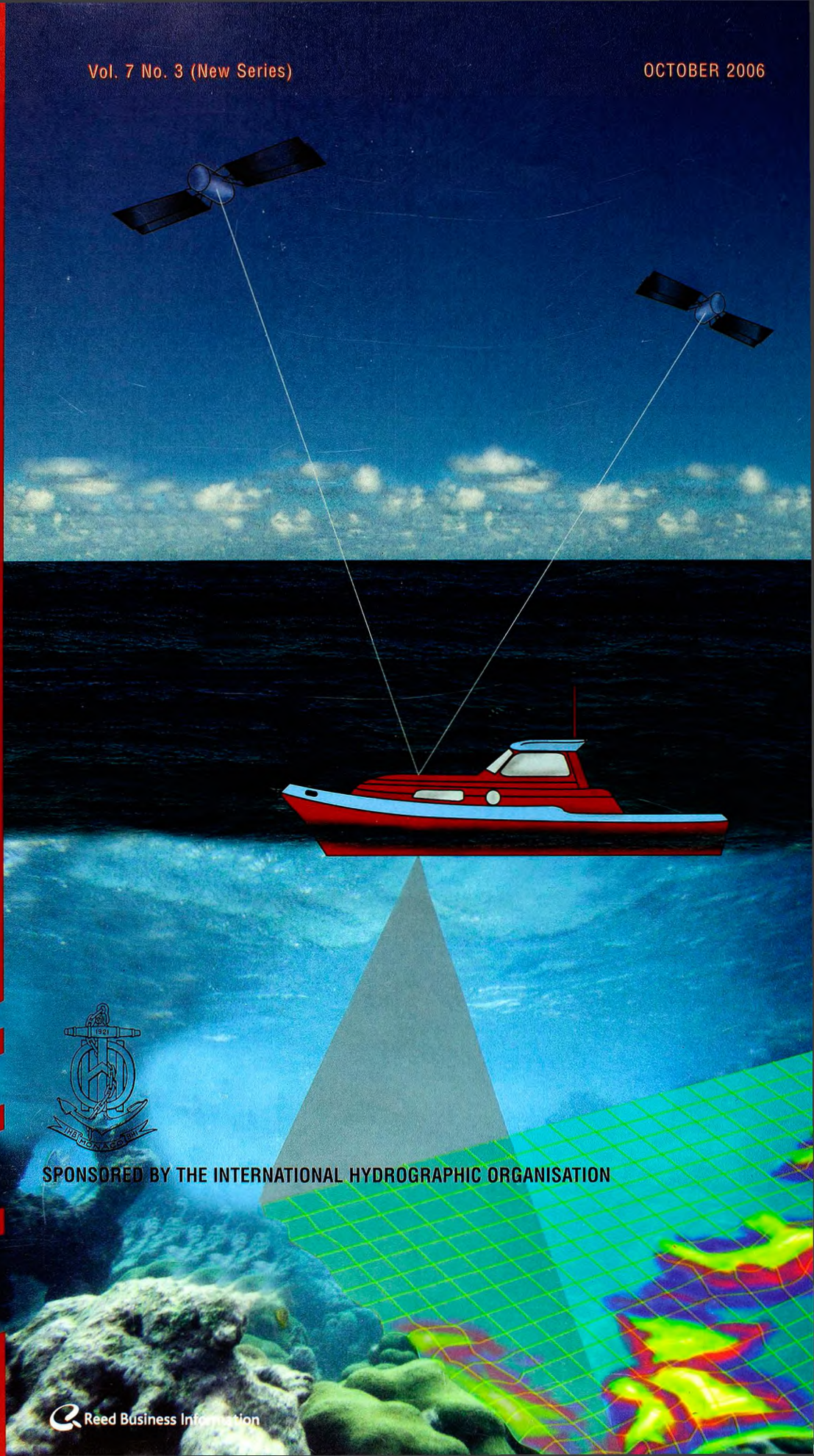


Vol. 7 No. 3 (New Series)

OCTOBER 2006

# The International Hydrographic Review



SPONSORED BY THE INTERNATIONAL HYDROGRAPHIC ORGANISATION

# Synthetic Aperture Sonar, HISAS



Synthetic aperture sonars combine a number of acoustic pings to form an image with much higher resolution than conventional sonars, typically 10 times higher.

The HISAS sonar is part of the HUGIN system solution for mine countermeasures, which has been ordered recently by the Norwegian Navy.

HISAS is a wideband SAS sonar with frequency range of 70-100 kHz, capable of producing ultra high resolution acoustic images as well as co-registered bathymetry. The sonar is tightly integrated with the INS navigation and motion sensing platform of the HUGIN AUV, and makes use of modern signal processing such as DPCA (Displaced Phase Centre Analysis) to process the raw data into images.

## Kongsberg Maritime

Norway: +47 33 03 41 00, USA: +1 425 712 1107  
Canada: +1 902 468 2268, UK: +44 1224 22 65 00  
Italy: +39 06 615 22 476, Singapore: +65 68 99 58 00

[www.km.kongsberg.com](http://www.km.kongsberg.com)  
e-mail: [subsea@kongsberg.com](mailto:subsea@kongsberg.com)



KONGSBERG

Vol. 7 No. 3 (New Series)

October 2006

# THE INTERNATIONAL HYDROGRAPHIC REVIEW

SPONSORED BY THE INTERNATIONAL HYDROGRAPHIC ORGANISATION

*Published by:*

Reed Business Information, P.O. Box 112, 8530 AC Lemmer, The Netherlands

Tel.: +31 (514) 56 18 54, Fax: +31 (514) 56 38 98

E-mail: [geo@reedbusiness.nl](mailto:geo@reedbusiness.nl), Website: [www.reedbusiness-geo.nl](http://www.reedbusiness-geo.nl)



## Contents

### ■ Editorial

---

By Adam J. Kerr, Editor 7

### ■ Articles

---

#### Height References in Hydrography

By Bernard Simon, Civil Engineer at SHOM 8

#### Coastal Modelling Applied to Tidal Predictions for Hydrographic Sounding Reduction

By Lucia Pineau-Guillou 21

#### Charting Nigerian Waters for Safer Navigation

By Chief Innocent N. Egbuh, Nigeria 28

#### The Juridical Continental Shelf In The Bay Of Bengal, According To The Statement Of Understanding

By Mr. Md. Abul Hasan Mridha, Bangladesh Foreign Service; Ron Macnab, retired marine geophysicist and Herman Varma, Bedford Institute of Oceanography 37

#### The Integration of the Free Fall Cone Penetrometer (FFCPT) with the Moving Vessel Profiler (MVP) for the Rapid Assessment of Seabed Characteristics

By John Osler, Defence Research Development Canada, Arnold Furlong, Brooke Ocean Technology Ltd., Harold Christian, Christian Situ Geosciences Inc. and Mike Lamplugh, Canadian Hydrographic Service 45

#### A Process for Producing Ice Coverage Marine Information Objects (MIOs) in IHO S-57 format

By George Dias and David Coleman, University of New Brunswick, Canada  
Ahmed El-Rabbany and Benson Agi, Ryerson University, Toronto, Canada  
Lee Alexander, University of New Hampshire, USA 55

### ■ Book Review

---

#### Canada's Offshore

##### Jurisdiction, Rights and Management, 3rd Edition

By Bruce Calderbank, Alex M. MacLeod, Ted L. McDorman and David H. Gray 64

### ■ Instructions for Contributors

---

66

## The International Hydrographic Review

Publishing Company : Reed Business Information bv  
Publication Director : Durk Haarsma  
Editor-in-Chief : Adam J. Kerr  
Editorial Board : Lee Alexander  
: Michael Casey  
: Captain Hugo Gorziglia (International Hydrographic Organisation)  
: Horst Hecht  
: Sean Hinds  
: Robert Ward  
Editorial Manager : Joost Boers (joost.boers@reedbusiness.nl)  
Account Manager : Wilmiene Bakker (wilmiene.bakker@reedbusiness.nl)  
Circulation Manager : Marjan de Vries (marjan.de.vries@reedbusiness.nl)

### Instructions for Contributors

The International Hydrographic Review is an international journal published three times a year by RBI bv. It is sponsored by the International Hydrographic Organisation. It contains original papers concerning all aspects of hydrography and associated subjects. All articles are subjected to peer review and are expected to be 4,000 to 6,000 words long, although longer articles may be considered. It also provides a medium for discussions in the form of shorter Notes, that are typically 1,500 to 2,000 words in length.

Information on the layout of articles and the form of illustrations and references may be obtained by requesting 'Instructions to Authors' from the Editor. They are also published in the first issue of each year. Submissions should be sent to:

Mr Adam Kerr  
Flagstaff Cottage  
Lamorna  
Penzance  
Cornwall TR19 6XQ  
UNITED KINGDOM  
Tel.: +44 (0)1736 - 731 228  
Fax.: +44 (0)1736 - 731 976  
E-mail: Adam.J.Kerr@btopenworld.com

#### Reprints

Reprints of all articles (including articles published in earlier issues) can be ordered. For more information, please contact Marianne de Boer: marianne.de.boer@reedbusiness.nl.

#### Copyright

Any permission needed to incorporate material published elsewhere is the responsibility of the authors and it will be assumed that such permission has been maintained. The publisher is not responsible for statements made in the articles or advertisements nor is responsible for typing or converting errors. No material may be reproduced in whole or in part without written permission of RBI bv.

#### Subscription Information

The Journal is published three times a year by RBI bv and can be obtained regularly by subscription. Please find below the subscription rates:

	Europe	All other countries
1 year Individual	€ 67.00	US\$ 93.00
1 year Library	€ 85.00	US\$108.00

Should you wish to take out a subscription then please contact our circulation manager.