In a MDGM, the left limb of one swath is merged with the right limb of the adjacent swath using a weighted average. Due to the nature of the MRO orbit and the MARCI observation strategy, there is large overlap at the summer high latitudes and very little overlap at the low latitudes. Larger weight is assigned to the pixel with a smaller sum of incident, emission, and phase angles. As it is very challenging to completely "flatten" the brightness of an image with such a wide range of illumination and viewing geometries, seams and other artifacts are still noticeable in some MDGMs.

During the production of version 2 MDGMs, a normalization step is added after the application of the photometric function correction to further flatten the residual large-scale brightness variations. This involves deriving an averaged photometrically corrected image swath and using it to normalize each image swath (i.e., dividing each swath by the averaged swath). When a bright polar cap (in one or both hemispheres) shows up in each swath, it will remain in the averaged swath. The normalization step will tend to cancel it out, which means that the polar cap in MDGMs is not as bright as it should be. Moreover, the normalization can lead to a darker or brighter annular ring in the vicinity of the cap edge. This is because the polar cap is zonally nonsymmetric, and the polar cap in the averaged swath can be larger or smaller than that in each individual swath. In some mission subphases, the regolith area near the cap edge is extrapolated to the pole to remove the anomalously bright cap in the averaged image swath. This results in brighter polar cap(s) and removes the associated artificial annular ring in MDGMs. However, the extrapolation can sometimes lead to severer seams in the polar region and abnormal (non-white) color of the polar cap.

In practice, MRO MARCI MDGMs are processed one mission subphase at a time. Since photometric parameters and other normalization data are derived for each mission subphase, strictly speaking, the last day of the first subphase is processed differently than the first day of the second subphase, and so on. To improve consistency among mission subphases, the median of each MDGM is scaled to a common value for each filter and then the IDL program bytscl.pro is applied to stretch the data range between zero and a pre-chosen maximum value to 0 - 255. A consistent color stretch scheme is used across all mission subphases to make RGB color composite. Please refer to the processing document for details. Some discontinuity in color is still discernable, especially between RGB composites made from band4 versus band3.

Spacecraft maneuvers often result in anomalous swath shape and imaging geometry. The edges of these swaths have corresponding "dents" and "bumps". These abnormal swaths are more difficult to process and often result in additional brightness anomalies in MDGMs. The effect is more severe in UV filters (band6 and band7) than in Visible filters. Some of the affected areas in UV and blue MDGMs have to be cropped out so that the anomalies won't look overwhelming.

Missing MDGMs are due to following:

(1) Long gap between B12 and B16, as there are no MARCI images for B13, B14, and B15.

(2) Scattered shorter gaps when MARCI images are not available.
(3) Most MARCI visible images (with “MA” in their names) include all 5 visible bands. However, some MARCI visible images (with “MC” in their names) only have band1, band2, and band3. Thus, sometimes, MDGMs will have missing days for band4 and band5.
(4) When a MDGM only contains one swath, this swath usually has already been included in the previous day. Thus, 1-swath MDGMs may be missing. This typically occurs for the last day of a MDGM.
(5) Lost MDGMs:
P22: data/band0003 days12-34
data/band0005 days10-34
data_resx2/band0003 days11-34
data_resx2/band0005 days10-34
D11: band5_resx2/band0005/day01