Dark Energy Survey Operations

HTD
All-Experimenter’s Meeting
November 30, 2015
Y3 Observing Summary (up-to-date)

- So far DES has had 73 scheduled observing nights.
- Bad weather (Godzilla el Nino) has caused us to lose more time this season than our most pessimistic simulation. Worst August to October ever seen in 50 years of CTIO. In SV + Y1 + Y2 we lost a total of 255 hrs due to weather.

<table>
<thead>
<tr>
<th></th>
<th># Nights</th>
<th>Total Hours</th>
<th>Hours Observing</th>
<th>Lost Camera or Telescope</th>
<th>Lost Obs. Error</th>
<th>Lost Weather</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug.</td>
<td>10.5</td>
<td>124 ½</td>
<td>58 ½</td>
<td>½ / 17 ½</td>
<td>0</td>
<td>48</td>
</tr>
<tr>
<td>Sept.</td>
<td>18.5</td>
<td>188 ¼</td>
<td>91 ¼</td>
<td>1 ¾ / 2</td>
<td>0</td>
<td>93 ¼</td>
</tr>
<tr>
<td>Oct.</td>
<td>24</td>
<td>225</td>
<td>139 ¼</td>
<td>3.5 / 2</td>
<td>0</td>
<td>80 ¼</td>
</tr>
<tr>
<td>Nov.</td>
<td>20</td>
<td>166 ½</td>
<td>124</td>
<td>3 ¾ / 1 ¾</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>704 ¼</td>
<td>413</td>
<td>9 ½ / 23 ¼</td>
<td>0</td>
<td>258 ½</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>58.6%</td>
<td>1.3 / 3.3%</td>
<td>0%</td>
<td>36.7%</td>
<td></td>
</tr>
</tbody>
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Y3 WF Survey Status

Even when we observed, we often had poor conditions. 64% Good images in Y3. As of this time in Y2 we had 8100 good WF exposures.

In Nov. we got a few nights observing during “dark time” (g,r,i-band filters)

In Y3 we had hoped to fill 6 tilings in all 5 filters.
Y3 WF Survey Status after 11/28/15

- Now For Y3, we hope to fill the <4 gaps. Have mostly 5 or 6 tilings after Y3.
- Only one more set of dark 1\textsuperscript{st}-half nights left to get area marked
10 SN fields (8 shallow, 2 deep fields)

We’d like to get good SN data about every 6 nights.

1405/1589 good exposures.

Cadence (spacing) is good but …

SN obs. will end after 3rd week of Jan. 2016, two weeks earlier than last 2 years, but lost 1st two weeks this year due to bad weather.
End-July Engineering.
- FNAL Teams of HTD, Alex Drlica-Wagner, Andy Lathrop, Otto Alvarez
- Replace LN2 pump. Replace 2 vacuum-jacketed LN2 line segments
- Advise CTIO that "missing cryo-cooling" is in the way they operate the He compressors.

Late August
- Some team members returned to remake one of the joints
- At present the LN2 system is close to "closed-loop"

LN2 pump (submerged) wears out after 8+ months. Investigating different bearing cage materials that might have a longer lifetime.
DECam Status

- Dark Energy Camera is doing OK. No change in status so far in Y3.
- Discovered mountaintop dust on outside and inside surfaces of C1. This dust has built up over 3 years. To be cleaned as soon as the equipment is available. Data from Starflats removes the CCD to CCD variations that this would add to the throughput.
Y3 FWHM worse than Y1 & Y2

Figure shows FWHM for SN data (upper) and WF data (lower)
There has been an improvement in the past month.
Other News

• Dec. 2014 Operations Review Feedback Received about a month ago
  – Dec. ‘14 we gave the agencies a heads-up about the possible need for a Y6.
  – DOE have asked us to provide a budget update that includes more detail and to reply to a set of questions by end of Nov. 2015
  – They have asked us to provide a justification for Y6. How much does it improve DES’s DE Science?
   • Survey Strategy Task Force now has simulated surveys including Y5 and Y6. Puzzling over how to decide what the most sensible “worse than we expect”. Simulation info is served at https://cdcvs.fnal.gov/redmine/projects/dessurveystategy/wiki/Y6Prep
   • Collaborators Tim Eifler and Dragan Huterer heading up the team to pick it up from there.
DES Observers?
Operations Summary

• Y3 has had a tough start due to el Nino. This is the time of year when Y1 & Y2 became consistently very good. There is some evidence for an improvement now.

• Bragging Rights: None
Y3 Improvements for DECam/Blanco

- New Primary Mirror Support Pad air-pressure controls after Y2 ended removed a default astigmatism left-over form the previous mosaic.
- New primary LUT