Table 1. Instrument Specifications for Clementine's UV-VIS and NIR Cameras and the Moon Mineralogy Mapper

	UV-VIS	NIR	M^{3a}
Focal plane array	Thompson CCD	Amber InSb	HgCdTe
Pixel array (samples × lines × bands)	384 × 228 × 1	256 × 256 × 1	600 × 1 × 260 (T) 300 × 1 × 85 (G)
Pixel size (μm)	23 × 23	38 × 38	27 × 27
Field of view (deg)	5.6 × 4.2	5.6 × 5.6	24
Spatial resolution[b] (m/pixel)	100–200	150–500	70 (T) 140 (G)
Spectral range and resolution[c] (nm)	415 ± 20 750 ± 5 900 ± 15 950 ± 15 1000 ± 15 400–1000	1100 ± 30 1250 ± 30 1500 ± 30 2000 ± 30 2600 ± 30 2792 ± 146	460–2980 ± 10 (T) 460–700 ± 40 (G) 730–1550 ± 20 (G) 1580–2980 ± 40 (G)
Power (W)	4.5	11	15

[a]T, target mode, and G, global mode.
[b]Clementine at 425 km altitude and M^3 at 100 km altitude.
[c]Clementine, band pass; filters ± FWHM.

2009]. Although Chandrayaan-1's did not complete its scheduled mission, M^3 imaged almost the entire lunar surface [cf. *Boardman et al.*, 2011] in global mode, which consisted of 85 spectral bands between 460 to 2980 (cf. Green et al., submitted manuscript, 2010). Orbital observations from M^3 are divided into optical periods (OP) that differ mainly with spacecraft altitude and beta angle (the angle between the plane of the spacecraft's orbit and the vector from the sun). M^3's spatial resolution is ~140 m/pixel for images obtained while in a 100 km orbit, between OP1A and OP2B, and 280 km/pixel in a 200 km orbit, OP2C-OP2D [cf. *Boardman et al.*, 2011]. For this comparative analysis we used level-1B calibrated M^3 data (radiometrically calibrated to radiance) from OP1A-OP1B. The data were selenographically registered by ray tracing each M^3 spatial element on the lunar surface to a LOLA-derived lunar reference frame [cf. *Boardman et al.*, 2011]. The reader is referred to the several companion articles in this issue for thorough discussions of the M^3 instrument and calibration (Green et al., submitted manuscript, 2010), geometric control [*Boardman et al.*, 2011], and photometric correction [*Hicks et al.*, 2011], which are all fundamental for the comparison presented herein.

[5] M^3 calibration is primarily based on preflight laboratory-acquired calibration information, and is improved through adjustments to the flat field and stray light calibrations using in-flight data (Green et al., submitted manuscript, 2010). Radiance calibration is still undergoing refinement, and we expect subsequent calibrations (such as will be released to the PDS) will have better addressed known issues, such as a scattered light component below 1 μm, that may cause artifacts in the work presented here. Our analysis used "K"-calibrated, photometrically corrected reflectance data at standard illumination geometry (incidence angle, i = phase angle, α = 30) [cf. *Boardman et al.*, 2011; *Hicks et al.*, 2011] to bring the data to a level of processing similar to that of Clementine's DIMs (Figure 2). This photometric correction does not include topography, instead it assumes a smooth sphere of radius = 1734 km, which is the same as the photometric calibration for Clementine. M^3's K calibration contained residual spectral structure still present even after these described conversions (cf. Green et al., submitted manuscript, 2010). We used a correction factor (specific to each wavelength) to smooth M^3 spectra, which is described by *Clark et al.* [2011]. Spectra presented here are truncated at 2.6 μm to avoid stretching of the plot due to the high reflectances at longer wavelengths due to thermal emission. Thermal corrections are also still being refined, and so have not been applied to the data used in this analysis. This is also in keeping with our endeavor to compare data sets at similar levels of calibration as Clementine data were never thermally corrected. As a result, beyond 2.2 μm the data may diverge from a true reflectance spectrum due to an influence from thermal emission, and it should be noted that these do not necessarily result from calibration differences.

[6] Clementine's 11-band spectra were achieved by passing light entering the optics through one of six spectral filters on a rotating wheel [*Nozette et al.*, 1994], one wheel for each camera. The six band-pass filters for the UV-VIS camera and six for the NIR camera are listed in Table 1, and their spectral response curves are shown in Figure 1.

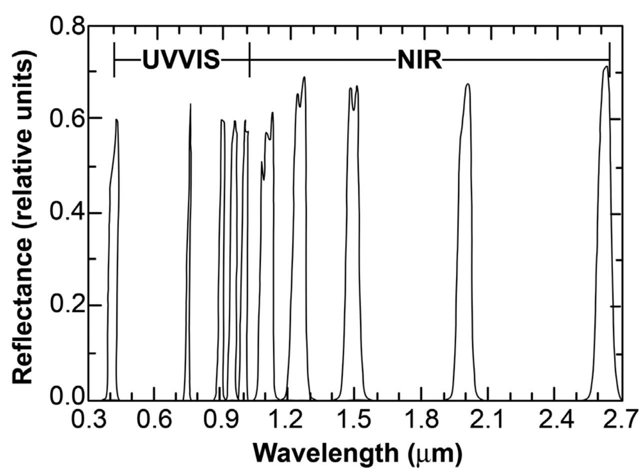

Figure 1. Band passes of Clementine filters for the UV-VIS and NIR cameras. In addition to the 10 filters shown here, the UV-VIS camera had a broadband filter, and the NIR camera had a filter centered near 2800 nm. From *Nozette et al.* [1994].