



Fig. 6(a-b). Mare Imbrium. (a) Location of areas shown in Figures 6(b) and 10. (b) Archimedes-Apennine Bench region (area A of Figure 6(a) showing locations of Imbrium basin rings and area presently covered by maria. Region designated as map area is region of artificial flooding.

mixing could only have been significant in the earliest stages of fill in Stage II. The inner depression probably filled to one km depth relatively rapidly, although the flux was higher at the time. Detailed consideration of the possibility of vertical mixing in regions covered during Stage II is presented in the next section.

3. The Archimedes-Apennine Bench Example

A further assessment of the second stage of fresh basin flooding can be obtained by analysis of the *Archimedes-Apennine Bench region*. This is a relatively unflooded region of the Imbrium basin lying between the second ring and the outer (third) Apennine Mountain ring (Figures 6a, b). Some mare deposits exist in the area and the region may have been the site of post-Imbrium, pre-mare volcanism (Hawke and Head, 1978; Spudis, 1978); thus, estimates for lava filling are probably conservative. A region centered on Palus Putredinis (NASA Map LM41, MONTES APENNINUS, 1:1M Scale) was artificially flooded at 300 m intervals using procedures described for Orientale and in Appendix A. The area covered and volume accumulated as a function of thickness are plotted in Figures 7a, b.