# 6th European Conference on Space Debris

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# 6th European Conference on Space Debris [1]

- 6th European Conference on Space Debris:
  - held at ESA/ESOC, Darmstadt/Germany, 22-25 April 2013
  - organized by the ESA Space Debris Office
  - co-sponsored by ASI, CNES, DLR, UKSA, COSPAR, and IAA
- participation statistics:
  - 355 participants from 26 countries (record participation)
  - 300 abstracts received
  - 115 oral presentations in 13 technical sessions
  - proceeding to be distributed as „ESA-SP 723“ before end Sep. 2013
- concluding press conference:
  - panel members: C. Bonnal (CNES & IAA), H. Lewis (UKSA), C. Portelli (ASI), T. Schildknecht (COSPAR), M. Metz (DLR), H. Klinkrad (ESA & IAA)
  - very good media coverage throughout the Conference

# 6th European Conference on Space Debris [2]

- highlights & core findings [1]:
  - measurements & surveillance: progress on radar observation technologies was reported, particularly from Japan and China; a strong interest, was noted for optical systems, in the context of tracking and surveillance applications, also in low orbits, with active illumination of targets by laser beams
  - modeling: consolidated information was provided by studies of IADC, national entities, and academia on the long-term evolution of the orbital debris environment and the suspected start of a run-away situation (known as the “Kessler Syndrome) at 700km to 1000km altitude, leading to collisional cascading within a few decades; the reported analyses suggest that the only effective remediation action would be active debris removal at rates of 5 to 10 large objects per year
  - mass removal: concepts were outlined that employed a whole range of different physical principles to initiate an immediate, controlled, or to a delayed re-entry; mass removal concepts comprised net or harpoon-based capture & tug servicers, attached propulsion units, drag augmentation, conductive tethers, or contact-less momentum exchange through plume interaction with chemical or ion thrusters

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- highlights & core findings [2]:
  - on-orbit risk reduction: debris avoidance techniques and the required accuracy and information content of underlying data were highlighted; CNES and ESA explained their use of JSpOC (US Joint Space Operations Center) conjunction messages to assess identified close conjunctions, based on derived risk levels; for the protection against sub-catalog object sizes deployable shield structures were introduced; HVI studies also indicated that impact ejecta will further deteriorate the small-particle environment, and that impact-induced plasmas may cause damage to operational spacecraft.
  - re-entry risk assessment: several authors reported on decay and re-entry prediction methodologies, on methods for on-ground casualty estimations, and on the determination of casualty cross-section and high-resolution population density data to support such risk assessments; the concept and application of a re-entry break-up recorder was outlined to improve our understanding of physical processes during the re-entry and break-up phase
  - policies & standardization: economic aspects of controlling the space debris environment were addressed; also legal and policy aspects of SSA systems and of debris remediation were highlighted