Dark Energy Survey Operations

Tom Diehl
All-Experimenter’s Meeting
October 10, 2016
DES Finished 3 of 5 observing seasons

End of Y3 WF Survey Status by Filter

We got 60% of our expected average season in Y3. Plus side: 4-6 good exposures in the full survey field. Quality not quite as good on the West side.
Camera & Telescope Status

- Camera & Telescope are working with very high reliability.
- Active control of the 34,000 lb Blanco Primary Mirror is working!
Status of auxiliary systems

- GPSMon monitors precipitable water vapor in the atmosphere
- CTIO DIMM (2) measures true seeing
- RasiCam (all-sky IR camera) measures cloud cover, informs Calibration WG if photometric conditions. May ‘16 maintenance by Kevin Reil (SLAC).
- aTmCam measures atmospheric transmission in 4 filters.
Observing Summary
(up-to-date as of This Morning)

- Y4 is off to a very good start

<table>
<thead>
<tr>
<th>Season</th>
<th># Nights</th>
<th>Total Hours</th>
<th>Observing (%)</th>
<th>Lost Camera (%)</th>
<th>Lost Telesc. (%)</th>
<th>Lost Weather (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y1</td>
<td>105</td>
<td>888 ¼</td>
<td>85</td>
<td>3</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Y2</td>
<td>105</td>
<td>928 ¾</td>
<td>84</td>
<td>&lt; ½</td>
<td>&lt; ½</td>
<td>15</td>
</tr>
<tr>
<td>Y3</td>
<td>105</td>
<td>969 ¾</td>
<td>66</td>
<td>1</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Y4 Aug.</td>
<td>6 ¼</td>
<td>63 ¼</td>
<td>87</td>
<td>½</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Y4 Sep.</td>
<td>21 ½</td>
<td>221 ¼</td>
<td>97</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Y4 Oct.</td>
<td>6</td>
<td>59</td>
<td>88</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Y4 Total</td>
<td>34</td>
<td>353</td>
<td>93 %</td>
<td>0%</td>
<td>1½%</td>
<td>5½%</td>
</tr>
</tbody>
</table>

And the weather is likely to improve for the remainder of Y4
• Finished off Tiling 4 & Tiling 5
• Now out progress plots show we’re working on Tilings 6 & 7

• Lt. Blue: end Y3
• Dark Blue: Y4
• Red: Last night (a ½ night)
WF Status

10/09/16

Sept. 2016 2nd best DES month so far
29% good exposure time is for SN fields in Y4 (through 9/30/16)
• Fall 2016 Maintenance trip
  – LN2 pump replacement, new bearings w/ new material
  – Replacement 7s, 7r lines with ones that are easier to remove/install.
  – Pump air out of the 1r vacuum jacket
  – Transfer commissioning software to newer laptop computer
  – Sample the hexapod gearbox oil
Y5.5 Request Status

• Because we cannot make up for the very bad weather of Y3 we’re likely to ask for another observing season or part thereof. No SN in Y5.5 or Y6. For a Y6:
  • The Teff over the best 4500 sq-deg increases by 33%
  • The area for best WL measurements increases by 200%
DES Operations Summary

• Camera & Telescope are working well

• August is usually a “bad weather” month but this year was best month in the past year.

• Sept. 2nd best month ever.