The Rosetta lander Philae successfully landed on the nucleus of comet 67P/Churyumov-Gerasimenko on 12 November 2014 at a heliocentric distance of 2.99 AU. Philae carries the Dust Impact Monitor (DIM) on board, which is part of the Surface Electric Sounding and Acoustic Monitoring Experiment (SESAME). DIM employs piezoelectric PZT sensors to detect impacts by sub-millimeter and millimeter-sized ice and dust particles that are emitted from the nucleus and transported into the cometary coma. The sensor measures dynamical data like flux and the directionality of the impacting particles. Mass and speed of the grains can be constrained for pre-defined density and elastic grain properties. During Philae’s descent to its nominal landing site Agilkia, DIM detected one approximately millimeter-sized particle at an altitude of 2.4 km from the nucleus surface. This is the closest ever dust detection at a cometary nucleus by a dedicated in-situ dust detector. The material properties of the detected particle are compatible with a porous grain having a bulk density of approximately 250 kg m$^{-3}$. At Philae’s final landing site, Abydos, DIM detected no dust impact which may be due to low cometary activity in the vicinity of Philae at the time of landing, or due to shading by obstacles close to Philae, or both. We discuss the DIM measurements at comet 67P and compare our results with data obtained by other Rosetta dust instruments.