

# ESO-VST science operations

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**(on behalf of the ESO Survey Time)**

# Status of ESO-VST operations in 2014

- ❖ **stable state reached**
- ❖ **modus operandi: no night astronomer, operated by telescope/instrument operator, no Visitor Mode (exception some GTO)**
- ❖ **total number of successful OB executions (hours) per month increased from ~60 hrs to 85 hrs due to optimizing operations (Image Analysis, R/O offset parallelization)**
- ❖ **Main customers: public surveys**

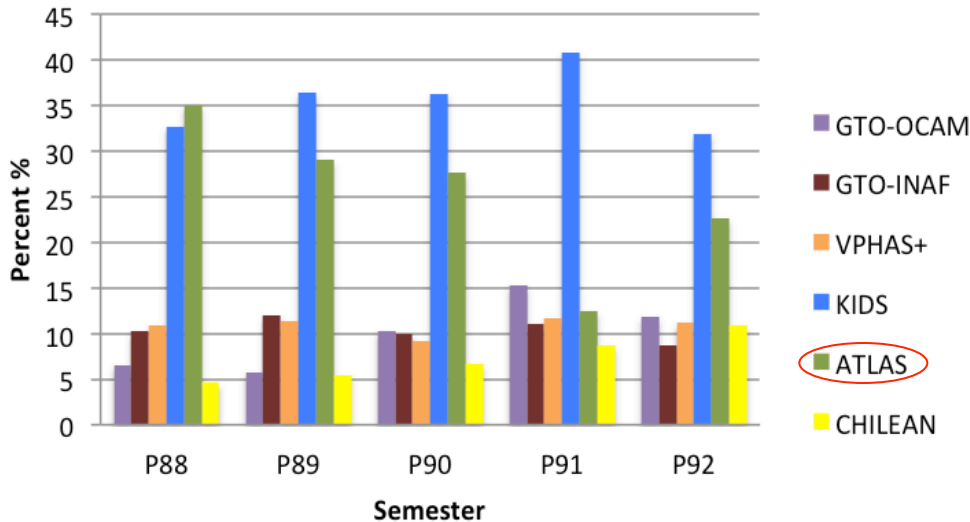
**ATLAS: 1306 hrs**

**KIDS: 3225 hrs**

**VPHAS+: 899 hrs**

# VST Time Distribution (1)

VST time scheduled



## GTO-INAF:

Years 1,2,3,4:	10%
Years 5,6:	15%
Years 7,8,9,10:	20%

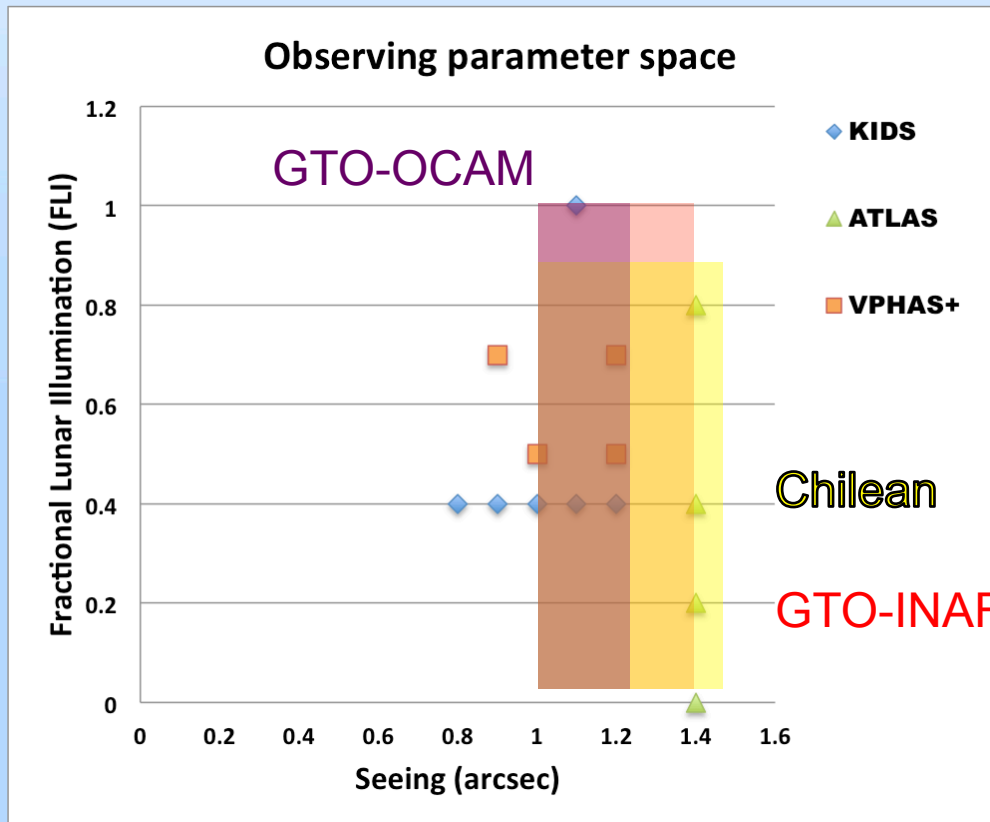
GTO/OmegaCAM: eligible 20%  
but decreased for first years

Chilean: 10%

**All time for ATLAS is scheduled now**

# VST Time Distribution (2)

## CLEAR SKY

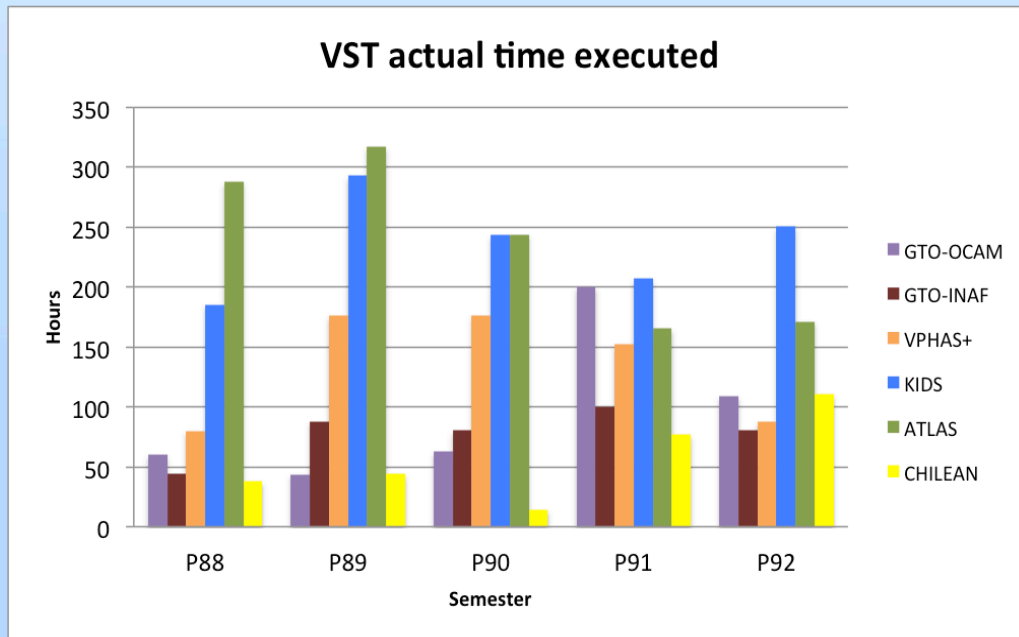


GTO/OmegaCAM:  
50 % for THN conditions

Chilean: <10 % for THN

# VST Time Distribution (3)

**Actual science time** available: ~1150hrs per semester  
(after subtracting weather loss, technical loss, Idle)



## Repetitions:

17% for KIDS

24% for ATLAS (incl. filling,  
13% w/o)

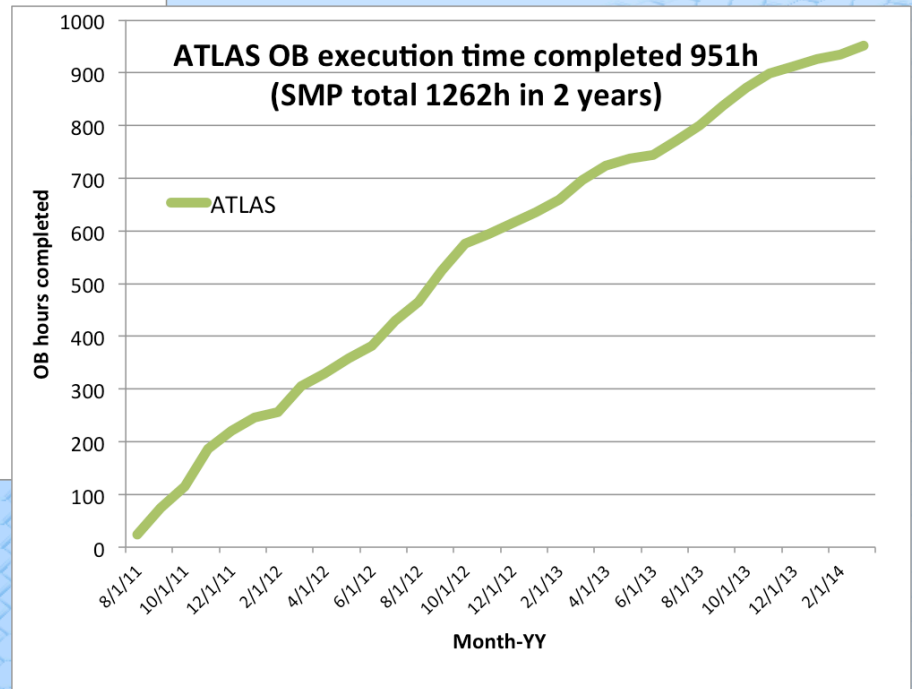
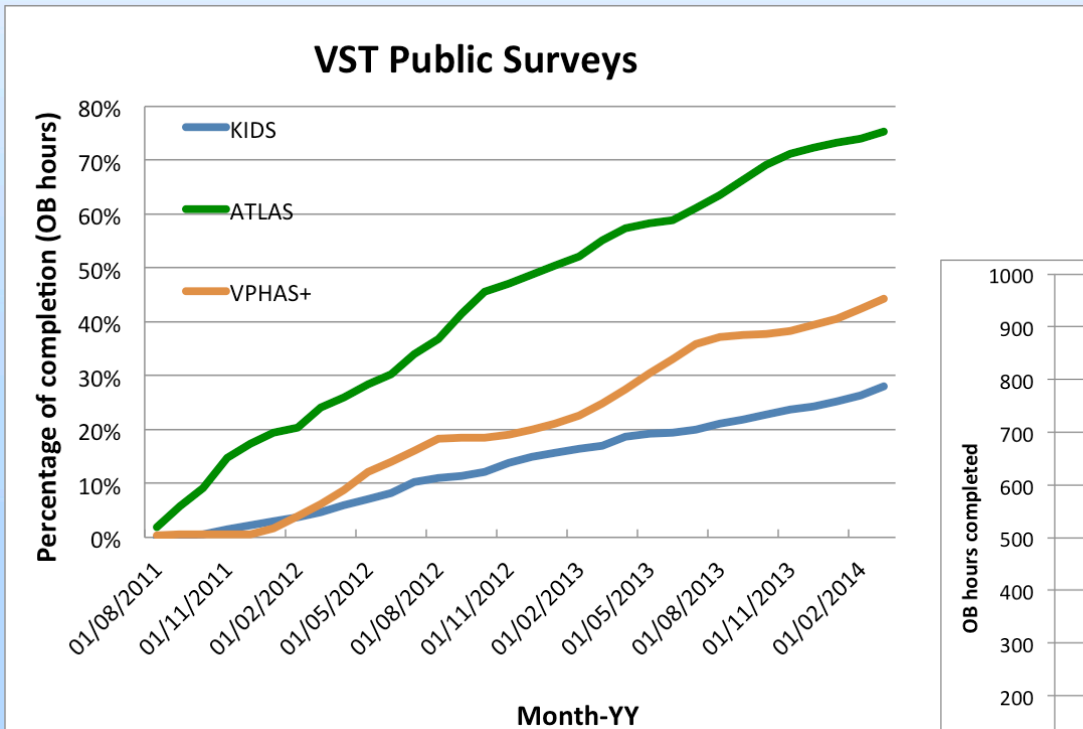
24% for VPHAS+ (incl. filling,  
21% w/o)

Filling science: check data!!

**Drop of PS** execution time from  
65% to 48%

due to more GTO and Chilean

# VST – ATLAS survey progress



**ATLAS completed: ~Jul. 2015**

# VST-OmegaCAM Quality Control (1)

## At the telescope:

Date	OBid	Filter	ImaQuality				Ellipticity		N_El	MeanIQ	IQ_degr		MeanELL(%)		msg	CLASSIFICATION																				
			Chip65	Chip76	Chip85	Chip96	Chip65	Chip76			Ima	OB/F	Ima	OB/F		Ima	OB/F	Se	ID	ME	Ai	MD	FL	FINAL												
....																																				
2013-02-18T01:04:04	768515	g_SDSS	1.22",14	1.22",13	1.22",12	1.31",14			0	1.24"	--	3.4	-	12.8	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2013-02-18T01:09:48	768515	g_SDSS	1.27",13	1.27",12	1.29",13	1.34",12			0	1.29"	--	1.5	-	12.3	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2013-02-18T01:15:33	768515	g_SDSS	1.32",10	1.28",12	1.31",14	1.42",14			0	1.34"	--	7.1	-	11.9	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2013-02-18T01:21:16	768515	g_SDSS	1.23",8	1.23",9	1.22",9	1.22",11			0	1.23"	1.27"	0.7	2.6	9.4	11.7		A	A	B	A	A	A	A												B	

- ❖ “QC0” based on pipeline reduction of 8 CCDs
- ❖ E.g. Image quality variation over FOV:

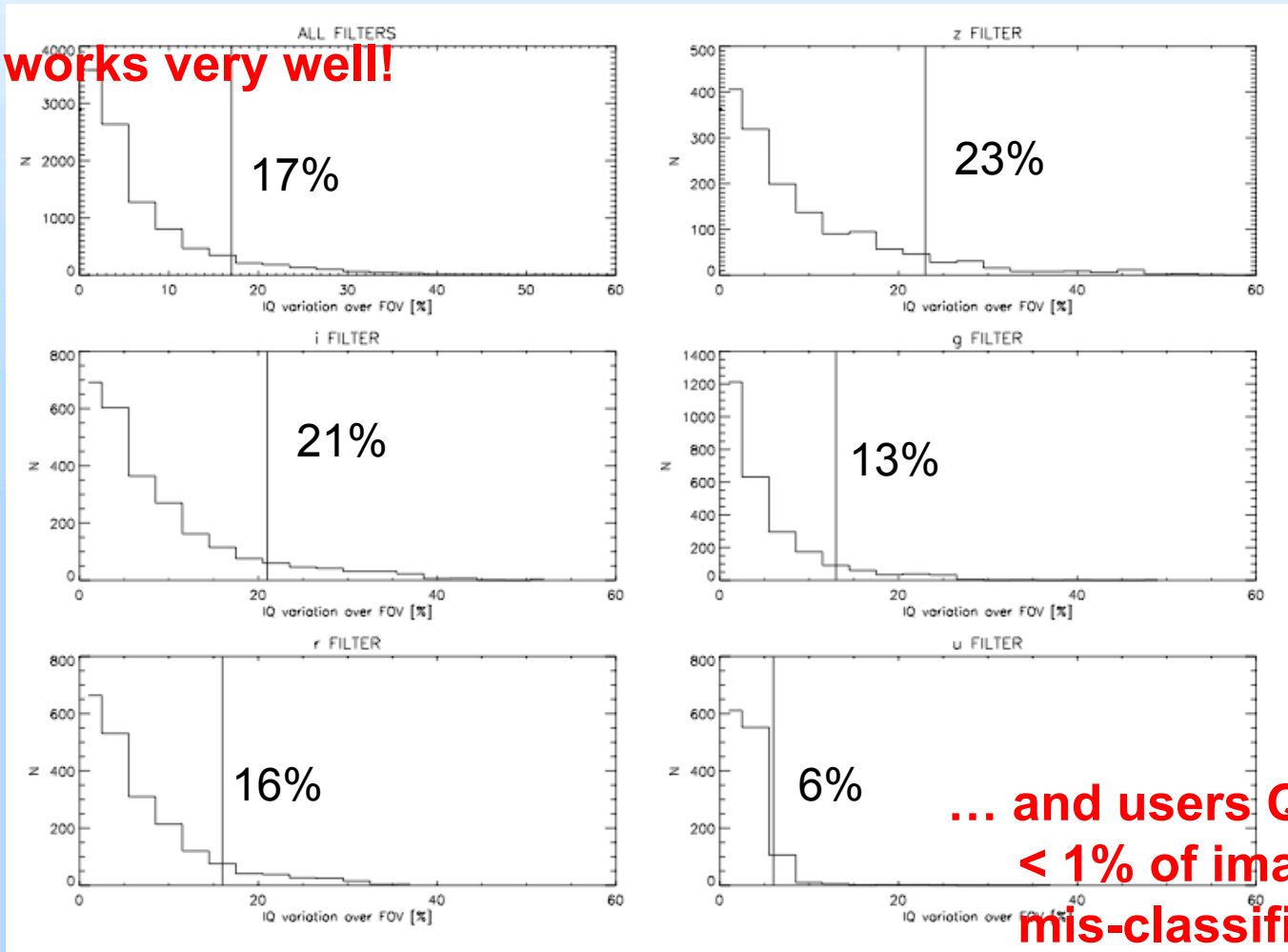
$$\left( \text{FWHM}_{\text{corner}} - \text{FWHM}_{\text{center}} \right) / \text{mean FWHM}$$

must be < 25%

- ❖ No further systematic science data quality control at ESO Garching (in Garching: only reduction of calibrations for instrument health check)

# VST-OmegaCAM Quality Control (2)

**QC0 works very well!**



**... and users QC shows  
 < 1% of images were  
 mis-classified**



# VST-OmegaCAM Quality Control (3)

In Garching: no science data reduction only calibs observations for “Health Check”

The screenshot shows the 'Health Check monitor' interface for the OMEGACAM trending system. The main heading is 'HEALTH CHECK report'. It includes a navigation menu on the left with categories like 'HealthCheck Monitor', 'ALL INSTRUMENTS', 'OmegaCAM:', 'detector', 'flats', 'standards', and 'image quality'. The main content area displays a table of reports for various dates from 2014-04-06 to 2014-04-12, with columns for 'DATE\*', 'Product quality', and 'no OPSLOG data'. Below the table, there are two line graphs: 'level\_AVG' (Average level) and 'level\_ALL' (All levels), both plotted in ADU (Analog-to-Digital Units) over time. The 'level\_AVG' graph shows a stable trend around 250-300 ADU, while the 'level\_ALL' graph shows a wider range of values between 200 and 600 ADU. The interface also includes a sidebar with various monitoring options and a footer with international flags.

Daily health checks with ultrastable (1%) FF lamp

# VST-OmegaCAM Quality Control (3)

## In Garching : Calchecker



mirror sites: [PL](#) (internal link) [HQ](#) [?](#)

### Calibration completeness monitor

[all links are internal] [page auto-refreshes after 300 sec] [stop | on] [press Ctrl+Shift+R to enforce refresh of "ago" time information]

**CAL** | [HC](#) | [refs](#) | [QC](#)

**CALCHECKER**

[HOME](#) | [HELP](#)

[ALL INSTRUMENTS](#)

**UT1**

- [CRIRES](#)
- [FORS2](#)
- [KMOS](#)

**UT2**

- [FLAMES/GIRAFFE](#)
- [UVES&FLAMES/UVES](#)

**UT3**

- [VIMOS](#)
- [X-SHOOTER](#)
- [VISIR \(out of ops\)](#)

**UT4**

- [HAWK-I](#)
- [NACO \(out of ops\)](#)
- [SINFONI](#)

**VLTI**

- [AMBER](#)
- [MIDI](#)

**Survey Cameras**

- [OMEGACAM](#)
- [VIRCAM](#)

**QC links:**

- [QC home](#)
- [Cal Checker](#)
- [Health Checks](#)
- [Reference Frames](#)

[QC1 database](#)

**CAL OMEGACAM calChecker: calibration completeness monitor**

Last update: 2014-04-13T20:41:33 (UT) (0d 00h:12m ago) ✓ [?](#) Paranal date\*: 2014-04-12 [?](#) server: [www.eso.org](#) [HQ](#) [HELP](#) [ASSC](#)

Last header: OMEGA\_2014-04-13T12:25:15.484.hdr ✓ transfer ✓ ngas [?](#) \*Date on this monitor changes at 21:00 UT. Refresh frequency: 1/2hr day and night

**General news:** Long-term calibrations and maintenance [complete over](#)

**OMEGACAM news:** all long-term calibrations within validity range

**HC** | [analyze ISSUES](#) | [HELP](#) | [Q&A](#) | [ASSOC-RULES](#) | [history...](#) | [contact](#) | [DataTransferMonitor](#) | [BandWidth](#)

science  cal4cal [?](#) Product availability depends on the data transfer to Garching and the archive access there (check the "trans

DATE* <a href="#">?</a>	2014-04-06	2014-04-07	2014-04-08	2014-04-09	2014-04-10	2014-04-11	2014-04-12	daytime calibs:	LOST?	Calibration action?	<a href="#">?</a> Set
<small>(color if science data acquired)</small>	SM 75 <a href="#">report</a>   <a href="#">NLT</a>	SM 112 <a href="#">report</a>   <a href="#">NLT</a>	SM 123 <a href="#">report</a>   <a href="#">NLT</a>	SM 85 <a href="#">report</a>   <a href="#">NLT</a>	SM 169 <a href="#">report</a>   <a href="#">NLT</a>	SM 39 <a href="#">report</a>   <a href="#">NLT</a>	SM 38 <a href="#">report</a>   <a href="#">NLT</a>	finished 12:25UT	<small>[may require OB grade review]</small>	<small>[take these data types ...]</small>	<small>... fo</small>
<b>P...</b> Product quality: <a href="#">?</a>	✓ products	✓ products	✓ products	✓ products	products	products	products				
<b>Data types:</b>	<b>Setup:</b>										
<a href="#">SCIENCE</a>	H_ALPHA	ok					ok <small>analyzed: [1]</small>	ok			<a href="#">all ok</a>
	NB_659	ok	ok			ok <small>analyzed: [2]</small>					<a href="#">all ok</a>
	g_SDSS	ok	ok	ok	ok	ok					<a href="#">all ok</a>
	i_SDSS	ok	ok	ok		ok		ok			<a href="#">all ok</a>
	r_SDSS	ok	ok	ok	ok	ok	ok	ok			<a href="#">all ok</a>
	u_SDSS		ok	ok		ok					<a href="#">all ok</a>
	z_SDSS					ok	ok				<a href="#">all ok</a>

**ANALYSIS NOTES:**

# VST-OmegaCAM issues and improvements (1)

- ❖ **Straylight:** reflection effects from the moon  
 → Baffling installed (Jan 2014 1<sup>st</sup> part, Apr 2014 2<sup>nd</sup> baffle set), recent set had problems with new reflections, solution: adhesive velvet tissue put on anodized surfaces
- ❖ **Frequent telescope jumps:** → cause identified, slight tilt of the telescope axis drive such that oil film has variable thickness → friction! Partly solution: put weights
- ❖ **ADC not working:** → cause identified, prisms incorrectly glued together, run without ADC
- ❖ **Optimize Interaction with IA:** → overheads for IA acquisition will be reduced by a new software “automatic IA star” detection.

# VST-OmegaCAM issues and improvements (2)

- ❖ **Operations:** read-out and preset could not be executed in parallel → software modifications implemented and parallelization realized (ATLAS concatenations much faster!)
- ❖ **Underpopulated queues** for THN, FLI = 0.9-1.0, seeing >1.5" (40-50hrs per semester !) → possible solution: allow open time proposals, TBD at the next Public Survey Panel meeting

# THANK YOU!

