THE GEOMORPHOLOGY OF ASTEROID (21) LUTETIA FROM INSITU IMAGING. L. Jorda[1], N. Thomas[2] and P. L. Lamy[1]. [1]Laboratoire d'Astrophysique de Marseille, 38 rue Frédéric Joliot‐Curie, 13388 Marseille, France (e-mail: laurent.jorda@oamp.fr), [2]Physikalisches Institut, Sidlerstr. 5, University of Bern, CH‐3012 Bern, Switzerland.

We present an overview of the surface geomorphology of asteroid 21 Lutetia observed using the high resolution images from OSIRIS, the imaging system onboard the European Space Agency's Rosetta spacecraft. The surface of 21 Lutetia is highly complex with significant interactions between ancient and more recent structures [1], see Fig.1. A wide range of surface morphologies are seen including heavily cratered terrain, extensive sets of lineaments, young impact craters, and a ridge the height of which is more than 1/5th of the mean radius of the body. Very young and very old terrains are seen in close proximity. The longest continuous lineament is over 80 km long. The lineaments show regional‐dependent organization and structure. Several categories of lineament can be described. Lineaments radial to impact craters as seen on other asteroidal bodies are mostly absent. Although the lineaments may be of seismic origin (and possibly the result of several impact‐induced events), impacts producing recent large craters place serious constraints on seismic phenomena. In particular, stronger attenuation of shocks than seen on other asteroidal bodies seems to be required. Inhomogeneous energy transport, possibly matching observed inhomogeneous ejecta deposition may offer explanations for some of the observed phenomena. Some impact craters show unusual forms which are probably the result of impact into a surface with relief comparable to the resultant crater diameter and/or oblique impact. .

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References:

[1] Sierks, H., Lamy, P. L., et al. (2011) *Science*, Vol. 334, 487.

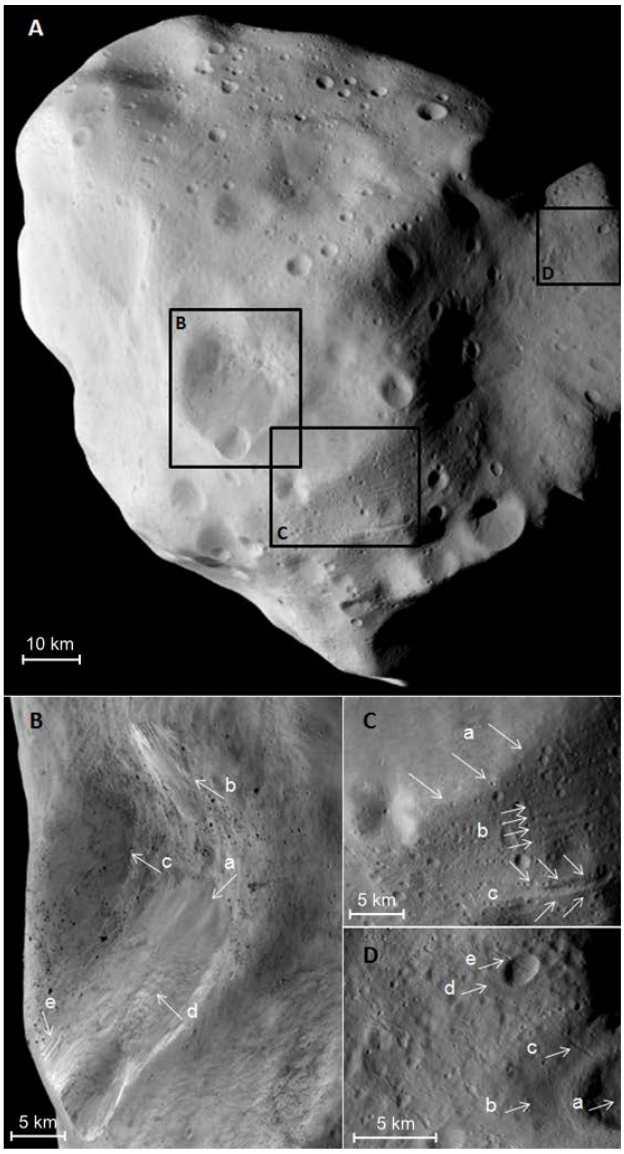

Fig. 1. Surface featureson asteroids (21) Lutetia. (**A**) Closest approach image, with insets showing details under different illumination cond tions. (**B**) The central 21 km diameter crater cluster in Baetica. Arrows a, b, and c point to landslides.