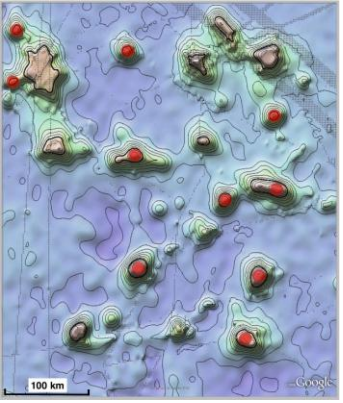
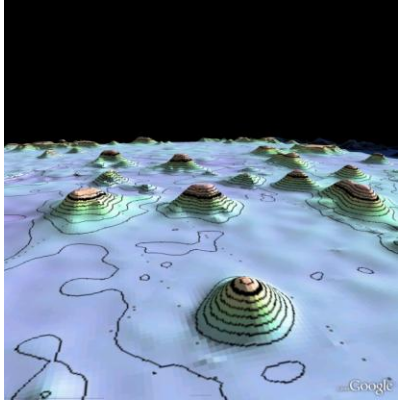


Seamount Discovery Tool

Megan Jones and David Sandwell
Scripps Institution of Oceanography



- Created as an efficient way for ships of opportunity to plan routes that travel over uncharted seamounts.

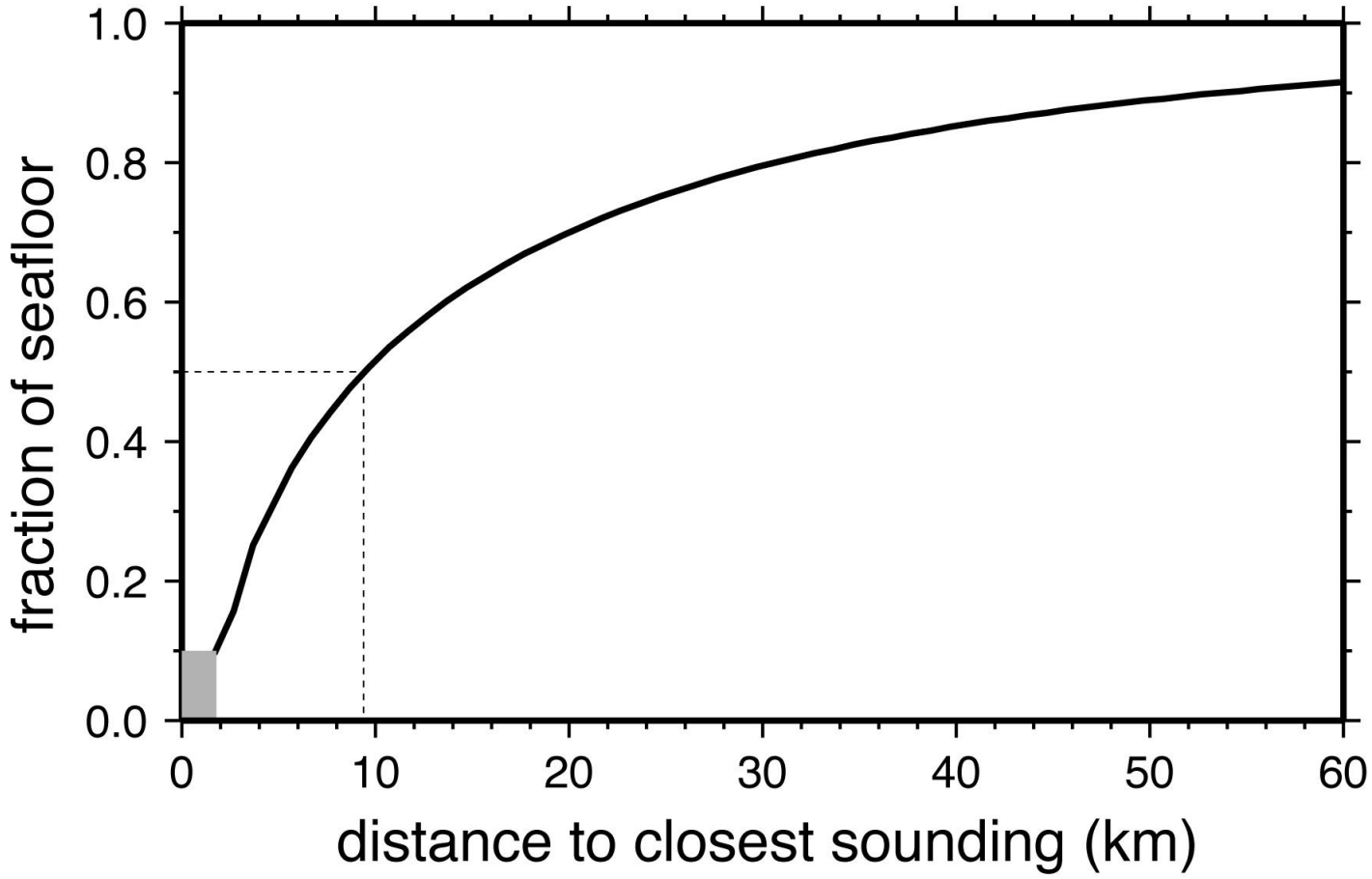
- Most seamounts < 2 km tall are uncharted

- Seamount exploration strategies
  - acquire and edit existing data (see poster)
  - ships of opportunity and Google Earth
  - satellite altimetry

- Discovery tool uses Google Earth and a GPS

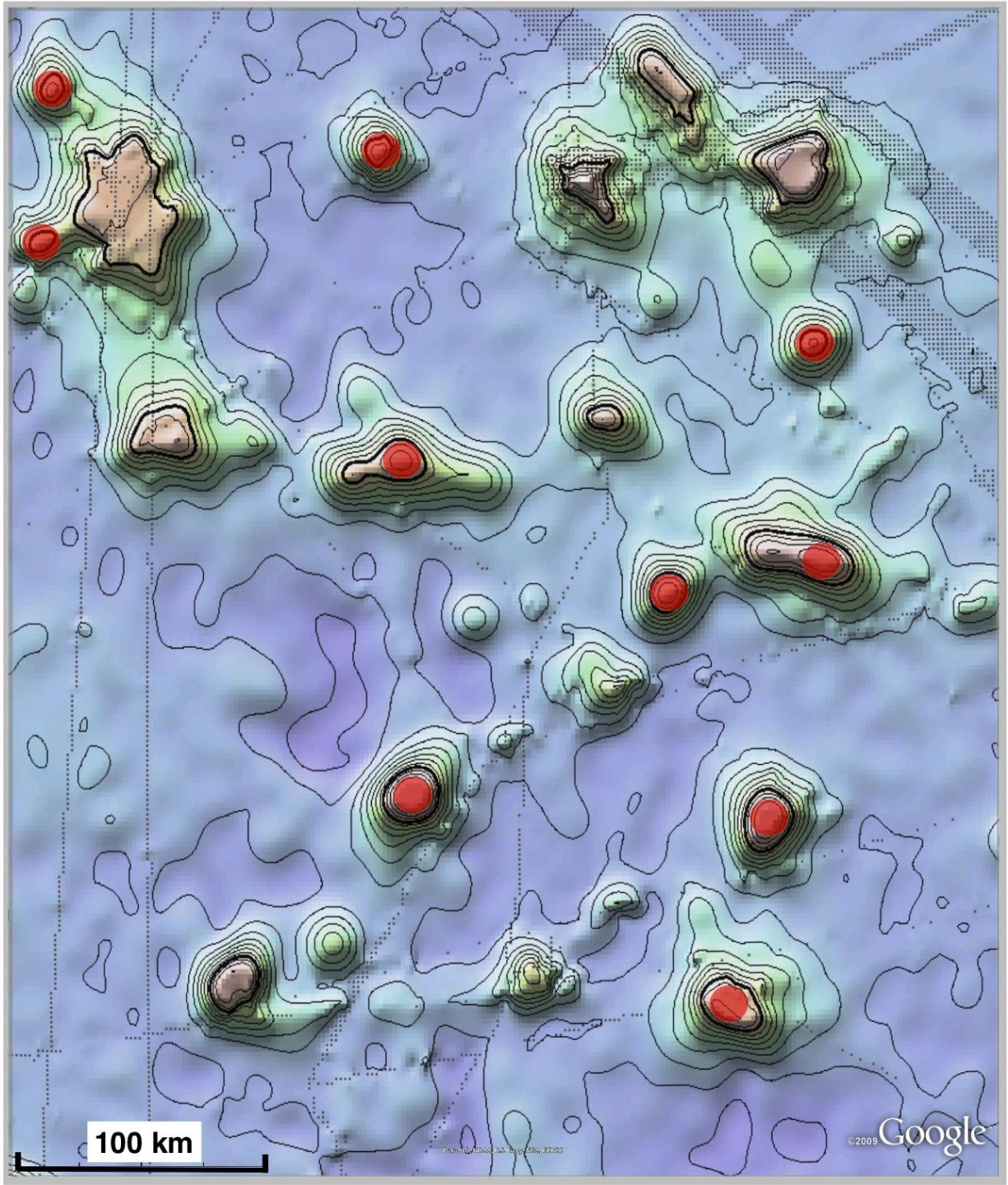
Wessel, P., D. T. Sandwell and S-S. Kim, The global seamount census, Oceanography, 23:1 p. 24-33, 2010.
Sandwell, D. T., and P. Wessel, Seamount discovery tool aids navigation to uncharted seafloor features, Oceanography, 23:1 , p. 24-26, 2010.

1/2 of global seafloor bathymetry not resolved at 10 km resolution

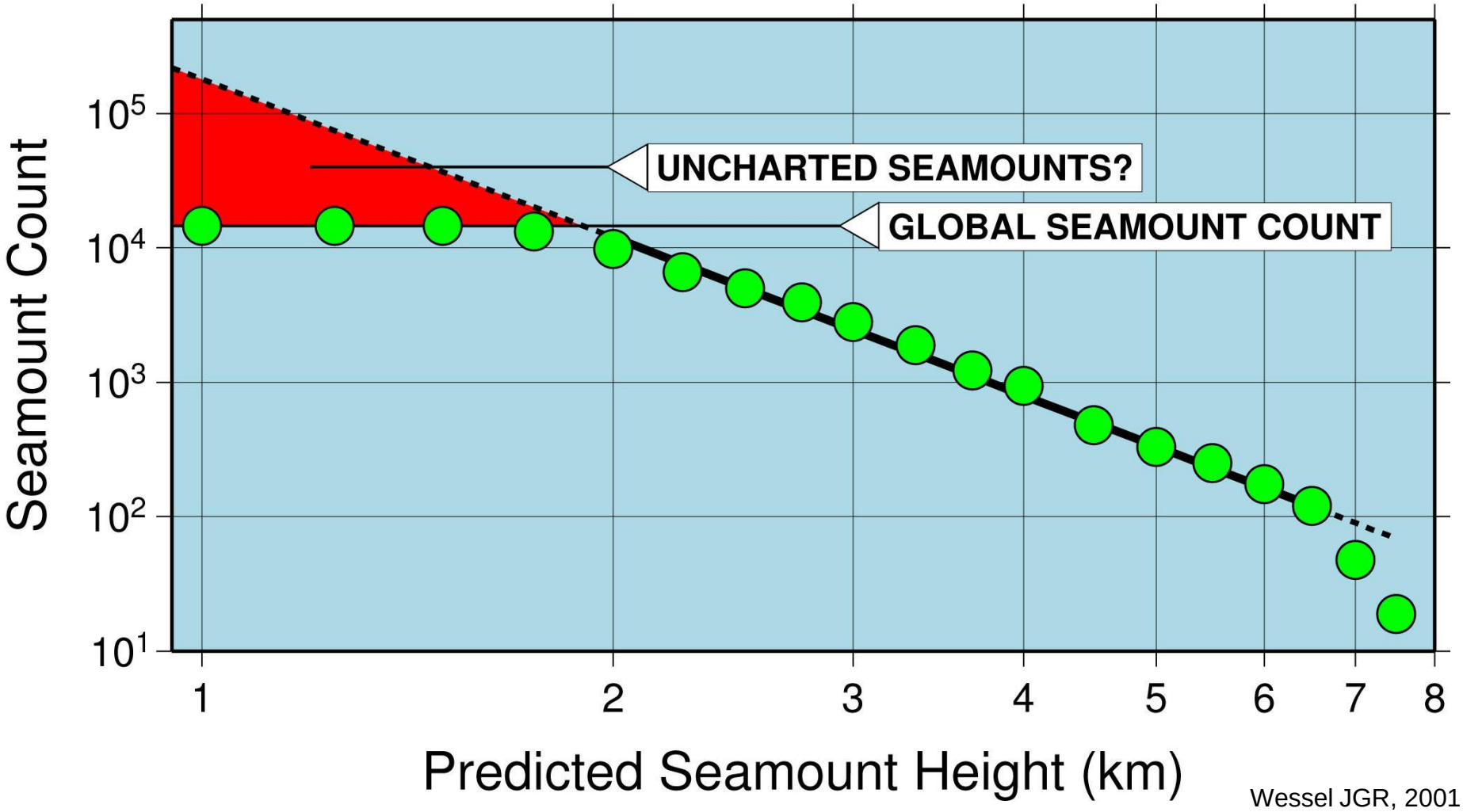


[Smith and Marks, 2009]

uncharted seamounts > 3 km tall



size distribution of seamounts



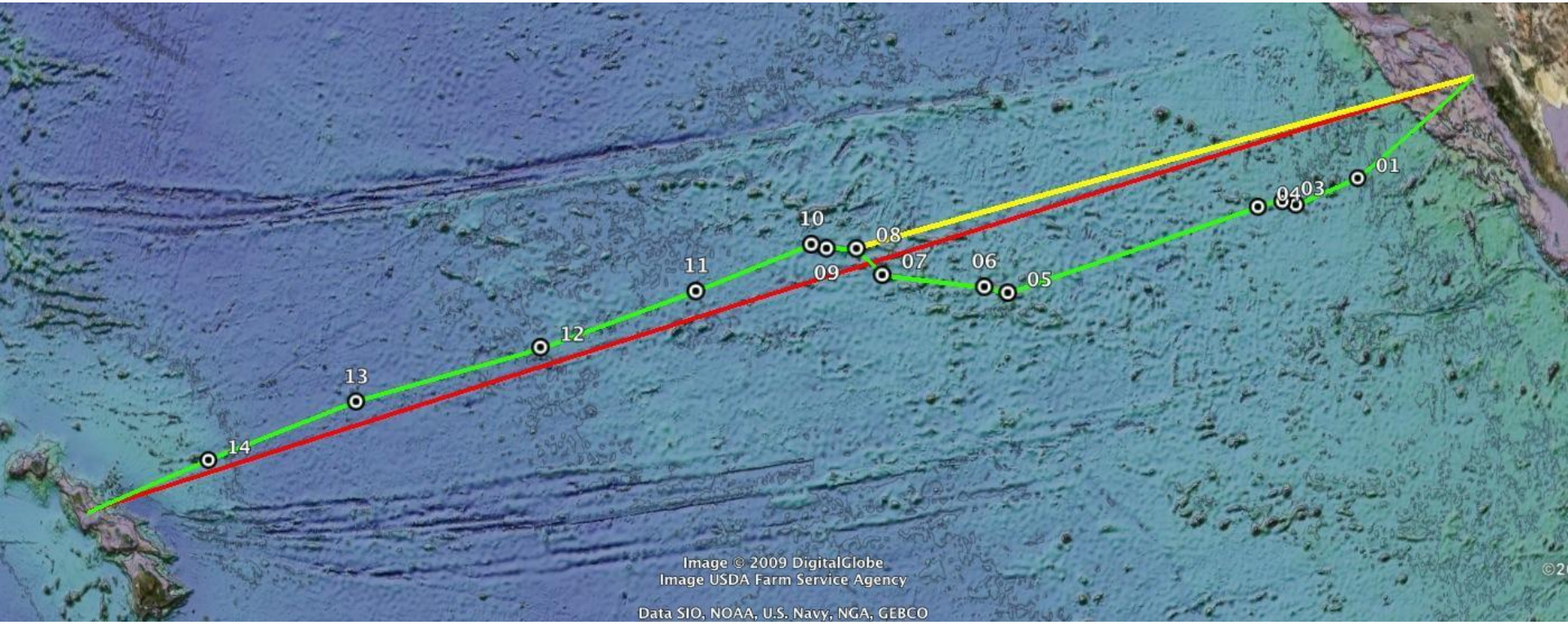
Wessel JGR, 2001

Seamount Exploration Strategies

- Existing data
- Ships of opportunity and Google Earth (GE)
  - GE to encourage data sharing
  - **GE as a real-time survey tool**
- Satellite altimetry
  - Cryosat II (launch April 2010)
  - Other non-repeat orbit altimeters

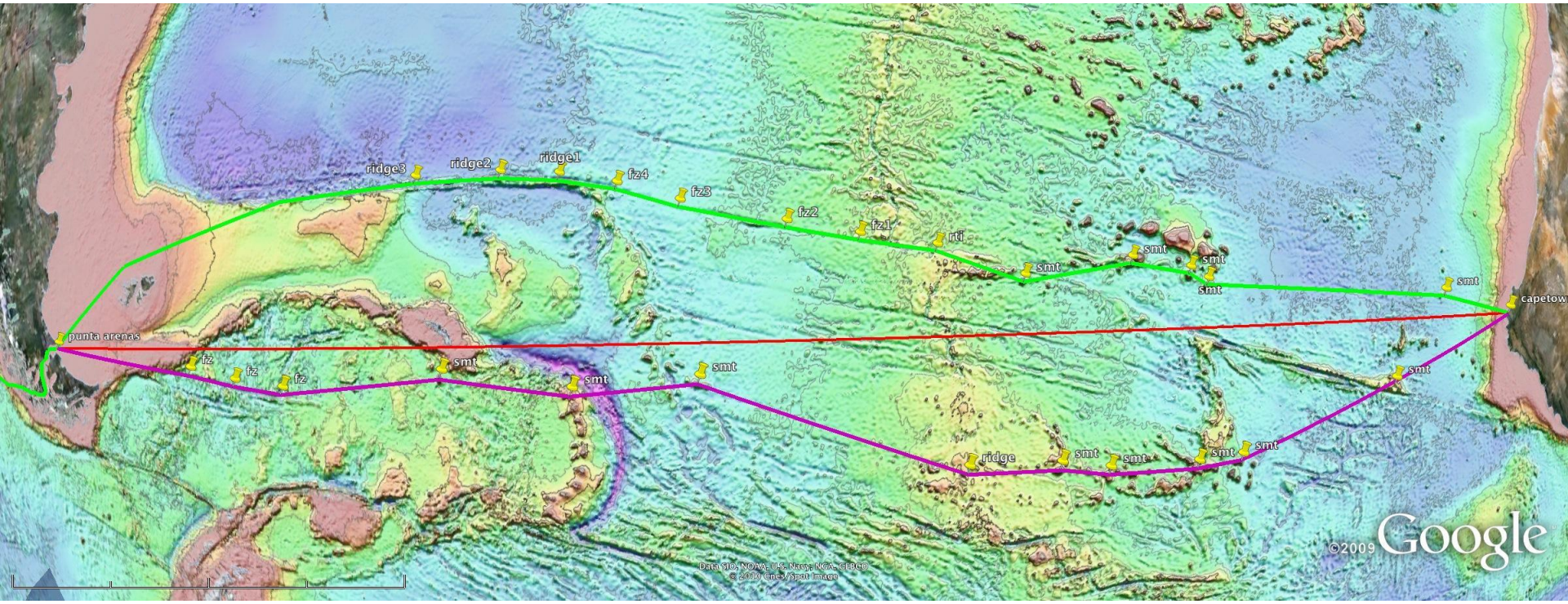
San Diego to Honolulu - White Holly - May 2009

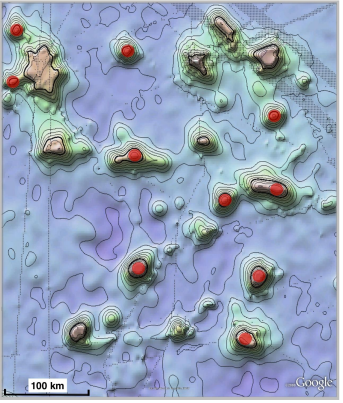
red - great circle = 4180 km
green – 14 new seamounts = 4300.1 km (1.028)
yellow - 7 new seamounts = 4189.7 km (1.0023)

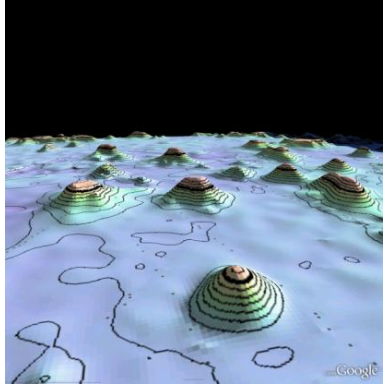


Capetown to Punta Arenas - Melville - Feb, 2011

red - great circle = 6896 km
green - 10 new seamounts = 7130 km (1.034)
violet - 11 new seamounts = 7069 km (1.025)







Setup real-time GPS with Google Earth

Hardware

1) Laptop computer with USB port (PC or Mac)
2) Garmin GPS Map 60 ($249.99)(many other GPS makes/models also work)
3) USB Cable ($14.99)
4) External antenna ($31.49)

Software and Data

5) Google Earth software
6) Bathymetry overlays in kmz format (http://topex.ucsd.edu)
7) Start GE go to Tools > GPS
8) Realtime Garmin PVT
9) Trackpoint import limit 100

Polling interval 10 sec. If the value is lower than 5 sec the position icon will not display. (May need to cycle GPS power and trash the realtime entry in temporary places.)