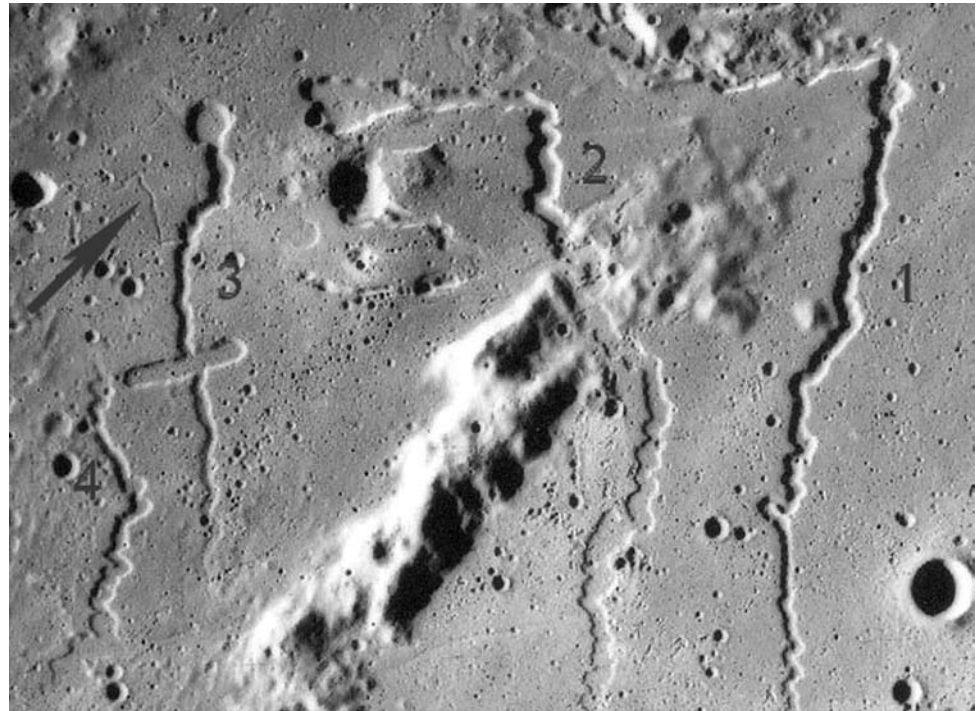


Prinz and Nearby Features

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1. Introduction

Prinz is a large Imbrian-Age crater flooded by Eratosthenian mare soils. The rilles occur mostly in a smooth, probably Eratosthenian mare unit which exhibits relatively sharp contacts with an older, probably Imbrian, roughly textured unit (Strain and El-Baz, 1975). In a previous paper I examined the width of the rilles using an Apollo 15 image (AS15-M-2195) and, for comparison, a CCD telescopic image taken with a Maksutov Cassegrain which was 18 cm in diameter (Lena, 2008). The IAU's Rimae Prinz includes the four large rilles around the peak named Harbinger Mu and probably the one starting in from the rille labeled as 3 (see image from Apollo 15 M 2195) and named Rima Handel in LTO 39A3. The thinner rilles in the west are an extension of the neighboring Rimae Aristarchus (Fig.1). In this article, the origin of three bumps



Apollo 15 M 2195

detected near the crater Krieger is described. The study is also an interesting test case for how well features can be interpreted from Earth-based photos.

2. Digital images and method

Fig. 1 displays Prinz and its rilles. The image



Figure 1: Prinz and Rilles. 11-9-08. 21:42 UT.

Figure 2: Prinz area

was taken on November 9, 2008 at 21:42 UT using an 18 cm Maksutov Cassegrain and a Lumenera LU 075M. This image is composed of two different photographs. Another image, taken in very oblique illumination, was made on October 10, 2008 at 21:10 UT (Fig.2). Fig. 3 is an enlarged view of the CCD image and shows 3 bumps, marked with arrows. The bumps could be dome-like features or three unresolved craterlets. The uncertainty is due to the limits imposed by resolution and seeing. [An example is Linnè crater: it looks like a mound under an oblique solar angle but definitely displays its crater nature when imaged under high solar angle.] The three bumps, shown in Figures 2 and 3, are also visible in Plate C19 of the Consolidated Lunar Atlas (Fig.4).

An image from Lunar Orbiter IV (IV-144-H3) is

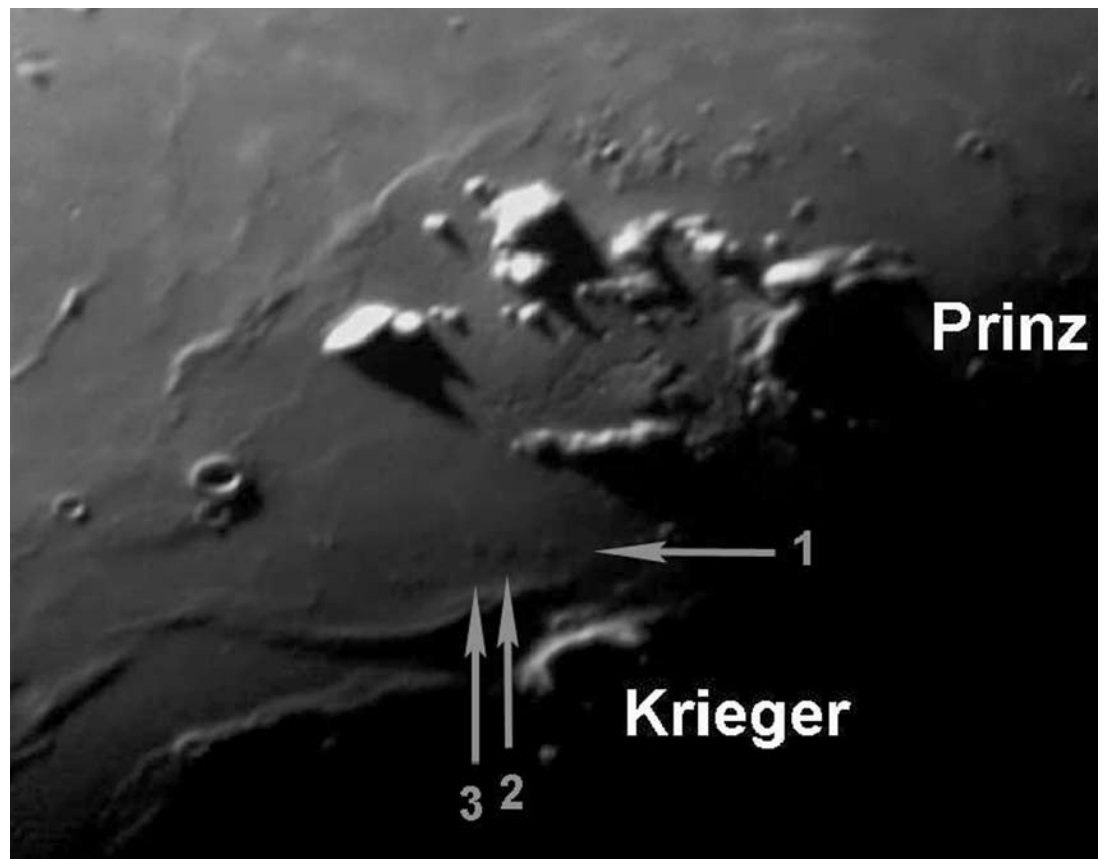


Figure 3: Enlarged view of figure 2 showing 3 bumps.

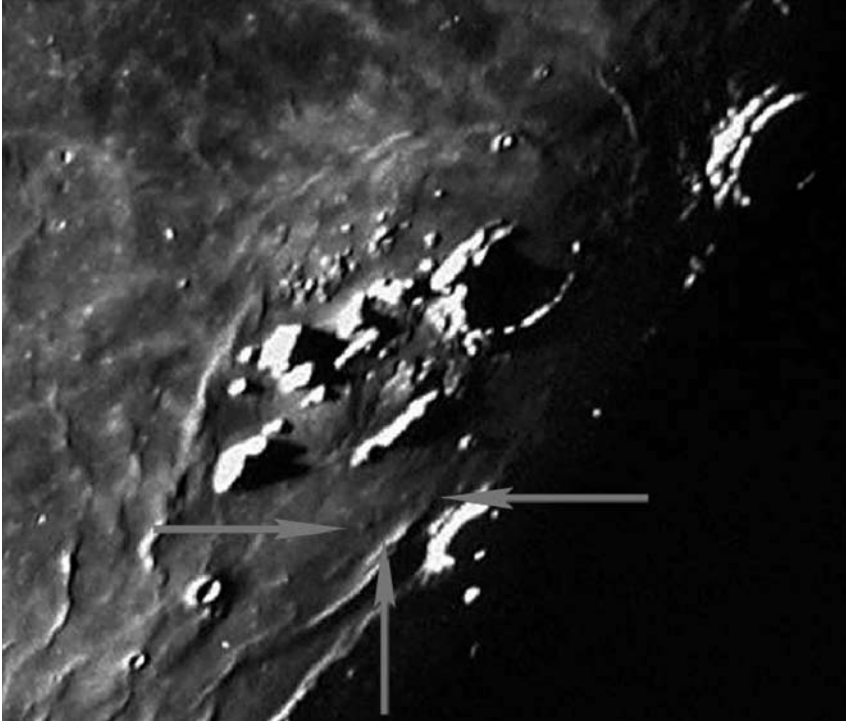


Figure 4: Plate C19 from the Consolidated Lunar Atlas

shown in Fig.5, where the three features are marked with arrows, corresponding to two evident craterlets.

This area was extensively photographed by Apollo 15 and appears in the LTO 39A2. Arizona State University (ASU) has recently posted high resolution images of some of the Apollo 15 photos from which the LTO was prepared. The region examined in this study is detectable with very high resolution in the Apollo 15 imagery (<http://apollo.sese.asu.edu/webmap/summaries/html/AS15-M-2082.html>). A crop of the region of interest is shown in Fig.6.

The location of the three objects was determined by superimposing Fig.3, transformed into a rectified view, onto the Apollo 15 frame allowing the

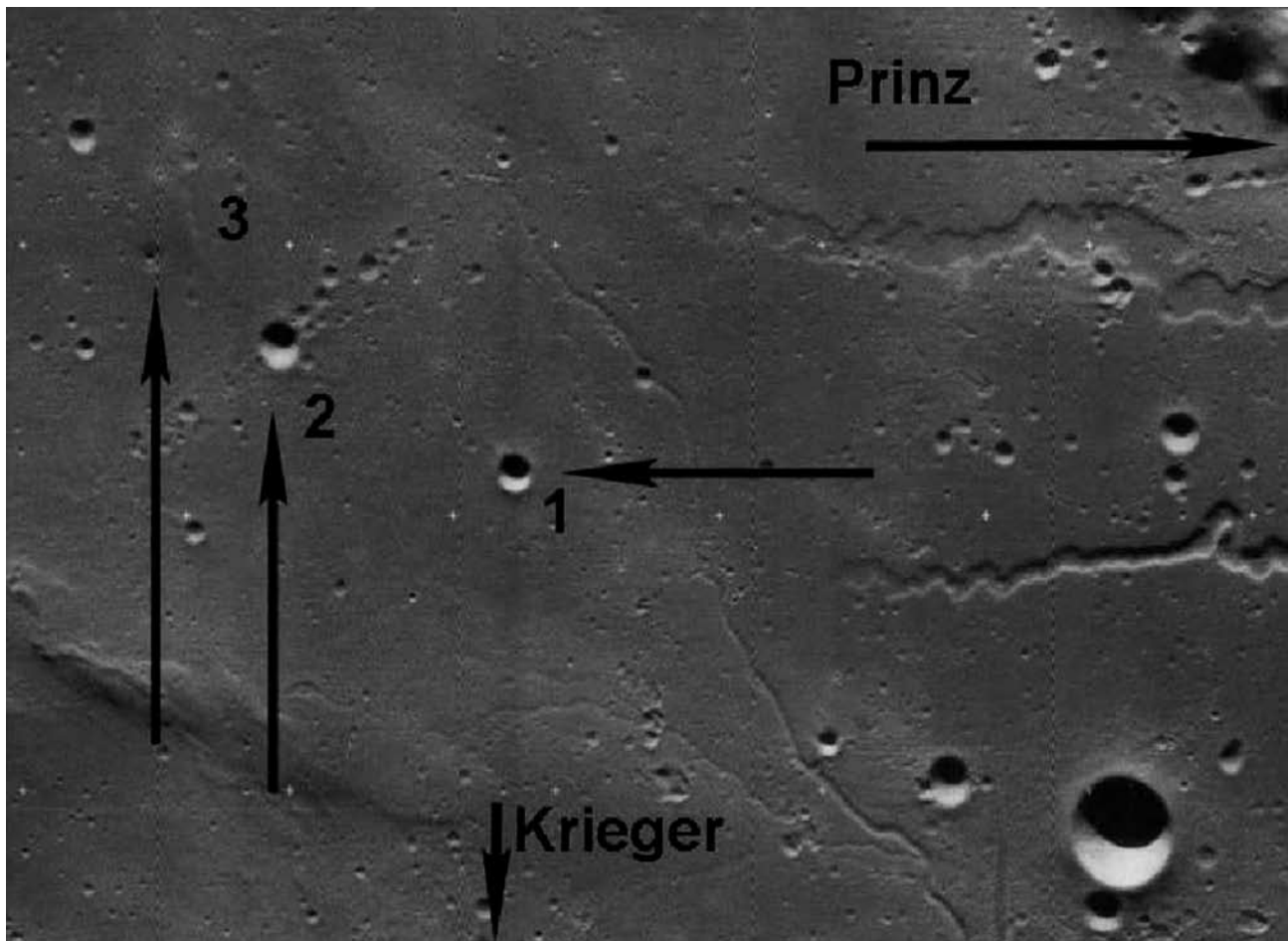


Figure 5: Image from Lunar Orbiter IV (IV-144-H3)

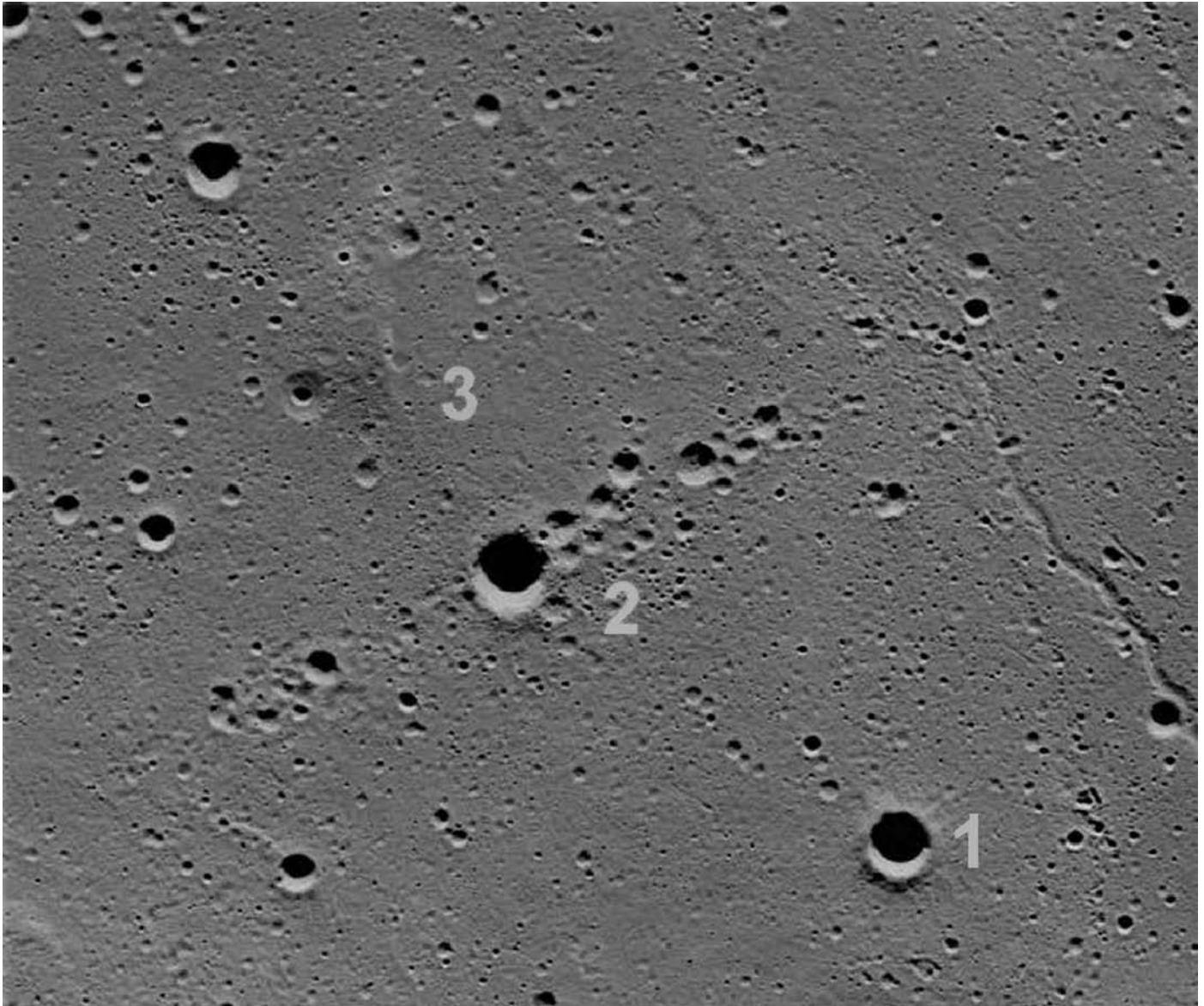


Figure 6: Crop of Apollo image AS15-M- 2082

identification of lunar features nearby. The superimposed map, proposed as Fig.7, was created using PhotoShop.

3. Results and discussion

Based on the Apollo 15 Metric photos, the nature of the three objects was identified. The superimposed map in Fig.7 allows a direct comparison of the corresponding location. Effectively the two western bumps (feature #1 and #2) are ordinary craters with diameters of 1.6 and 1.9 km respectively. The eastern feature (bump #3) is a triangular-shaped swelling about 3 km across and 6-7 km long. On its northwestern edge there is a 1.1 km

crater with a 0.5 km crater inside (appearing as a concentric crater). All detected features are unambiguously seen in the Apollo images, including two craterlets and a swell.

This study highlights a warning against interpretation based only on terrestrial images. Always, all available spacecraft images should be checked.

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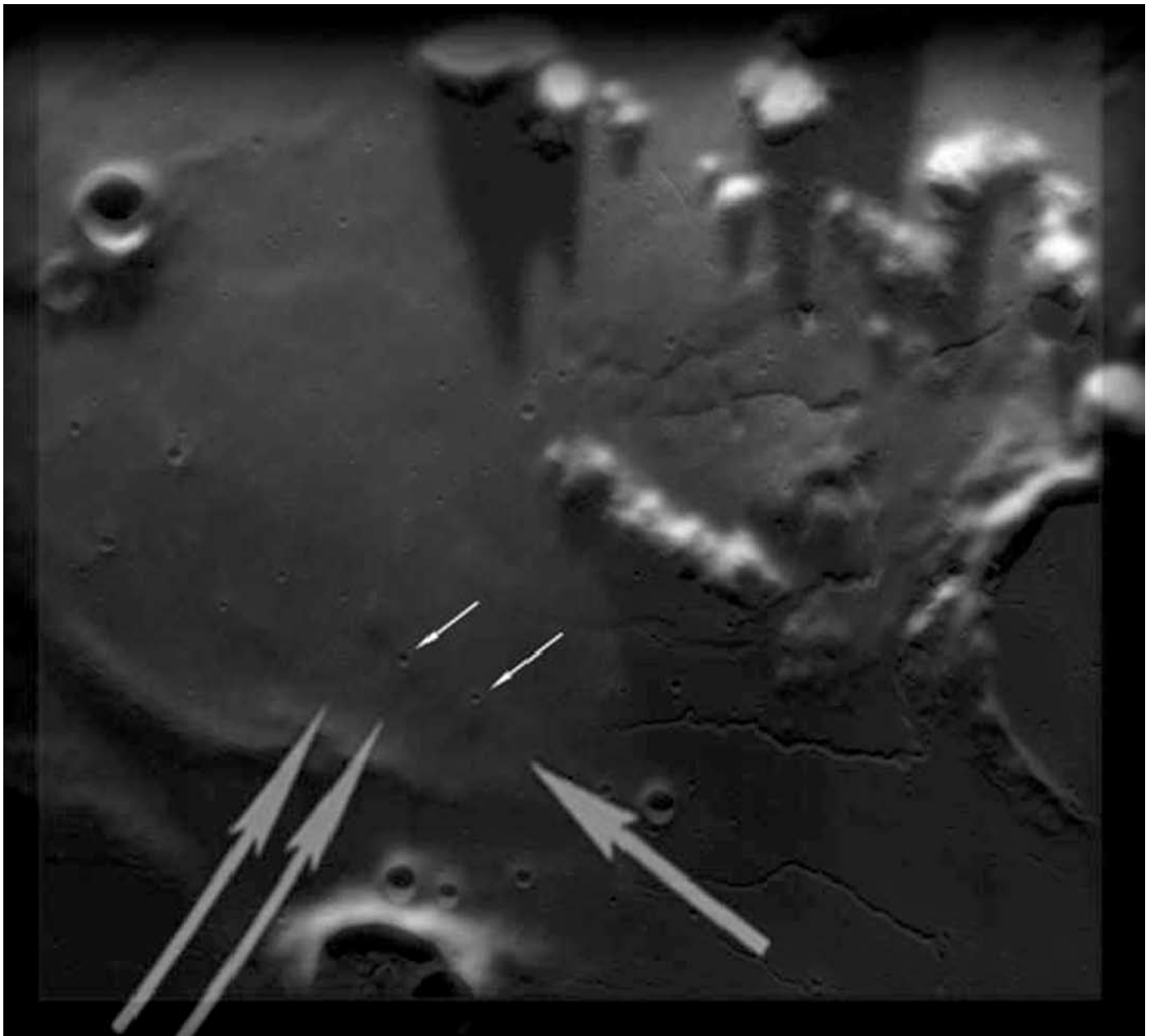


Figure 7: Superimposition of Fig.3, transformed into a rectified view, onto the Apollo 15 frame