

Current Telescope and TCS Performance

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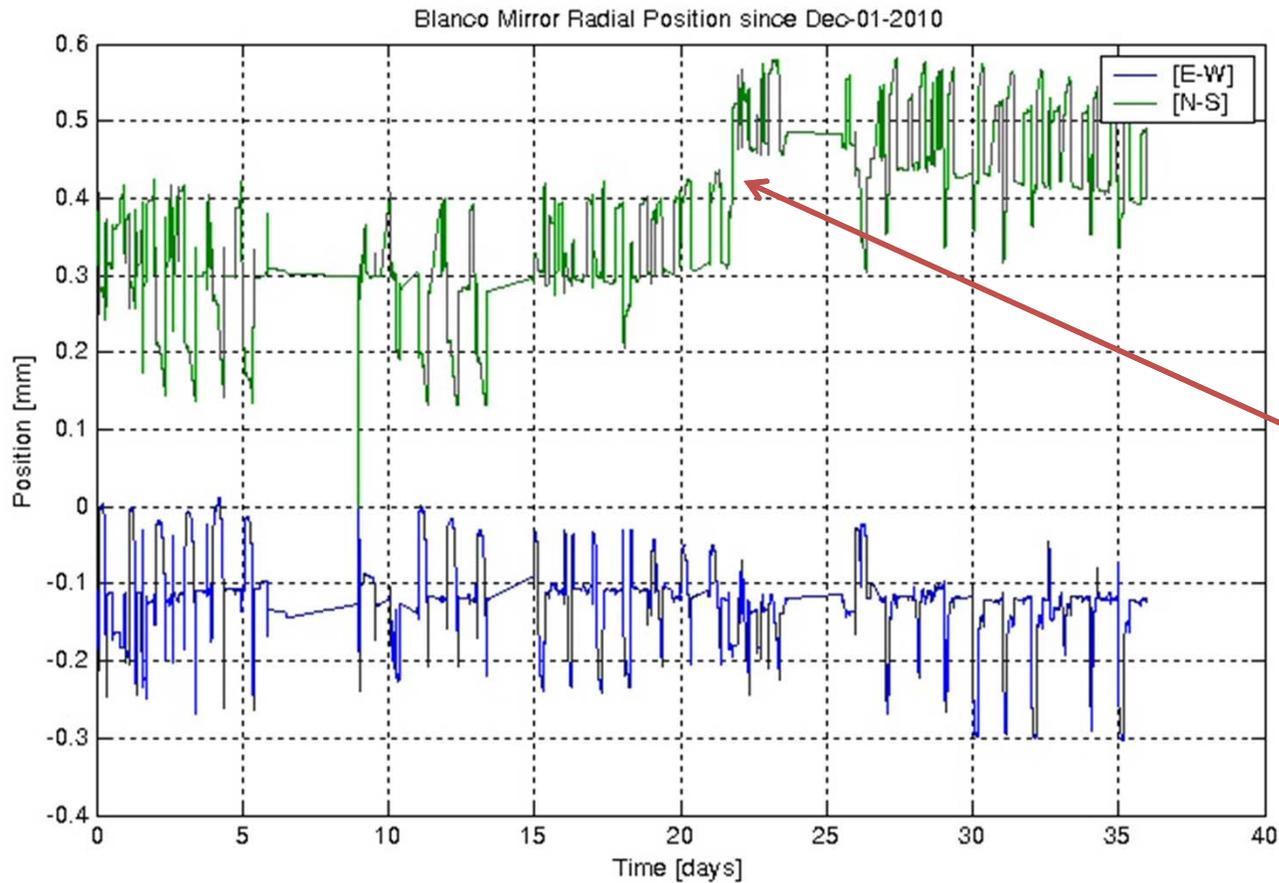
DECam Focus & Alignment Review

2011 Jan 09

Mirror supports

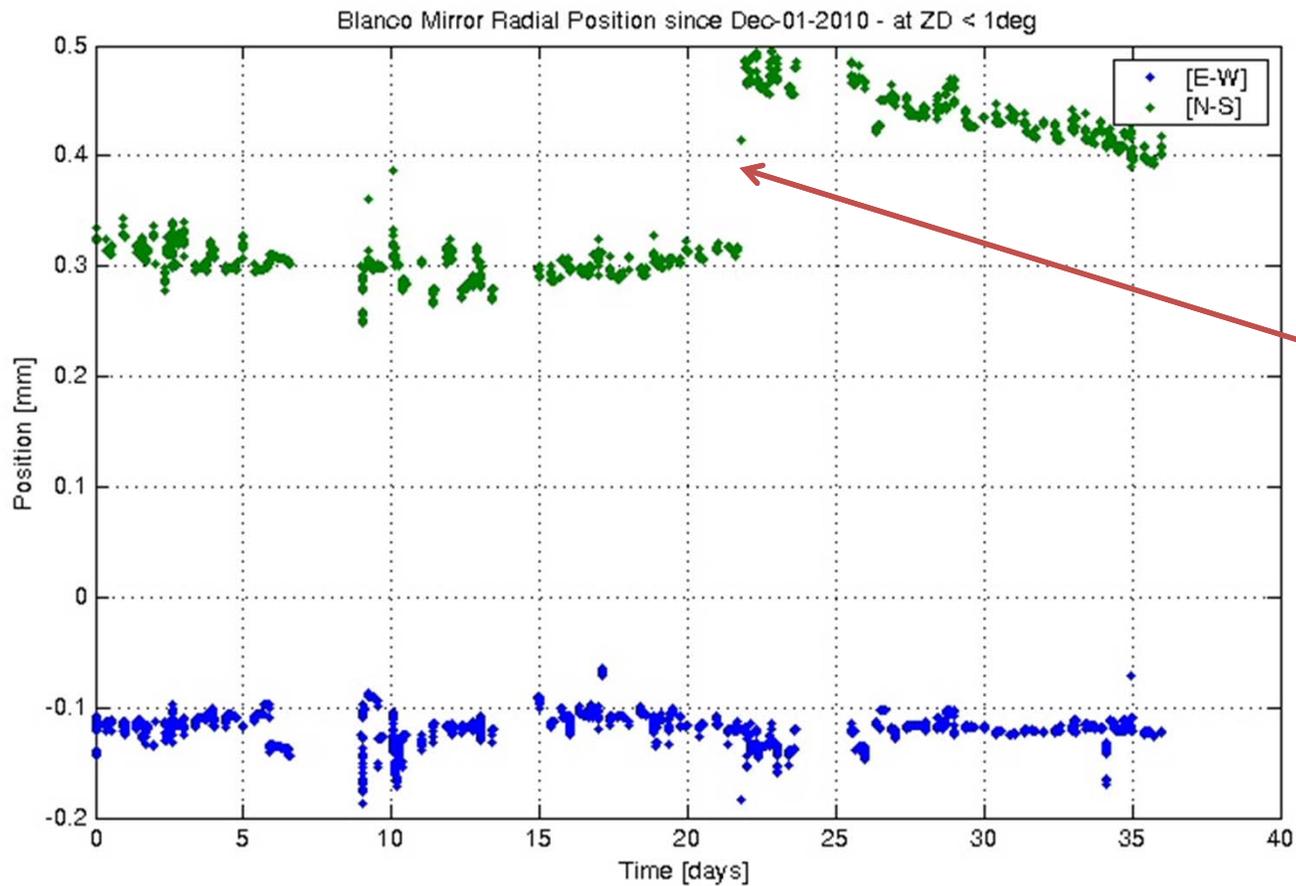
- Radial supports are all still intact.
- Mirror/Cell motions are typically small
 - Peak-to-peak in one night $\sim\pm 0.1\text{mm}$
 - Occasional large movements of $\sim 0.2\text{mm}$ with long (\sim weeks) decay times, latest clearly associated with glitches in the active optics system.

Mirror/Cell position changes, past month.



Telescope lost air 3 times that night, cause unknown.

Mirror/Cell positions at zenith, past month



Offsets like this take *weeks* to settle, restoring forces are small.

Optical performance

	COMA				ASTIGMATISM				TREFOIL				QUADRATIC				Total
	Mag	stdev	Angle	stdev	Mag	stdev	Angle	stdev	Mag	stdev	Angle	stdev	Mag	stdev	Angle	stdev	d80
Averages in nm and Deg	837	333	212	74	521	108	184	108	206	56	170	24	106	47	156	25	
Averages in d80 Arcsec and Deg	0.12	0.05	212	74	0.17	0.04	184	108	0.08	0.02	170	24	0.04	0.02	156	25	0.23

- These data are taken over the last 16 months with the Hartman screen and using only the active optics baseline correction.
- The LUTs are proving unstable after all
 - This may be due to improper procedures when collecting the data, specifically not waiting for the active optics system to settle after a pointing change. For normal observations, this is not a problem due to the setup time taken to acquire a new field. We are continuing to investigate.

TCS Upgrade

- Significant delays due to:
 - Manufacturing errors in the Delta Tau drive boxes,
 - now fully resolved
 - Noise on the encoder lines
 - We have purchased appropriate isolating electronics which will be tested this coming week.

New TCS, full integrated test

- In December 2010, using the old incremental encoders and the new motor controllers, we were able to demonstrate the new system is capable of achieving the accelerations ($0.8 \text{ }^\circ/\text{s}^2$) and cruise speeds ($0.8^\circ/\text{s}$) required for DES observations.
- The telescope PMAC controller was commanded from the TCS Kernel, to perform a series of maneuvers consisting of consecutive and contiguous slew, track, offset & slew motions, demonstrating the capacity for responding to optimal trajectories without mode switching.
- Because we have not used the full system with the tape encoders, we cannot yet provide meaningful numbers for pointing precision nor tracking jitter.

New TCS, next

- Over the next few weeks, the full system, including the tape encoders, will be shaken down. Testing will take place in February (20th & 21st).
- The basic system, as required for DES, should be commissioned by April.
- There remains to extend the system to f/8 instruments via SMC upgrades, relocation of various control lines to the new control room and other details, none of which will affect DES.