Rubin Scheduler and Uniformity

Peter Yoachim
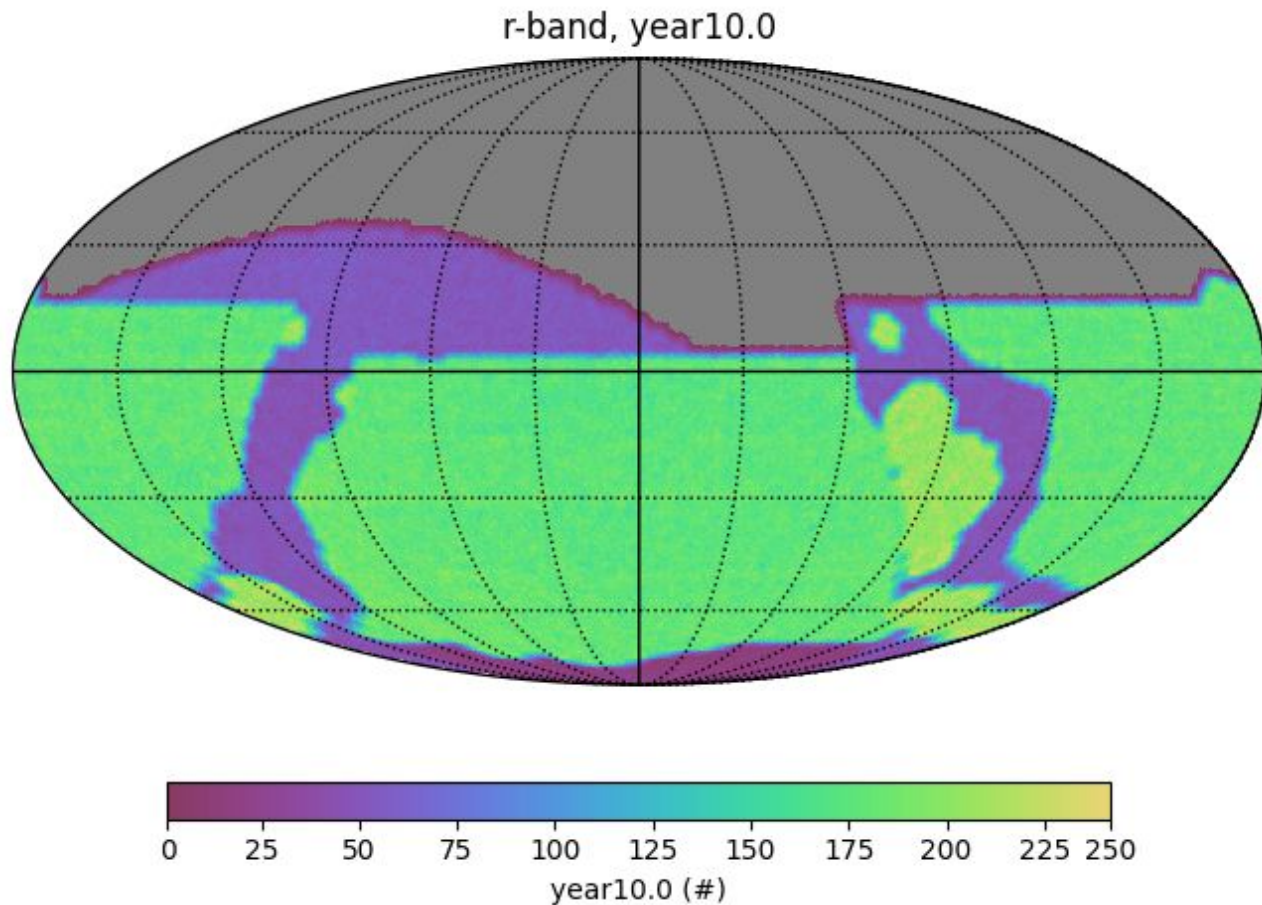University of Washington
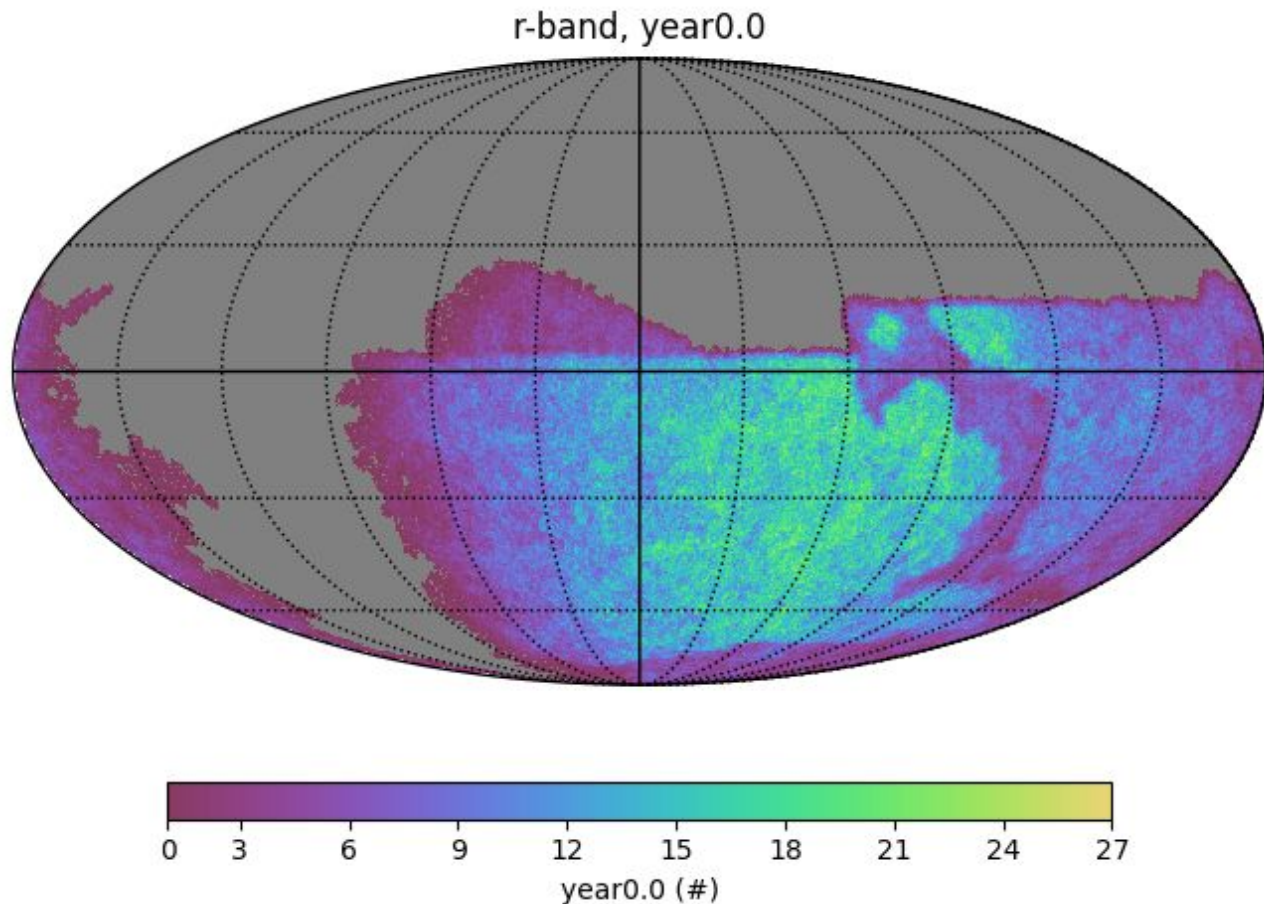
Full survey after 10 years

r-band, year10.0
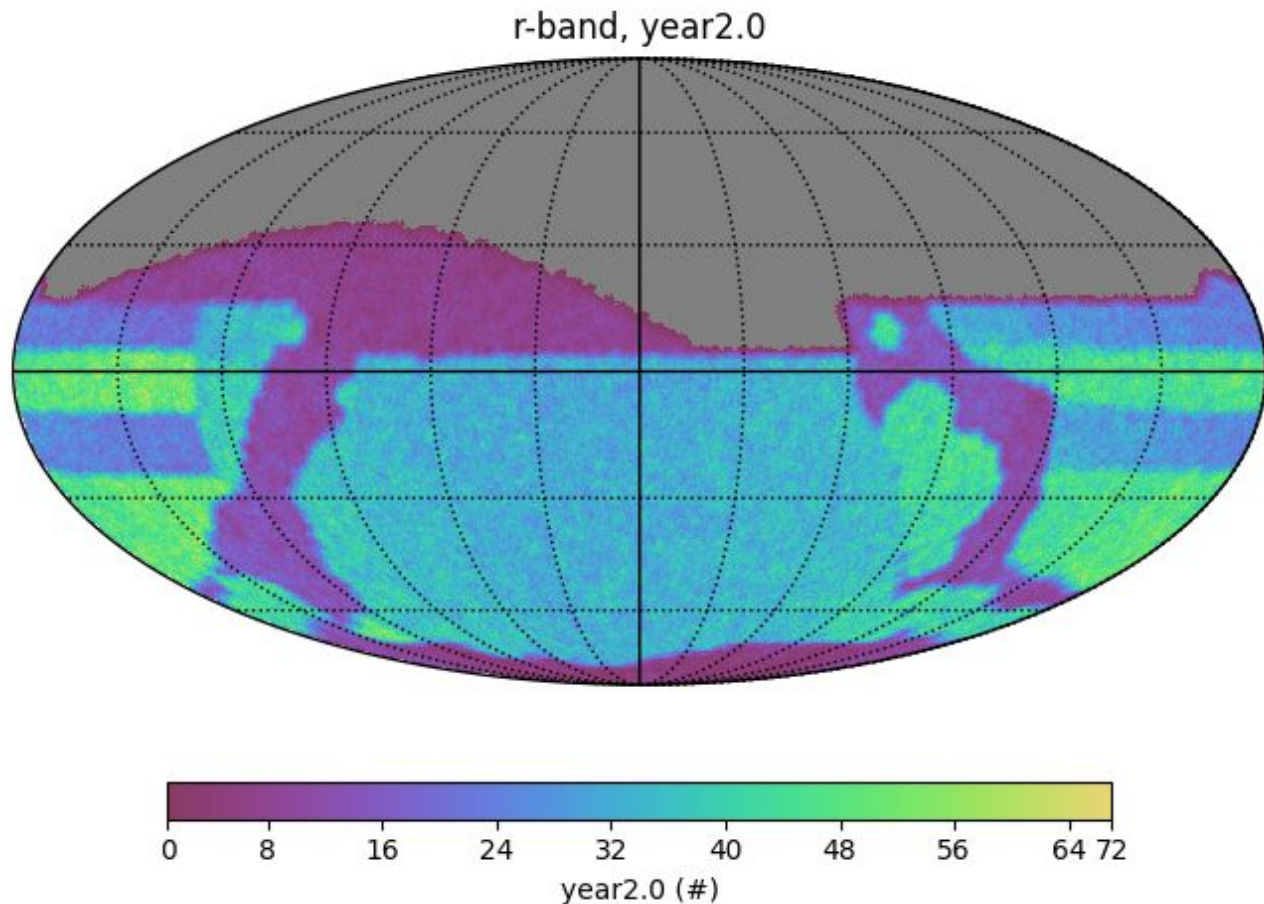
year10.0 (#)

r-band, year0.0
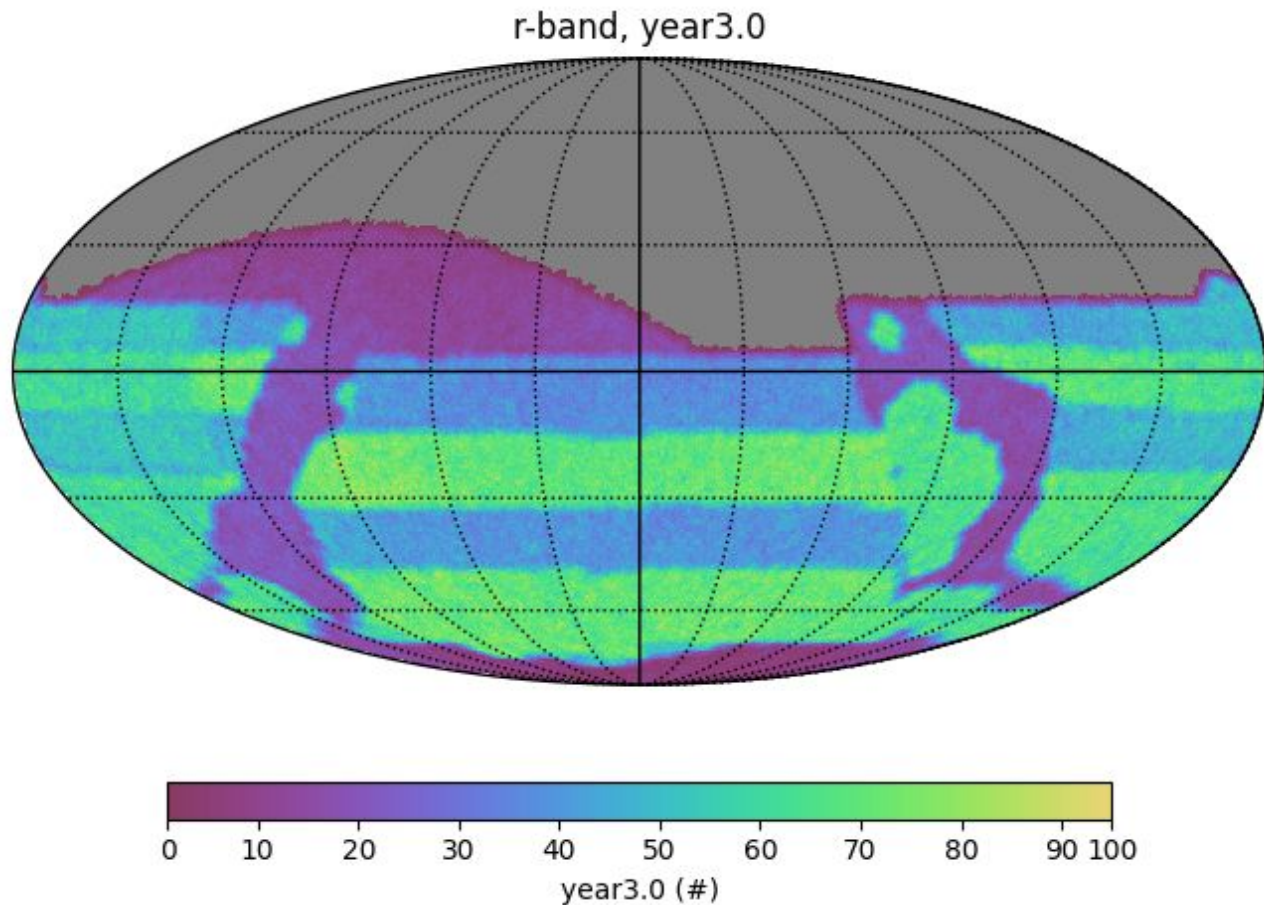
After 6 months, aka, DR1!

All of year 1 observations, aka, DR2

r-band, year1.0
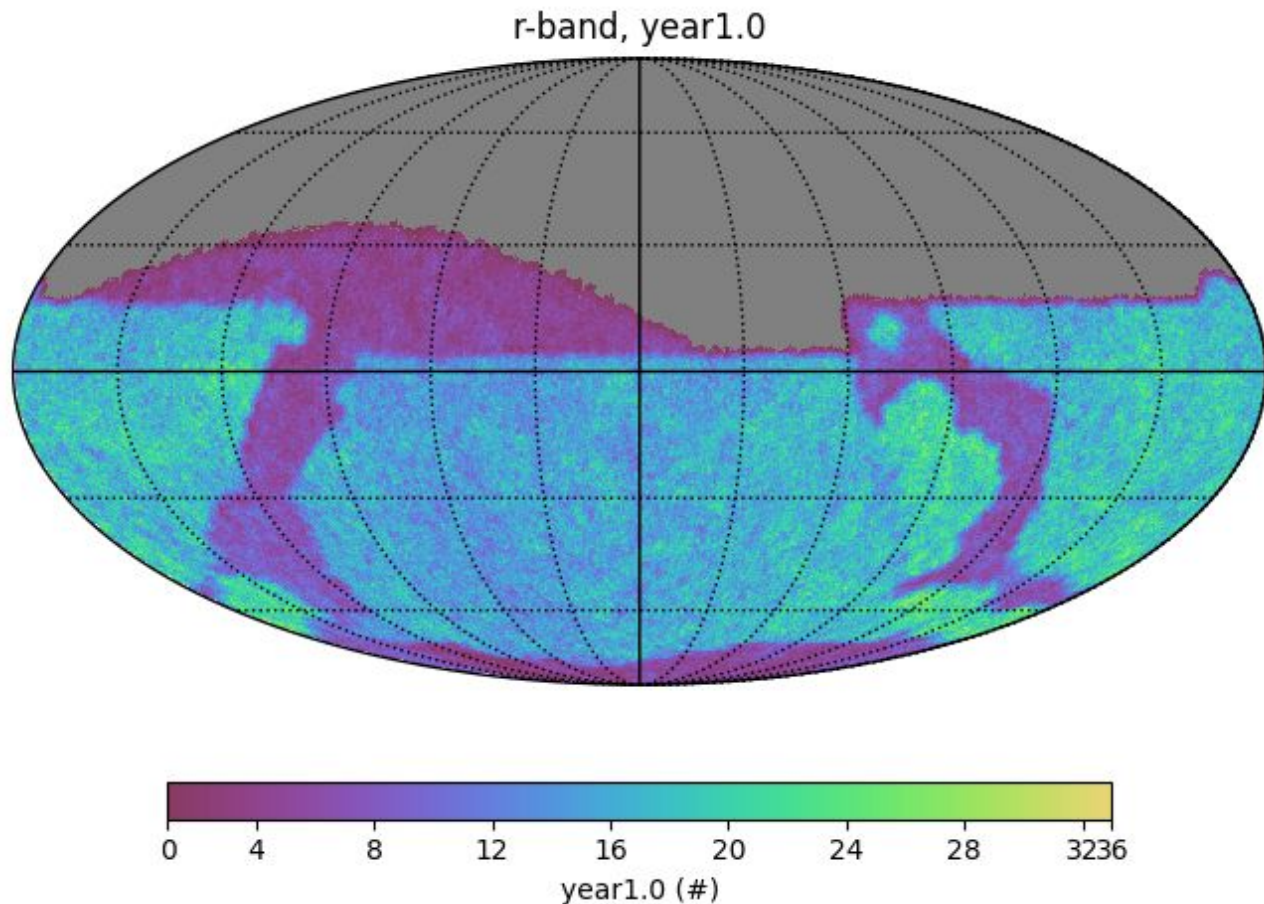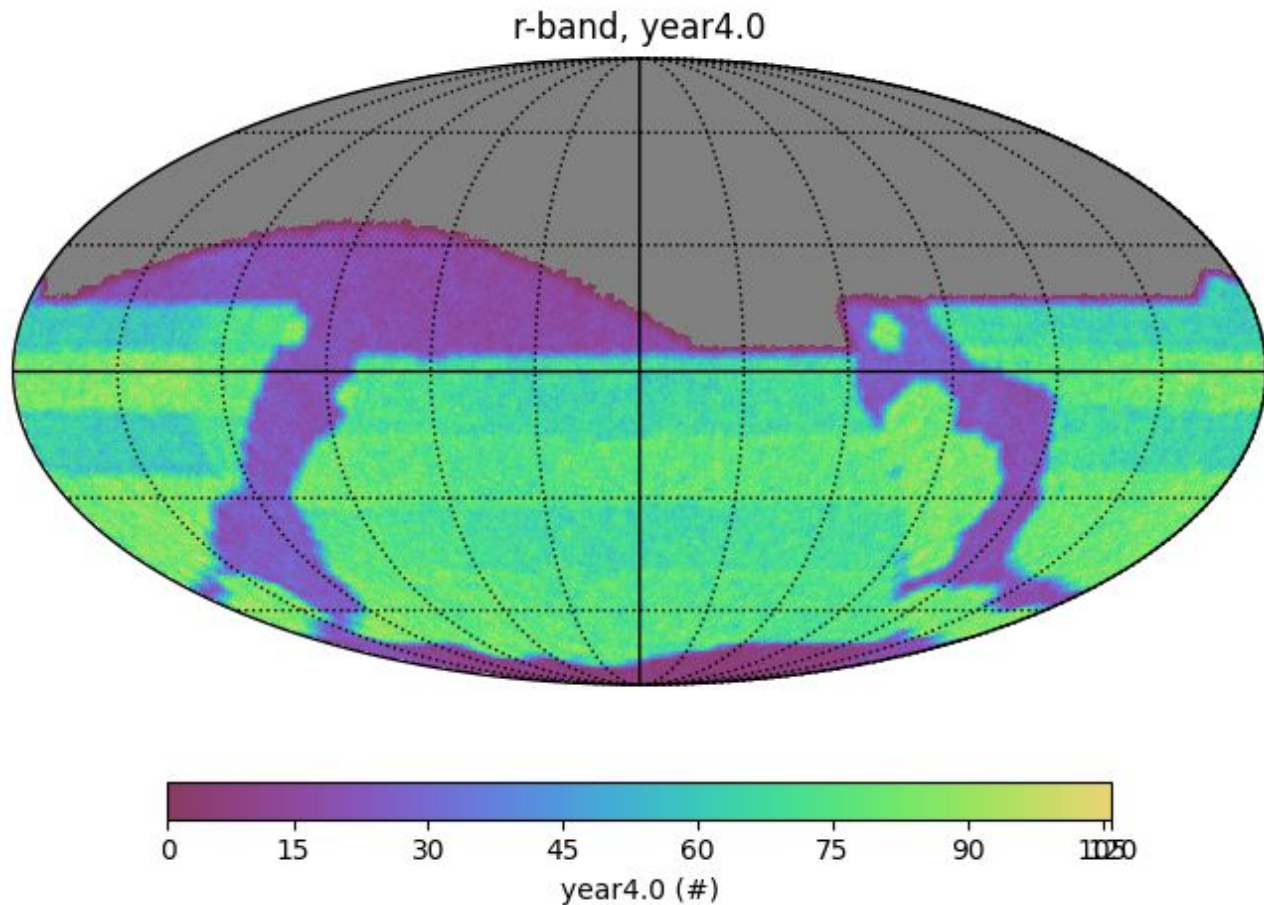
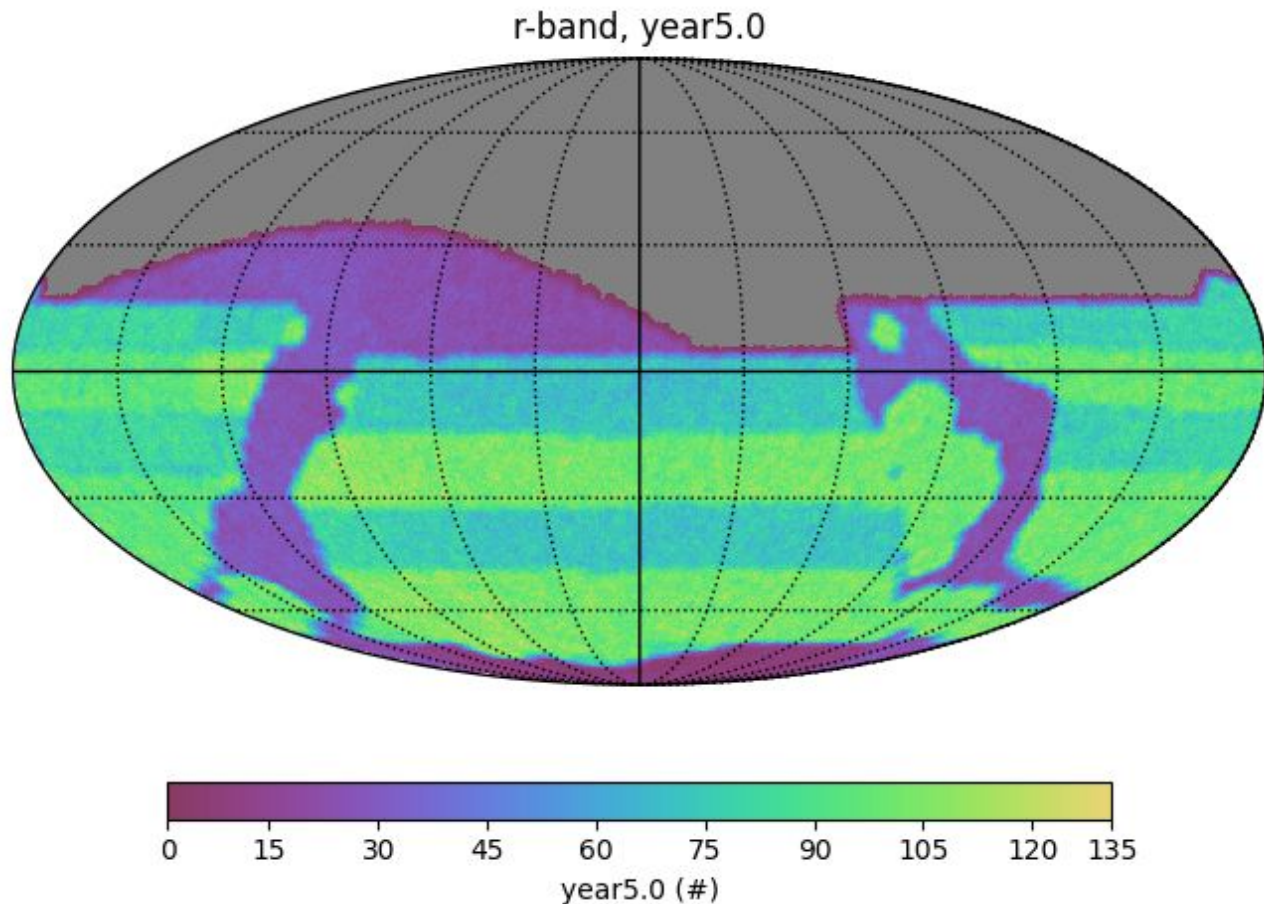Year 2, rolling has started, but ~half of the WFD area is fairly uniform

r-band, year2.0

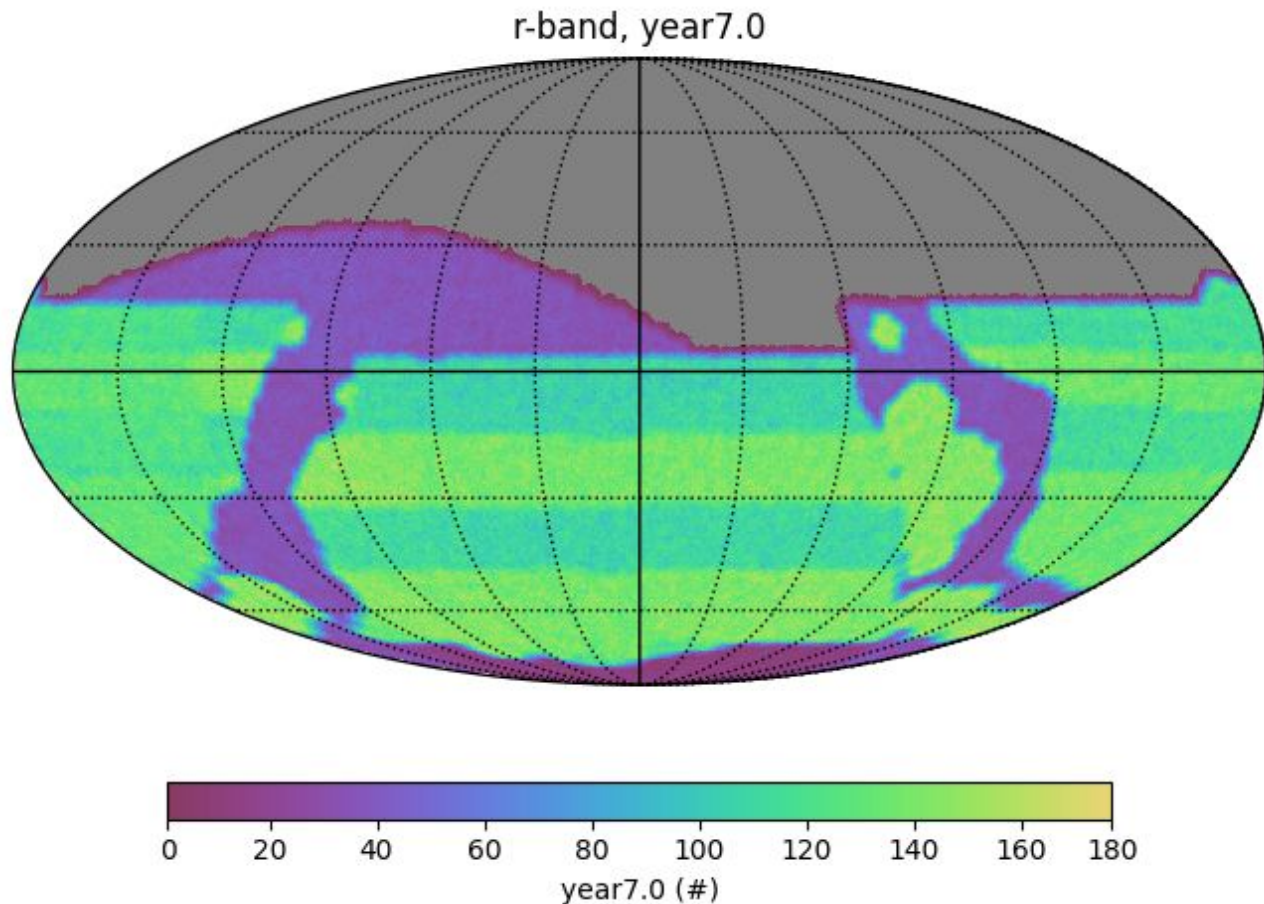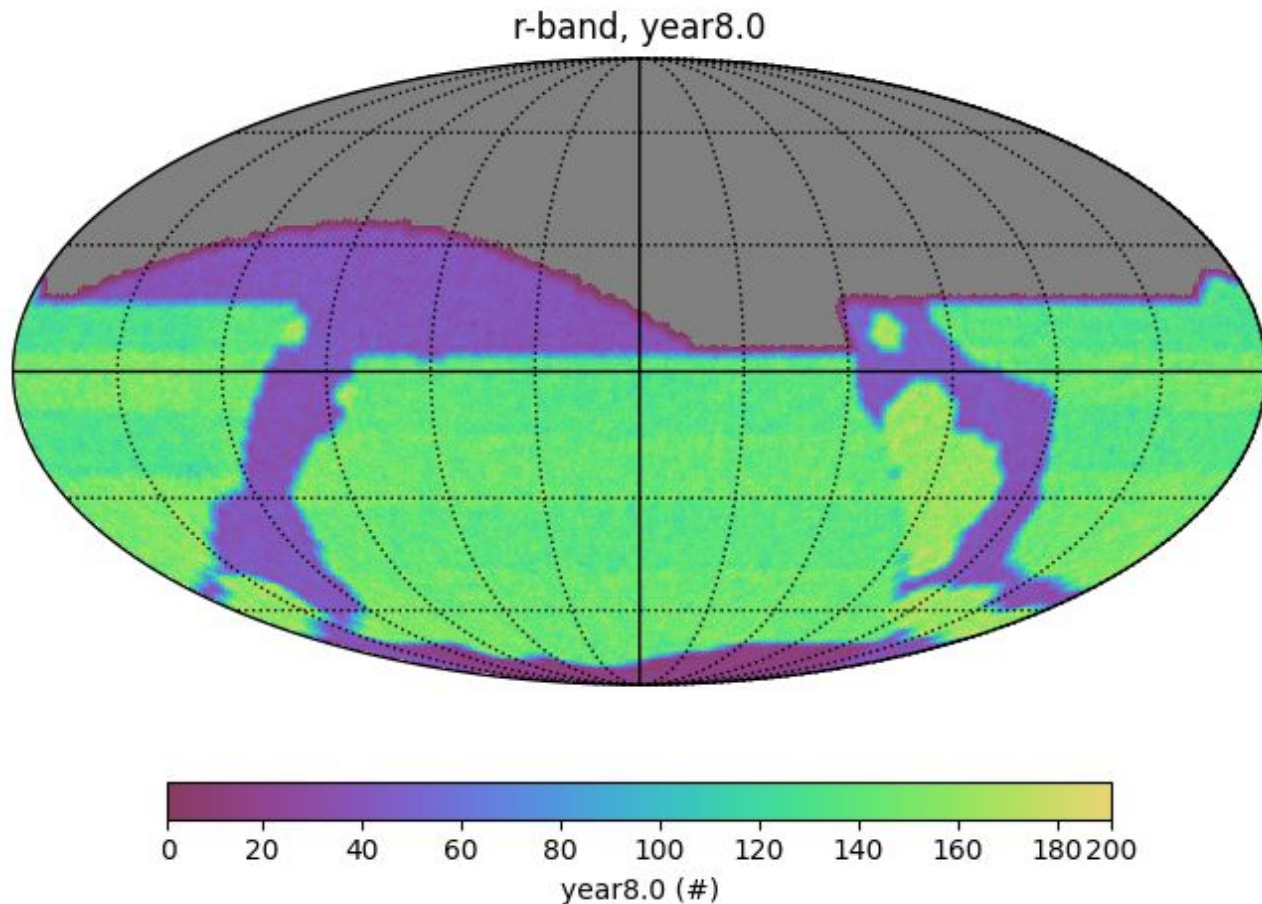r-band, year3.0

r-band, year4.0

ack

r-band, year5.0

year5.0 (#)

ack

r-band, year6.0

r-band, year7.0

ack

r-band, year8.0

ack

r-band, year9.0
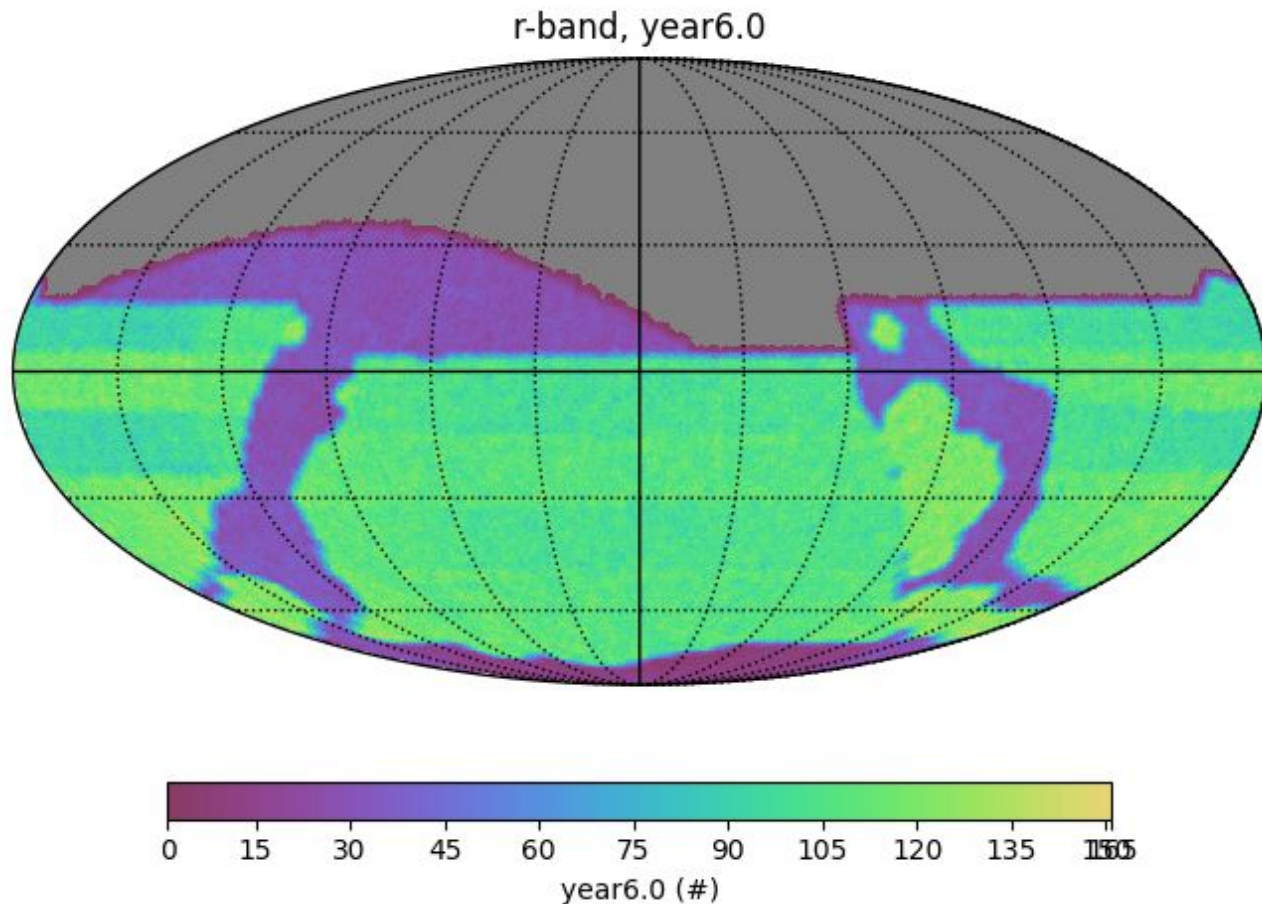
ack

Full survey after 10 years

r-band, year10.0
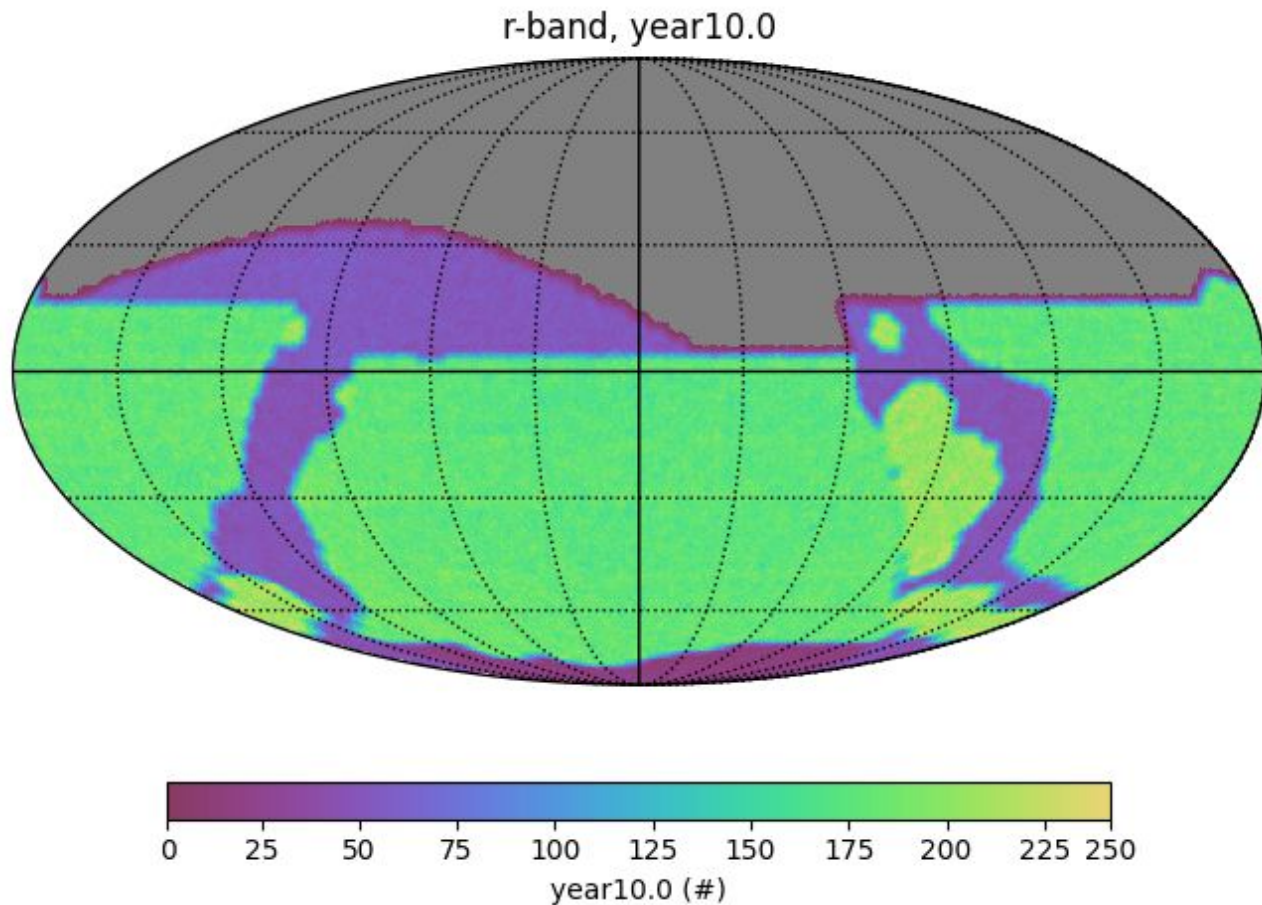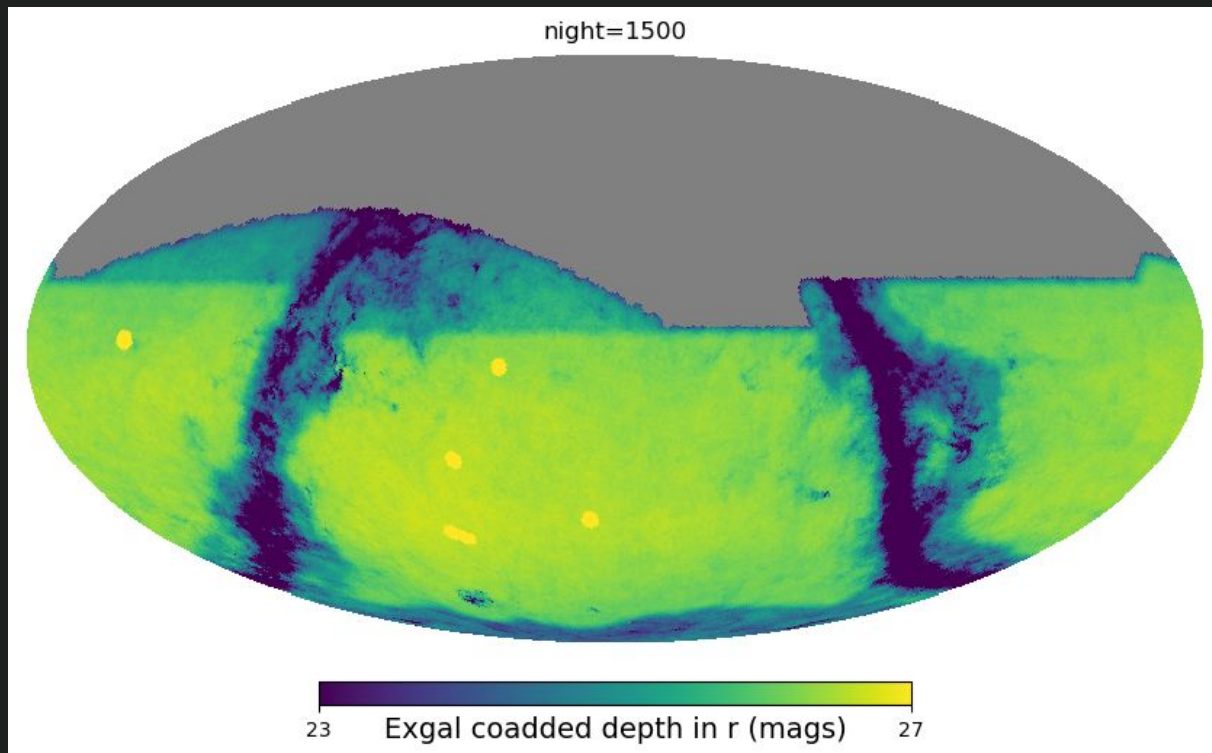
year10.0 (#)
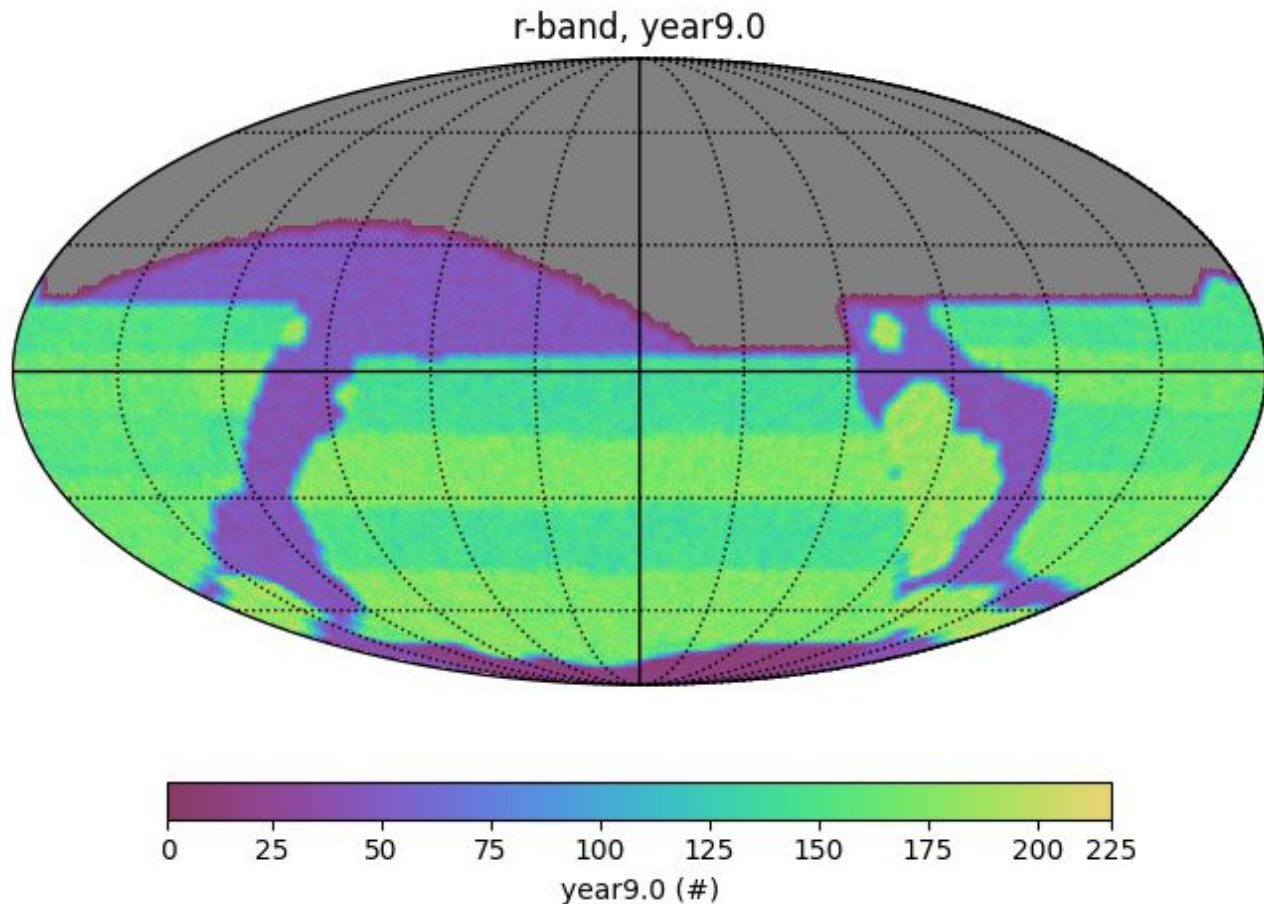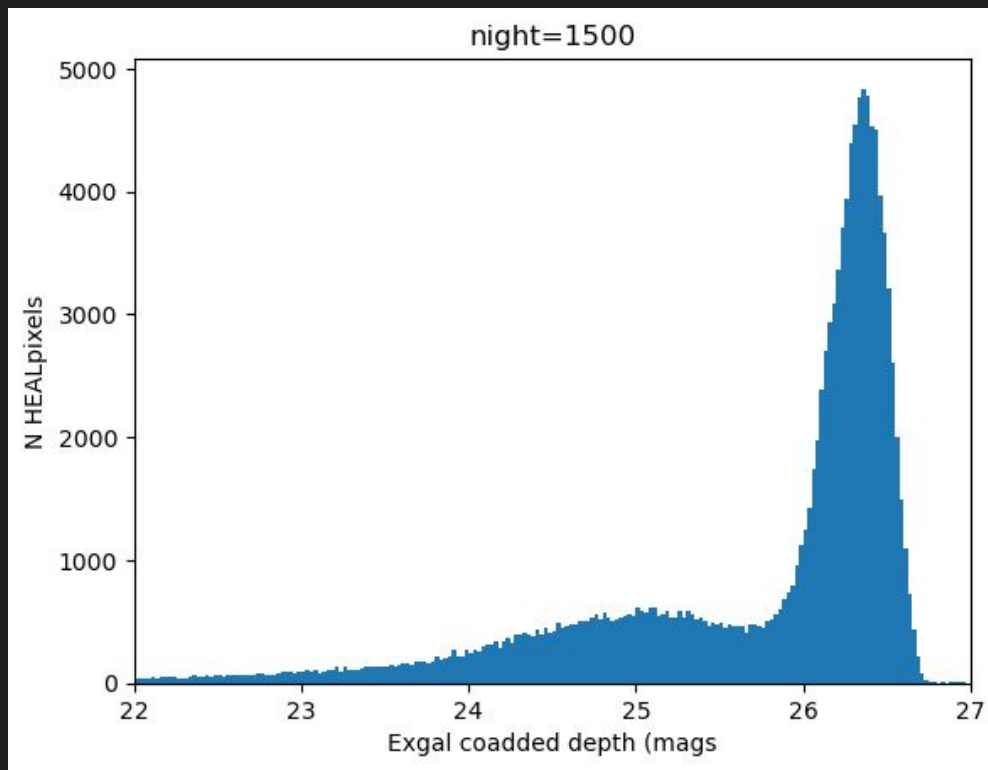
Currently,

- DR0, DR1 will not have full sky coverage
- DR2 will be fairly uniform, all of year 1 observations
- Rolling means DR3, 5, 7, 9 have uniformity on ~half the sky
- DR4,6,8,10 are very non-uniform
- DR11 is the final smooth survey

Potential Metric

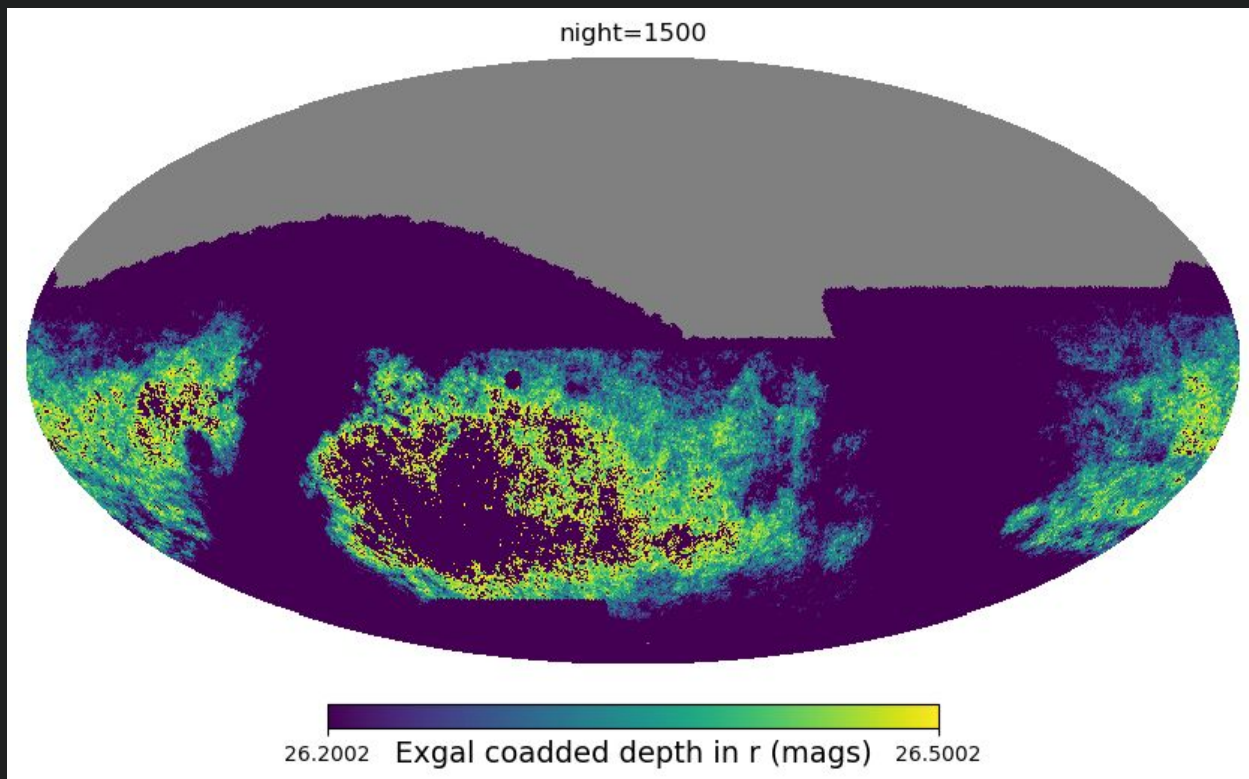Coadded depth, corrected
for dust

night=1500

Exgal coadded depth in r (mags)

23   27

Select only areas around the peak

End up with a lot of area that's deeper than the peak depth

night=1500

26.2002 Exgal coadded depth in r (mags) 26.5002

Actually little difference between rolling and non-rolling when looking at similar depth areas
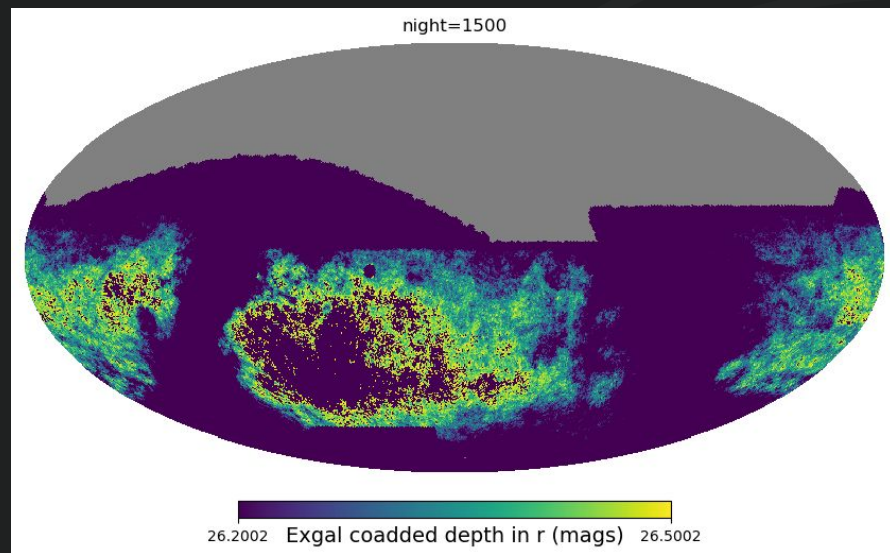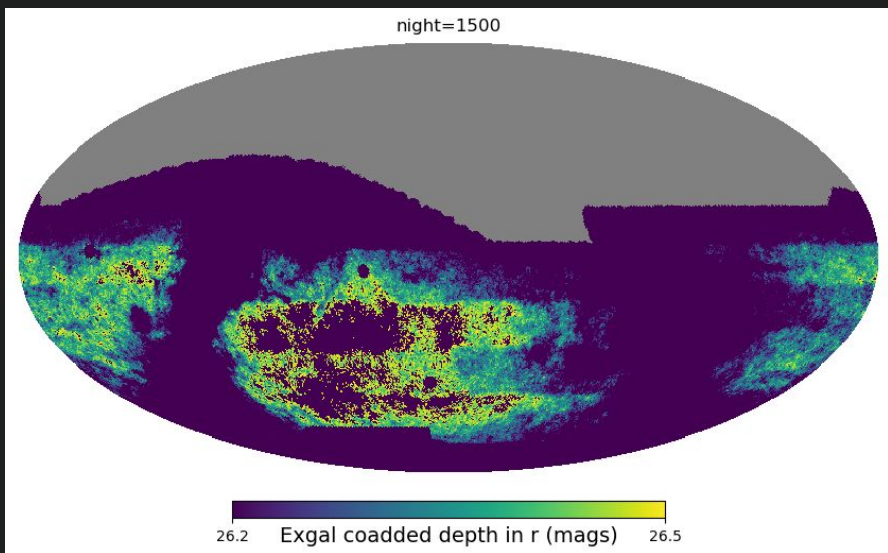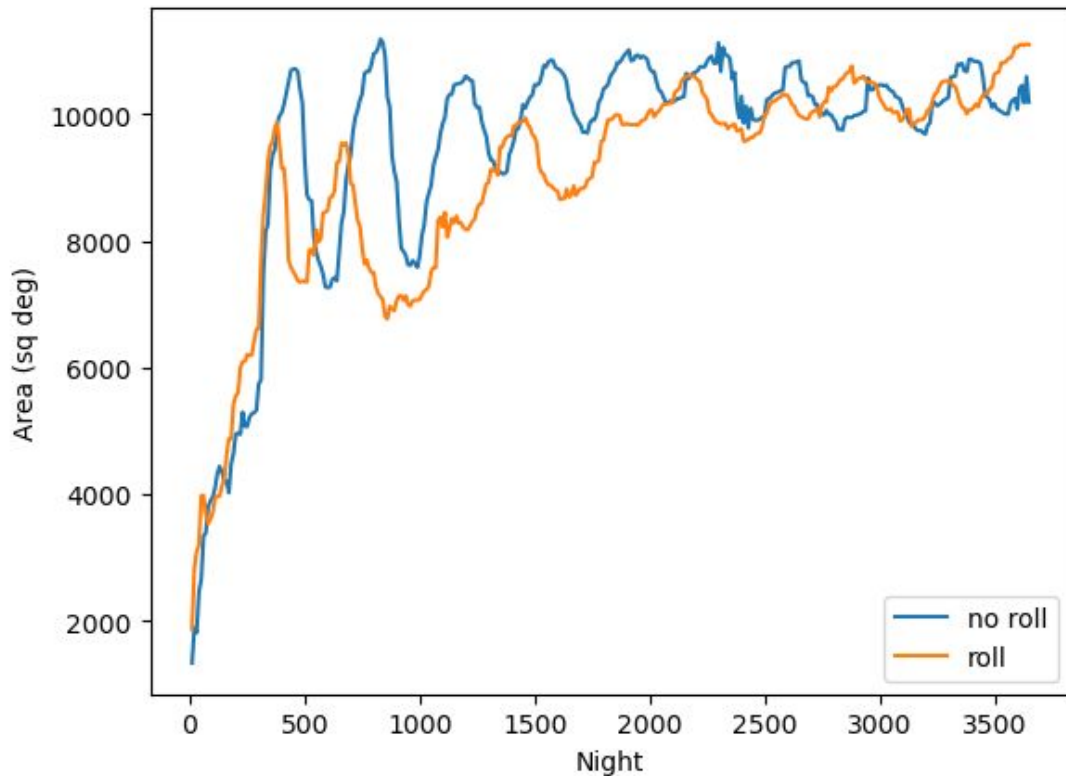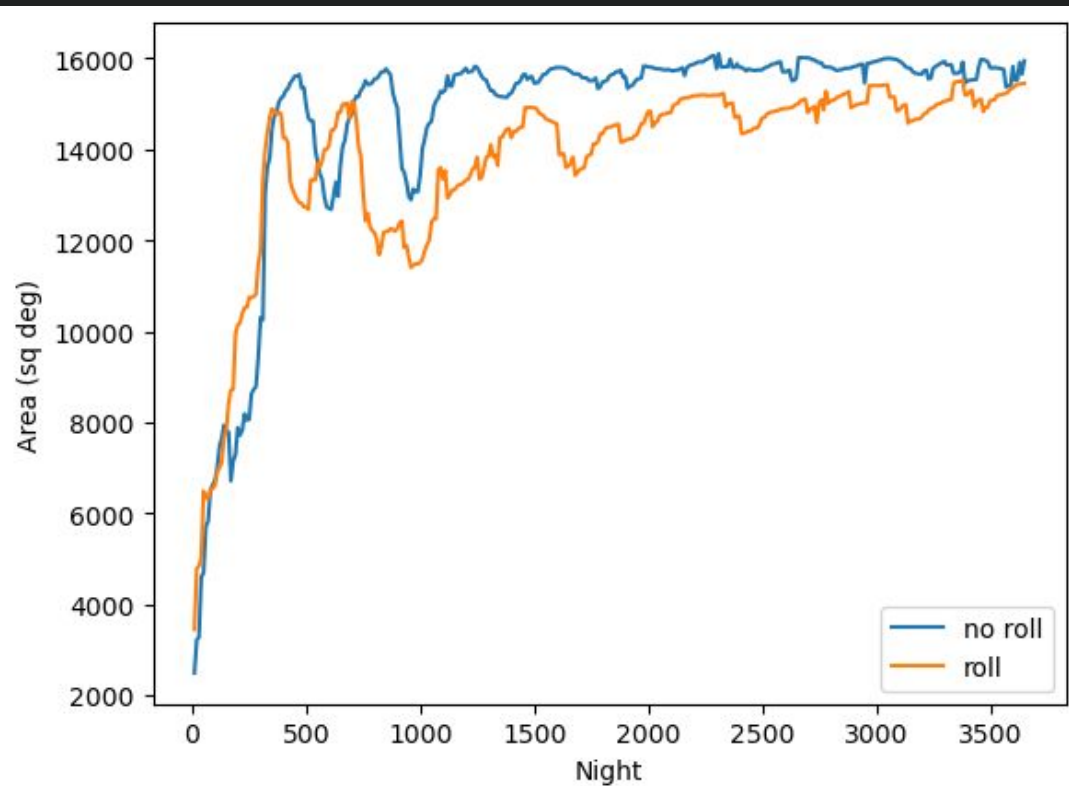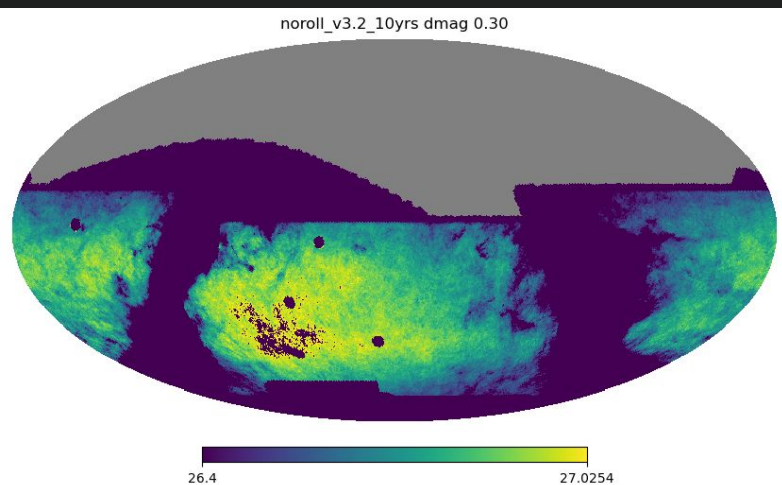
How much area can be used if +/- 0.15 mags in r depth is acceptable over time.

Notebooks to make uniformity v time at https://ls.st/lyj

While we nominally have 18,000 sq degrees of exgal area only ~10,000 sq degrees gets covered to "uniform depth" irregardless of rolling

If we select everything +/- 0.3 mags from the peak

noroll_v3.2_10yrs dmag 0.30

26.4   27.0254

Conclusions

- Is the non-rolling strategy actually uniform enough to enable SQL-science?
- Can we quantify the impact on science analysis in intermediate years
  - How bad is it to only use the uniform half of the sky?
  - How hard is it to make a custom co-add that is more uniform?