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Coronagraphic observations of Solar Eruptions and Solar Wind in the UV range: past, present and future

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After the first observations of the extended solar corona in the UV carried out starting from late '70s with rocket experiments, and later on with the Spartan flights, the field was revolutionized thanks to the UVCS (UV Coronagraph Spectrometer) instrument on-board SOHO mission. UVCS observed the UV extended corona (tipically above 0.5 solar radii from the limb) at different latitudes over more than 15 years (1996-2012), and captured the transit of hundreds of small- and large-scale solar eruptions (CMEs, jets, prominences). These observations (combined with data acquired by other instruments) allowed to derive unique information on the early evolution of plasma embedded in solar eruptions, and on related topics (e.g. 3D structure, post-CME Current Sheets, CME-driven shocks). The same data led also to fundamental new discoveries on the Solar Wind, and allowed to characterize the backround corona being crossed by each solar eruption.

At present UVCS is not taking data anymore since 2012, but lot of data in the archive still have to be analysed; for the next future, no similar instruments have been selected at present as a payload of forthcoming solar missions. Nevertheless, the next generation multi-channel coronagraphs (such as Metis on-board Solar Orbiter) will observe at the same time and same locations the Visible Light and the UV HI Lyman-alpha extended corona. These data will really provide a new view not only of solar eruptions, but also of the ambient solar wind. Future prospects will be summarized here.