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Dust Component of Comet 9P/Tempel 1 as Seen by the ESO Team

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Besides of the authors of the presentation, the members of the ESO team, who participated in the observations, data reductions and analysis related to the dust component of comet 9P/Tempel 1, are the following: G. P. Tozzi (Arcetri Observatory, Italy), H. U. Kaeufl, F. Kerber (ESO Garching, Germany), G. Lo Curto, E. Pompei, N. Ageorges, S. Bagnulo, O. Hainaut, E. Jehin, I. Saviane, F. Selman (ESO Santiago, Chile), E. Pantin (ONRS, Paris, France), L. Barrera (UMCE Santiago, Chile), T. Bonev (University of Sofia, Bulgaria). ESO campaign on observations of comet 9P/Tempel 1 provided an integrated study of pre- and post-Deep Impact gas and dust in this comet. During the impact period ESO has devoted all seven La Silla and Paranal telescopes to observe the event from the ground over the widest possible wavelength range (UV to Q band) and with complementary observing techniques (imaging, spectroscopy, polarimetry). This presentation summarizes the observational results obtained for the dust environment in the comet. They included the data obtained with 10 instruments that provided narrow-band imaging and spectroscopic observations in the visible, near-infrared and mid-infrared wavelengths as well as polarimetric imaging in near-infrared and narrow-band polarimetric imaging and spectropolarimetry (including circular polarization) in the visible. The data allowed us to study variations in brightness, color, linear and circular polarization with the distance from the nucleus in the impact-generated cloud as well as out of it. No significant change in polarization for pre- and post- impact data was found. This, together with the analysis of the mid-infrared data, allows us to conclude that the post-impact dust contained not significantly smaller but rather more porous particles, which may be typical for the nucleus interior. Study of the dust colors in different directions in the coma provided additional information about size distribution of the dust particles. The processing of the enormous amount of the accumulated data is still in progress. The latest results will be reported.