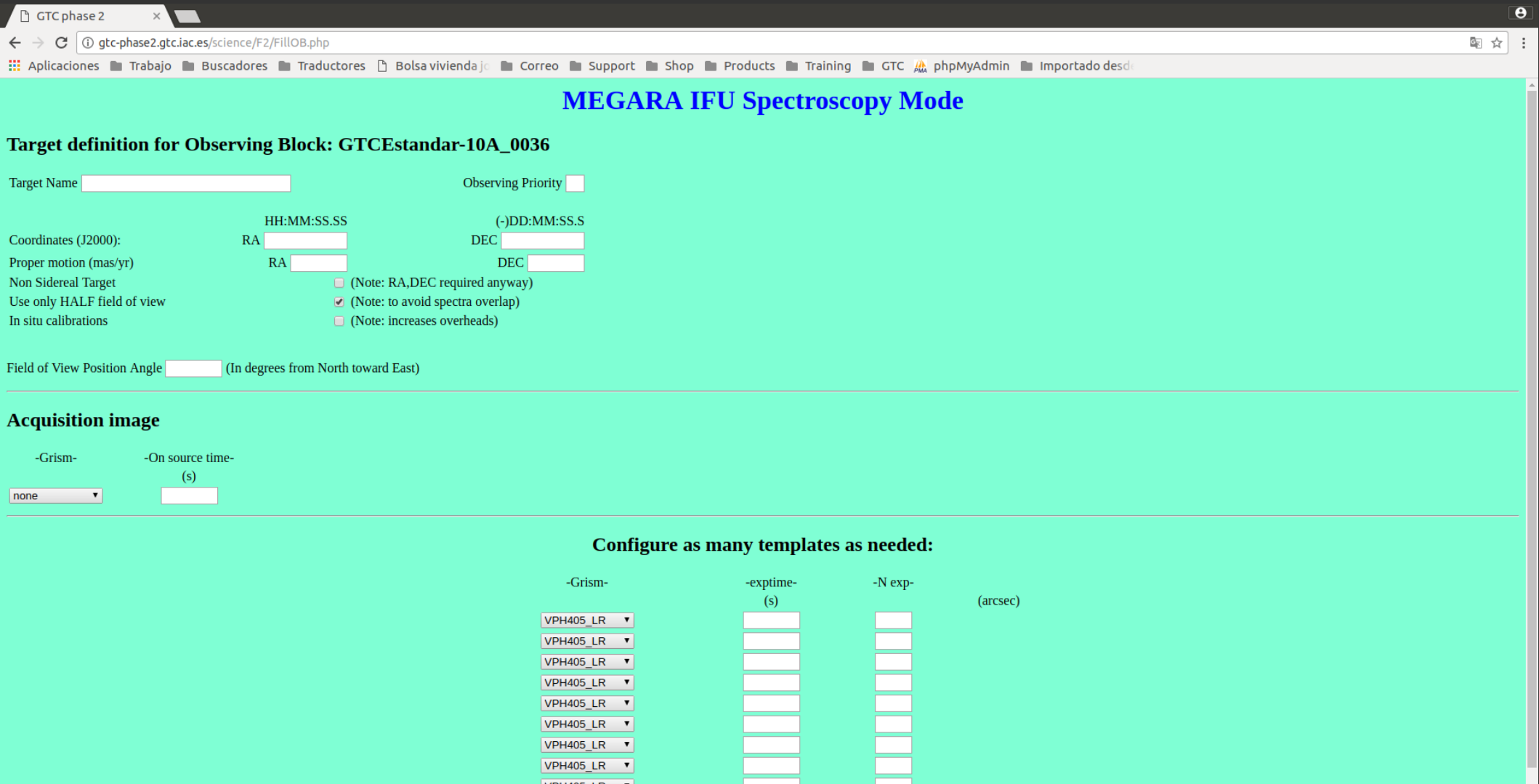
MEGARA MODES

- Integral Field Unit
- Multi-Object Spectroscopy



IFU Observing Block

- Basic Info



IFU Observing Block

- Basic Info

GTC phase 2

gtc-phase2.gtc.iac.es/science/F2/FillOB.php

Aplicaciones Trabajo Buscadores Traductores Bolsa vivienda j Correo Support Shop

MEGARA IFU

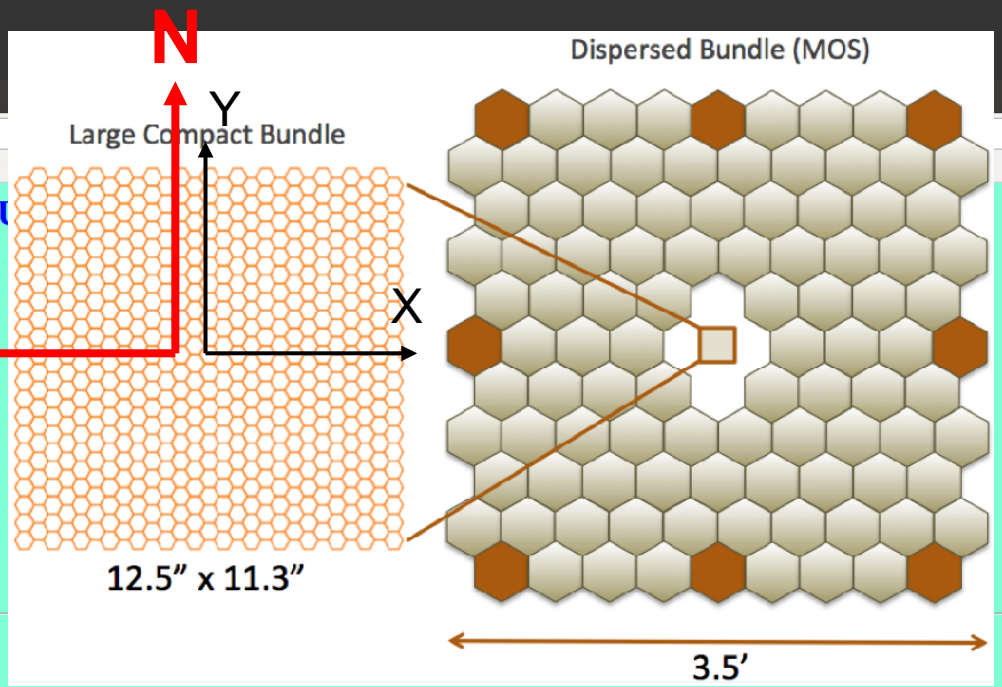
Target definition for Observing Block: GTCEstandar-10A_0036

Target Name Observing Priority

	HH:MM:SS.SS	(-)DD:MM:SS.S
Coordinates (J2000):	RA	DEC
Proper motion (mas/yr)	RA	DEC

Non Sidereal Target (Note: RA,DEC required anyway)
Use only HALF field of view (Note: to avoid spectra overlap)
In situ calibrations (Note: increases overheads)

Field of View Position Angle (In degrees from North toward East)



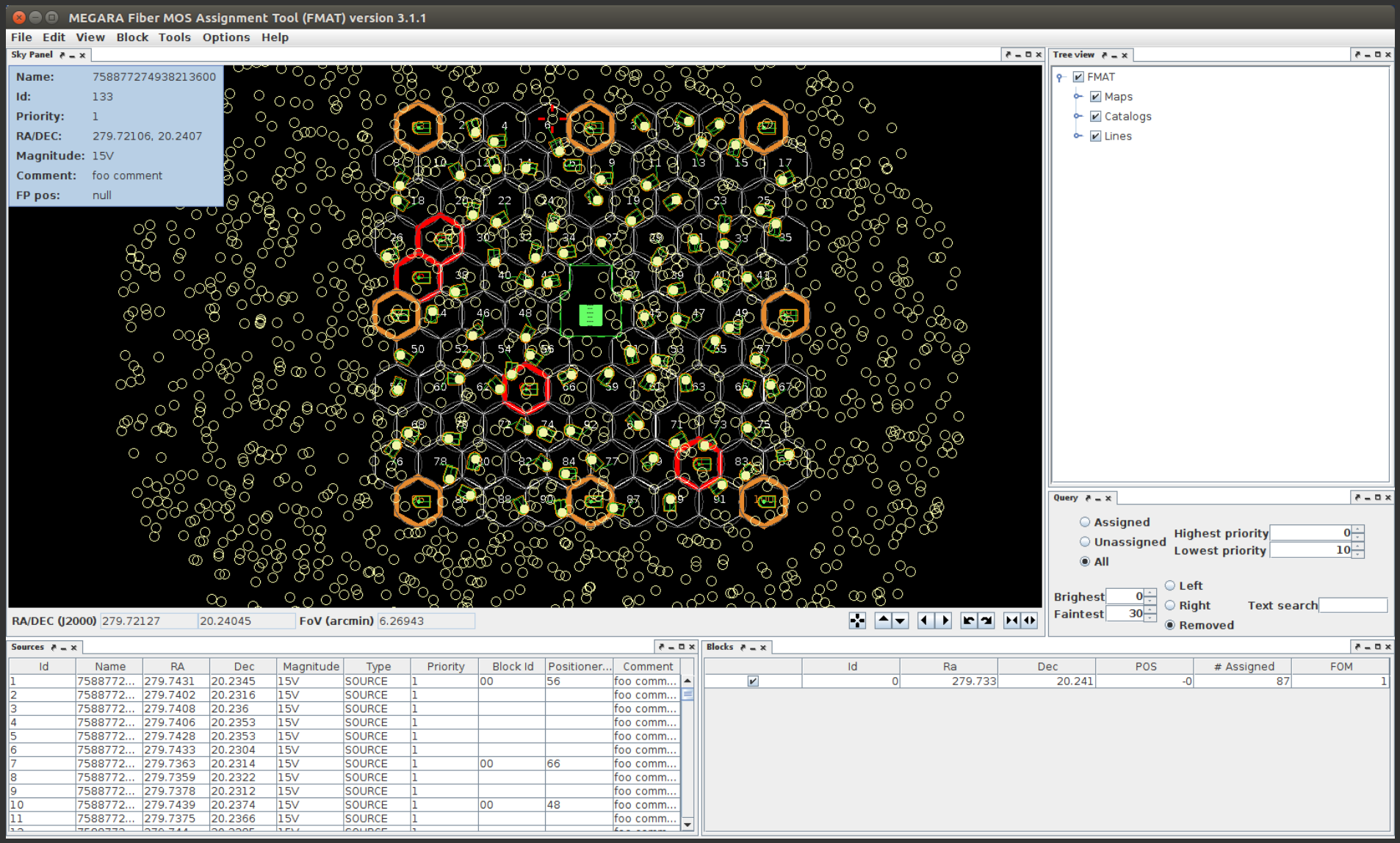
Acquisition image

-Grism-	-On source time- (s)
none	

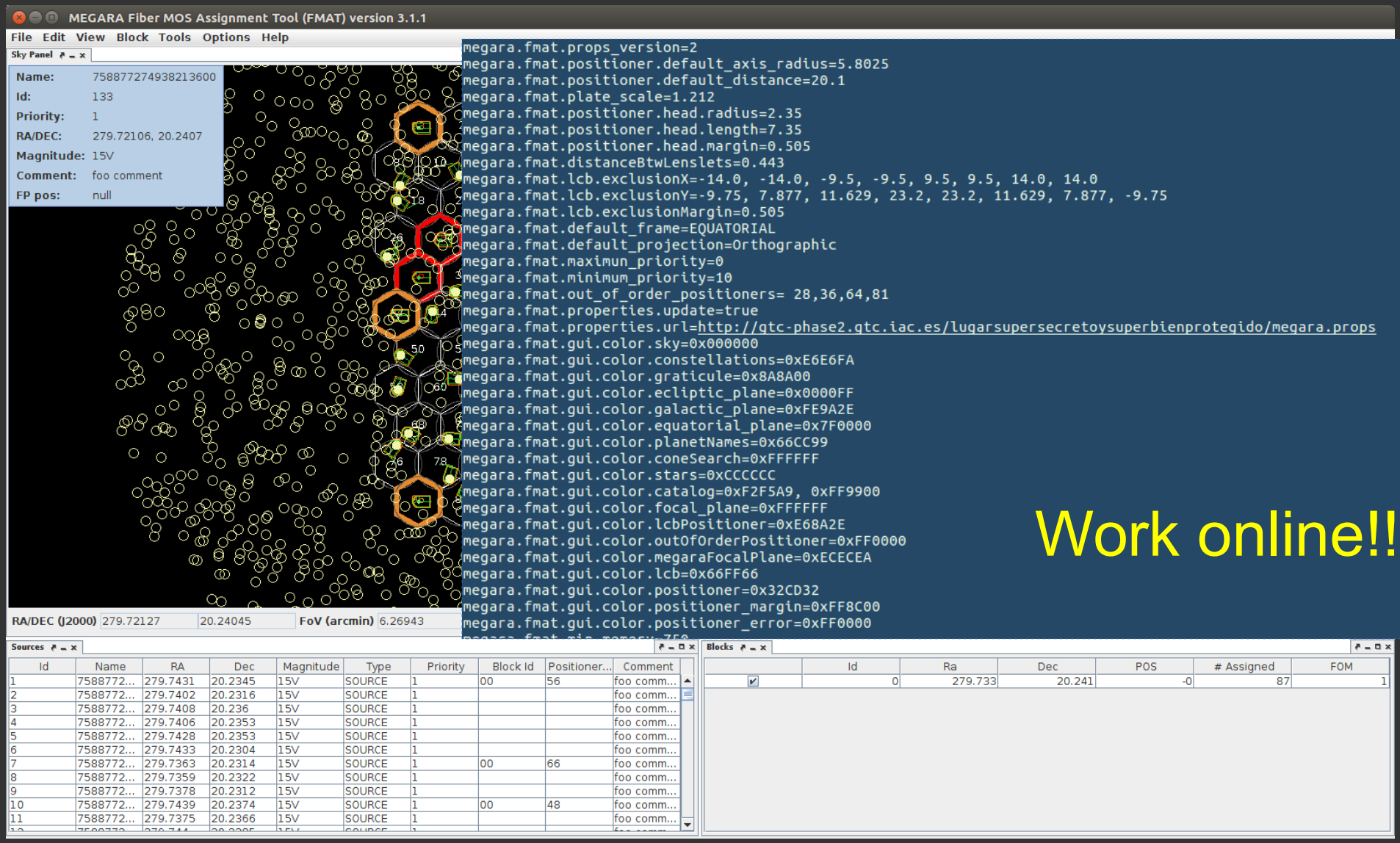
Configure as many templates as needed:

-Grism-	-exptime- (s)	-N exp-	(arcsec)
VPH405_LR			
VPH405_LR			
VPH405_LR			
VPH405_LR			
VPH405_LR			
VPH405_LR			
VPH405_LR			
VPH405_LR			

MOS Tool


MEGARA Fiber MOS Assignment Tool (FMAT) version 3.1.1
File Edit View Block Tools Options Help
Sky Panel
Name: 7588772749382136OO
Id: 133
Priority: 1
RA/DEC: 279.72106, 20.2407
Magnitude: 15V
Comment: foo comment
FP pos: null
RA/DEC (J2000) 279.72127 20.24045 FoV (arcmin) 6.26943
Tree view
FMAT
Maps
Catalogs
Lines
Query
Assigned
Unassigned
All
Highest priority 0
Lowest priority 10
Brighest 0
Faintest 30
Left
Right
Removed
Text search
Sources
Id Name RA Dec Magnitude Type Priority Block Id Positioner... Comment
1 7588772... 279.7431 20.2345 15V SOURCE 1 00 56 foo comm...
2 7588772... 279.7402 20.2316 15V SOURCE 1 foo comm...
3 7588772... 279.7408 20.236 15V SOURCE 1 foo comm...
4 7588772... 279.7406 20.2353 15V SOURCE 1 foo comm...
5 7588772... 279.7428 20.2353 15V SOURCE 1 foo comm...
6 7588772... 279.7433 20.2304 15V SOURCE 1 foo comm...
7 7588772... 279.7363 20.2314 15V SOURCE 1 00 66 foo comm...
8 7588772... 279.7359 20.2322 15V SOURCE 1 foo comm...
9 7588772... 279.7378 20.2312 15V SOURCE 1 foo comm...
10 7588772... 279.7439 20.2374 15V SOURCE 1 00 48 foo comm...
11 7588772... 279.7375 20.2366 15V SOURCE 1 foo comm...
Blocks
Id Ra Dec POS # Assigned FOM
0 279.733 20.241 -0 87 1

MOS Tool



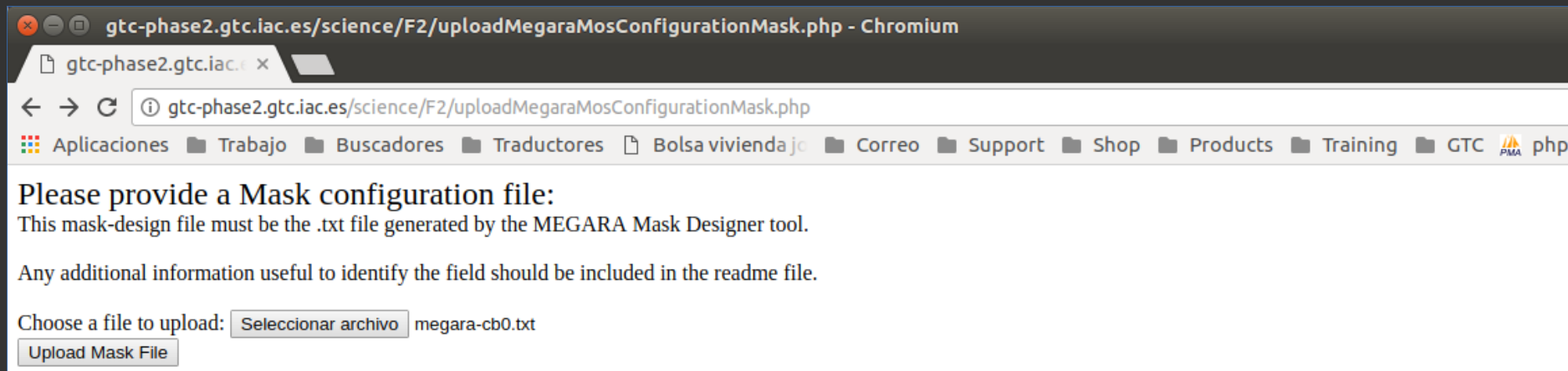
Work online!!

Designing an appropiate MOS Observation

- At least 3 fiduciary stars
- Devote enough fibers for sky estimate (ETC)
- Split total exposure time according to:
  - ✓ Brightness of the sources (faintness and similarity between them)
  - ✓ Magnitude of the brightest fiduciary (to avoid saturation)

MOS Observing Block

- *Filename.meg* (usually megara-cb0.meg)



MOS Observing Block

- *Filename.meg* (usually megara-cb0.meg)

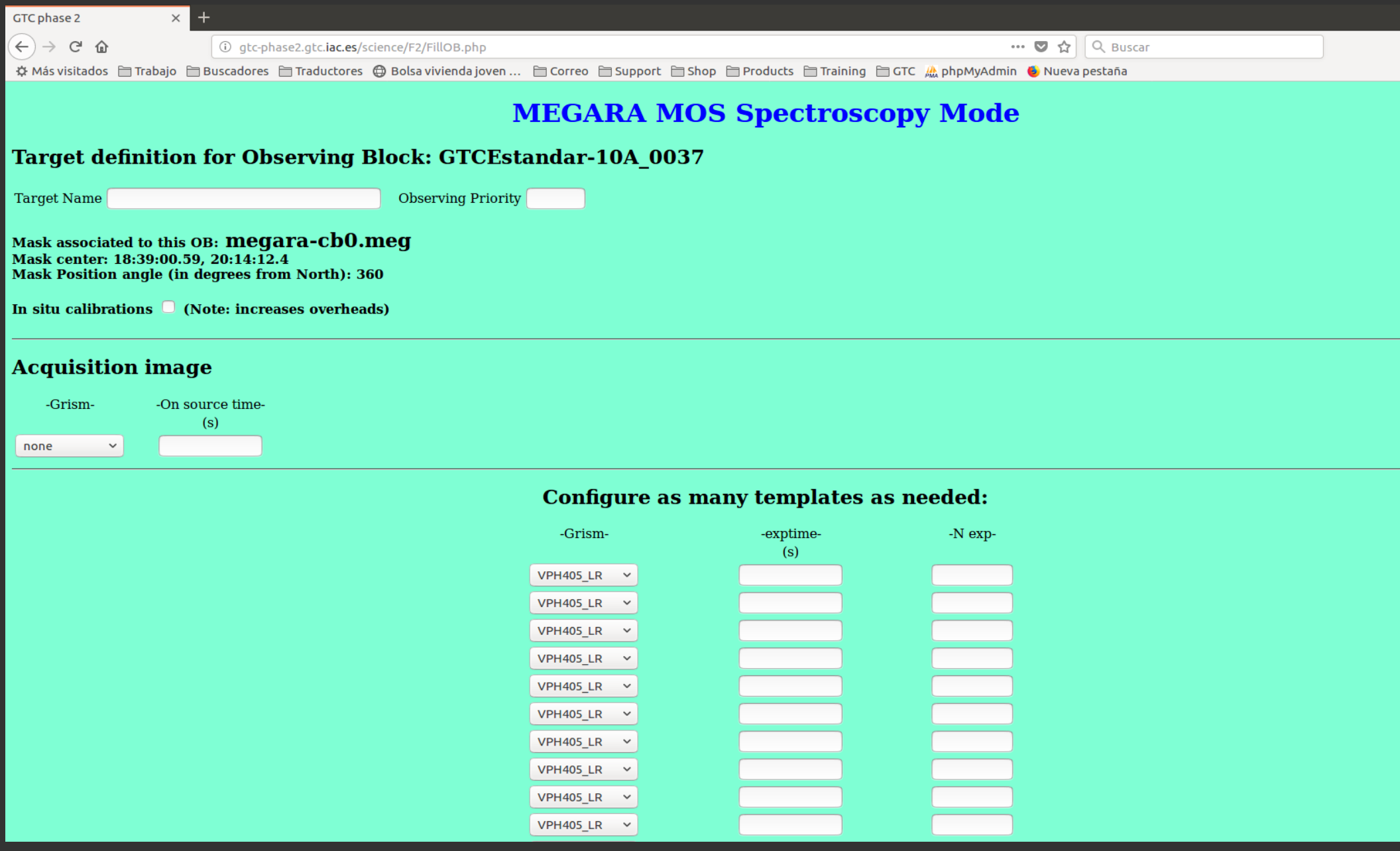


MOS Observing Block

- *Filename.meg* (usually megara-cb0.meg)



MOS Observing Block



MOS Observing Block

During this summer we go to learn if we can do it like this

1.- Guide at Location [remove pointing uncertainty in the vicinity of the target through accurate stellar catalogs]

2.- Pointing.

3.- MOS fine acquisition (depends on Acq_Time)

MOS Observing Block

If not, then

1.- IFU acquisition image at the brightest fiduciary within the catalog provided (meg)

2.- Offset (Target MODE) where:

$$\Delta RA\ (") = [RA_{Center} - RA_{Fiduciary}] \cdot \cos(Dec)$$

$$\Delta Dec\ (") = Dec_{Center} - Dec_{Fiduciary}$$

3.- MOS fine acquisition

Summarizing

- Still a bit of work (in progress) to be ready
- Phase-2 easy to fill
- Phase-3 first contacts already in progress
- Contact us for any question / suggestion / improvement
- And, please, make use of Phase-2_SIMULATOR (http://gtc-phase2.gtc.iac.es/science/F2/ instructions at http://gtc-phase2.gtc.iac.es/science/F2/simulator.html

Thanks

Regards to all ESTALLIDOS