

**HYDROGRAPHY AND ITS  
CONTRIBUTION TO  
THE PROTECTION OF  
THE MARINE ENVIRONMENT  
IN ANTARCTIC WATERS**

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# OBJETIVOS:

- 1- CARACTERISTICAS SINGULARES
- 2- AUMENTO DEL TRAFICO Y DEL RIESGO
- 3- LA LEGISLACION GENERAL
  - SOLAS
  - MARPOL
  - TRATADO
- 4- LA HIDROGRAFIA
- 5- CONCLUSIONES







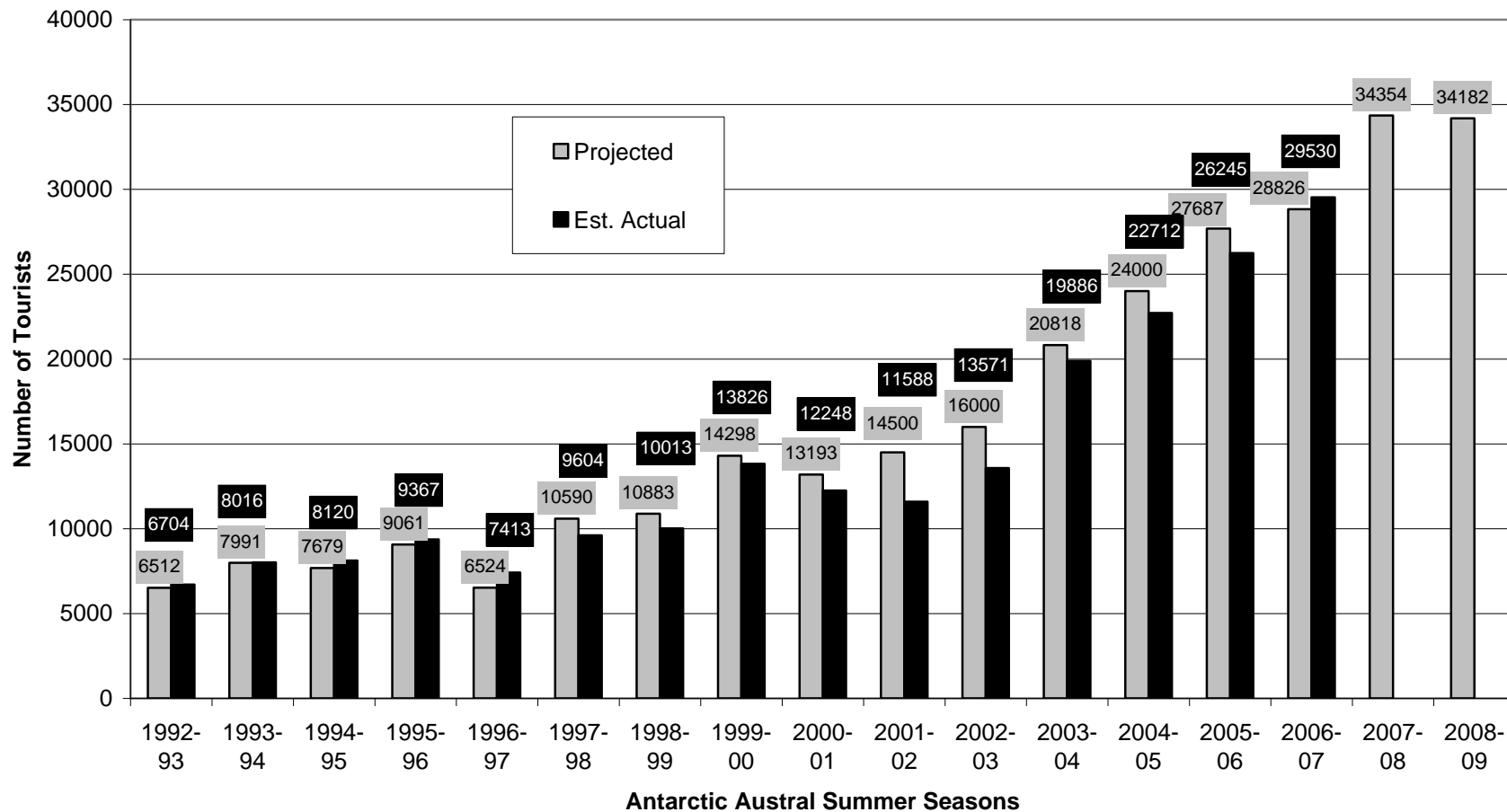






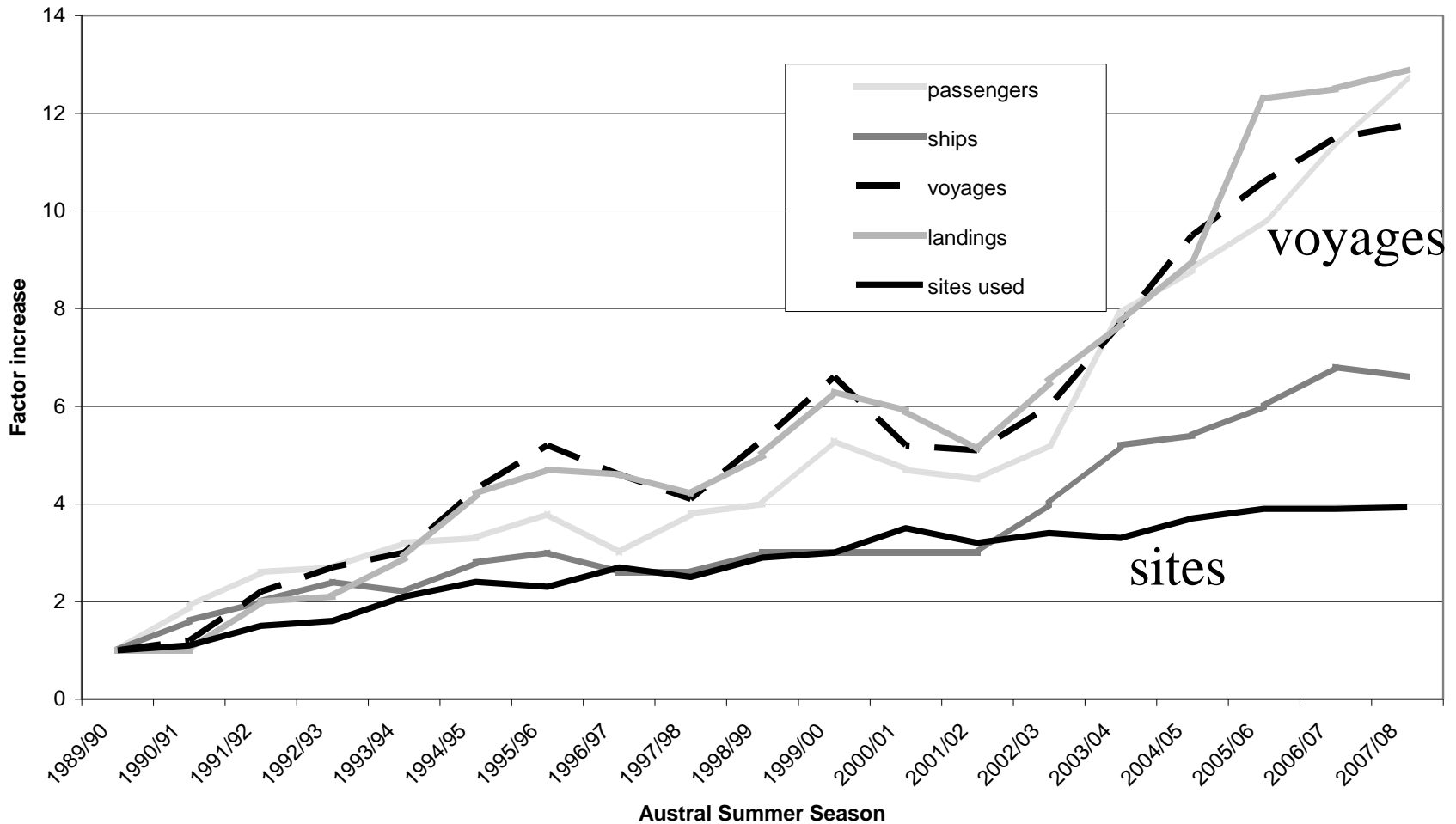
**1992-2007 ANTARCTIC TOURISM TRENDS - Landed (Includes Ship and Land-based passenger numbers. 1997-98 onwards includes some commercial yacht activity)**

**March 14, 2008**



**Continuing increase in tourism results in tourist numbers doubling every few years – currently about five years.**

**Figure 1: Factor Increase in Traditional Landing Shipborne Tourism (not including sailing or motor vessels carrying 12 or fewer passengers) in the Antarctic Peninsula 1989-2008.**



***Establishment of “mass tourism destinations” – i.e., locations that appear on most tourist itineraries, where hundreds or thousands of tourists land every season***





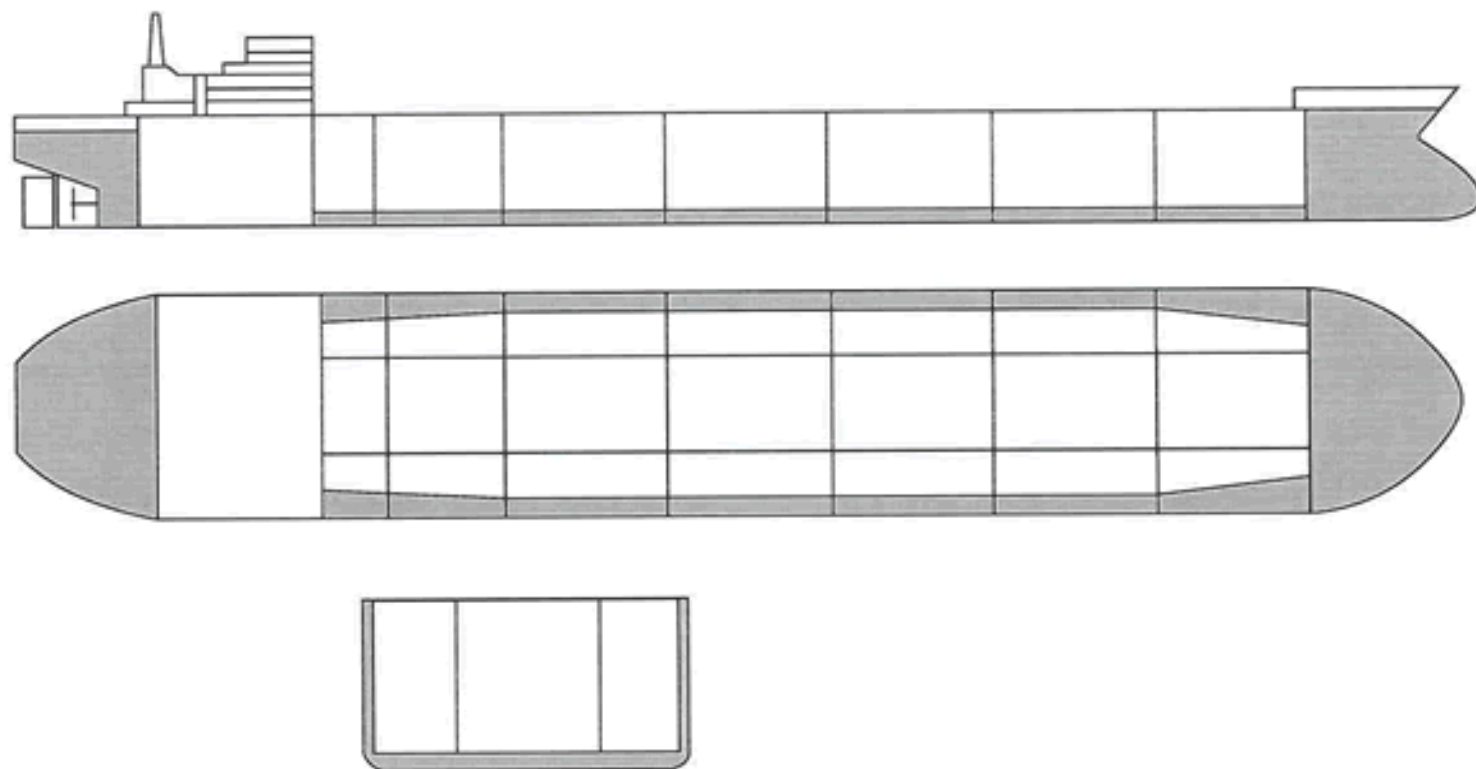








## Double hull tanker design













PERICOLO  
SOTTO BORDO











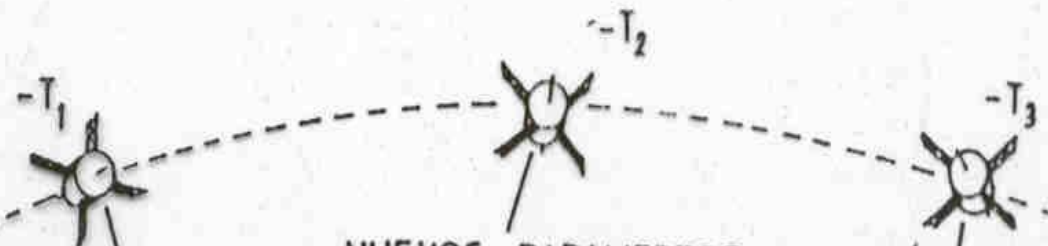








ORBITA  
TRANSIT



NUEVOS PARAMETROS  
ORBITALES

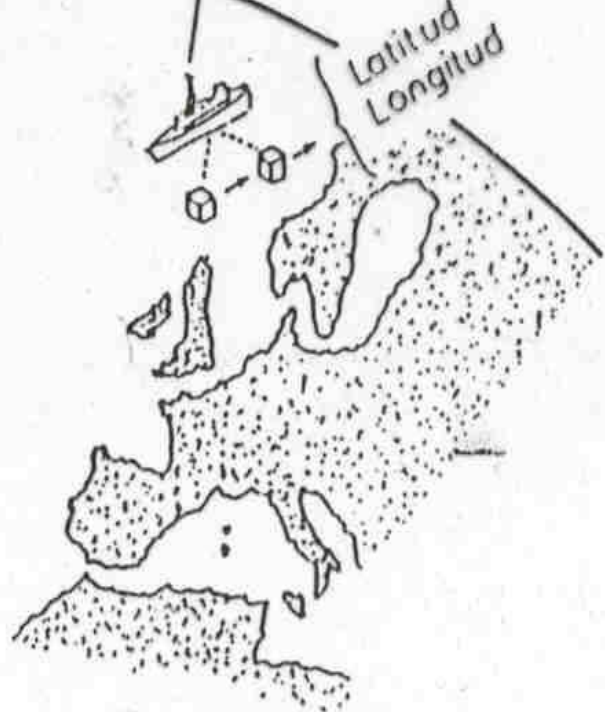
SEÑAL DOPPLER PARA-  
METROS ORBITALES TIEMPO

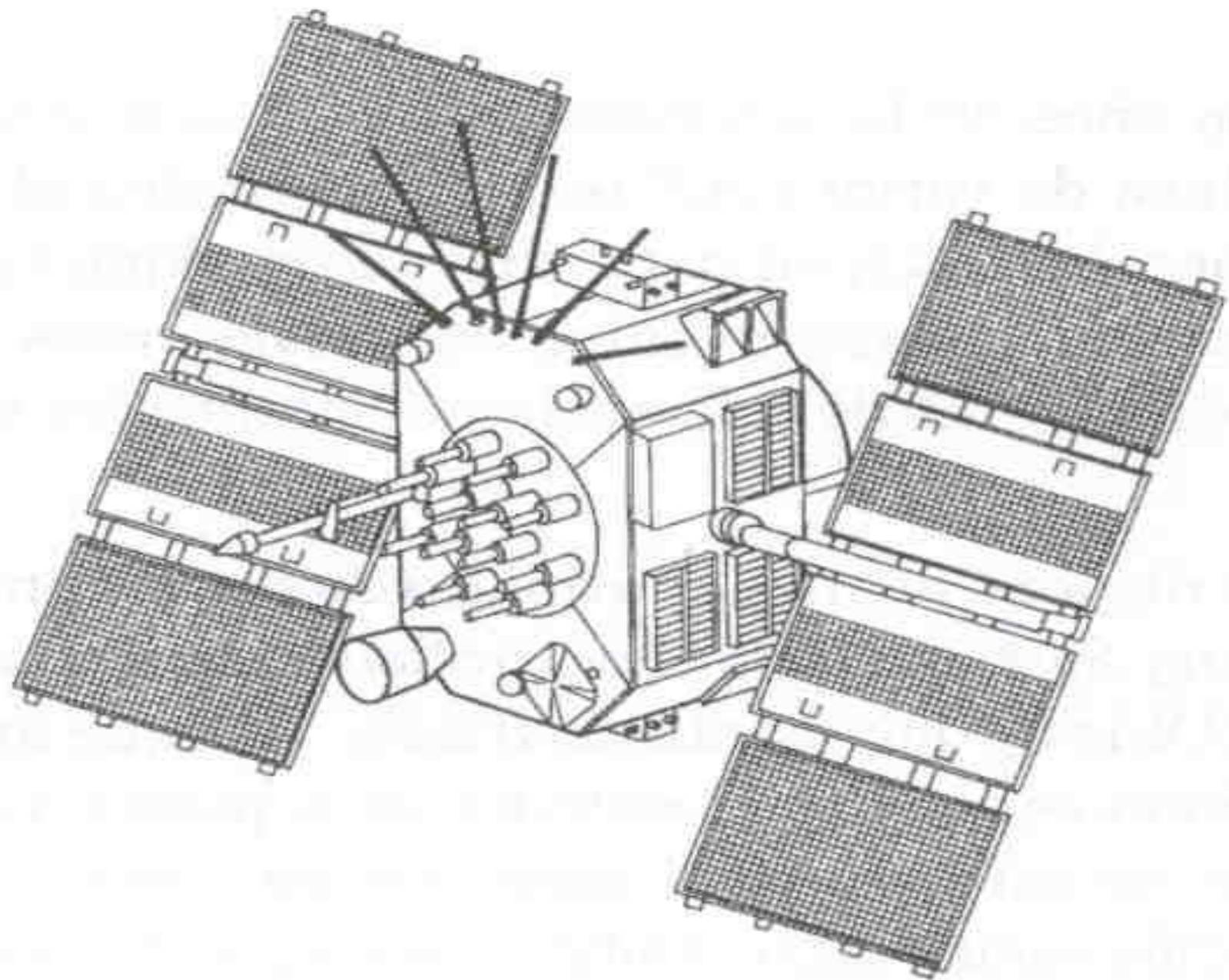
SEÑALES DOPPLER

CORRECCION DEL  
TIEMPO

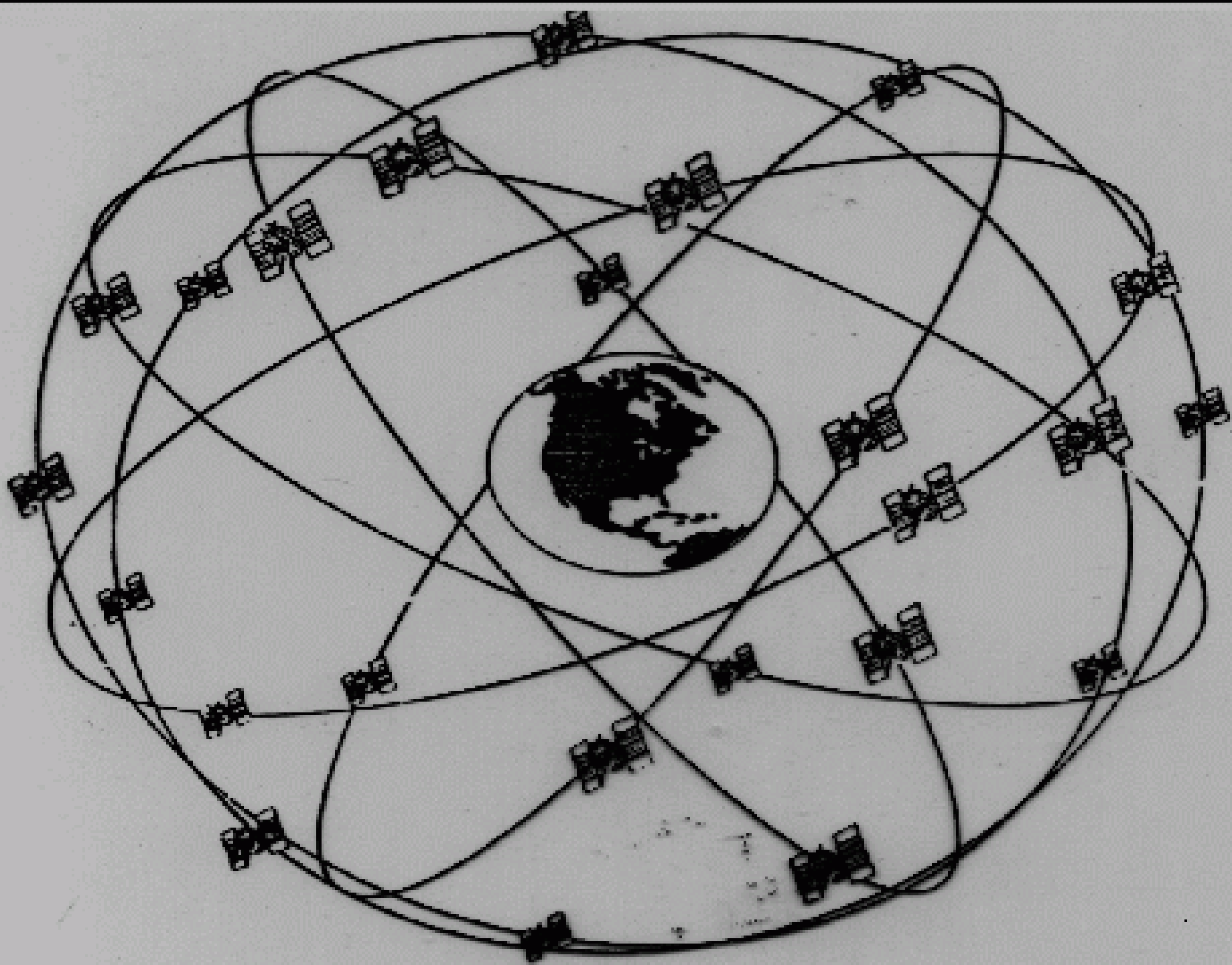
Latitud  
Longitud

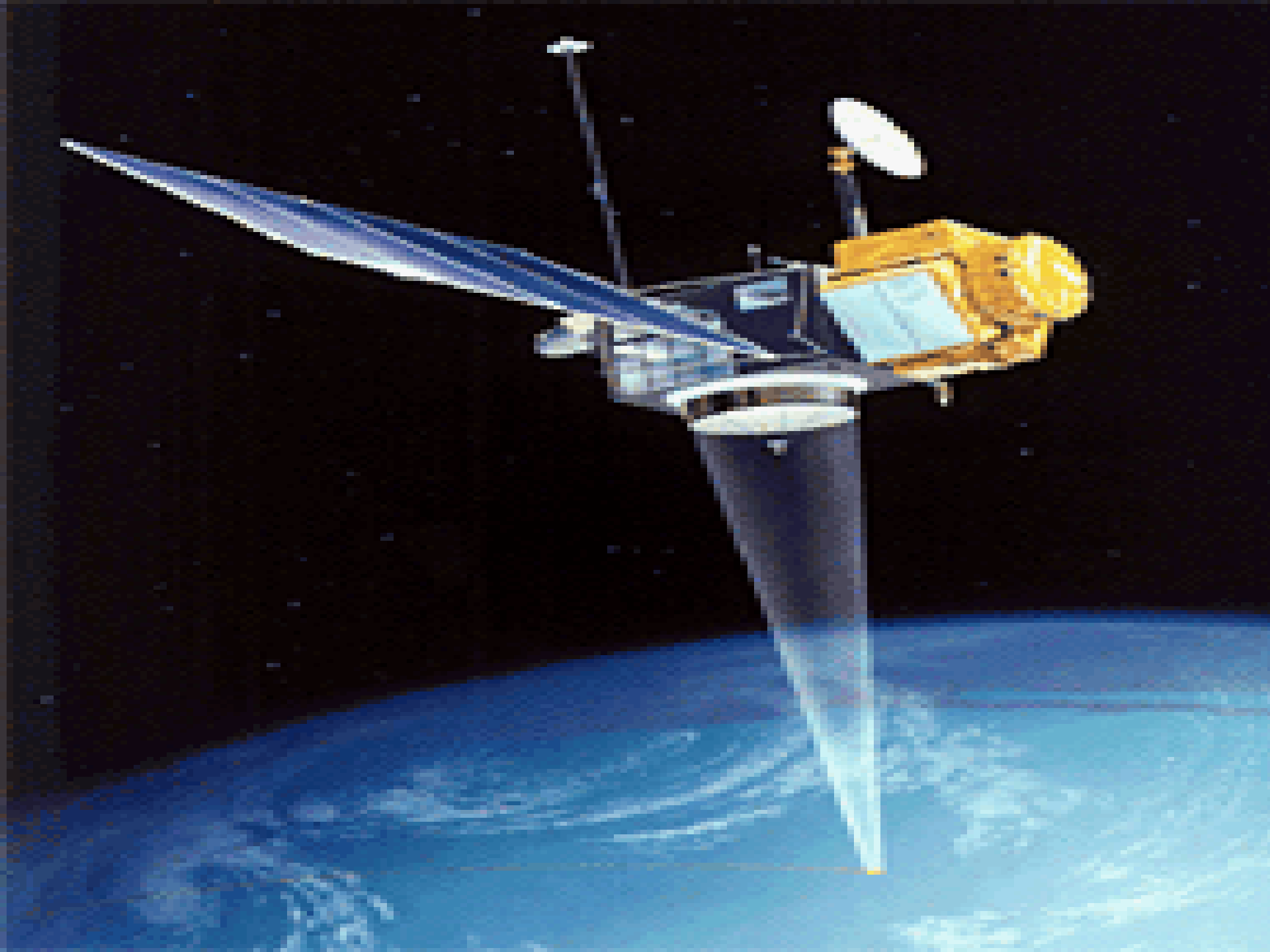
DATOS DOPPLER













**MAIN THREAT FOR  
ANTARCTIC ENVIRONMENT  
AND SAFETY  
IS THE RISK OF GROUNDING**



*-The long distances of navigation through an uncertain nautical cartography*

*-The risk of the difficulties of manoeuvre in restricted areas, with insufficient hydrography and suffering sudden meteorological changes*



Higher probability of maritime incidents  
- resulting from more ships operating in  
the area.

- Use of vessels that lack the ice-  
strengthening and other characteristics  
needed to protect them under the  
difficult Antarctic conditions.

- Increasing penetration of the Antarctic is spreading without previous SCAR studies about its environmental values and possible ASPA declaration,

- Larger ships from the global cruise industry; use of flags of convenience; and resulting loss of effective control by Antarctic Treaty Parties;



# CONCLUSION

AL COOPERAR CON HCA, PARA UNA  
HIDROGRAFIA MAS SEGURA  
SE APOYA :

- . LA SEGURIDAD
- . LA PROTECCION MEDIO AMBIENTAL
- . LA INVESTIGACION CIENTIFICA











## COMO HEMOS VISTO :

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Muchas Gracias

















