Inter–Agency Space Debris Coordination Committee

The Inter-Agency Space Debris Coordination Committee

An overview of the IADC scope and its activities.

48th Session STSC

Feb. 2011

Overview of IADC

The primary purpose of the IADC is
- to exchange information on space debris research activities between member space agencies,
- to facilitate opportunities for cooperation in space debris research,
- to review the progress of ongoing cooperative activities and
- to identify debris mitigation options.

(IADC Terms of Reference, see http://www.iadc-online.org)

Overview of IADC

- The Inter-Agency Space Debris Coordination Committee is a technically oriented intergovernmental organisation.
- The members share a number of common interests in space debris research which may be developed into a variety of cooperative research activities.
- Technical meetings are held annually to facilitate these cooperative research activities.

Membership

Members are countries or national or international space organizations which are carrying out space activities, through either manufacturing, launching and operating spacecraft or manufacturing and launching rockets.

Criteria for Membership:

- Active research in Space Debris
- Participation in the Steering Group and Working Group 4

Membership

Members of the IADC:

- ASI (IT)
- CNES (FR)
- CNSA (CN)
- CSA (CA)
- DLR (DE)
- ESA
- ISRO (IN)
- JAXA (JP)
- NASA (US)
- NSAU (UA)
- ROSCOSMOS (RU)
- UK Space Agency (UK)

IADC Organisation

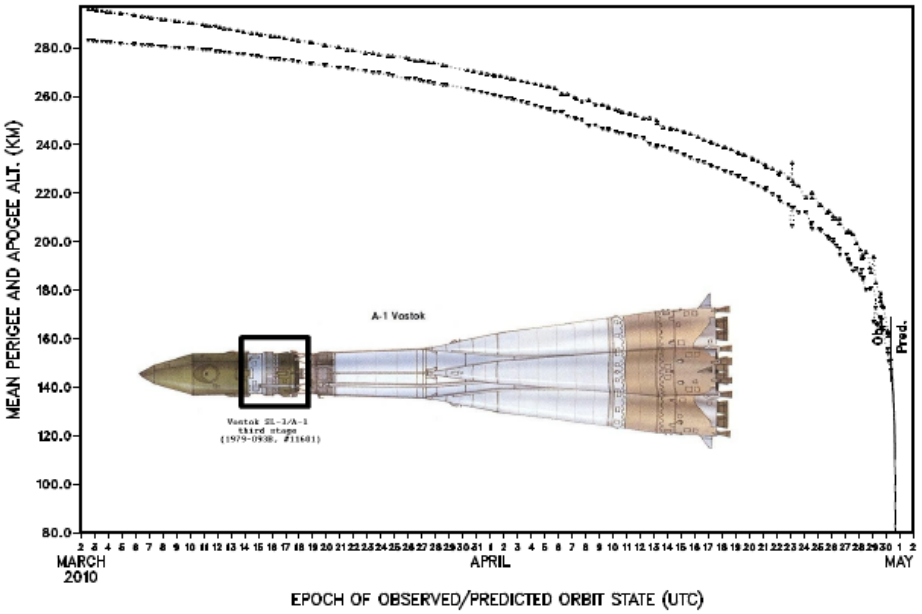
- Steering Group (SG)
- Working Group 1: Measurements
- Working Group 2: Environment & Data Base
- Working Group 3: Protection
- Working Group 4: Mitigation

IADC is supported by a Secretariat and a Webmaster.

Activity Highlights
Steering Group

Since 1998 the SG coordinates annual test re-entry prediction campaigns in preparation for:

- objects that may survive re-entry to cause potential significant damage
- re-entry events that may cause radioactive contamination



Example: 2010 re-entry campaign test object, Vostok 3rd stage

- data exchange via a web based database
- near real-time availability of orbit data

Activity Highlights
WG1 - Measurements

WG1 performs internationally coordinated measurement campaigns for Low Earth and Geostationary orbit environment, predominantly

- radar for LEO
- optical for GEO

Example: two radar stations participating, Haystack (USA) and TIRA (D).

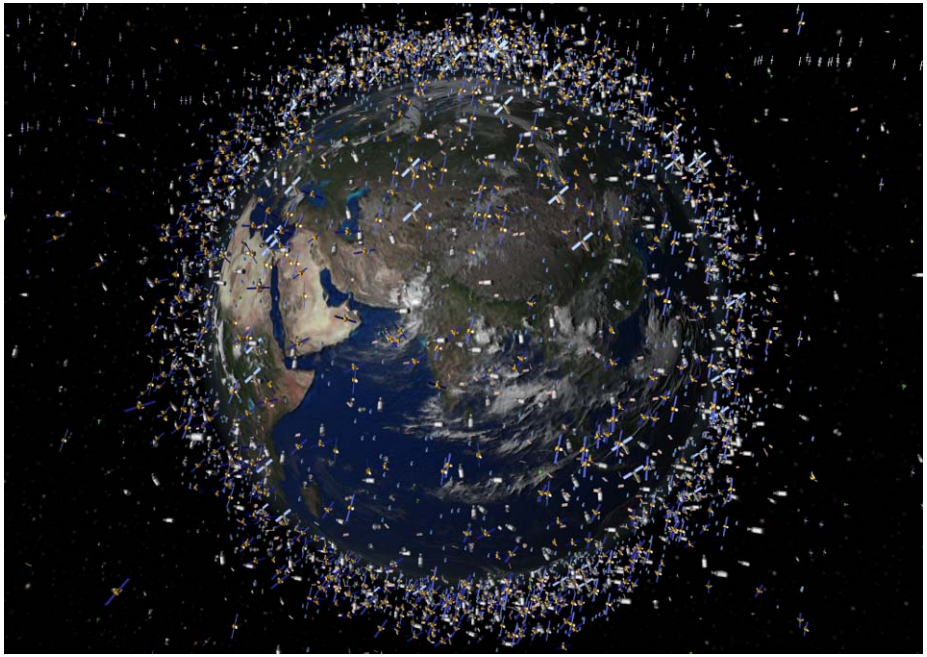
Campaign results are used to

- calibrate debris environment models
- improve sensor techniques
- identify debris populations below the detection limit of operational surveillance systems

Activity Highlights
WG2 - Environment & Data Base

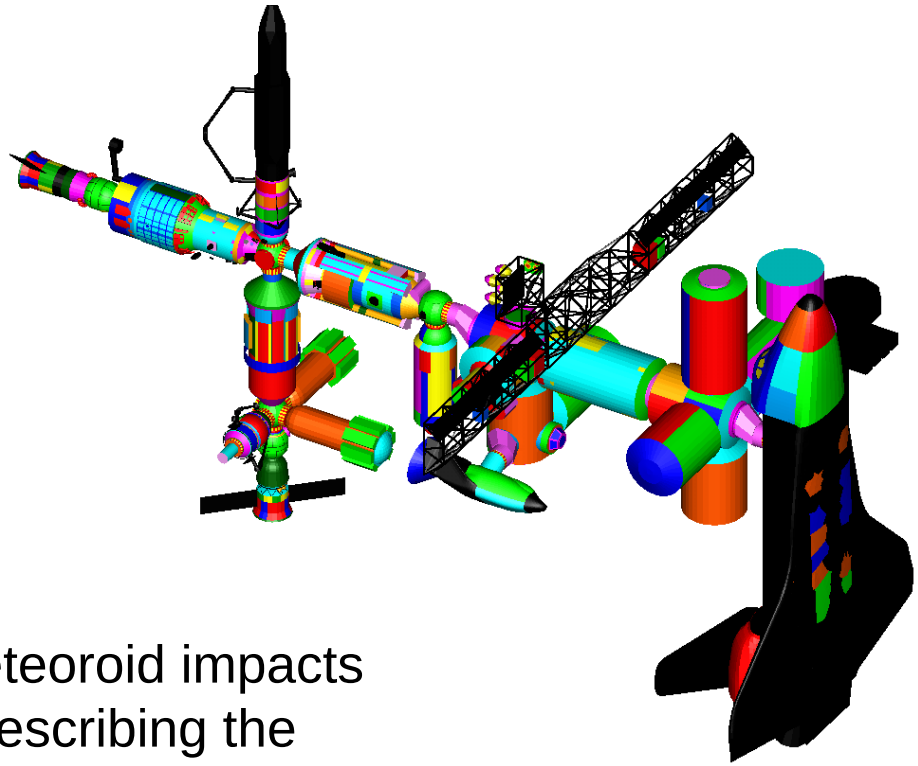
WG2 works on characterisation and modelling of meteoroids and space debris in near Earth space. This includes:

- short- and long-term evolution of the space debris environment
- collision risk assessment
- development of models which characterize explosions or collisions in space
- predictions of uncontrolled re-entry



Activity Highlights
WG3 - Protection

WG3 maintains an IADC "Protection Manual" which provides a standard framework to assess meteoroid and orbital debris risk to spacecraft.

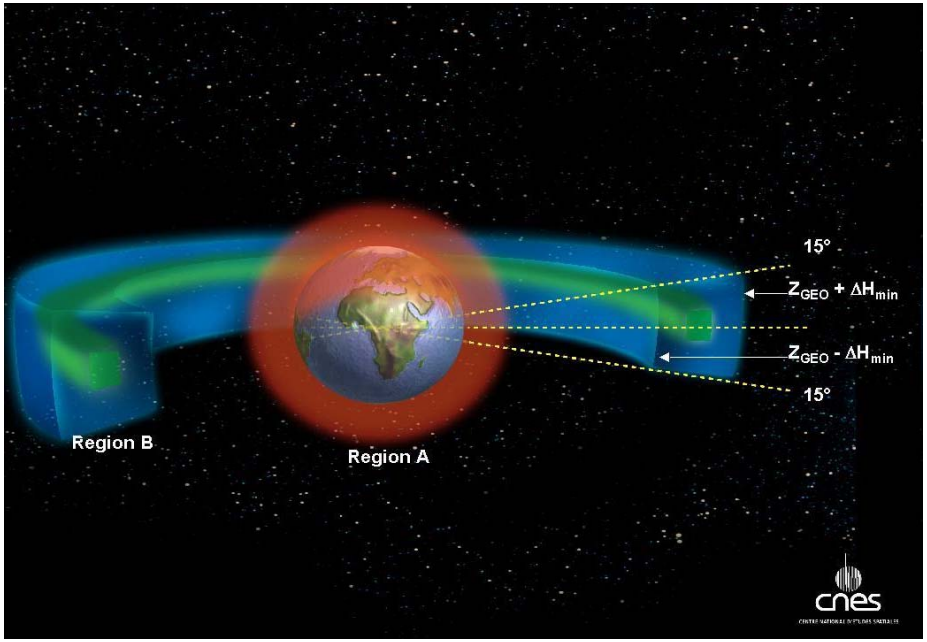


- comparison and validation of procedures to determine effects of space debris and meteoroid impacts (e.g. software and equations describing the damage to spacecraft on impact)
- design guidelines for the protection of spacecraft

Activity Highlights
WG4 - Mitigation

WG4 maintains the "IADC Space Debris Mitigation Guidelines" describing best practices for limiting the generation of space debris.
Fundamental principles are:

- Limitation of debris released during normal operations
- Minimisation of potential risk of on-orbit break-ups and collisions
- limiting the orbital lifetime of non-functional objects in populated regions (natural decay, de- or re-orbiting)

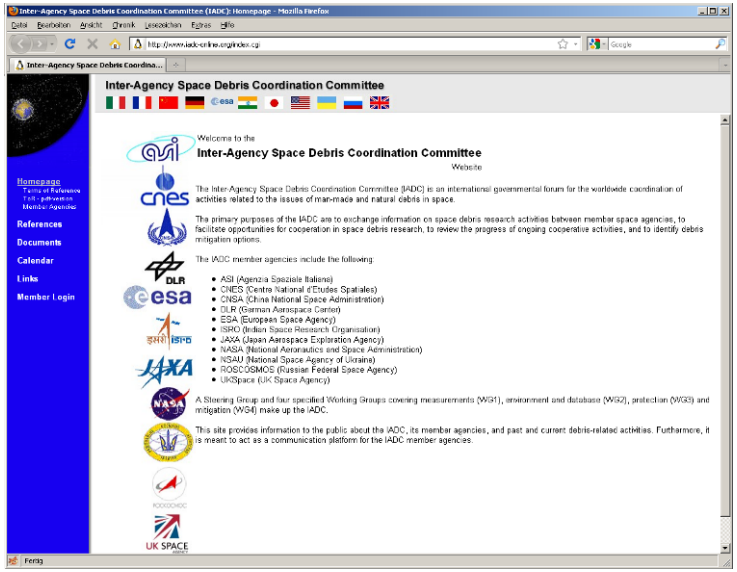


LEO and GEO protected regions

Ongoing Activities

- Update of “Mitigation Handbook”
  and “Protection Manual” (living documents)
- Research on future Long-term Population Evolution
- Re-entry risk criteria
- LEO and GEO Surveys
  (Optical and radar measurement campaigns)
- Investigation of new debris populations
- Characterization of ejecta in case of impact

IADC website
www.iadc-online.org



- Public area:
  - Terms of Reference
  - Member agencies
  - Reference documents
  - Links to other websites
- Restricted area:
  - Points of contact
  - Agenda and minutes of meetings
  - Action items
  - Exchange area

Cooperation of the IADC with other organisations

The Steering Group of IADC coordinates with and responds to requests from other organisations on issues related to space debris.
For example IADC in the past has contributed to

- the UN mitigation guidelines
- discussion with ISO

By request IADC may contribute expertise to the "*Working Group on the Long-term Sustainability of Outer Space Activities"* as described in A/AC.105/C.1/L.307 (IV. Scope), regarding

- Space Debris
- Space Operations
- Tools to support collaborative space situation awareness