AGES OF YOUNG BASALTS NORTHWEST OF THE ARISTARCHUS PLATEAU. J. M. Walsh[1], J. D. Clark[1], H. Bernhardt[1], M. S. Robinson[1], C. H. van der Bogert[2], [1]School of Earth and Space Exploration, Arizona State University, Tempe, AZ, USA (jessica.walsh.1@asu.edu); [2]Institut für Planetologie, Westfälische Wilhelms-Universität Münster, Germany.

Introduction: Aristarchus Plateau is one of the most volcanically diverse regions on the Moon. An exposure of highland crust surrounded by some of the youngest mare basalts (~1.2 Ga) [**2**], the plateau hosts pyroclastic and effusive materials and one of the largest rilles on the Moon [**1**].

Since the work of [**2**], others have re-examined the ages of nearby mare basalts [**3**, **4**, **5**]. [**3**] recently re-examined the P60 mare basalt unit south of the Aristarchus plateau, which was previously determined to be the youngest lunar basalt unit [**2**]. [**4**] re-examined P53 using Wide Angle Camera (WAC) photo mosaics (100 mpp), differentiating dark and light mare, and found two distinct ages on the P53 unit. [**2**] first determined an absolute model age (AMA) of 1.68 +/-0.03 Ga (Fig. 1) for the entire P53 mare unit, while [**4**] determined an AMA of 1.7 +/-0.09 Ga for dark mare and 2.49+/-0.13 Ga for light mare. The count areas for their crater size-frequency distribution (CSFD) measurements were, however, not explicitly shown [**4**].

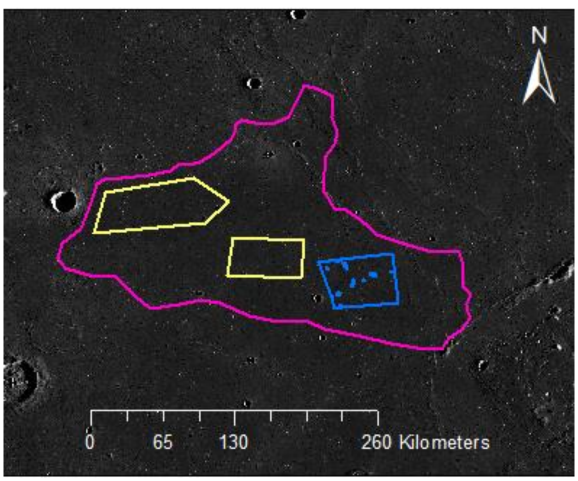

Figure 1: *P53 mare basalt (purple) shown on LROC Wide Angle Camera Global Mosaic basemap (100 mpp) centered at 30° N,* -61° W. *Count areas of [2] are marked in yellow and the CSFD measurement area from our investigation marked in blue.*

Here, we re-examine the age of the P53 basalt to the northwest of the plateau, by determining AMAs from Kaguya and WAC image datasets and comparing those to previous work of [**2**, **3**, **4**]. Previous work was conducted on lower resolution datasets, or their count areas were not well-documented, justifying an updated AMA to constrain the ages of volcanic activity near Aristarchus Plateau.

Data and Methods: CSFD measurements were conducted on the WAC Global Mosaic basemap (100 mpp [**6**]) and Kaguya morning mosaic (7 mpp). The ArcGIS extension, CraterTools [**7**], was used to define count areas and perform the CSFD measurements. The CSFDs were then plotted and fitted in Craterstats2 [**8**], using the techniques described in [**9**]. The AMAs derived in Craterstats2 used the production and chronology functions of [**9**], valid for craters >10m and <300 km in diameter.

We selected a different count area than [**2**] on the eastern edge of the P53 unit (Fig. 1, blue polygon) to see if we would derive a similar age. We avoided wrinkle ridges that cross the area to minimize resurfacing issues. One caveat for selecting a count area in this region is its proximity to Aristarchus crater, where secondary crater chains may have affected the area more than the areas measured by [**2**]. Therefore, the Clementine Color Ratio map [**10**] was used to define an area on the P53 unit, restricted to a spectrally homogeneous region. Obvious secondary craters and chains were excluded from our CSFD measurements and count areas, respectively.

Results & Discussion: Our AMA for the P53 unit is 1.59 ± 0.24 Ga based on the Kaguya data (Fig. 2) and 1.63 ± 0.27 Ga for WAC (Fig.3). Additionally, we identified a second age determination at 2.05 ± 0.057 Ga and 2.04 ± 0.14 Ga, for Kaguya and WAC respectively, in our crater population < 400 m.

For comparison with our AMAs, [**2**] determined an age of 1.68 ± 0.03 Ga and [**4**] an age of 1.70 ± 0.09 Ga (for their "darker mare", which corresponds to a subunit of P53). The older age in our AMA is fit to a kink in the size-frequency curve between craters 400-500 meters in diameter, where we can distinguish two separate ages on either side of the kink. [**4**] also determined a second age for P53 which corresponded to a "lighter mare", with an AMA of 2.49 +/-0.13 Ga. [**2**] also noted that P53 showed evidence for resurfacing, with a second age closer to [**11**] at 2.5 Ga.

Conclusion: Our AMA of P53 using WAC and Kaguya images match with [**2**] and [**4**] within the margin of error. A re-examination of other nearby mare units around Aristarchus Plateau using high resolution imagery from Kaguya may be useful for further constraining these secondary model ages, which are thought to be correlated with resurfacing events across these young mare basalts.

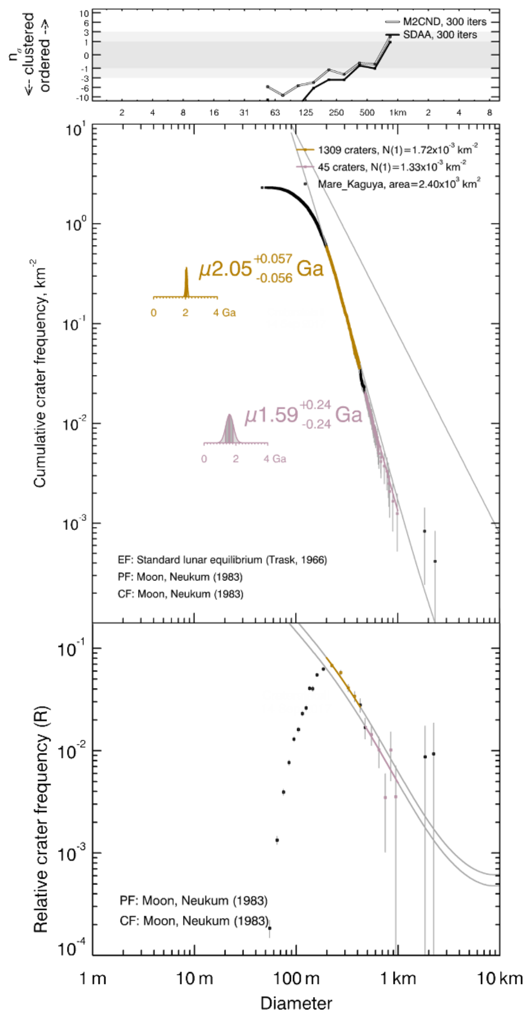

__Figure 2:__ Absolute model age Kaguya mosaic.

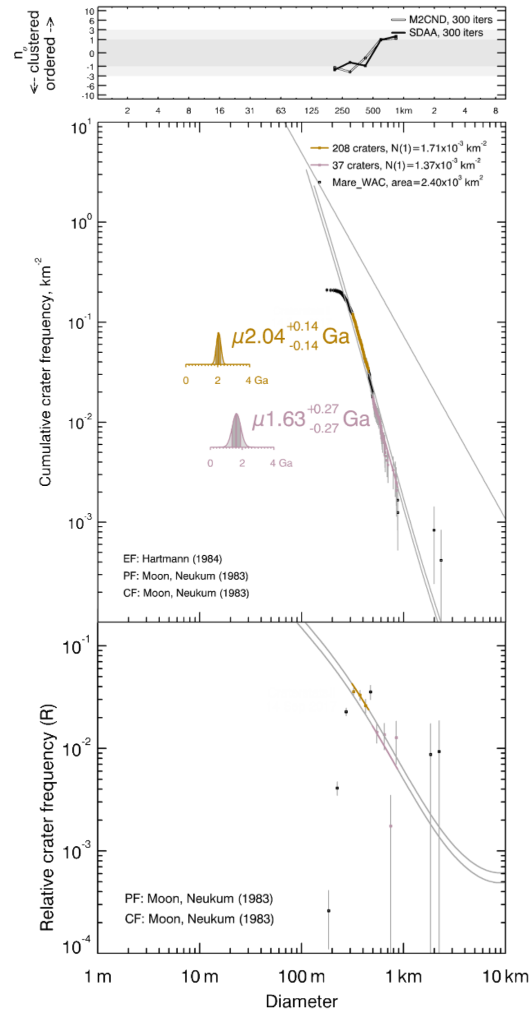

__Figure 3:__ Absolute model age WAC mosaic.

Acknowledgements: We would like to thank Wajiha Iqbal from the Institut für Planetologie for her assistance in processing the Kaguya images.

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