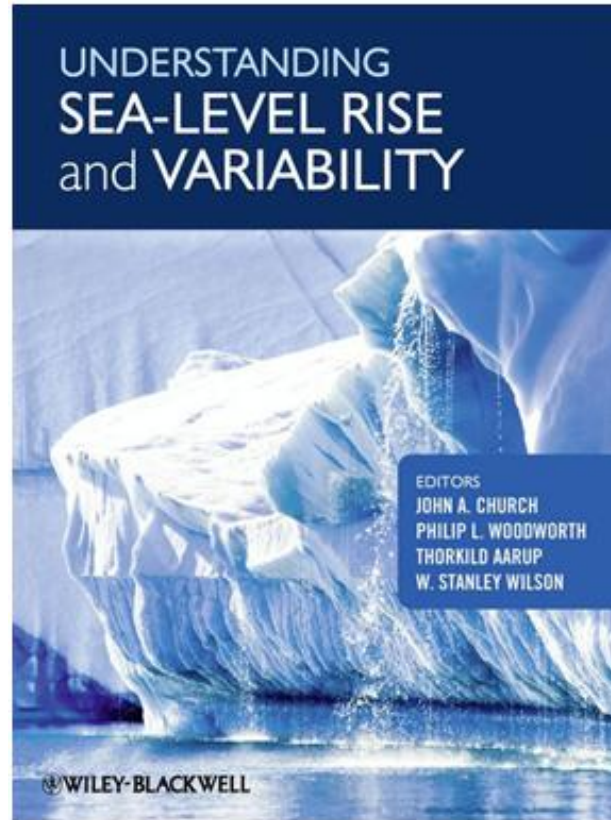




# New publication....



Google books search:

[http://books.google.co.uk/books?hl=en&lr=&id=K8S9\\_71pbDIC&oi=fnd&pg=PT12&dq=understanding+sea+level+rise+and+variability&ots=5g zr2gcfM-&sig=x7tx0TaQ8DDF8F5R8gSH-1QChY#v=onepage&q&f=false](http://books.google.co.uk/books?hl=en&lr=&id=K8S9_71pbDIC&oi=fnd&pg=PT12&dq=understanding+sea+level+rise+and+variability&ots=5g zr2gcfM-&sig=x7tx0TaQ8DDF8F5R8gSH-1QChY#v=onepage&q&f=false)



THE UNITED KINGDOM  
HYDROGRAPHIC OFFICE



## Edited by:-

- **John A. Church**, Centre for Australian Weather and Climate Research and the Antarctic Climate and Ecosystems Cooperative Research Centre.
- **Philip L. Woodworth**, National Oceanography Centre (formerly Proudman Oceanographic Laboratory, former Director of PSMSL and Chairman of GLOSS.
- **Thorkild Aarup**, Senior Programme Specialist with IOC UNESCO and technical secretary of GLOSS.
- **W. Stanley Wilson**, Office of Naval Research, NASA and NOAA.



## Background:

- Workshop in June 2006, organised under the auspices of the **World Climate Research Programme (WCRP)**.
- Attended by 163 scientists from 29 countries, representing a wide range of expertise and supported by 34 organisations.
- Purpose of workshop: to address the wide range of uncertainty in projections of global and regional sea-level rise presented by the **Intergovernmental Panel on Climate Change (IPCC)**. This is a significant hindrance in agreeing appropriate mitigation levels and in planning adaptation.
- Book published as a result of the proceedings of the workshop.



## Abstract:

- Identifies the major impacts of sea-level rise
- Up-to-date assessments of past change
- Explores all factors contributing to sea-level rise
- Investigates how sea-level extreme events might change
- Summarises current knowledge
- Suggests what research and observations are required to reduce uncertainties in understanding sea-level rise
- More reliable future projections of sea-level rise
- Relevant to policy makers, research funders, scientists, students, coastal managers and engineers.



## Chapters and Contributors:

- **Impacts of and Responses to Sea-Level Rise:** *Robert J. Nicholls*
- Focuses on understanding the threat of sea-level rise and its implications for climate science and policy, as well as coastal management.
- Impacts of rising sea-levels on coastal areas and the responses that can be implemented.
- **A First-Order Assessment of the Impact of Long-Term Trends in Extreme Sea Levels on Offshore Structures and Coastal Refineries:** *Ralph Rayner & Bev MacKenzie*
- Considers the impact of long-term sea-level trends on the design of new offshore structures and coastal refineries and the possible additional costs of protecting existing installations.



- **Paleoenvironmental Records, Geophysical Modelling and Reconstruction of Sea-Level Trends and Variability on Centennial and Longer Timescales:** *Kurt Lambeck, Colin D. Woodroffe, Fabrizio Antonioli, Marco Anzidei, W. Roland Gehrels, Jacques Laborel and Alex J. Wright.*
- Understanding past sea-level change plays an important role in determining the underlying causes, and also permits the extrapolation of past sea levels to locations and epochs for which there are no instrumental data.
- **Modern Sea-Level Change Estimates:** *Gary T. Mitchum, R. Steven Nerem, Mark A. Merrifield and W. Roland Gehrels.*
- Presents proxy sea-level information from the paleo-oceanographic evidence which is seen to complement that from tide-gauge data in many ways.
- Mainly focuses on the results from tide gauges and satellite altimetry.



- **Ocean Temperature and Salinity Contributions to Global and Regional Sea-Level Change:** *John A Church, Dean Roemmich, Catia M. Domingues, Josh K. Willis, Neil J. White, John E. Gilson, Detlef Stammer, Armin Köhl, Don P. Chambers, Felix W. Landerer, Jochem Marotzke, Jonathan M. Gregory, Tatsuo Suzuki, Anny Cazenave and Pierre-Yves Le Traon.*
- The close connection between ocean thermostatic sea-level rise and ocean heat-content changes means that understanding sea-level rise will contribute significantly to the understanding of the Earth's total climate system.
- **Cryospheric Contributions to Sea-Level Rise and Variability:** *Konrad Steffen, Robert H. Thomas, Eric Rignot, J. Graham Cogley, Mark B. Dyurgerov, Sarah C. B. Raper, Philippe Huybrechts and Edward Hanna.*
- Investigates big ice sheet contribution to sea-level rise.





- **Terrestrial Water-Storage Contributions to Sea Level Rise:**  
*P.C.D. (Chris) Milly, Anny Cazenave, James S. Famiglietti, Vivien Gornitz, Katia Laval, Dennis P. Lettenmaier, Dork L. Sahagian, John M. Wahr and Clark R. Wilson.*
  - Summarises current understanding and uncertainties on contemporary continent-ocean water exchanges on timescales ranging from seasonal to centennial.
- **Geodetic Observations and Global Reference Frame Contributions to Understanding Sea-Level Rise and Variability:**  
*Geoff Blewitt, Zuheir Altamimi, James Davis, Richard Gross, Chung-Yen Kuo, Frank G. Lemoine, Angelyn W. Moore, Ruth E. Neilan, Hans-Peter Plag, Markus Rothacher, C.K. Shum, Michael G. Sideris, Tilo Schöne, Paul Tregoning and Susanna Zerbini.*
  - Identify critical geodetic requirements to meet the rigorous scientific demands for understanding sea-level rise and its variability, thus contributing to its prediction.



- **Surface Mass Loading on a Dynamic Earth: Complexity and Contamination in the Geodetic Analysis of Global Sea-Level Trends:** *Jerry X. Mitrovica, Mark E. Tamisiea, Erik R. Ivins, L.L.A. (Bert) Vermeersen, Glenn A. Milne and Kurt Lambeck.*
- Summarises research in solid Earth geophysics, ranging from the relatively straightforward to the conceptually complex, that has a bearing on the problem of global sea-level rise..
- **Past and Future Changes in Extreme Sea Levels and Waves:** *Jason A. Lowe, Philip L. Woodworth, Tom Knutson, Ruth E. McDonald, Kathleen L. McInnes, Katja Woth, Hans von Storch, Judith Wolf, Val Swail, Natacha B. Bernier, Sergey Gulev, Kevin J. Horsburgh, Alakkat S. Unnikrishnan, John R. Hunter and Ralf Weisse.*
- Discusses changes in extreme sea levels and waves, reviewing changes in the recent past, changes in atmospheric storm events that drive extreme sea-level changes, and reviews recent advances in the modelling of future extreme events..



- **Observing Systems Needed to Address Sea-Level Rise and Variability:** *W. Stanley Wilson, Waleed Abdalati, Douglas Alsdorf, Jérôme Benveniste, Hans Bonekamp, J. Graham Cogley, Mark R. Drinkwater, Lee-Lueng Fu, Richard Gross, Bruce J. Haines, D.E. Harrison, Gregory C. Johnson, Michael Johnson, John L. LaBreque, Eric J. Lindstrom, Mark A. Merrifield, Laury Miller, Erricos C. Pavlis, Stephen Piotrowicz, Dean Roemmich, Detlef Stammer, Robert H. Thomas, Eric Thouvenot and Philip L. Woodworth.*
- Provides a descriptive summary of the observing systems, both existing systems to be sustained and new systems to be developed, as well as the terrestrial reference frame in which they are used to collect observations that are needed to address sea-level rise and variability.



- **Sea-Level Rise and Variability: Synthesis and Outlook for the Future:** *John A. Church, Thorkild Aarup, Philip L. Woodworth, W. Stanley Wilson, Robert J. Nicholls, Ralph Rayner, Kurt Lambeck, Gary T. Mitchum, Konrad Steffen, Anny Cazenave, Geoff Blewitt, Jerry X. Mitrovic and Jason A. Lowe.*
- Provides a synthesis of the findings and recommendations from the contributors, including a summary of the inputs to 20<sup>th</sup> century sea-level rise and a survey of the outlook for the future. It ends with a discussion of the implications for society.

