

# **Workshop on: Global Bathymetry for Oceanography, Geophysics, and Climatology**

Scripps Institution of Oceanography  
October 24-26, 2002

Sarah Gille, John Orcutt, David Sandwell (Chair), and Walter H. F. Smith

## **Sponsors:**

NSF  
NASA  
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IGPP Green Foundation

<http://topex.ucsd.edu/workshop>

## **Program**

### **Thursday October 24 – Hubbs Hall**

	Session Chair – William Young
8:30 – 8:40	John Orcutt – Introduction and outline of workshop report
8:40 – 9:10	Walter Smith – Why are we having this workshop? ABYSS proposal
9:20 – 9:40	Walter Munk – Abyssal Recipes
9:50 – 10:20	Paul Wessel – The Impact of Satellite Altimetry on Plate Tectonics and Geodynamics: Past and Future
10:30 – 10:50	Break
10:50 – 11:00	Ellen Kappel – Workshop report
11:00 – 11:30	Stefan Llewellyn Smith – Ocean bathymetry and tidal conversion
11:40 – 12:10	Gary Egbert - Barotropic/baroclinic Tidal Energy Conversion: Estimates from Altimetry and Models
12:20 - 13:20 -	Lunch
13:20 – 13:50	Session Chair – Kurt Polzin – Mixing in the Deep Ocean and Mid-Ocean Ridge Bathymetry

- 14:00 – 14:30 John Goff – Stochastic Modeling of Abyssal Hill Morphology  
 14:40 – 15:10 Eric Kunze – The Role of Small-scale Topography for Internal Waves and Mixing
- 15:20 – 15:40 Break
- 15:40 – 16:00 Joseph Metzger - Sensitivity of High Resolution Ocean Models to Topography  
 16:10 – 16:30 Chris Massell – Deformation and faulting of trench outer slopes
- 16:40 – 18:30 Posters/Reception – IGPP Munk Laboratory – Chair, David Sandwell
- Barry Eakins Determining the Structure of Hawaiian Submarine Rift Zones  
 Sarah Kruse Global Bathymetry, Education, and Outreach  
 Steve Miller Toward automated calibration: merging shipboard archives with predicted bathymetry  
 Greg Neumann Satellite Altimetry and the EEZ's of Remote Islands  
 Dave Porter Ancillary wind speed and significant wave height from a bathymetric altimetry mission  
 Louis St. Laurent The Application of Bathymetric Data in Calculations of Internal Tides and Mixing  
 Andreas Thurnherr Beyond Topographic Variance : The need for accurate high-resolution bathymetric data in physical oceanography
- 18:30 – 20:30 Dinner - IGPP Munk Laboratory

### **Friday October 25 – Hubbs Hall**

- Session Chair – Detlef Stammer  
 8:30 – 9:00 Steve Jayne – Connections Between Ocean Bottom Topography and the Earth's Climate  
 9:10 – 9:40 Sarah Gille – How Ocean Mixing Can Influence Global Sea Level and Climate  
 9:50 – 10:20 Robin Tokmakian - GCM sensitivity to bathymetry  
 10:30 – 10:50 Break  
 10:50 – 11:20 David Sandwell – Bathymetry from Space  
 11:20 – 11:40 George Sharman - Bathymetry and the National Geophysical Data Center  
 11:40 – 12:00 David Monahan – Altimetry and the Law of the Sea definition of the Continental Shelf
- 12:10 - 13:00 Lunch
- Session Chair – Sarah Kruse  
 13:00 – 13:20 Dave Naar - Altimetry-Aided Plate Tectonic Reconstructions

13:20 – 13:40	Doug Luther – The Hawaii Ocean Mixing Experiment (HOME)
13:40 – 14:00	Donna Blackman – Contributions of mGal-Accuracy Gravity to Studies of Oceanic Spreading Centers and the RIDGE2000 Program
14:00 – 14:20	Dale Sawyer – MARGINS Interests in Improved Resolution Satellite Derived Gravity Observations
14:20 – 15:00	Discussion of requirements
15:00 – 15:20	Break
15:20 – 15:40	Khalid Soofi – Petroleum exploration
15:50 – 16:00	Manik Talwani – High resolution gravity applications
16:00 – 16:20	Keith Raney – Delay Doppler Altimeter
16:20 – 16:40	Ernesto Rodriguez – Swath Altimeter Technology
16:40 – 17:00	Discussion of requirements
17:30 -	Martin Jakobsson - Display of seafloor mapping in IGPP Viz Lab (informal reception)

## **Saturday October 26 – IGPP Munk Conference Rm.**

9:00 - 12:00            Prepare first draft, writing assignments

### **Outline of Document:**

- Chapter 1 - overview and recommendations
- Chapter 2 - characterization and causes of seafloor roughness – John Goff, Walter Smith, John Orcutt, Donna Blackman
- Chapter 3 - observations global ocean mixing, tides, and measurements of mixing – Eric Kunze, Kurt Polzin, Doug Luther, Richard Ray, Lou St. Laurent
- Chapter 4 - theory of internal-wave generation/breaking, Bill Young, Stefan Llewellyn-Smith, Gary Egbert
- Chapter 5 - effects of mixing/bathymetry on global ocean circulation – Robin Tokmakian, Joseph Metzger, Detlef Stammer, Steve Jayne
- Chapter 6 - effects of bathymetry on climate and sea level – Steve Jayne, Sarah Gille, Walter Munk
- Chapter 7 - solid earth applications of deep-ocean gravity/bathymetry: ridges, plate re-organizations, seamounts, trench outer rise fractures, . . . Paul Wessel, Donna Blackman, David Naar, Barry Eakins, Chris Massell
- Chapter 8 - continental margins structure and processes – Dale Sawyer, Bernie Coakley, Manik Talwani
- Chapter 9 - petroleum exploration – Khalid Soofi, Michal Ruder, Manik Talwani
- Chapter 10 - gravity methods and applications – Bernie Coakley, C.K. Shum, David Sandwell, Ron Trimmer,
- Chapter 11 - exploration of Planet Earth and outreach – Sarah Kruse, Walter Smith, Dave Porter, John Orcutt, Marcia McNutt
- Chapter 12 - limitations of existing data sets: altimetry and soundings – Dave Sandwell (altimeter), Walter Smith (ship), Paul Wessel, Steve Miller, George Sharman
- Chapter 13 – other applications: fisheries, marine habitat, law of the sea – Dave Monahan
- Appendix A – possible altimeter designs– Keith Raney, Ernesto Rodriguez