

# CURRICULUM VITAE

## Ingo Richter

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Climate Variability Prediction and Application Research Group, APL  
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### Personal

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Date of birth	18 February 1971
Citizenship	Germany
Marital status	married

### Education

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Doctor of Philosophy (PhD) in Atmospheric Sciences <i>University of California at Los Angeles, Los Angeles, USA</i> Advisor: Carlos R. Mechoso Thesis: "Impact of the large-scale environment on sub-tropical stratocumulus clouds"	March 2005
Master of Science (MS) in Atmospheric Sciences <i>University of California at Los Angeles, Los Angeles, USA</i>	May 2000
Diplom (MS equivalent) in Physics <i>Georg-August University, Göttingen, Germany</i>	May 1998

### Professional Experience

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<b>Deputy Group Leader</b> <i>Climate Variability Prediction and Application Research Group (CVPARG), Application Laboratory (APL) Japan Agency for Marine-Earth Science and Technology Yokohama, Japan</i>	04/2017 – present
<b>Senior Scientist</b> <i>Application Laboratory (APL) Japan Agency for Marine-Earth Science and Technology Yokohama, Japan</i>	04/2013 – 03/2017
<b>Scientist</b> <i>Research Institute for Global Change and APL Japan Agency for Marine-Earth Science and Technology Yokohama, Japan</i>	04/2009 – 03/2013

<b>Post-Doctoral Researcher</b> <i>University of Hawaii at Manoa, Honolulu, USA</i>	09/2006 – 04/2009
<b>Post-Doctoral Researcher</b> <i>University of California at Los Angeles, Los Angeles, USA</i>	04/2005 – 08/2006
<b>Graduate Student Researcher</b> <i>University of California at Los Angeles, Los Angeles, USA</i>	06/1999 – 03/2005
<b>Research Assistant</b> <i>Georg-August University, Göttingen, Germany</i>	01/1997 – 06/1998

## Teaching Experience

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<b>Teaching Assistant</b> <i>University of California at Los Angeles, Los Angeles, USA</i>	01/1999 – 03/2003
<b>Teaching Assistant</b> <i>Georg-August University, Göttingen, Germany</i>	Summer 1997

## Research Interests

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- interannual variability in the tropical Atlantic
- ocean-atmosphere interaction
- general circulation model intercomparison and error diagnosis
- stratocumulus clouds and their role in the tropical circulation

## Awards

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- JAMSTEC President's Award, FY2012
- JAMSTEC Research & Development Achievements Award, FY 2012

## Synergistic Activities

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- external collaborator of the multi-national PREFACE project on “Enhancing prediction of Tropical Atlantic climate and its impacts”, funded by the European Union (<http://preface.b.uib.no/>)
- member of the CLIVAR Eastern Tropical Oceans Synthesis (ETOS) Working Group (<http://www.usclivar.org/working-groups/etos>) (2012/01 – present)
- JAMSTEC/APL Seminar Coordinator (2012/04 – present)
- member of SATREPS South Africa project (2010 – 2012)
- journal reviewer for *Climate Dynamics*, *Environmental Research Letters*, *GRL*, *International Journal of Climatology*, *International Journal of Oceanography*, *JGR Atmospheres*, *JGR Oceans*, *Journal of Climate*
- proposal reviewer for NOAA (2), NSF (4), and NERC (1) proposals
- contributed to article on El Niño for the German science website “Welt der Physik” (supported by the German national science foundation, DFG): <http://www.weltderphysik.de/gebiet/planeten/atmosphaere/wetter/el-nino/>
- interview with German journalist Dr. Sven Titz on El Niño predictions for 2014 in the face of reduced in-situ observations; article appeared in Swiss newspaper “Neue Zürcher Zeitung”: <http://www.nzz.ch/wissenschaft/ausfall-von->

messbojen-erschwert-prognosen-1.18240763

- interview with German journalist Dr. Sven Titz on topics of interannual variability and predictability (with S. K. Behera), 2011/11/16

## Publications in Refereed Journals

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- Richter, I.,** S.-P. Xie, Y. Morioka, T. Doi, B. Taguchi, and S. Behera, 2016: Phase locking of equatorial Atlantic variability through the seasonal migration of the ITCZ. *Clim. Dyn.*, doi:10.1007/s00382-016-3289-y
- Zuidema, P., P. Chang, B. Medeiros, B. Kirtman, R. Mechoso, E. Schneider, T. Toniazzo, **I. Richter**, J. Small, K. Bellomo, P. Brandt, S. de Szoeki, T. Farrar, E. Jung, S. Kato, M. Li, C. Patricola, Z. Wang, R. Wood, and Z. Xu, 2016: Challenges and prospects for reducing coupled climate model SST biases in the eastern tropical Atlantic and Pacific oceans: The US CLIVAR Eastern Tropical Oceans Synthesis Working Group. *Bull. Am. Meteorol. Soc.*, doi: 10.1175/BAMS-D-15-00274.1
- Richter, I.,** P. Chang, Z. Xu, T. Doi, T. Kataoka, M. Nagura, Pascal Oettli, S. de Szoeki, and T. Tozuka, 2016: An overview of coupled GCM performance in the tropics. Chapter 8, pp. 213-263 in *Indo-Pacific Climate Variability and Predictability* (Vol. 7), T. Yamagata and S. K. Behera, eds.,
- Richter, I.,** 2015: Climate model biases in the eastern tropical oceans: causes, impacts and ways forward. *WIREs Climate Change*, doi: 10.1002/wcc.338 (invited)
- Xu, Z., P. Chang, **I. Richter**, and W. Kim, 2014: Diagnosing southeast tropical Atlantic SST and ocean circulation biases in the CMIP5 ensemble. *Clim. Dyn.*, **43**, 3123-3145. doi: 10.1007/s00382-014-2247-9
- Richter, I.,** S. K. Behera, T. Doi, B. Taguchi, Y. Masumoto, and S.-P. Xie, 2014: What controls equatorial Atlantic winds in boreal spring? *Clim. Dyn.*, **43**, 3091-3104. doi: 10.1007/s00382-014-2170-0
- Richter, I.,** S.-P. Xie, S. K. Behera, T. Doi, and Y. Masumoto, 2012: Equatorial Atlantic variability and its relation to mean state biases in CMIP5. *Clim. Dyn.*, doi: 10.1007/s00382-012-1624-5
- Richter, I.,** S. K. Behera, Y. Masumoto, B. Taguchi, H. Sasaki, and T. Yamagata, 2012: Multiple causes of interannual sea surface temperature variability in the equatorial Atlantic Ocean. *Nature Geosci.*, doi: 10.1038/NGEO1660
- Richter, I.,** S.-P. Xie, A. T. Wittenberg, and Y. Masumoto, 2012: Tropical Atlantic biases and their relation to surface wind stress and terrestrial precipitation. *Clim. Dyn.*, **38**, 985-1001. doi: 10.1007/s00382-011-1038-9.
- Richter, I.,** S. K. Behera, Y. Masumoto, B. Taguchi, N. Komori, and T. Yamagata, 2010: On the triggering of Benguela Niños: Remote equatorial versus local influences. *Geophys. Res. Lett.*, **37**(L20604). doi:10.1029/2010GL044461
- Richter, I.,** and S.-P. Xie, 2010: Moisture transport from the Atlantic to the Pacific basin and its response to North Atlantic cooling and global warming. *Clim. Dyn.*, **35**, 551-566, doi:10.1007/s00382-009-0708-3.

- Richter, I.**, and S.-P. Xie, 2008: Muted precipitation increase in global warming simulations: A surface evaporation perspective. *J. Geophys. Res.-Atmos.*, **113**, D24118, doi:10.1029/2008JD010561.
- Richter, I.**, and S.-P. Xie, 2008: On the origin of equatorial Atlantic biases in coupled general circulation models. *Clim. Dyn.*, **31**, 587-598. doi:10.1007/s00382-008-0364-z
- Richter, I.**, C. R. Mechoso, and A. W. Robertson, 2008: What Determines the Position and Intensity of the South Atlantic Anticyclone in Austral Winter?—An AGCM Study. *J. Climate*, **21**, 214–229.
- Richter, I.**, and C. R. Mechoso, 2006: Orographic influences on subtropical stratocumulus, *J. Atmos. Sci.*, **63**, 2585–2601.
- Richter, I.**, and C. R. Mechoso, 2004: Orographic influences on the annual cycle of Namibian stratocumulus clouds, *Geophysical Research Letters*, **31**, L24108, doi:10.1029/2004GL020814
- Oltchev, A., A. Ibrom, J. Constantin, M. Falk, **I. Richter**, K. Morgenstern, Y. Joo, H. Kreilein, and G. Gravenhorst, 1998: Stomatal and surface conductance of a spruce forest: model simulation and field measurements. *J. Phys. Chem. Earth*, **23**, 453-458

### Invited Presentations

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- Richter, I.**, “Phase locking of equatorial Atlantic variability through the seasonal migration of the ITCZ”, JpGU Meeting, Makuhari Messe, Chiba, Japan, 2016/05/24
- Richter, I.**, “Tropical Atlantic biases and their impact on simulated interannual variability”, VALUE Workshop on GCM bias correction, Hamburg, Germany, 2014/10/16
- Richter, I.**, "Why GCMs refuse to simulate cold SSTs in the eastern and south-eastern tropical Atlantic", AGU Fall Meeting, San Francisco, California, USA, 2011/12/08
- Richter, I.**, “Tropical Atlantic biases and their relation to surface wind stress and terrestrial precipitation”, CLIVAR Workshop on Coupled Ocean-Atmosphere-Land Processes in the Tropical Atlantic, RSMAS, Miami, Florida, USA, 2011/03/23

### Conference Presentations

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- Richter, I.**, T. Doi, S. Behera, “How predictable are equatorial Atlantic surface winds?”, EGU General Assembly, Vienna, Austria, 2017/04/27
- Richter, I.**, Y. Morioka, S. Behera, “Estimating the stochastic component of equatorial Pacific variability”, Meeting on Perspectives in Computational Atmosphere and Ocean Science and 8th OFES International Workshop, Nagoya, Japan, 2017/03/14
- Richter, I.**, S.-P. Xie, Y. Morioka, T. Doi, B. Taguchi, S. Behera, “Phase locking of equatorial Atlantic variability through the seasonal migration of the ITCZ”,

APL Workshop on Application of Ocean and Climate Predictions, Yokohama, Japan, 2017/01/25

**Richter, I.**, T. Doi, S. Behera, “On the influence of GCM biases on seasonal prediction skill in the tropical Atlantic”, Tropical Atlantic Variability Conference, Paris, France, 2016/11/30

**Richter, I.**, T. Doi, S. Behera, “Examining the influence of mean state biases on prediction skill”, JAMSTEC-CMCC Workshop, Aizu, Japan, 2016/10/13

**Richter, I.**, T. Doi, S. Behera, “On the influence of GCM biases on seasonal prediction skill”, Fall Meeting of the Japanese Oceanographic Society, Kagoshima, Japan, 2016/09/14

**Richter, I.**, S.-P. Xie, S. Behera, T. Doi, Y. Morioka, B. Taguchi, “How the ITCZ modulates coupled air-sea interaction in the equatorial Atlantic and Pacific”, Fall Meeting of the Japanese Oceanographic Society, Kagoshima, Japan, 2016/09/12

**Richter, I.**, S.-P. Xie, Y. Morioka, T. Doi, B. Taguchi, S. Behera, “Phase locking of equatorial Atlantic variability through the seasonal migration of the ITCZ”, EGU General Assembly, Vienna, Austria, 2016/04/18

**Richter, I.**, “Why the simulated Atlantic ITCZ is often south of the equator and how it matters”, TropMet Workshop, Aizu, Japan, 2015/09/10

**Richter, I.**, S. Behera, T. Doi, B. Taguchi, “On the role of continental convection in equatorial Atlantic surface wind variability”, Tropical Precipitation Systems Workshop, JAMSTEC, Yokohama, Japan, 2015/09/04

**Richter, I.**, S. Behera, T. Doi, B. Taguchi, “On the role of internal atmospheric processes in equatorial Atlantic variability”, PREFACE General Assembly, Cape Town, South Africa, 2015/08/26

**Richter, I.**, S. Behera, T. Doi, B. Taguchi, “Phase locking of equatorial Atlantic variability through the seasonal migration of the ITCZ”, IUGG General Assembly, Prague, Czech Republic, 2015/06/30

**Richter, I.**, S. Behera, Y. Masumoto, B. Taguchi, H. Sasaki, T. Yamagata, “On the role of internal atmospheric processes in interannual equatorial variability”, JpGU Meeting, Makuhari Messe, Chiba, Japan, 2015/05/26

**Richter, I.**, S. Behera, T. Doi, B. Taguchi, “Rethinking the role of the Bjerknes feedback in the equatorial Atlantic”, EGU General Assembly 2015, Vienna, Austria, 2015/04/16

**Richter, I.**, “Tropical-extratropical air-sea interaction in the Atlantic basin”, CMCC-JAMSTEC symposium on predictability and applicability of climate variations and change, CMCC, Bologna, Italy, 2015/03/17

**Richter, I.**, B. Taguchi, T. Doi, S. Behera, “Westerly wind biases over the equatorial Atlantic and their link to South American convection”, AGU Fall Meeting, San Francisco, California, USA, 2014/12/18

**Richter, I.**, T. Doi, S. Behera, “On the erratic interaction between the equatorial Pacific and Atlantic”, 7th OFES International Workshop, Aizu, Japan, 2014/10/02

**Richter, I.**, S. Behera, T. Doi, Y. Masumoto, B. Taguchi, S.-P. Xie, “GCM biases

in the tropical Atlantic and their influence on prediction skill”, Workshop on Tropical Precipitation Systems 2014, Yokohama Institute for Earth Sciences, JAMSTEC, Yokohama, Japan, 2014/08/05

**Richter, I.**, S. Behera, T. Doi, “The Influence of GCM Mean State Biases on Simulated Variability and Prediction Skill in Coastal Upwelling Regions”, 11th Annual Meeting, Sapporo, Japan, 2014/07/30

**Richter, I.**, S. Behera, T. Doi, Y. Masumoto, B. Taguchi, S.-P. Xie, “On the Relation Between Equatorial Atlantic Wind Biases and Deep Convection”, AOGS 11th Annual Meeting, Sapporo, Japan, 2014/07/29

**Richter, I.**, S. Behera, T. Doi, Y. Masumoto, B. Taguchi, S.-P. Xie, “On the Interaction Among Deep Convection, Surface Winds, and SST in the Equatorial Atlantic”, AGU Fall Meeting, San Francisco, California, USA, 2013/12/13

Behera, S., **I. Richter**, Y. Masumoto, B. Taguchi, H. Sasaki, T. Yamagata, “Multiple influences on equatorial Atlantic variability”, AGU Fall Meeting, San Francisco, California, USA, 2013/12/12

**Richter, I.**, S. Behera, T. Doi, Y. Masumoto, B. Taguchi, S.-P. Xie, “On the Relation Among SST, deep convection and surface winds in the equatorial Atlantic”, APL Symposium on Scale Interactions in Climate Variability, Yokohama, Japan, 2013/11/01

**Richter, I.**, S. Behera, Y. Masumoto, B. Taguchi, H. Sasaki, T. Yamagata, “Multiple influences on equatorial Atlantic variability”, Davos Atmosphere and Cryosphere Assembly DACA-13, Davos, Switzerland, 2013/07/09

**Richter, I.**, S. Behera, Y. Masumoto, B. Taguchi, H. Sasaki, T. Yamagata, “Off-equatorial influences on equatorial Atlantic variability”, JpGU Meeting, Makuhari Messe, Chiba, Japan, 2013/05/24

**Richter, I.**, S.-P. Xie, S. Behera, T. Doi, and Y. Masumoto, “On the role of ITCZ latitude in equatorial Atlantic SST biases”, 4th WGNE Workshop on Systematic Errors in Weather and Climate Models, Exeter, UK, 2013/04/15

**Richter, I.**, “A new type of interannual variability in the equatorial Atlantic”, RIGC Annual Symposium, Yokosuka, Japan, 2013/03/28

**Richter, I.**, S. Behera, Y. Masumoto, B. Taguchi, H. Sasaki, and T. Yamagata, “Two competing influences on equatorial Atlantic variability”, APL-SATREPS Workshop on the Predictability of Climate Variations and its Applications, Tokyo University, Tokyo, Japan, 2013/03/01

**Richter, I.**, S. Behera, Y. Masumoto, B. Taguchi, H. Sasaki, and T. Yamagata, “Off-equatorial influences on equatorial Atlantic dynamics”, 5th OFES Workshop, GODAC, Okinawa, Japan, 2013/01/24

**Richter, I.**, S.-P. Xie, S. K. Behera, T. Doi, and Y. Masumoto, “Equatorial Atlantic variability and its relation to mean state biases in CMIP5”, AGU Fall Meeting, San Francisco, California, USA, 2012/12/07

**Richter, I.**, S.-P. Xie, S. K. Behera, T. Doi, and Y. Masumoto, “An assessment of tropical Atlantic climate and interannual variability in CMIP5”, SATREPS Symposium on Prediction of Climate Variations and its Application in the Southern African Region, Pretoria, South Africa, 2012/10/17

- Richter, I.**, S.-P. Xie, S. K. Behera, T. Doi, and Y. Masumoto, “Interannual variability in the equatorial Atlantic: CMIP5 simulations vs. observations”, Tropical Atlantic Variability Meeting / PIRATA-17 Meeting, Kiel, Germany, 2012/09/10
- Richter, I.**, S. K. Behera, Y. Masumoto, and T. Yamagata, “A new perspective on the weak relationship between ENSO and Atlantic Niños”, Japan Geoscience Union Meeting 2012, Makuhari, Chiba, Japan, 2012/05/22
- Richter, I.**, S. K. Behera, B. Taguchi, Y. Masumoto, and T. Yamagata, “Two types of Atlantic Niños: ENSO-like vs. off-equatorially forced events”, EGU General Assembly, Vienna, Austria, 2012/04/27
- Richter, I.**, “On the Relation between Equatorial Surface Winds and Atlantic Niños”, SATREPS Symposium on Climate Prediction and Its Application in the Southern African Region, Tokyo University, 2011/10/20
- Richter, I.**, “Why climate models fail to capture the seasonal cycle in the eastern tropical Atlantic”, South Africa-Japan SATREPS Workshop on Ocean Dynamics, University of Cape Town, Cape Town, South Africa, 2011/08/25
- Richter, I.**, “On the origin of GCM biases in the Gulf of Guinea and the Benguela upwelling region”, ACCESS SATREPS Symposium on Prediction of Climate Variations & its Application in the Southern African Region”, Pretoria, South Africa, 2011/08/22
- Richter, I.**, “Decadal modulation of the relation between equatorial wind anomalies and Atlantic Niños – implications for predictability”, EGU General Assembly, Vienna, Austria, 2011/04/06
- Richter, I.**, “Interannual variability in the southeast Atlantic and its relation to local wind anomalies and remote equatorial influences”, RIGC Annual Symposium, Yokosuka, Japan, 2011/02/24
- Richter, I.**, On the role of along-shore wind anomalies in the development of Benguela Niños, AGU Fall Meeting, San Francisco, California, USA, 2010/12/16
- Richter, I.**, “On the triggering of Benguela Niños – equatorial vs. local forcing”, 17th Conference on Air Sea Interaction, Annapolis, Maryland, USA, 2010/09/29
- Richter, I.**, “On the Triggering of Benguela Niños: equatorial vs. local forcing”, SATREPS Workshop on Seasonal and Inter-Annual Climate Variability, University of the Western Cape, Cape Town, Republic of South Africa, 2010/08/25
- Richter, I.**, “On the triggering of Benguela Niños - equatorial vs. local forcing”, Tropical Atlantic and PIRATA-15 Meeting, RSMAS, Miami, Florida, USA, 2010/03/02
- Richter, I.**, “The link between equatorial and southeast Atlantic warm events as inferred from CFES simulations and observations”, 2nd OFES international workshop and ESC-IPRC joint workshop on computationally intensive modeling of the climate system, Honolulu, HI, USA, 2009/12/09
- Richter, I.**, “On the link between warm events in the equatorial and southeast Atlantic as inferred from model simulations and observations”, Workshop on

Climate Variations in Indo-Atlantic Oceans, JAMSTEC YES, Yokohama, Japan, 2009/12/04

**Richter, I., S.-P. Xie, J. Ma:** The Muted Precipitation Increase in Global Warming Simulations: A Surface Evaporation Perspective, AGU Fall Meeting, San Francisco, California, USA, 2008/12/18

**Richter, I., S.-P. Xie:** The muted precipitation increase in global warming simulations: A surface evaporation perspective, AGU Chapman Conference on Atmospheric Water Vapor and Its Role in Climate, Kailua-Kona, Hawaii, USA, 2008/10/23

**Richter, I., S.-P. Xie:** The muted precipitation increase in global warming simulations: A latent heat flux perspective, *IPRC Annual Symposium, Honolulu, Hawaii*, 2008/05

S. Wahl, W. Park, M. Latif, and **I. Richter:** Tropical Atlantic Ocean Feedbacks in the Kiel Climate Model, *EGU General Assembly, Vienna, Austria*, 2008/04

**Richter, I., S.-P. Xie:** On the Origin of Tropical Atlantic Biases in Coupled General Circulation Models, *2nd International AMMA conference, Karlsruhe, Germany*, 2007/11

**Richter, I., S.-P. Xie:** On the origin of tropical Atlantic SST biases in coupled general circulation models, *AMS, 15<sup>th</sup> Conference on Air Sea Interaction, Portland, Oregon, USA*, 2007/08

**Richter, I., and C. R. Mechoso:** The sensitivity of Peruvian stratocumulus to the large-scale environment, *AGU, 14<sup>th</sup> Conference on Air Sea Interaction, Atlanta, Georgia, USA*, 2006/01

**Richter, I., and C. R. Mechoso:** Orographic influences on the persistence of subtropical stratocumulus clouds, *IAMAS, Beijing, China*, 2005/08

**Richter, I., C. R. Mechoso, and J. D. Farrara:** Orographic influences on the annual cycle of Namibian stratocumulus clouds, *2003 Fall Meeting of the American Geophysical Union, San Francisco, California, USA*, 2003/12

**Richter, I., A. Ibrom, K. and G. Gravenhorst:** Measurement errors in ultra-sonic anemometers. Presented at the *22nd General Assembly of the European Geophysical Society, Vienna, Austria*, 1997/04

### **Invited Lectures/Seminars**

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**Richter, I.,** "How predictable is the equatorial Atlantic?", Max-Planck-Institute for Meteorology, Hamburg, Germany, 2017/05/03

**Richter, I.,** "Do GCM biases affect seasonal prediction skill?", GEOMAR, Kiel, Germany, 2016/12/08

**Richter, I.,** "Why the simulated Atlantic ITCZ is often south of the equator and how it matters", Max-Planck-Institute for Meteorology, Hamburg, Germany, 2015/07/08

**Richter, I.,** "On the Relation Among SST, deep convection and surface winds in the equatorial Atlantic", Bjerknes Centre for Climate Research, Bergen, Nor-



way, 2014/10/20

**Richter, I.**, "On the Relation Among SST, deep convection and surface winds in the equatorial Atlantic", Atmosphere and Ocean Research Institute, University of Tokyo, Tokyo, Japan, 2013/11/15

**Richter, I.**, "Challenges Facing GCMs in the Tropical Atlantic Region", Yamashita University, Kofu, Japan

**Richter, I.**, "The muted precipitation increase in global warming simulations: A surface evaporation perspective", LDEO, Palisades, New York, USA, 2008/11/25

**Richter, I.**, "On Tropical Atlantic GCM biases", Geophysical Fluid Dynamics Laboratory, Princeton, New Jersey, USA, 2008/11/12

## **Funded Projects**

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- "Toward reducing climate model biases in the equatorial Atlantic and adjacent continents"; NOAA/CPO CLIVAR Program; Shang-Ping Xie (PI), **Ingo Richter** (Co-I); funded 2008/07-2011/06
- "Ocean-Land-Atmosphere Interaction and its Role in Seasonal-to-Interannual Climate Prediction"; CPU allocation at NCAR's Climate Simulation Laboratory (CSL); Carlos R. Mechoso (PI), Andrew W. Robertson (PI), **Ingo Richter** (Co-I), Heng Xiao (Co-I); funded 2006/02-2007/07

## **Computer Skills**

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- Programming with Fortran 90, C/C++, IDL, Matlab, NCL
- Parallel programming under MPI and OpenMP
- UNIX Scripting with bash, csh, Perl
- Data visualization with IDL, NCL, Matlab, SAS
- Statistical analysis with IDL, SAS, NCL

## **Languages**

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German (native), English (fluent), Japanese (conversational; JLPT N2), Spanish (basic)