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Continuous observation of ice precipitation at Concordia Station (Antarctica) by means of an image scanner and a depolarization LIDAR

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Observing Ice precipitation in the inland of Antarctica is challenging because most commercial instruments suffer from the extreme environmental conditions of this continent. Manual observation of precipitation is also a complicated work during the cold winter, with temperatures as low as -80°C. Moreover, precipitations are often weak and their automatic collection made difficult by wind-drift and reprocessing processes (sublimation , regrowth). From 2102 on an experimental setup composed of an automated depolarization LIDAR and an image scanner ("ICE-CAMERA") for the automatic imaging and sizing of precipitating ice grains is operating at the international Antarctic station "Concordia" (75°S ,123°E, 3230 m a.s.l.). This innovative and robust experimental setup resulted in being a useful tool for monitoring in cold polar regions the origin of ice precipitation (precipitation from clouds, diamond-dust, pollution-triggered), as well as the shape, quantity, and size of the ice grains.