67P/Churyumov-Gerasimenko on 5th September 2016 exhibited an outburst that GIADA characterized as a dust-rich event

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GIADA (Grain Impact Analyzer and Dust Accumulator) is an in-situ instrument onboard Rosetta monitoring the dust environment of comet 67P/Churyumov-Gerasimenko. GIADA is composed of 3 sub-systems: 1) the Grain Detection System (GDS), based on particle detection through light scattering; 2) the Impact Sensor (IS), measuring particles momentum; 3) the Micro-Balances System (MBS), constituted of 5 quartz crystal microbalances, giving cumulative deposited dust. The combination of the measurements performed by these 3 subsystems provides: the number, the mass, the momentum and the speed distribution of dust particles emitted from the comet nucleus. We present the coma dust environment as observed by GIADA during the outburst event occurred on the 6th of September 2016, few days before Rosetta landing on comet 67P/Churyumov-Gerasimenko. GIADA detected temporal and spatial variation of dust density distribution during this brief but intense event observed from a very close distance from the nucleus (<5km). The three GIADA subsystems, MBS, GDS and IS recorded data with relevant statistics. In few hours, a very large number of dust particle detections allowed to characterize the dust environment in the size ranges from few microns to millimetres. We obtained a complete physical and dynamical characterization of the outburst phenomenon.