The VISTA-VMC survey – I.
Strategy and Early Science Data

http://star.herts.ac.uk/~mcioni/vmc

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PSPI meeting – Cambridge UK – 27-28 January 2010

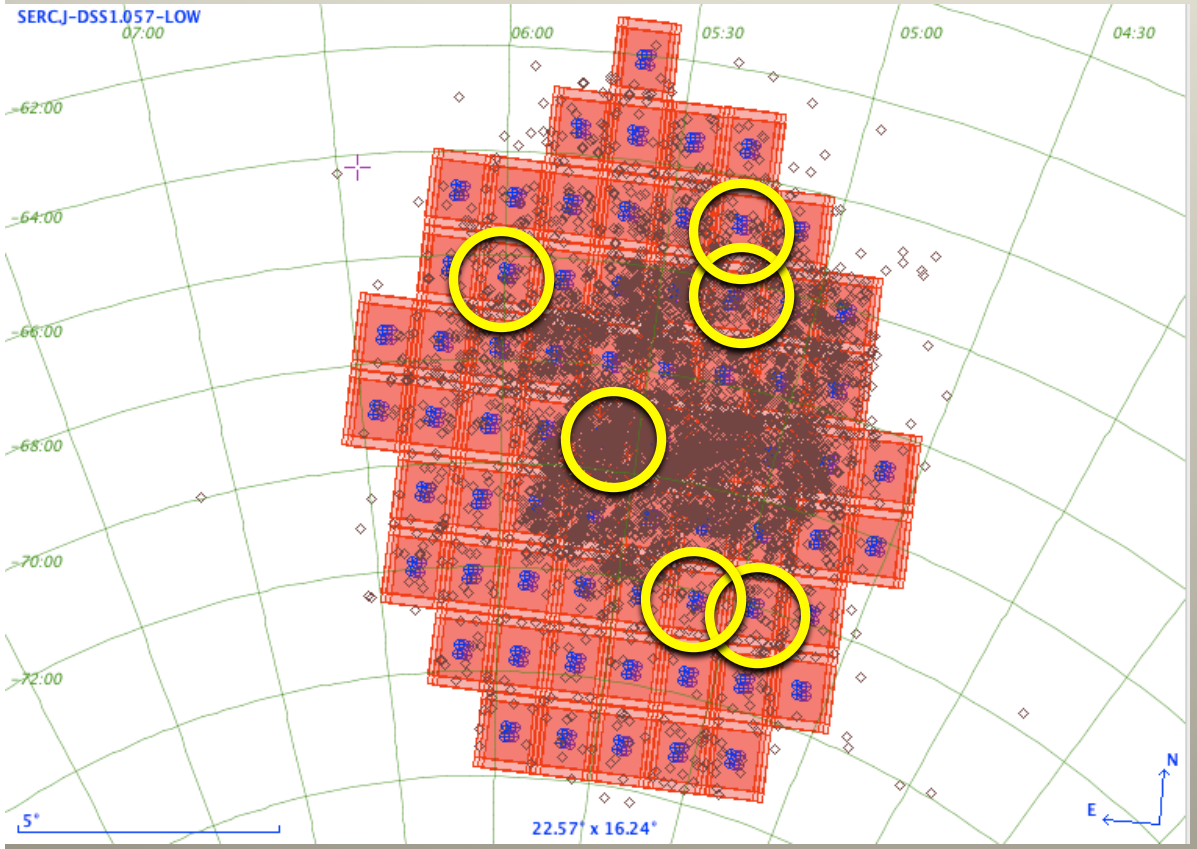
VMC science goals

I. Spatially resolved SFH
II. 3D structure (variable stars, red clump,…)

III. Stellar sub-structures (clusters, streams…)
IV. PNe, SNRs and other extended sources (galaxies)
V. Differential proper motion
VI. Star formation
VII. Testing evolution models
VIII. The distance to the LMC
IX. Extinction map
X. …

VMC - Early Science data

The Large Magellanic Cloud



Fields:

- 30 Dor
- GAIA South Galactic Pole
- 2 in the outer disk
- 2 towards the Bridge

Tests:

- X and Y overlap
- different crowding
- strategy

VMC Observing Blocks

- One OB = one tile = one filter
- Concatenations, groups and time links
- DIT/NDIT = 5/12 – 10/8 – 20/4 for K, J and Y
- Jitter=5n, Tile6zz
- Epochs: 3 in YJ and 12 in K
- Variable constraints (seeing and AM) depending on crowding (moon is not a problem)

Observations to-date

100h - 78% completed

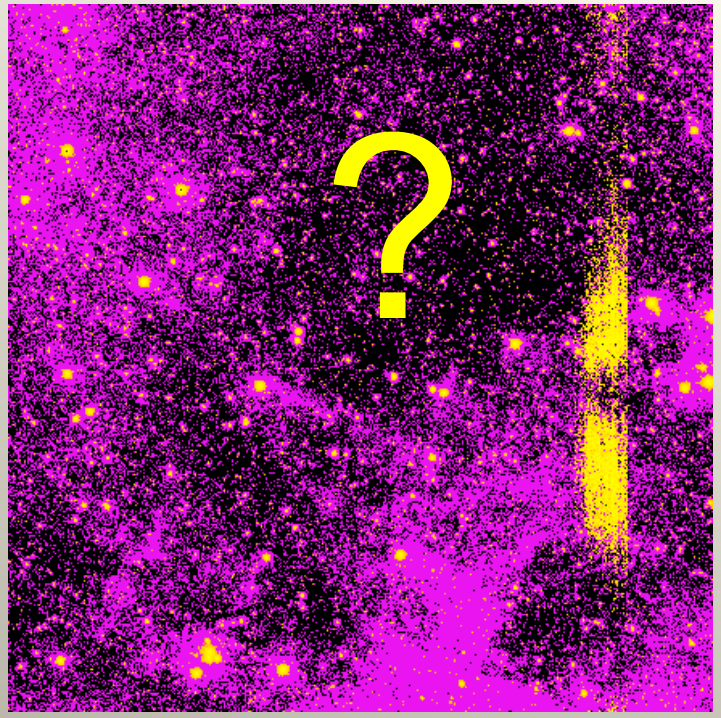
Table 2. LMC epochs: concatenations and YJ bands

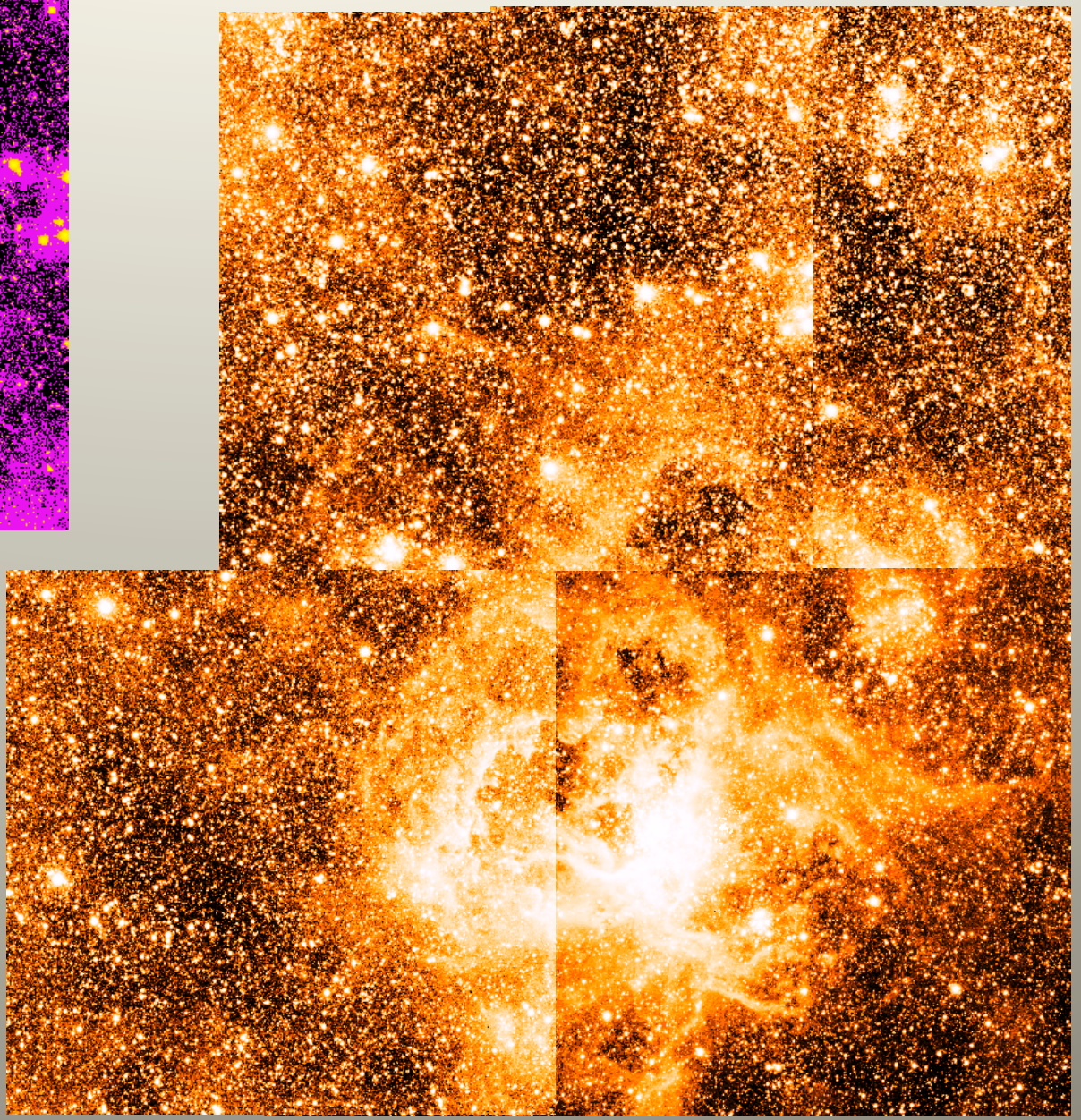
Tile	*CK*1	*CJ*1	*CY*1	*CK*2	*CJ*2	*CY*2	*Y*1	*J*1	*Y*2	*J*2
4_2	20.12.09	20.12.09	20.12.09	15.01.10	15.01.10	15.01.10	15.12.09		16.12.09	28.11.09
4_3	22.12.09	22.12.09		16.01.10	16.01.10	16.01.10	9.12.09	18.11.09	10.12.09	28.11.09
	23.12.09	23.12.09	23.12.09							28.11.09
6_6	5.11.09	5.11.09	5.11.09	20.11.09	20.11.09	20.11.09	4.11.09	4.11.09	8.11.09	8.11.09
8_3	26.11.09	26.11.09	26.11.09	22.11.09	22.11.09	22.11.09	19.11.09	15.11.09	21.11.09	26.11.09
8_8	21.11.09	21.11.09	21.11.09	20.11.09	20.11.09	20.11.09	5.11.09	9.11.09	9.11.09	11.11.09
	26.11.09	26.11.09								
9_3	21.11.09	21.11.09	21.11.09	22.11.09	22.11.09	22.11.09	30.11.09	1.12.09	1.12.09	2.12.09

Table 3. LMC epochs: K-band monitoring

Tile	*TK*1	*TK*2	*TK*3	*TK*4	*TK*5	*TK*6	*TK*7	*TK*8	*TK*9	*TK*10	*TK*11
4_2	14.12.09	17.12.09	5.01.10	14.01.10	22.01.10						
4_3	10.12.09	17.12.09	21.12.09	27.12.09	18.01.10						
6_6	8.11.09	12.11.09	17.11.09	29.11.09	7.12.09	26.12.09	13.01.10				
				29.11.09							
8_3	3.12.09	6.12.09	22.12.09	28.12.09	14.01.10						
8_8	14.11.09	19.11.09	25.11.09	30.11.09	7.12.09	25.12.09	14.01.10				
	15.11.09										
9_3	4.12.09	9.12.09	19.12.09	16.01.10	23.01.10						

30 Dor – Y band

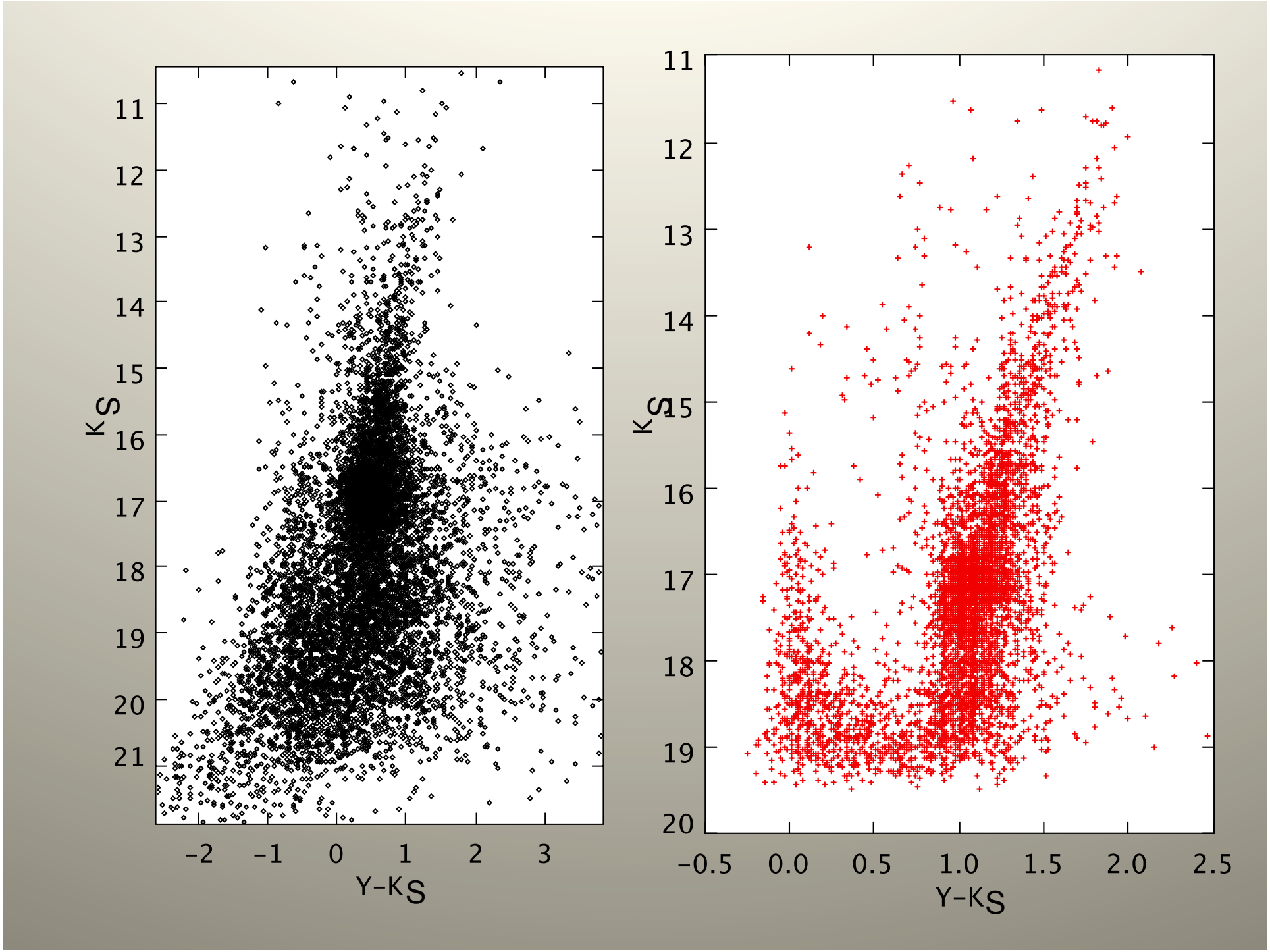




5 adjacent pawprints
Exposure ~ 400 sec

Multi-colour image of a side of 30 Dor:

Exp. Time ~ 400s per pawprint


11
12
13
14
15
16
17
18
19
20
21
K_S
−2
−1
0
1
2
3
Y−K_S
11
12
13
14
15
16
17
18
19
20
K_S
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
Y−K_S

SV-VMC data

Goal = Investigate the discrepancy between two ETCs

Method = Short/minimal exposures to test saturation

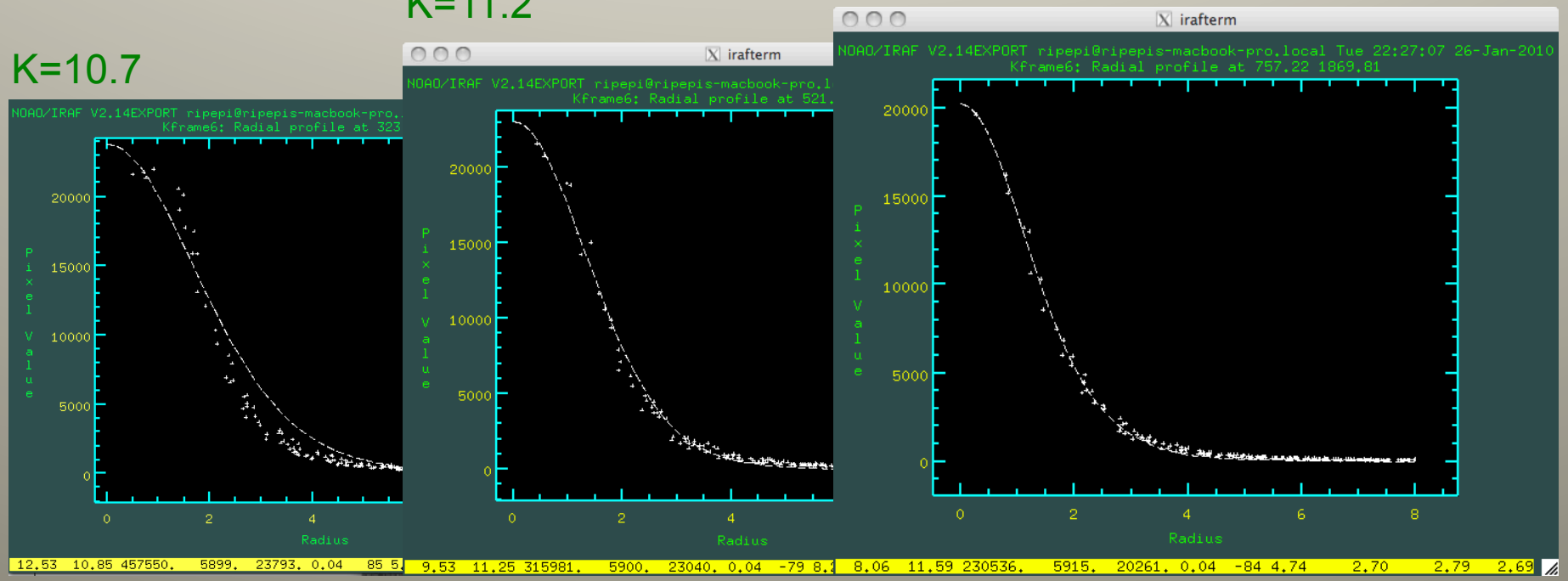
Conclusion = Decide on the best DIT

DIT = 6 s
NDIT =1

K=10.7

K=11.2

K=11.6



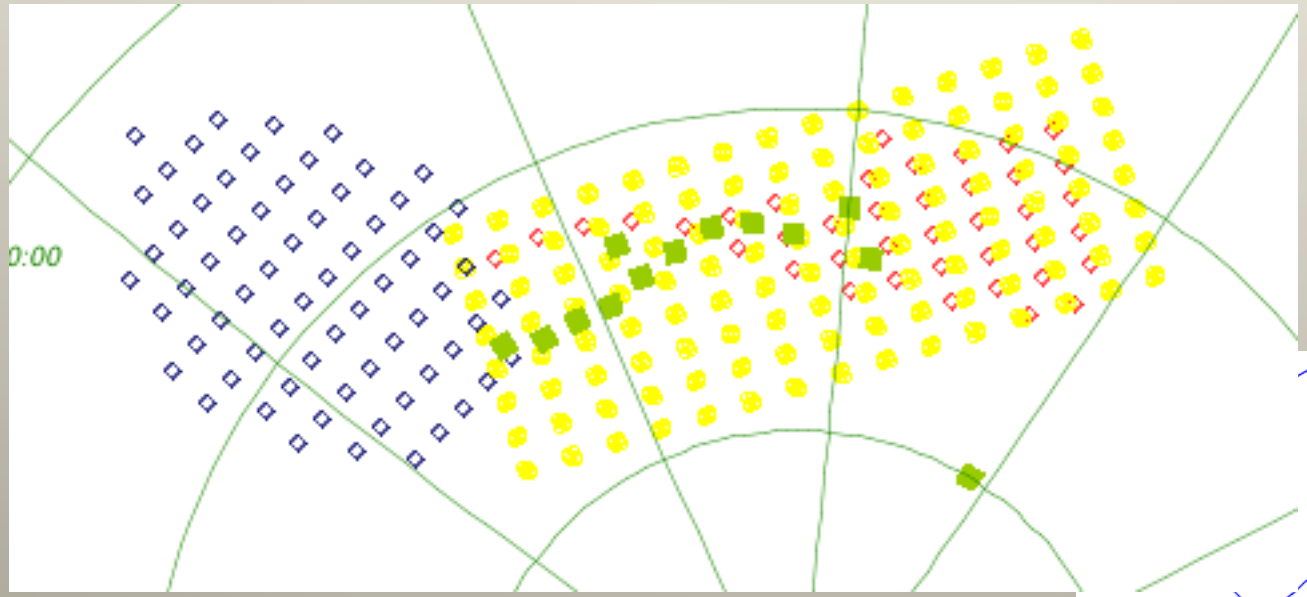
Sensitivity

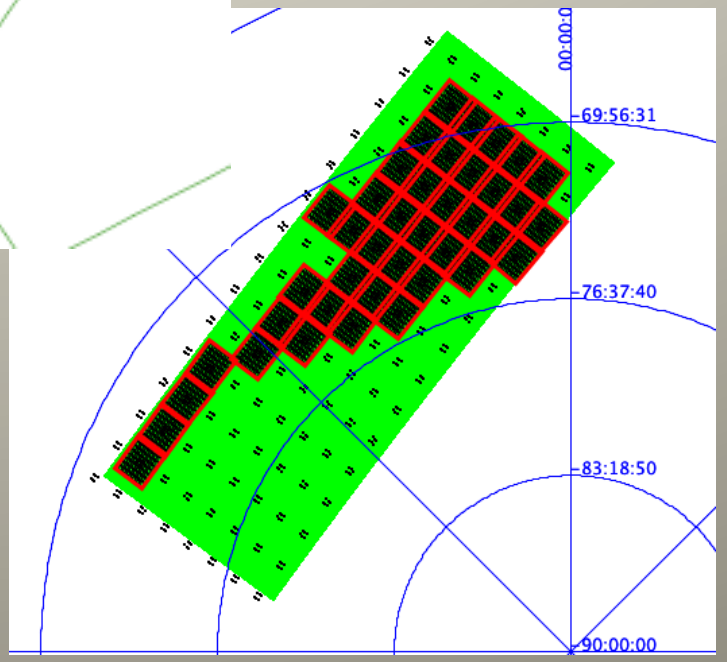
- S/N=10 at K=18.4 (avg. paw-print) - observed
- S/N=10 at K=18.9 - requested

Time scales ?

- Tiling + catalogue
- Multi-epoch, multi-colour matched catalogues
- Stacked tiles + catalogue

Preliminary pattern: SMC+Bridge





+ 2 tiles in the Stream