An Estimate of ESO/VST Public Survey Data Delivery Sizes

1. Tile Size:

effective area of one tile (consisting of 5 field dithers):
3645″ (60.76′) x 3672″ (61.2′) = 1.0329 sqr. deg.
with a pixel scale = 0.2134″/pixel

==> tile = 17080 x 17207 pixels
single CCD = 2144 x 4200 pixels

$$\text{ratio tile/single OCAM image} = \frac{17080 \times 17207}{32 \times 2144 \times 4200} = 1.02$$

size of a single OCAM image = 576.6 MB (int)
= 1.153 GB (float)

therefore, effective size of one OCAM tile = 1.176 GB (float)

2. Survey Image Delivery:

Survey	Filters	Epochs	Area sqr. deg.	Filter x Epoch x Area	Number of Tiles*	x 1.176 TB per tile
KIDS	4	2 (g' only)	1500	7500	7261	8.6 TB
ATLAS	5	1	4500	22500	21783	25.6 TB
VPHAS+	5	1	1800	9000	8713	10.3 TB

* Number of tiles = (filters x epoch x area)/1.033 sqr. deg. per tile

3. Survey Catalogue Delivery:

- for one of the large CTIO mosaic camera fields that I have, I ran SeXtractor using its full complement of parameters. This resulted in an ascii table with 100 columns and 27045 sources. Scaling this to 10^6 sources yields a catalogue size of 1.479 GB. Clearly, if the delivered catalogues collate all filters associated with the survey, then these table sizes must be multiplied by roughly the number of filters. For simplicity, however, I will assume mono-colour catalogues.

- assuming the number density counts of Metcalfe et al. 2001 (R-band) and comparing these to the r′-band limits of the extra-galactic surveys, I can deduce the number of sources per square degree. For the VPHAS+ Galactic survey the expected source numbers are explicitly given in the proposal.

- OK. Here we go:

3. Survey Catalogue Delivery Continued:

Survey	r′ limit	mJy	logS (Jy)*	log(dN/dS)	# sources per sqr. deg.
KIDS	25.2	0.000245	-6.61	4.9	8.0×10^4
ATLAS	22.9	0.00203	-5.69	4.0	1.0×10^4
VPHAS+	23.2	---	---	---	$\sim 2 \times 10^8$ over full survey

* from Metcalfe et al. 2001

3. Survey Catalogue Delivery Continued:

Survey	Filters	Area	# counts x filters x area	Catalogue size (GB)
KIDS	4	1500	4.8×10^8	710
ATLAS	5	4500	2.3×10^8	333
VPHAS+	5	1800	1.0×10^9	1479

4. Summary & Conclusions:

- for simplicity, I assume a uniform data delivery rate over the 3 year duration of the VST public surveys.

Survey	Image Size (TB)*	Catalogue size (TB)	Total (TB) over 3 years	Total (TB) per period
KIDS	17.2	0.71	17.9	3.0
ATLAS	51.2	0.33	51.5	8.6
VPHAS+	20.6	1.48	22.1	3.7
	Totals:		92	15.3

* image size is doubled to account for image tile + its associated weight map

An Estimate of ESO/VST Public Survey Data Delivery Sizes

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