



Crowd-Sourced Bathymetry



UN Articles and Resolutions

- *SOLAS Chapter V, Regulations 2 and 9*
- *UNCLOS Annex II, Article 3, Paragraph 2*
- *UN General Assembly Resolution A.53/32 (1999) “The year of the Oceans”*
- *UNCLOS Article 75: Charts and lists of geographical coordinates*
- *UN GA Resolution A/55/7 (2001)*
- *UN GA Resolution A/56/12 (2001)*
- *UN GA Resolution A/58/240 (2004)*



The Provision of Hydrographic Services

- ... is an International Obligation under Treaty Law
- ... affecting ALL SOLAS contracting governments.



Governmental Obligations

SOLAS V/9 – Requires each State to ensure:

- the provision of Maritime Safety Information (MSI)
- surveying and data collection
- the production of charts and nautical publications
- chart maintenance and updating services



Survey and charting status 2014

(source: IHO C-55)

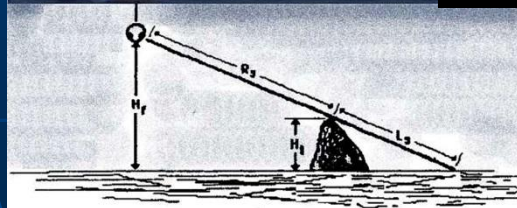
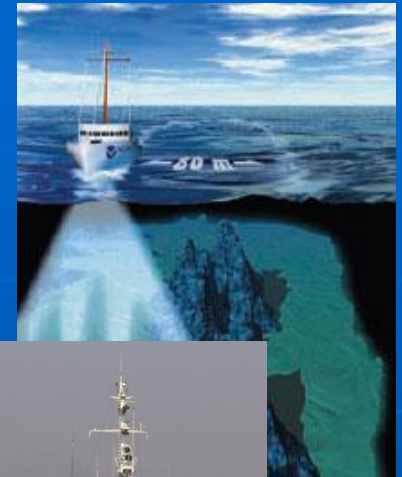
Unsurveyed or requires better data (0-200m deep)

- SW Pacific >95%
- Polar regions > 95%
- W. Africa >80%
- Caribbean >80%
- Australia ~ 65%
- Greece 65%
- USA ~ 40%
- UK 30%
- France 19%



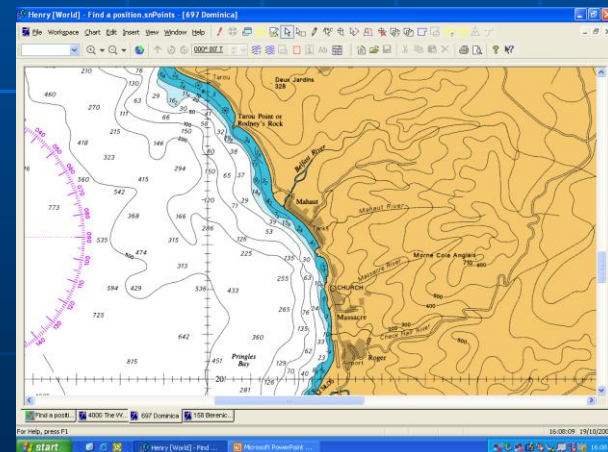
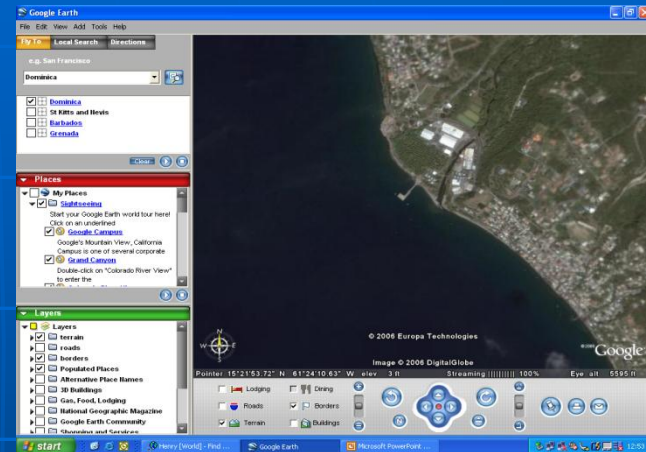
Global surveying capacity

- 35% reduction in government fleet in 25 years

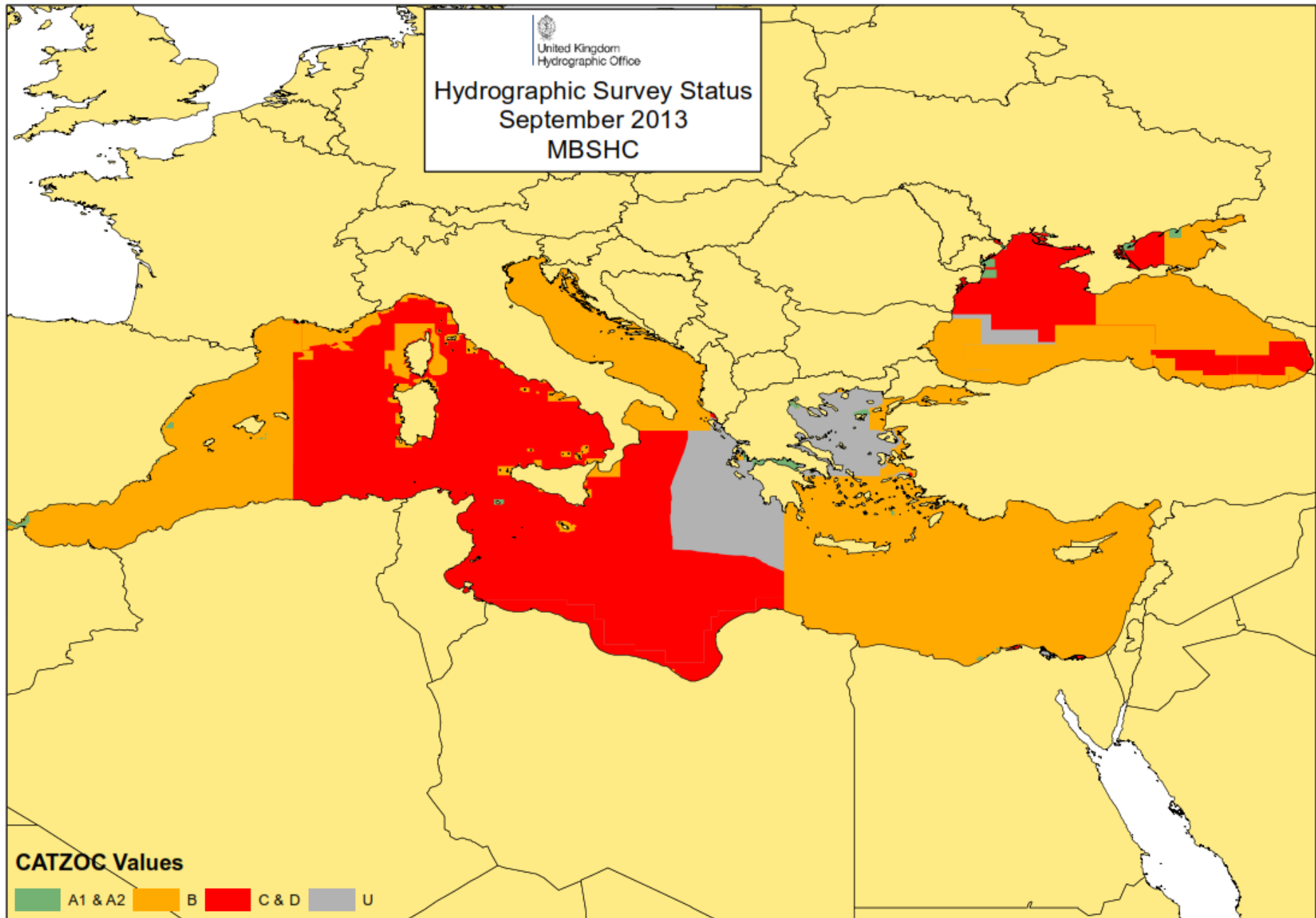


What is commonly found?

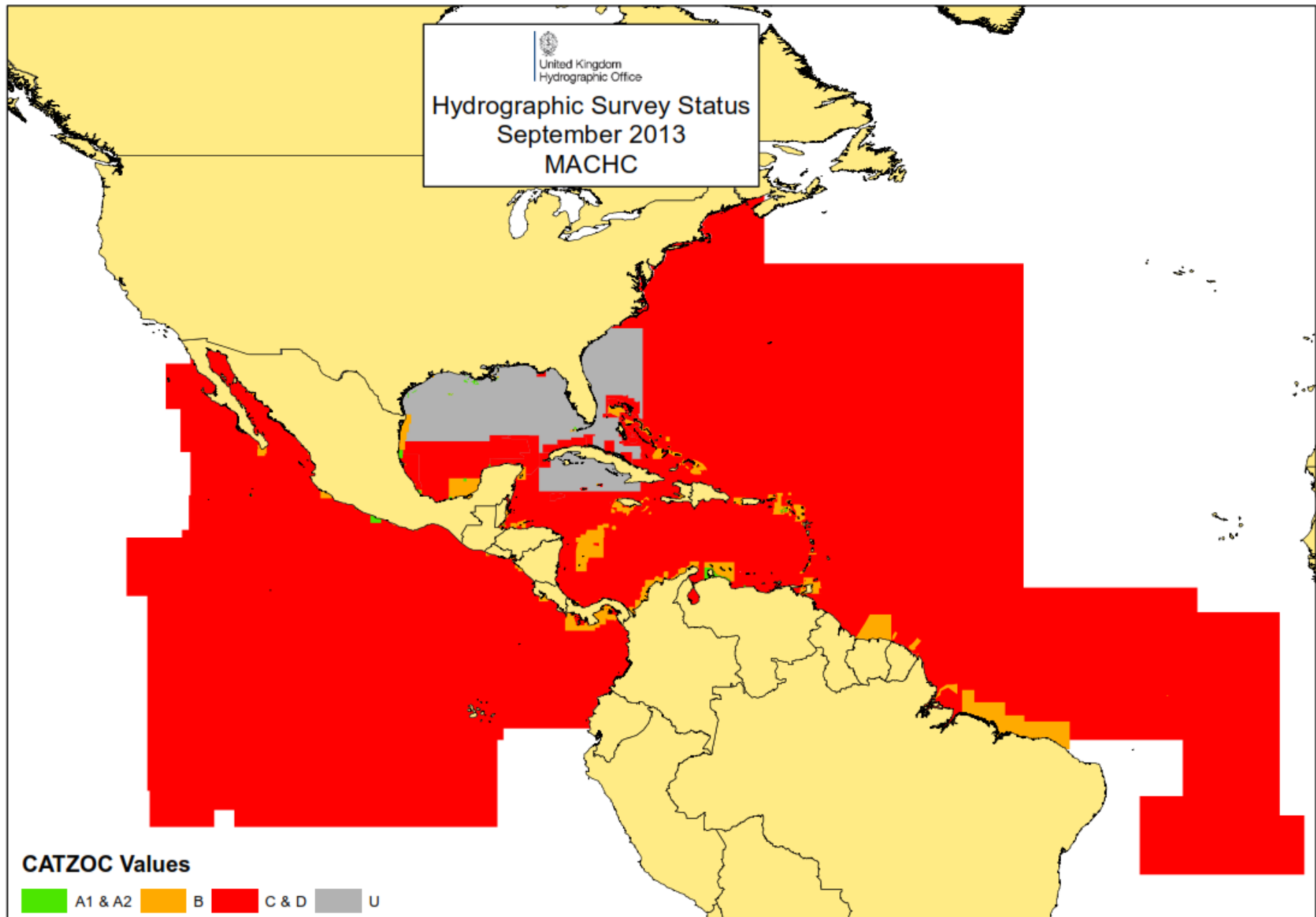
- New jetties and port installations, utilised by high risk vessels (LNG carriers; large passenger vessels), where surveys have not been conducted and information has not been passed to HOs for charting.



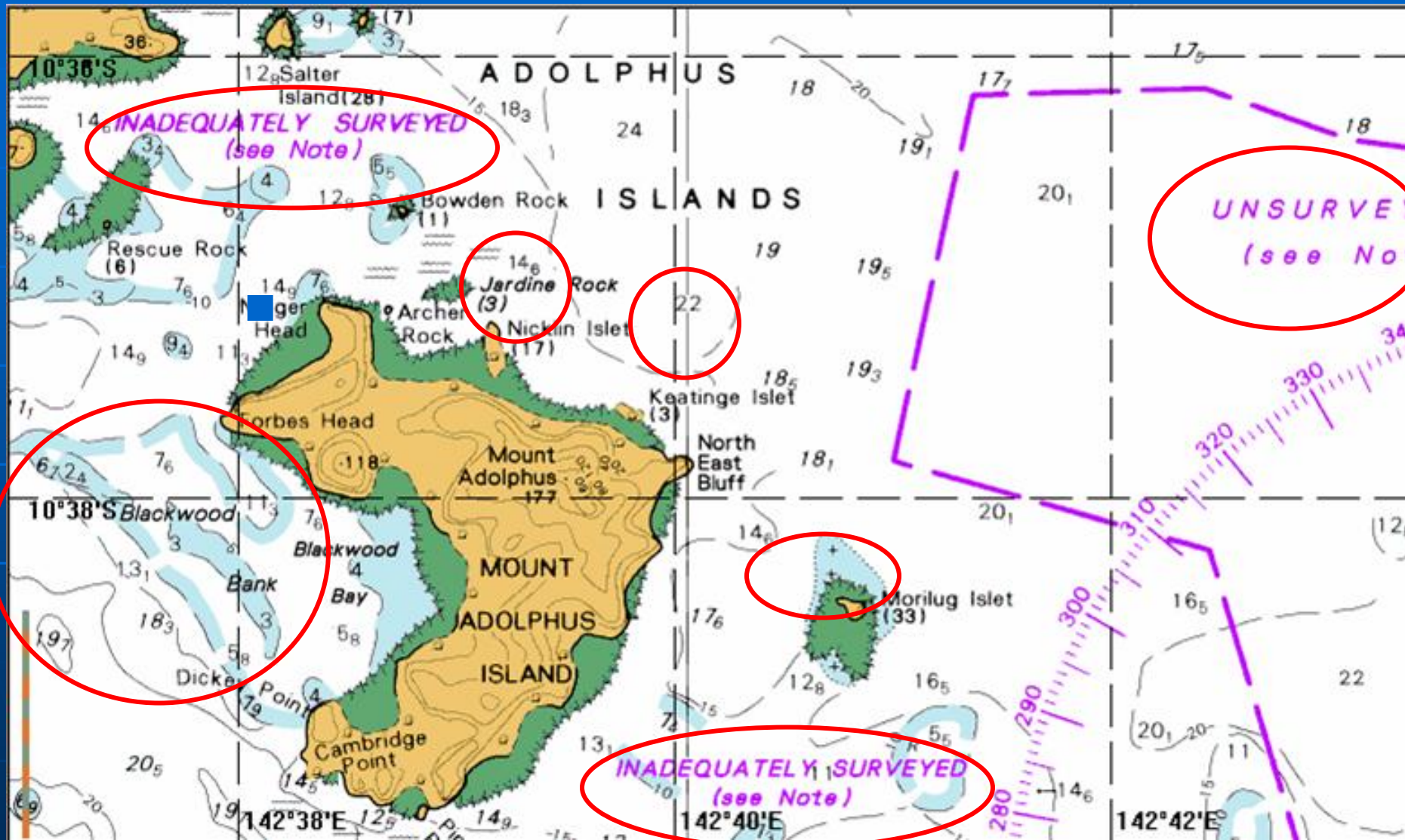
Data Coverage in Mediterranean Sea



Data Coverage in Caribbean Sea



Status of surveying worldwide



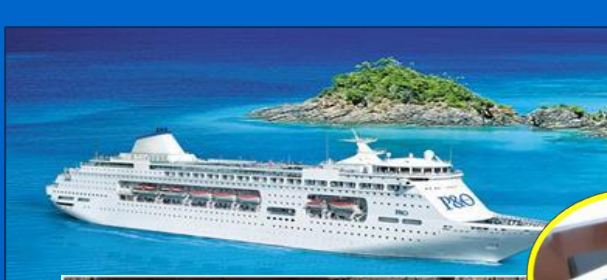
Crowd-Sourced Bathymetry (CSB)

- Low cost – high impact
- Non commercial
 - community based
- IHO/PYA proof of concept initiative
- Already happening!
- Mariners' self-help programme
- Logger in every professionally crewed ship



Installed Data Logger



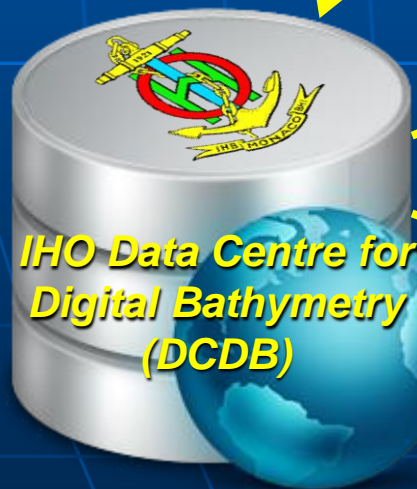


Crowd-sourced data collection



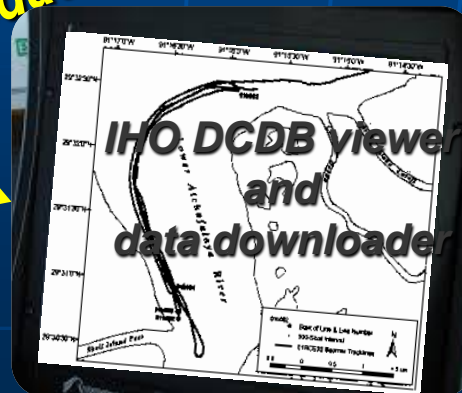
**observers send alert to HO
(if appropriate)**

**data uploaded
(at mariners' convenience)**



**HO's access DCDB
for normal chart
updating cycle**

**Public
access
to DCDB**

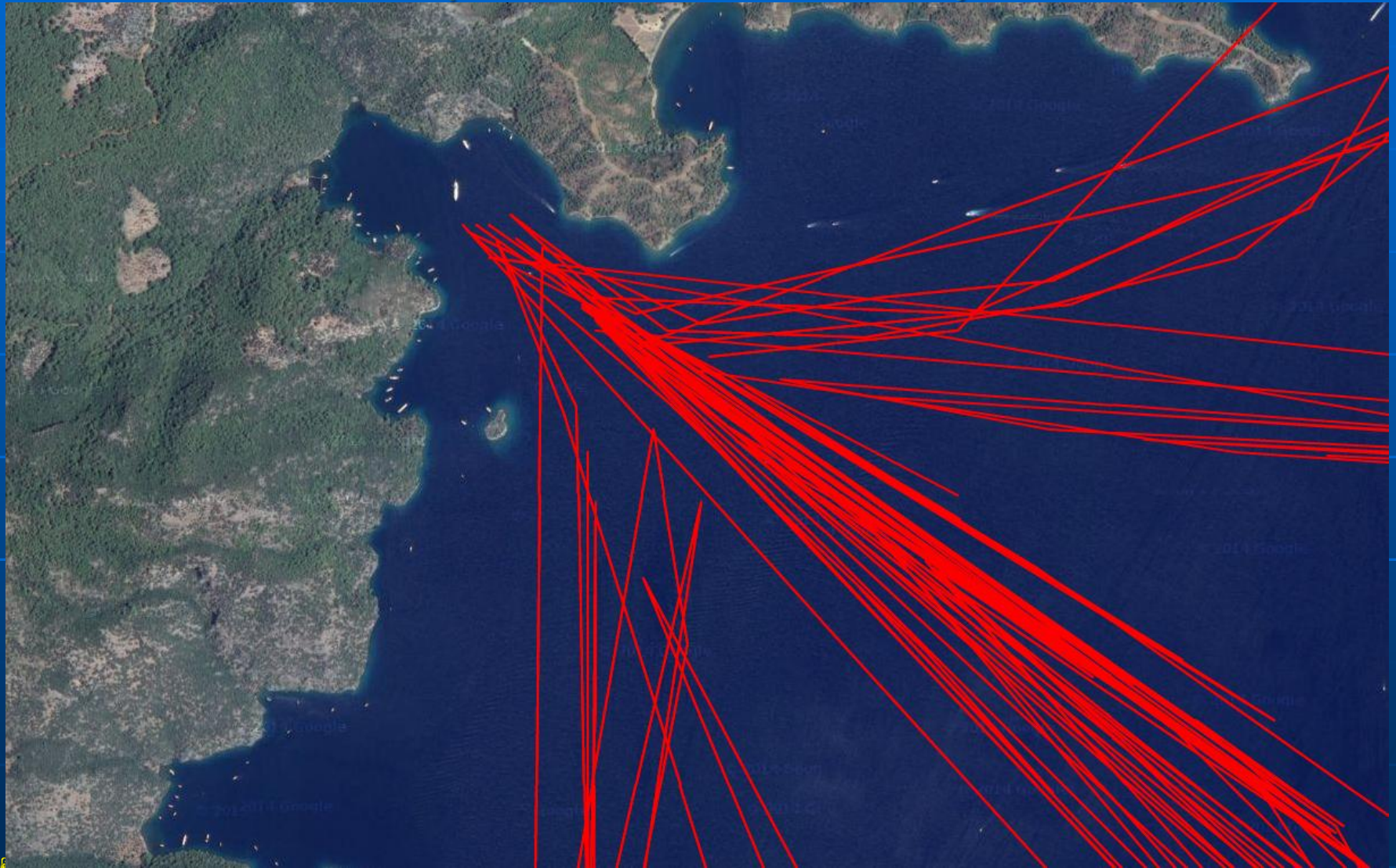


**HO produces
new or revised
chart**

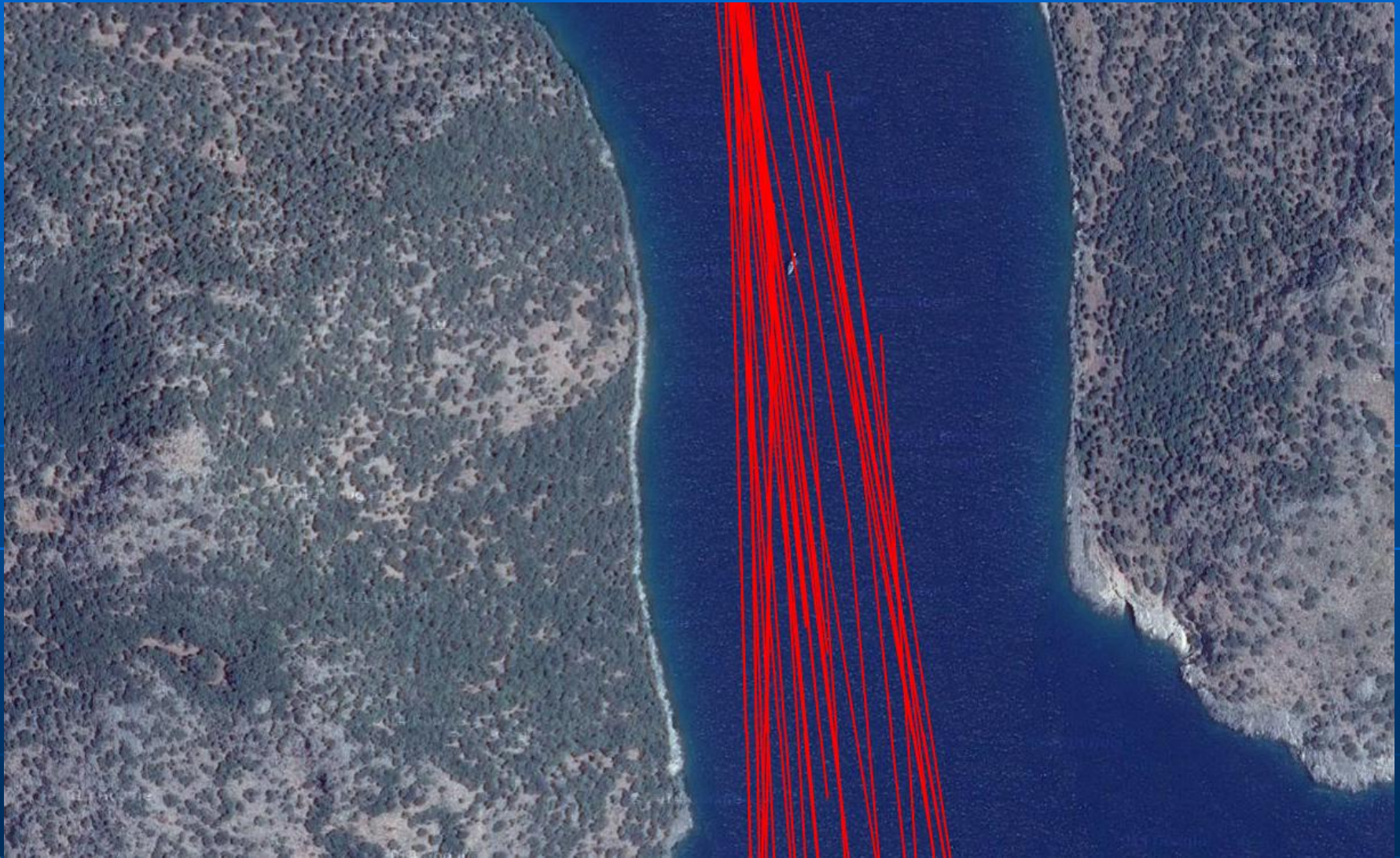
- near real-time update
- view all data
- users download and use data "as is"



Sample data set - Tomb Bay, Gocek, Turkey (36°41.65'N 28°52.23'E)

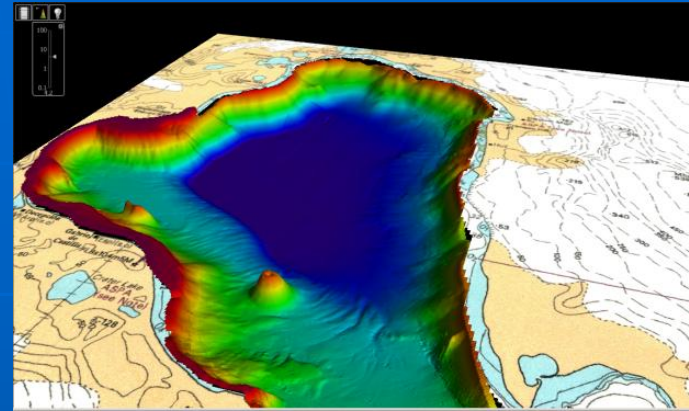


Sample data set - Chanel between Domuz Island and Tersane Island, Gocek Turkey. ($36^{\circ}39.36'N$ $28^{\circ}52.23'E$)



Concept now proven

Next steps :



- Develop upload and download portals on DCDB
- Develop IHO guidelines to assess CSB data quality for use in charts, draft ToRs for WG nearly ready
- Collect more sample data sets and explore methods for quantifying uncertainty values
- Expand areas in which data being collected, such as current work in Malaysia



Data Submission:

The IHO DCDB can accept data via File Transfer Protocol (FTP), e-mail, CD and DVD as well as other mutually agreed upon digital media. Data are preferably in the MGD77 exchange formats, but any well documented format is acceptable.

Mailing Address:

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Thank You

