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 <u>successful</u> OB executions (hours) per month increased from ~60 hrs to 85 hrs due to optimizing operations (Image Analysis, R/O offset parallelization)**
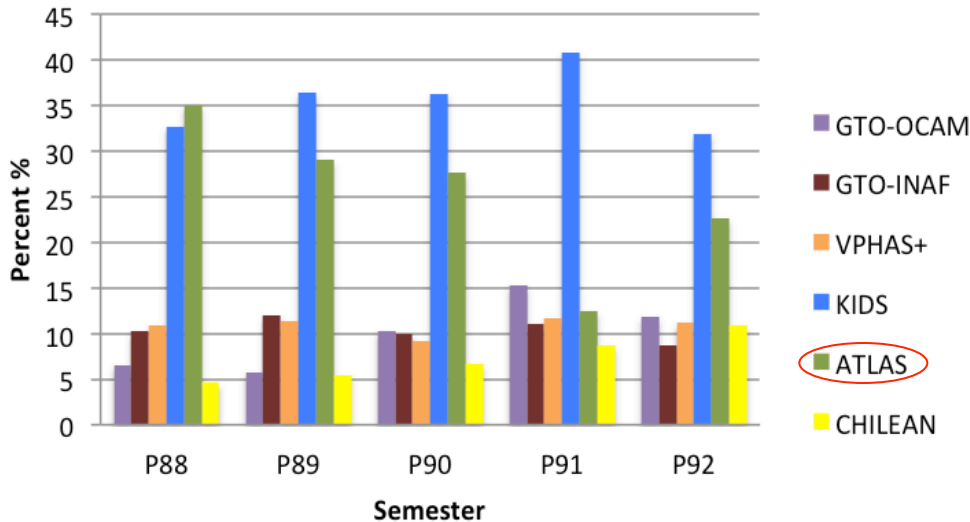
- ❖ **Main customers: public surveys**

  ATLAS: 1306 hrs

  KIDS: 3225 hrs

  VPHAS+: 899 hrs

VST Time Distribution (1)

GTO-INAF:

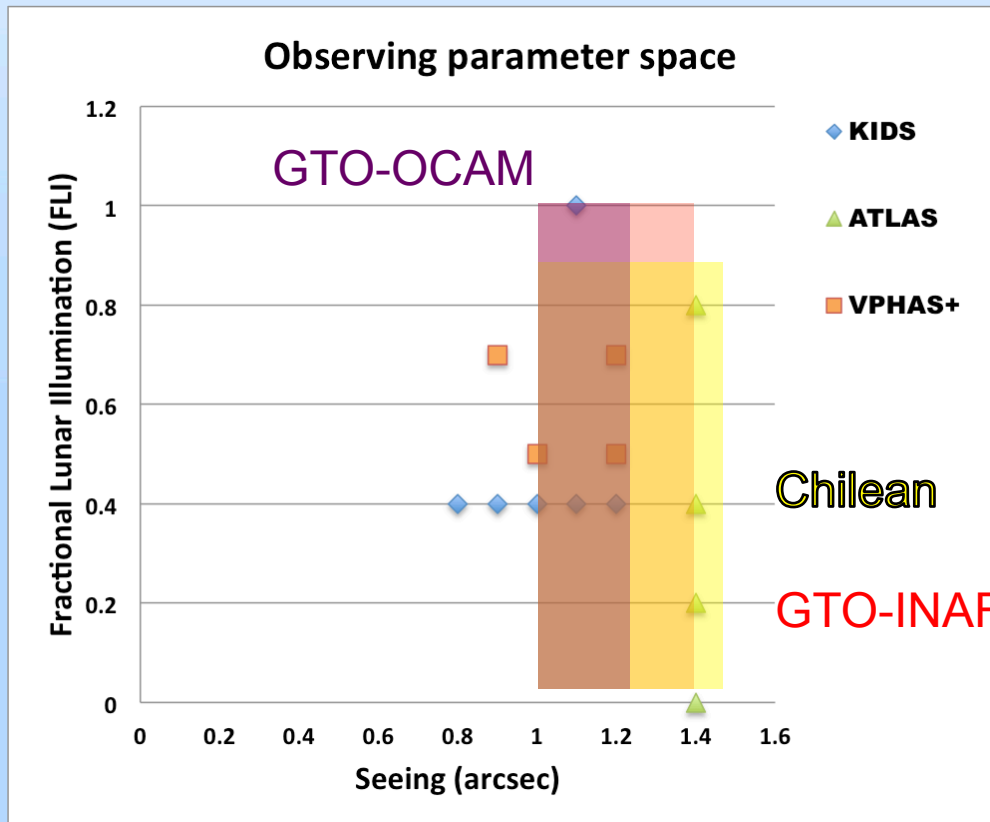|	
Years 1,2,3,4:	10%
Years 5,6:	15%
Years 7,8,9,10:	20%

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

Chilean: 10%

All time for ATLAS is scheduled now

VST Time Distribution (2)

CLEAR SKY

Observing parameter space

KIDS • (blue diamond)
ATLAS ▲ (green triangle)
VPHAS+ ■ (orange square)

GTO-OCAM, Chilean, GTO-INAF regions shown.

Y-axis: Fractional Lunar Illumination (FLI)
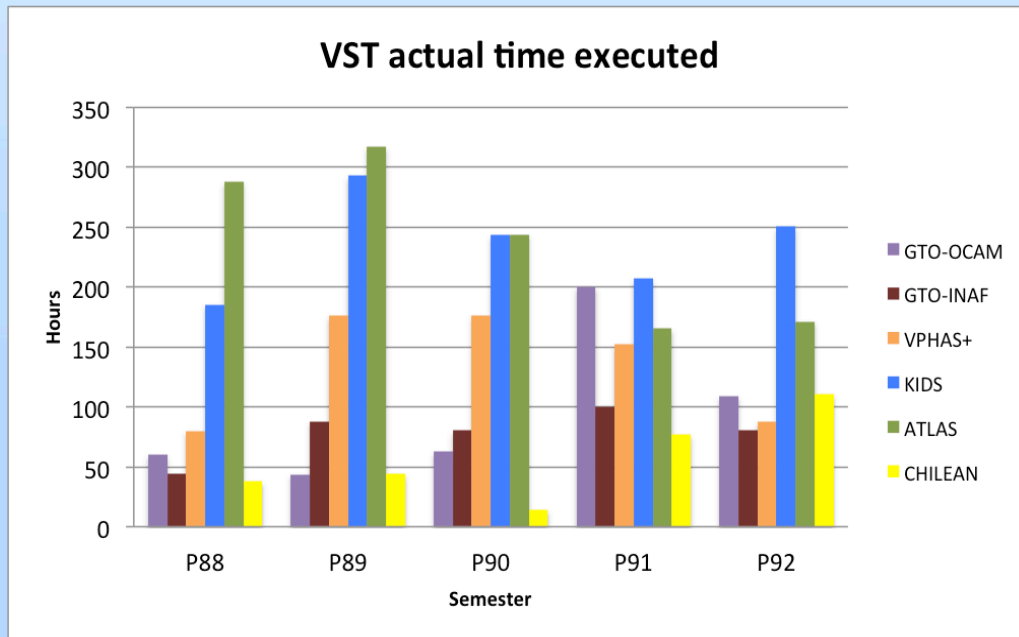X-axis: Seeing (arcsec)

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)

VST actual time executed

Legend:
- GTO-OCAM
- GTO-INAF
- VPHAS+
- KIDS
- ATLAS
- CHILEAN

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
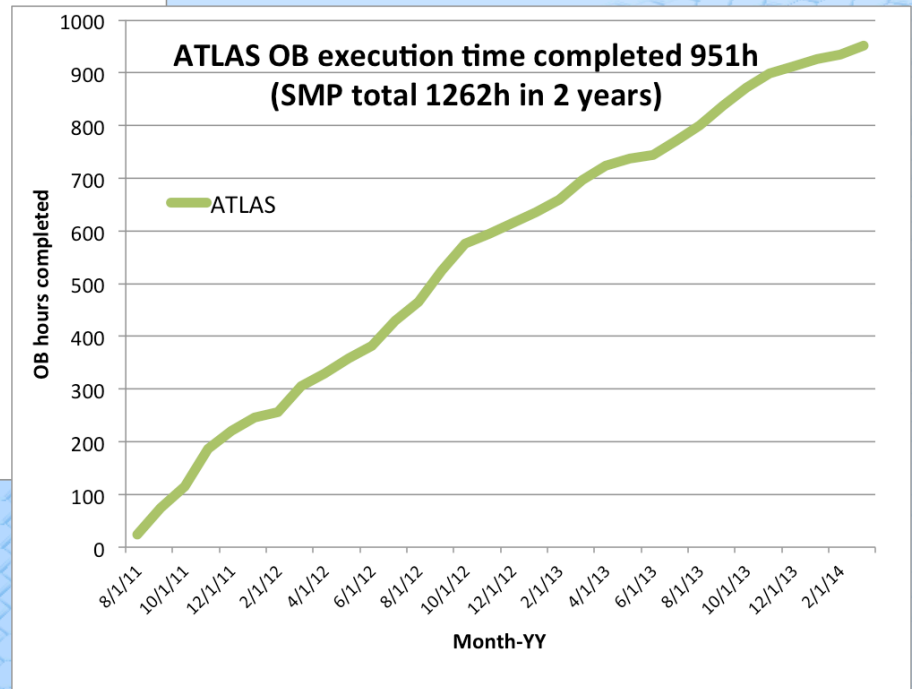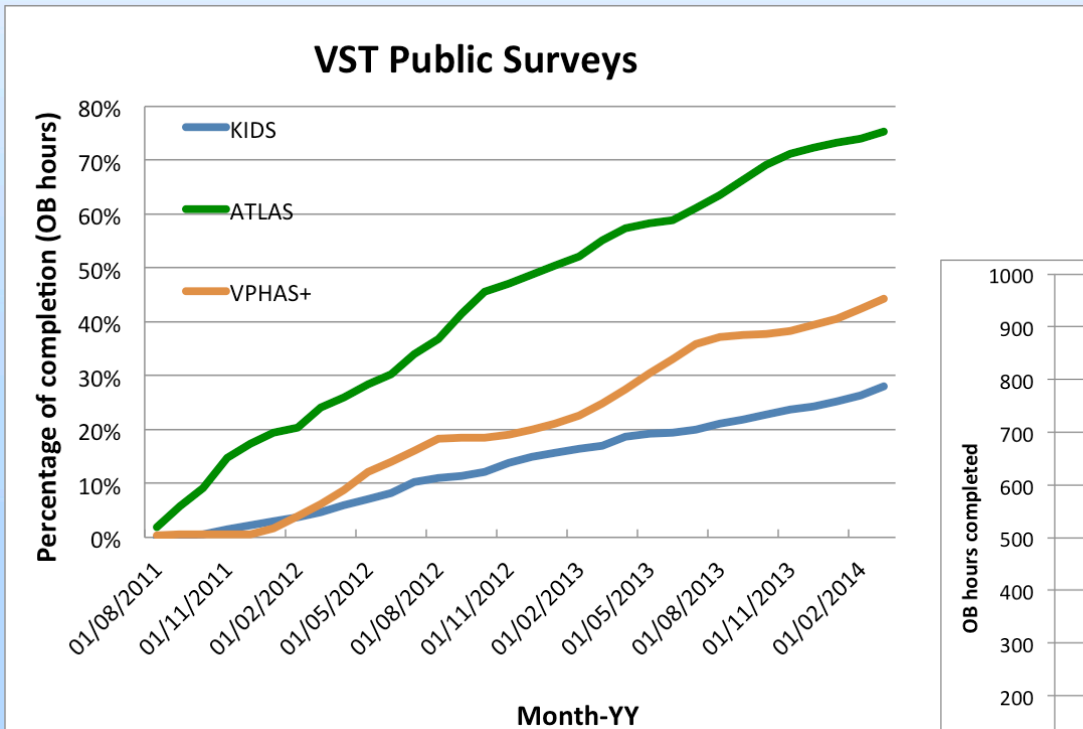
ATLAS completed: ~Jul. 2015

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				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 B	

❖ "QC0" based on pipeline reduction of 8 CCDs

❖ E.g. Image quality variation over FOV:

$$(FWHM_{corner} - FWHM_{center}) / mean\ FWHM$$

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)
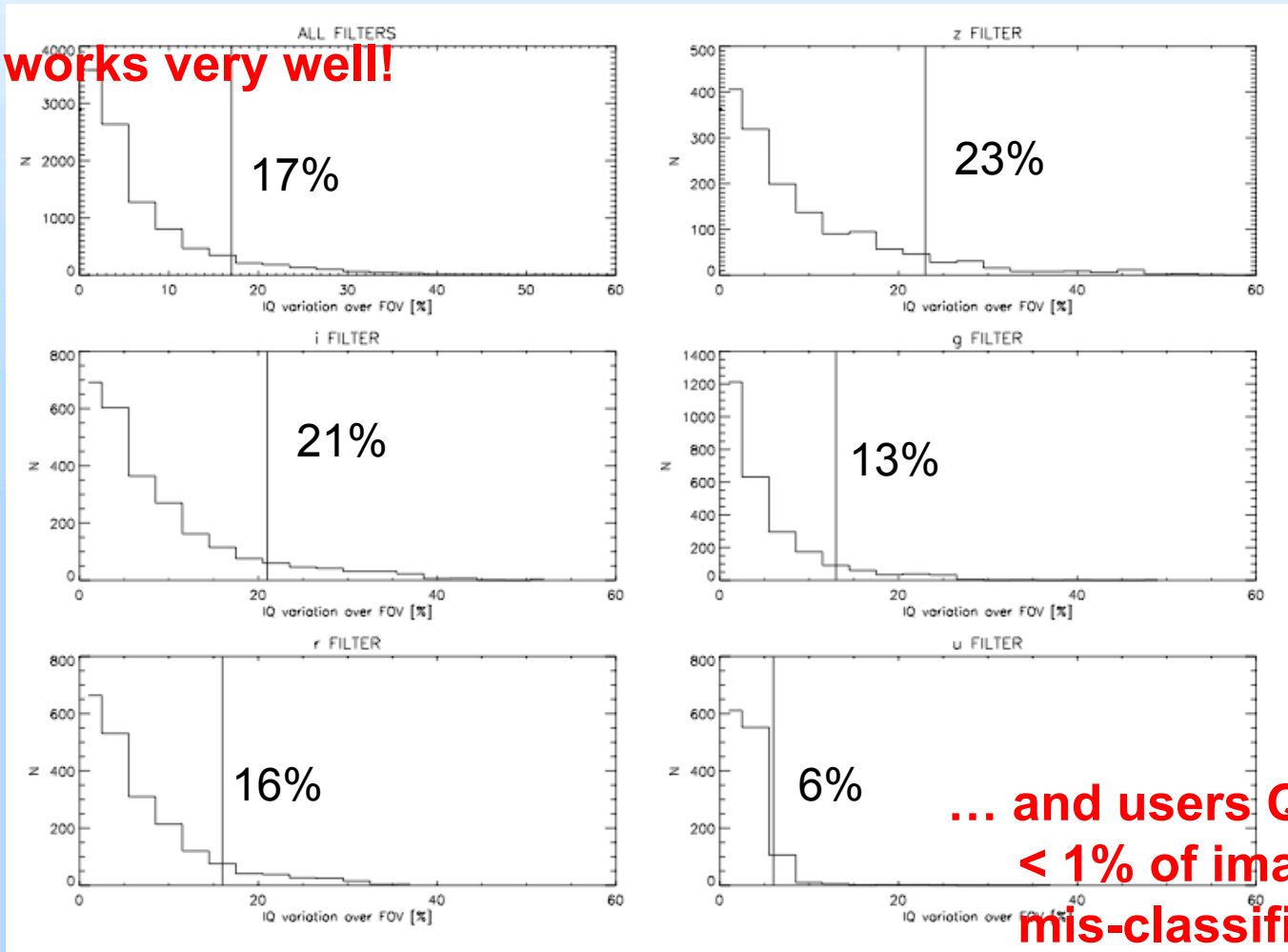
VST-OmegaCAM Quality Control (3)

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

Daily health checks with ultrastable (1%) FF lamp

VST-OmegaCAM Quality Control (3)

In Garching : Calchecker

VST-OmegaCAM issues and improvements (1)

❖ **Straylight:** reflection effects from the moon
➔ Baffling installed (Jan 2014 1st part, Apr 2014 2nd 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!