**Introduction:** In previous work stereo-derived Digital Elevation Models (DEMs) were used to identify differences in the rim-floor depths and rim heights between Venusian impact craters with radar-bright and radar-dark floors [1]. Subsequent work [2] has shown that impactor dispersion has a significant effect on rim-floor depths for craters with diameters (D) < 15 km, so their shapes are not considered here. Since these earlier works I have produced DEMs for all remaining available craters covered by left-left Magellan stereo and profiles for all bright-floored craters covered by right-left stereo. Here I summarize preliminary results from this expanded data set that contains 89 craters with D > 15 km, 37 of which have a radar-bright floor (data in [1] contained 47 craters, 21 with bright floors).

**Figure 1.** Rim-floor depths of Venusian craters from DEMs derived from Magellan stereo imagery. The DEMs have a horizontal resolution of ~1 km and vertical resolution of tens of meters. Errors for rim-floor depths are typically 100 m and are a function of both DEM resolution and the variability of rim and floor topography for individual craters.

**Summary of topographic data:** Figures 1 and 2 show the rim-floor depths and rim heights for the expanded data set. In these plots a crater is deemed to have a “bright” or “dark” floor by qualitative comparison with the terrain surrounding the crater. A dark floor typically has backscatter properties indistinguishable from the surrounding terrain, while a bright floor usually has a backscatter comparable to the ejecta blanket. The results are not changed substantially if quantitative measures of floor backscatter properties are used to divide the crater population. Best fit functions for rim-floor depths (d) for bright- and dark-floored craters on smooth plains are $d = 513 \, D^{0.122}$ and $d = 191 \, D^{0.292}$, respectively, with d in m and D in km. The respective functions for rim heights (rh) are $rh = 72 \, D^{0.351}$ and $rh = 151 \, D^{-0.039}$.

**Figure 2.** Rim heights of Venusian craters. Rim heights can be slightly negative in areas of rugged terrain because they are calculated by subtracting the average elevation of the terrain surrounding the ejecta blanket.

Although there is considerable scatter in the data, it is unambiguous that impact craters with radar-bright floors are deeper and have higher rims than craters with radar-dark floors. As discussed in detail in [1], correlations of bright floors with other unrelated features attributable to fresh craters indicates that the vast majority of craters form with bright floors. The lack of sedimentary processes on Venus and the lower rim-floor depths indicate that floors become dark as a result of post-impact volcanic infilling. The lower rim heights for dark-floored craters indicate that filling of the craters is accompanied by volcanic embayment.

**Geologic histories:** Close visual inspection of craters with dark floors, particularly when aided with the stereo-derived topography, corroborates the conclusions drawn from the statistical differences between bright- and dark-floored craters. Craters with bright floors will typically have continuous ejecta blankets. Dark-floored craters often have patchy ejecta blankets where the low-lying areas are all radar-dark.
eastern exterior of the crater have been partially covered by post-impact lavas. What is most peculiar about this crater is the deformed eastern rim of the crater, the nonsymmetric peak ring, and the tessera-like fabric in the southeastern portion of the peak ring. The latter two observations are most unusual when one considers that Cleopatra crater, located on the side of Maxwell Montes, has a fairly symmetric peak ring without a tessera-like appearance. I suggest that some deformation of the eastern side of the crater occurred before the final volcanic flooding event. If this interpretation is correct then significant tectonic deformation and emplacement of volcanic plains both predate and postdate the crater.

**Final thoughts:** As the impact crater population is examined in greater detail it is becoming clear that most of the craters are not at the top of the stratigraphic column, and many craters have a complicated post-impact tectonic and volcanic history. For large craters it is not uncommon for different parts of the crater to have different post-impact histories, so the crater can be the youngest feature in some places but not in others. Given that the image resolution is ~100 m, it is not surprising that the sources, conduits, and individual flow boundaries are often not evident for the lavas that fill and embay the craters. Imagery alone often allows multiple interpretations for an individual crater’s history, and one of the allowable interpretations may be that the crater is the last feature that formed. However, the constraints provided by the addition of high-resolution topography frequently rule out this simplest interpretation.