

Report on WHT Tertiary Mirror (M3) 2 Oct 2018: reflectivity and scattering measurements over 1 year. Water wash 20 Sept 2018.

Wash by Neil & Emilie. First dry air, then rinse, then soap & water (sponges), IPA+H2O rinse. 2 iterations. Dragged propanol tissue over foggy area on left.

Water wash was effective, increasing Reflectivity by 6 to 7%. Visual appearance improved, although some faint drop stains remain.

Bluish fog also remains. Scratch damage over wide areas remind one of tissue texture but also appears in areas not drag cleaned this time.

Scattering reduced by 7-13%, but remains close to 20% in blue bands. Thus wash recovers values from 1 year ago in Blue and improves 3-5% in Red.

M3 had better reflectivity and scattering than M1 in 2 red bands immediately after wash, but poorer than M1 in the rest, significantly so in 2 blue bands.

About 1% deterioration in measurements discovered 2 weeks later. Previously washed in March 2016.

				Tempr. °C	Reflectivity (%R) wavelength of band (nm)							"Dust Indices" (DI)							
					365	404	464	522	624	760	970		365	404	464	522	624	760	970
1186	29/09/2017 14:05	5 WHTM3 all	23.1	81.9	81.1	81.3	82.0	82.0	79.8	86.0		21.6	19.9	20.5	15.1	16.7	13.3	12.8	
1187	29/09/2017 14:06	5 WHTM3 all	23.1	80.7	80.2	80.8	81.4	81.7	79.7	86.2		26.4	25.1	24.4	17.7	19.0	15.1	13.5	
1405	30/04/2018 13:52	5 WHTM3 all	21.4	76.2	76.1	76.7	78.3	78.4	77.0	83.9		30.9	33.5	33.7	23.8	25.0	19.6	17.3	
1406	30/04/2018 13:53	5 WHTM3 all	21.3	80.4	79.8	80.8	80.0	81.0	78.9	84.0		23.8	22.2	21.8	18.2	18.5	15.2	16.0	
1468	18/09/2018 11:42	5 WHTM3 all	21.4	76.5	76.0	76.5	77.0	76.9	75.1	80.8		29.7	28.5	29.2	22.8	25.0	21.0	21.2	
1469	18/09/2018 11:43	5 WHTM3 all	21.5	76.2	77.0	77.6	78.4	77.2	76.4	81.9		30.1	27.6	26.7	20.5	24.4	19.1	19.3	
After Wash																			
1470	20/09/2018 14:02	5 bottom	20.9	82.9	82.6	83.4	84.3	84.5	83.1	90.2		21.8	19.5	17.8	12.0	11.9	8.0	6.5	
1471	20/09/2018 14:03	5 R< centre	20.9	83.7	83.0	83.8	84.4	85.1	83.2	90.3		20.7	18.5	17.1	12.0	10.9	7.9	6.3	
1472	20/09/2018 14:07	5 L> centre	21.1	81.3	81.2	82.3	83.6	84.2	82.9	90.2		26.8	23.3	21.2	14.1	13.5	9.0	6.9	
1473	20/09/2018 14:08	5 top left	21.3	83.1	82.7	83.5	84.5	84.9	83.4	90.4		22.9	20.2	18.4	12.3	11.9	7.9	6.4	
averages					82.8	82.4	83.3	84.2	84.7	83.2	90.3		23.1	20.4	18.6	12.6	12.1	8.2	6.5
change from washing					6.6	5.4	5.7	5.8	7.5	6.8	8.4		-7.1	-7.2	-8.1	-7.9	-12.4	-10.9	-12.8
relative to averages from 1 year ago					0.8	1.3	2.0	2.2	2.7	3.4	4.3		1.5	0.5	-1.9	-2.5	-4.7	-5.1	-6.3
relative to current WHT M1					-3.9	-3.1	-2.1	-1.4	-0.4	0.2	1.3		9.5	7.4	5.4	2.3	0.7	-1.1	-2.9

Orange highlight for worst values, notably in blue bands. This is probably a stain, many of which remain visible.

Measurements taken 2 weeks after wash shown on next page:

					Tempr. °C	Reflectivity (%R) wavelength of band (nm)							"Dust Indices" (DI)							
						365	404	464	522	624	760	970		365	404	464	522	624	760	970
1486	02/10/2018 11:49	5 bottom R	20.4		81.9	81.7	82.7	83.3	83.8	82.1	88.9		24.0	21.7	19.5	14.1	13.6	9.8	8.4	
1487	02/10/2018 11:50	5 L<centre	20.3		82.4	81.9	82.6	83.7	84.2	82.6	89.6		23.4	21.2	19.5	13.2	12.8	9.0	7.2	
1488	02/10/2018 11:52	5 top L	20.3		81.9	82.0	82.7	84.3	83.6	82.8	89.5		25.4	21.6	20.1	13.6	16.2	9.4	8.0	
averages						82.1	81.9	82.7	83.8	83.9	82.5	89.3		24.3	21.5	19.7	13.6	14.2	9.4	7.9
change over 2 weeks						-0.7	-0.5	-0.6	-0.4	-0.8	-0.7	-0.9		1.2	1.1	1.1	1.0	2.2	1.2	1.3