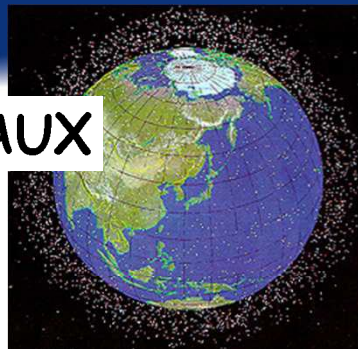


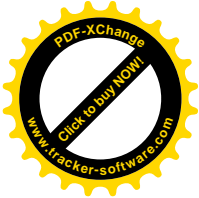
# LES DEBRIS SPATIAUX

F.ALBY  
(CNES-Toulouse)



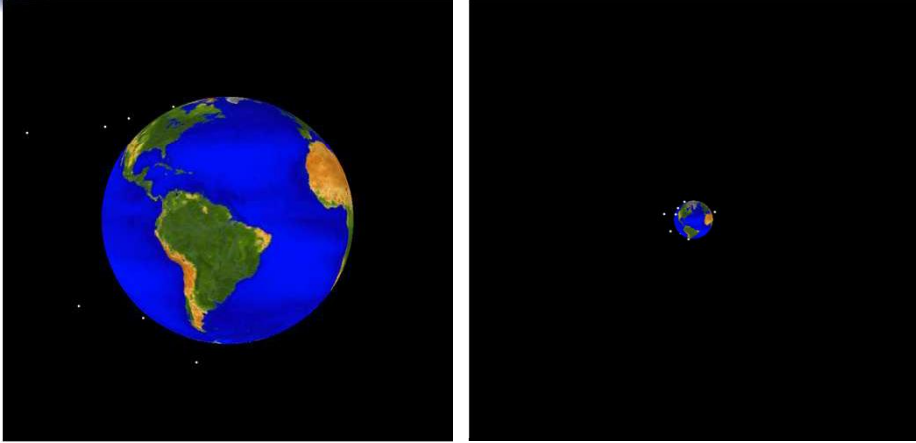
- la population d 'objets autour de la Terre
- les risques en orbite et au sol
- les solutions potentielles et la réglementation

- la population d 'objets autour de la Terre
- les risques en orbite et au sol
- les solutions potentielles et la réglementation



**cnes** Evolution de la population en orbite autour de la Terre

1960

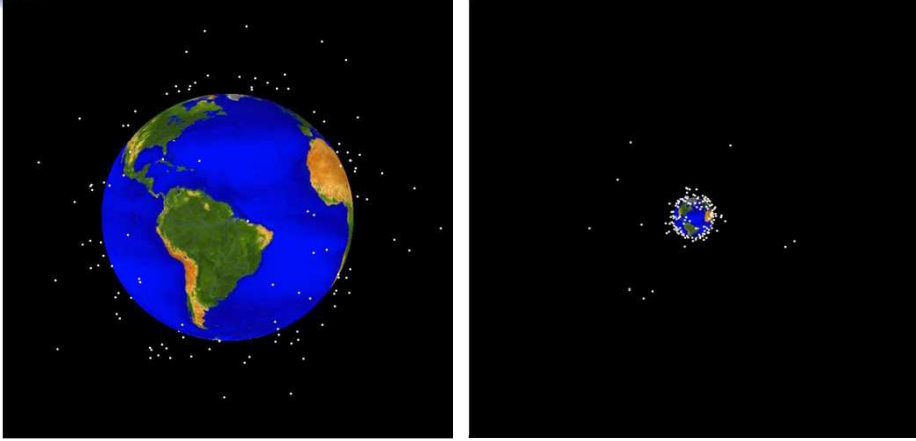


objets >10 cm

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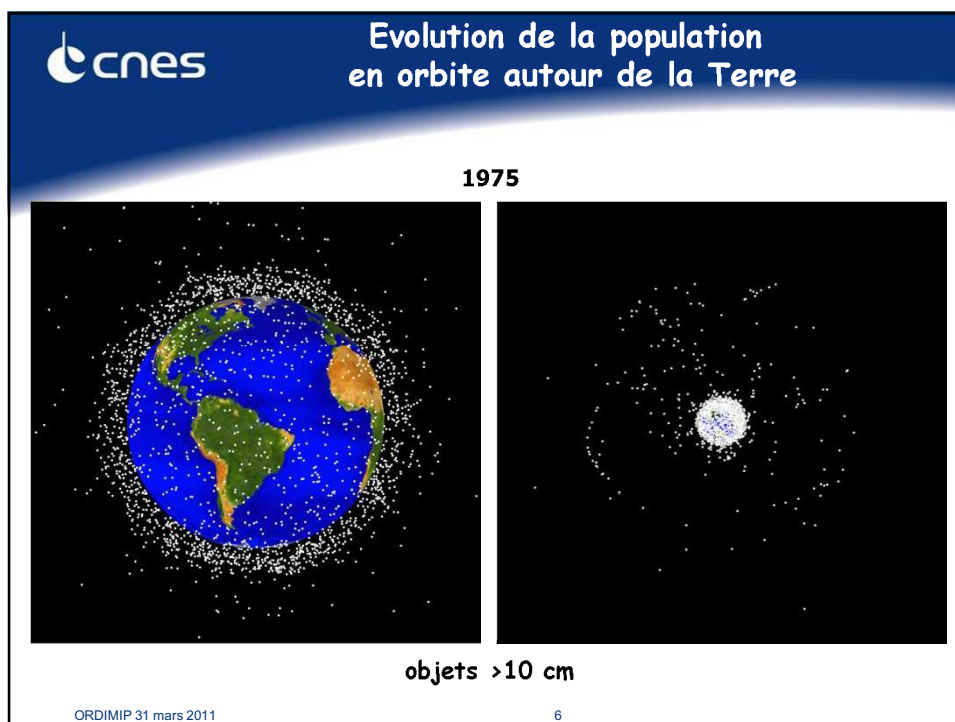
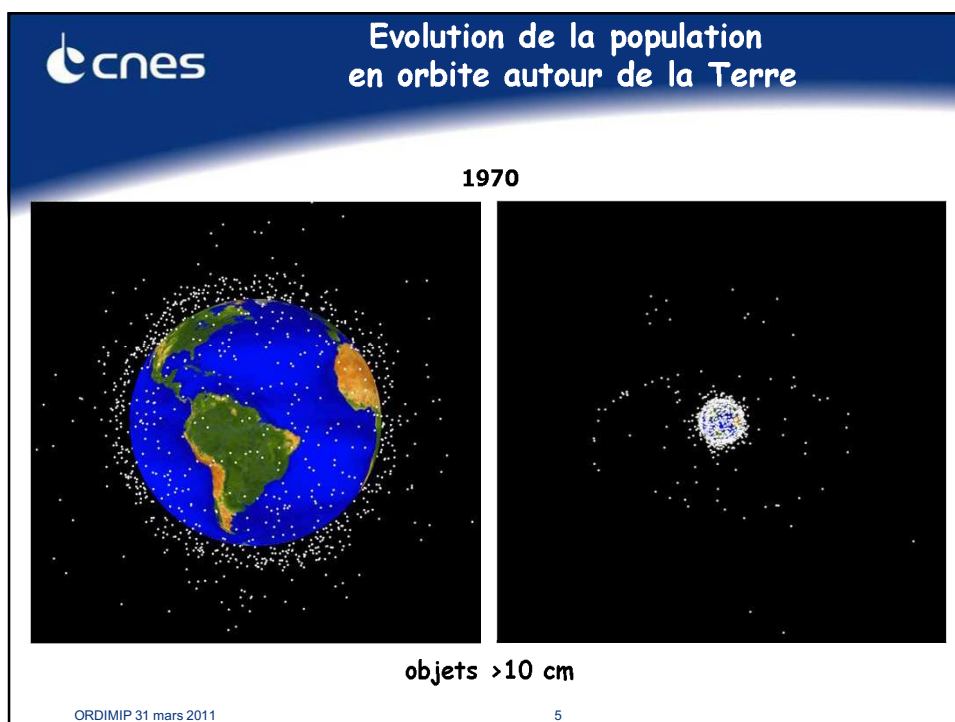
**cnes** Evolution de la population en orbite autour de la Terre

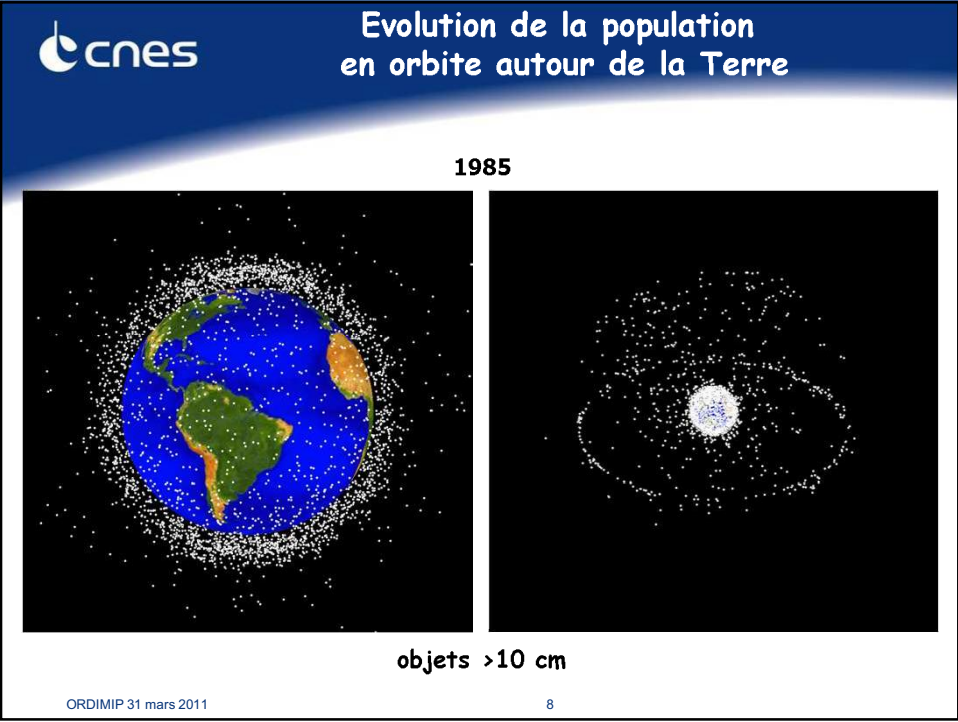
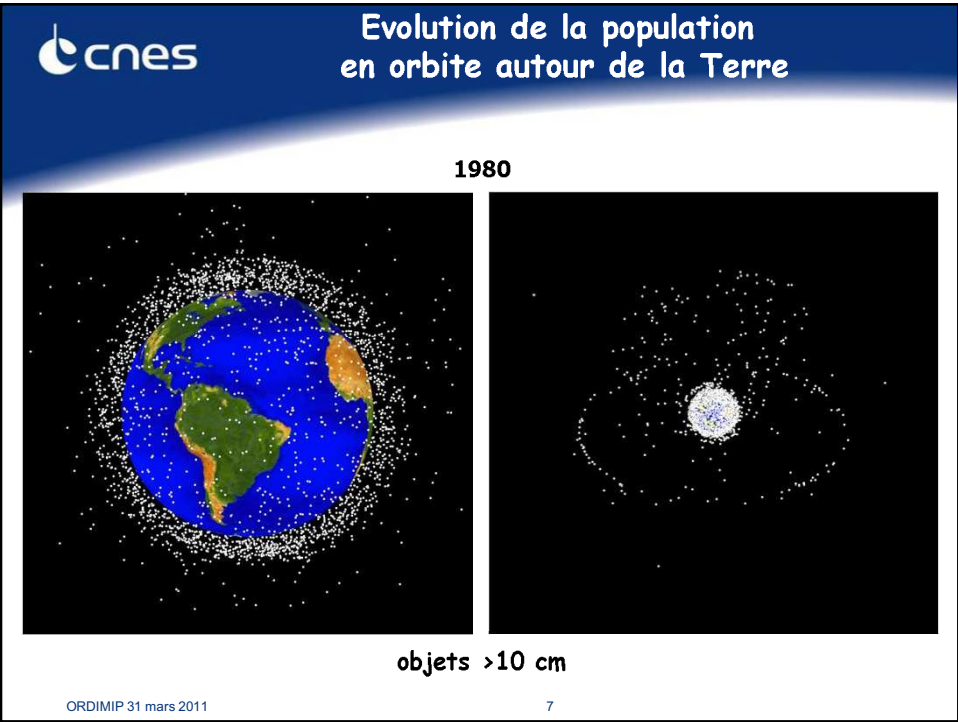
1965

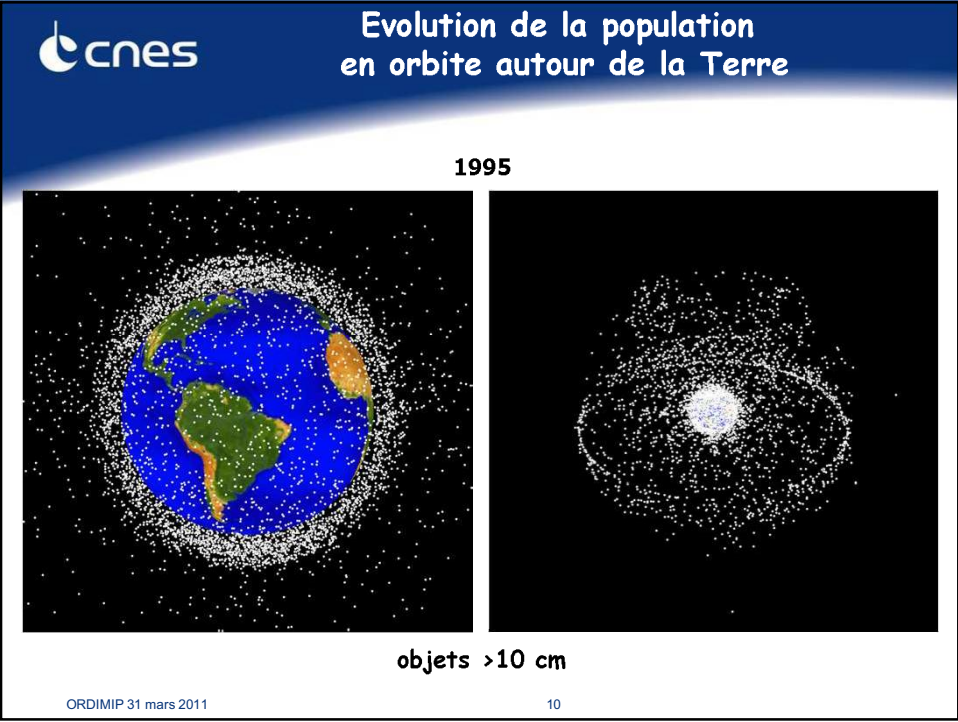
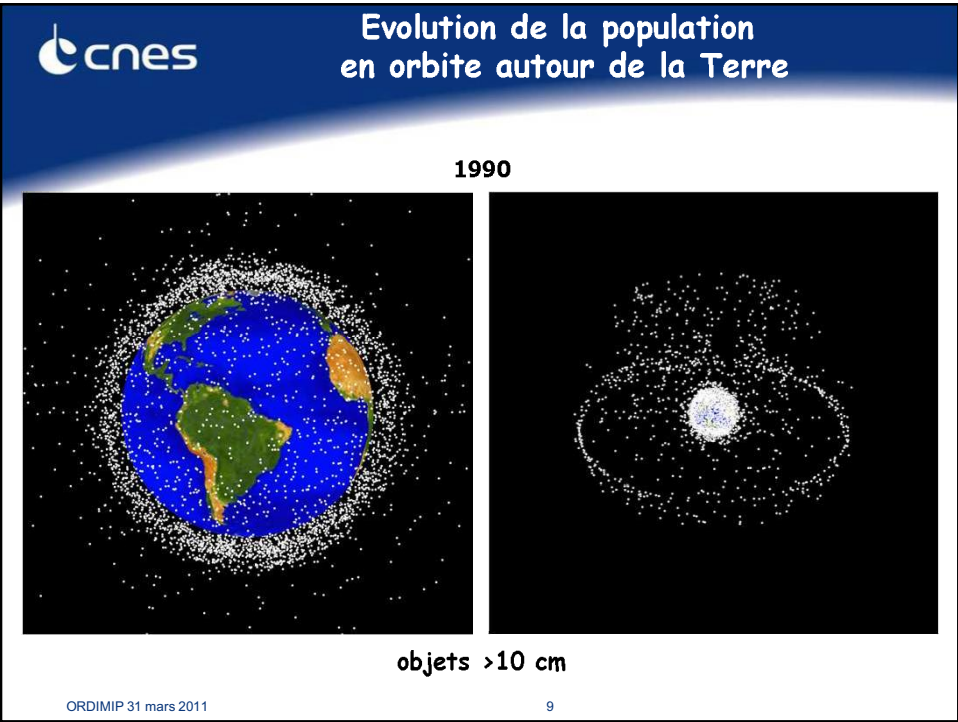
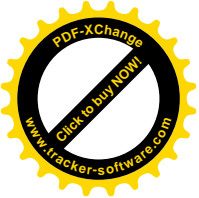


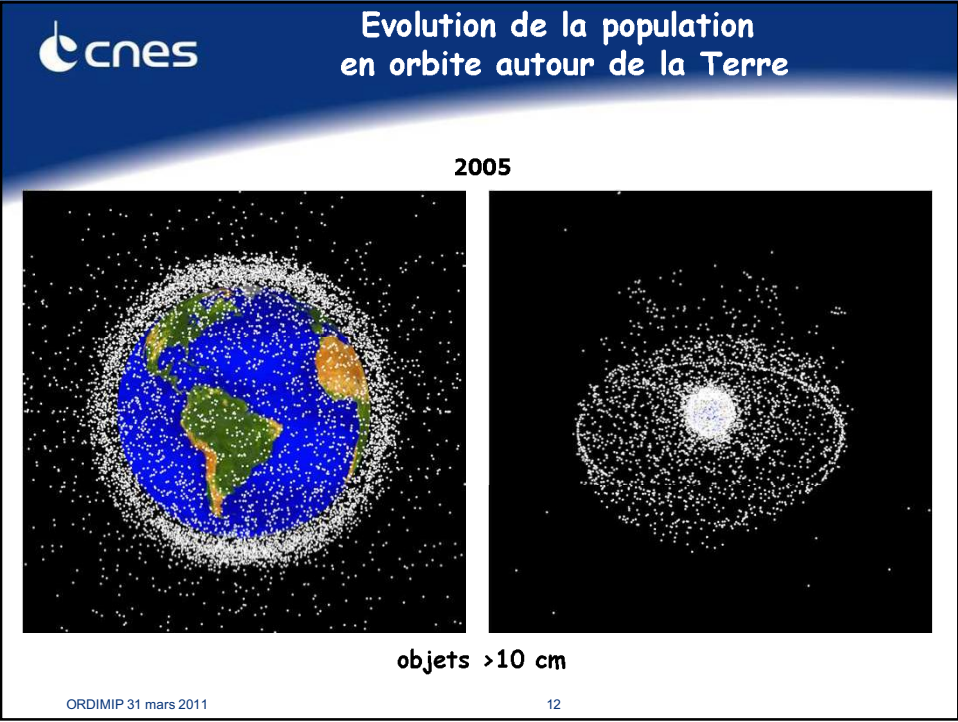
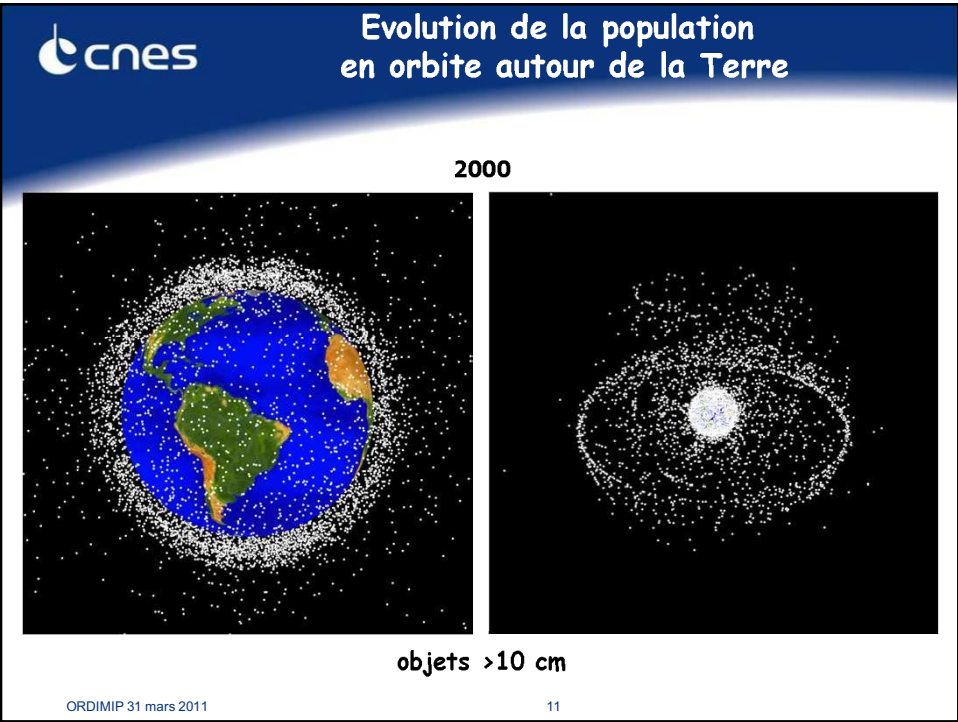
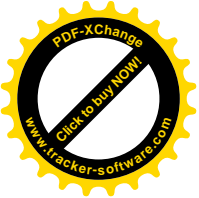
objets >10 cm

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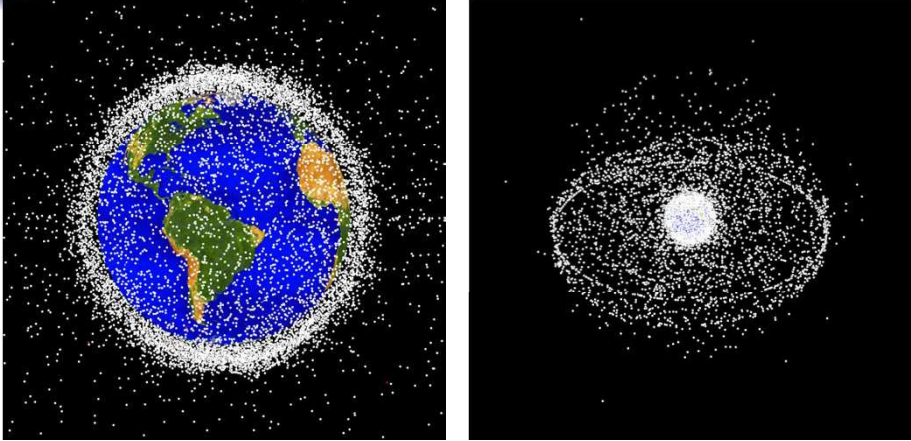






**cnnes** Evolution de la population en orbite autour de la Terre

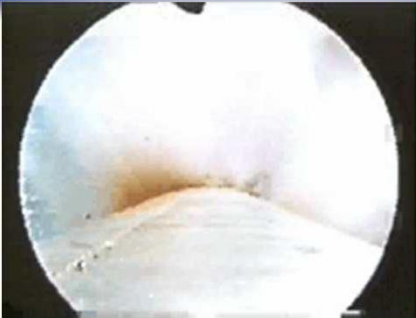
Avril 2008



objets >10 cm

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**cnnes** Origine des débris



- satellites et étages intacts
- produits de fragmentation
  - . explosion (volontaire, accidentelle)
  - . collision (micrométéorites, débris)
- vieillissement
  - . ruptures structurales (protections thermiques)
  - . usure des matériaux (peintures)
- débris opérationnels
  - . nominaux (sangles, boulons, capots)
  - . produits de propulsion (alumine)

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