Weather and Seeing Stats
and
Control System Progress Report

Nils Turner

12 March 2018 / CHARA Winter Meeting, Paris
## Weather Station Uptime

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>95.6</td>
<td>99.7</td>
<td>95.9</td>
<td>95.2</td>
<td>97.3</td>
</tr>
<tr>
<td>E2</td>
<td>81.8</td>
<td>62.2</td>
<td>3.4</td>
<td>65.0</td>
<td>96.5</td>
</tr>
<tr>
<td>S1</td>
<td>94.6</td>
<td>79.8</td>
<td>94.3</td>
<td>95.1</td>
<td>97.3</td>
</tr>
<tr>
<td>S2</td>
<td>93.1</td>
<td>98.5</td>
<td>97.0</td>
<td>93.3</td>
<td>84.5</td>
</tr>
<tr>
<td>W1</td>
<td>96.1</td>
<td>97.9</td>
<td>98.2</td>
<td>95.0</td>
<td>97.3</td>
</tr>
<tr>
<td>W2</td>
<td>97.9</td>
<td>99.6</td>
<td>98.0</td>
<td>92.1</td>
<td>97.2</td>
</tr>
<tr>
<td>L1</td>
<td>67.4</td>
<td>12.9</td>
<td>99.7</td>
<td>99.4</td>
<td>63.1</td>
</tr>
</tbody>
</table>

*Table: Weather station uptimes as a percentage of time.*
## Cross-year Vital Stats

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurable Wind</td>
<td>35.6</td>
<td>27.5</td>
<td>11.4</td>
<td>14.3</td>
<td>50.8</td>
<td>63.7</td>
</tr>
<tr>
<td>High Wind†</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>High Humidity‡</td>
<td>15.6</td>
<td>13.5</td>
<td>16.0</td>
<td>17.5</td>
<td>17.4</td>
<td>18.6</td>
</tr>
</tbody>
</table>

**Table:** Table entries are percentages of time. Values quoted are the largest of the six bunker weather stations. † High wind is defined as being above 20 kph. ‡ High Humidity is defined as being above 90%.
Rainfall

data courtesy of L. Webster

Cumulative Rainfall, Mount Wilson

- Average, 2009-present
- Rainy Years
- Drought Years
- 2017-present
Seeing \( r_0 \) values

tiltip, May-Sep, prime observing hours

2006-2016
2017
Seeing

$r_0$ values, last year

![Graph showing seeing values for 2006-2015 and 2016.](image-url)
Seeing $t_0$ values

2004-2013 data vs. 2016, Classic

No. Meas. (Area Normalized)

Seeing ($t_0$, msec)
Seeing $t_0$ values

2004-2013 data vs. 2017, Classic

No. Meas. (Area Normalized)

Seeing ($t_0$, msec)
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  - patched kernel doesn’t work with all the CHARA code
  - our hardware is old and slow
- Web interface to actuator (picos, zabers, shutters, etc.) control
- There must be more tasks I haven’t thought of yet
Mount Wilson network converting to gigabit
Infrastructure

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- CHARA converting to VoIP phones
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- Mount Wilson network converting to gigabit – potential increased bandwidth from the current 50 Mbps
- CHARA converting to VoIP phones – soon to be phones inside the telescopes as well as in the bunkers