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# Thomas Spengler

*Atmospheric Scientist*

## PERSONAL INFORMATION

Date of Birth September 4, 1978  
Place of Birth Munich, Germany  
Nationality German  
Marital Status Unmarried

## PROFESSIONAL EMPLOYMENT

Sep 2009 – Today **Postdoctoral Research Associate at the Atmospheric and Oceanic Sciences Program, NOAA Geophysical Fluid Dynamics Laboratory, Princeton University, New Jersey, USA.**  
Group of Prof. Dr. Isaac M. Held

Feb 2009 **Visiting Scientist at Monash Atmospheric Science, Monash University, Melbourne, Australia.**  
Group of Prof. Dr. Michael J. Reeder

Oct 2008 – Aug 2009 **Postdoctoral Research Assistant at the Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland.**  
Group of Prof. Dr. Huw C. Davies

Jun 2005 – Sep 2008 **Doctoral Research Assistant at the Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland.**  
Group of Prof. Dr. Huw C. Davies

Nov 2004 – May 2005 **Research assistant at the Meteorological Institute Munich, University of Munich, Germany.**  
Group of Prof. Dr. Joseph Egger

Nov – Dec 2002 **Research assistant at the School of Mathematical Sciences, Monash University, Melbourne, Australia.**  
Group of Prof. Dr. Michael J. Reeder

Sep 2001 – Jan 2002 **Research assistant at the Meteorological Institute Munich, University of Munich, Germany.**  
Group of Prof. Dr. Roger K. Smith

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## EDUCATION

- Jun 2005 – Sep 2008 **Doctorate in Atmospheric Science (Dr. sc. ETH Zurich)**, *Institute for Atmospheric and Climate Science*, ETH Zurich, Switzerland.  
Doctoral Thesis *Influence of the ambient flow upon Rossby wave propagation between the tropics and extra-tropics*  
Supervisor Prof. Dr. Huw C. Davies
- Sep 2001 – May 2005 **Diploma/Master in Meteorology (Dipl. Met)**, *Meteorological Institute Munich*, Department of Physics, University of Munich, Germany.  
Diploma Thesis *The Dynamics of Heat Lows in simple background Flows*  
Supervisor Prof. Dr. Roger K. Smith
- Feb – Oct 2002 **Study of Atmospheric Sciences (supported by a DAAD scholarship)**, *School of Mathematics*, Monash University, Melbourne, Australia.  
Honours Thesis *Development and Deformation of Heat Lows with Applications to Prefrontal Westerly Troughs in Australia*  
Supervisor Prof. Dr. Michael J. Reeder
- Feb 2002 **Summer School for Dynamic Meteorology**, *School of Mathematics*, Monash University, Melbourne, Australia.
- Sept 1999 – Sep 2001 **Intermediate Diploma in Meteorology**, *Meteorological Institute Munich*, University of Munich, Germany.
- Jun 1998 **Abitur (general qualification for university entry)**, *Max Planck Gymnasium*, Munich, Germany.

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## INTERNSHIPS

- Oct – Dec 2004 **Institute for Atmospheric and Climate Science**, *ETH Zurich*, Switzerland.  
Group of Professor Dr. Huw C. Davies
- Feb – Apr 2004 **Alfred Wegener Institute for Polar and Marine Research**, *AWI Bremerhaven*, Germany.  
Group of Dr. Ursula Schauer

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## SCHOLARSHIPS

- 2001 Oskar-Karl-Forster Scholarship  
2002 DAAD Scholarship (German Academic Exchange Service)

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## TEACHING

### COURSES

- Master The General Circulation of the Atmosphere (Princeton University), 2010  
Master Dynamics of large scale atmospheric flow (ETH Zurich), 2007, 2008, 2009  
Master Weather Discussion (ETH Zurich), 2007, 2008, 2009  
Bachelor Environmental Fluid Dynamics Part I (ETH Zurich), 2006, 2007, 2008, 2009  
Bachelor Bachelor Seminar: Atmosphere and Climate (ETH Zurich), 2006, 2007, 2009  
Bachelor Mathematics, Algebra and Calculus (NJ State Prison), 2010

### VOCATIONAL TRAINING

- 2009 Designing a course (Princeton University)  
2008 Project management for supervising bachelor and master thesis (ETH Zurich)  
2008 Rhetoric tools for teaching (ETH Zurich)  
2008 Rhetoric for seminar and lecture (ETH Zurich)

- 2007 Presenting-publishing-communicating (ETH Zurich)
- 2007 Newcomers workshop (Presenting-Teaching-Communicating) (ETH Zurich)
- 2006 How to write and publish a scientific paper (ETH Zurich)

#### SUPERVISION OF STUDENTS

- 2010 O'Rourke A. (Semester Thesis, Princeton University): Drag and the momentum flux in a randomly forced spherical barotropic model
- 2010 Potter S. (Semester Thesis, Princeton University): Linear Stable Reflection and the JWKB Approximation
- 2009 Schemm S. (Master Thesis, ETH Zurich): Wave Activity Flux applied to baroclinic Development
- 2009 Kröner N. (Bachelor Thesis, ETH Zurich): A global Heat Low Climatology
- 2009 Struchen B. (Bachelor Thesis, ETH Zurich): Diabatically Forced Linear Quasi-Geostrophic Rossby Waves
- 2009 Cervenka D. (Bachelor Thesis, ETH Zurich): Weather conditions for severe forest fires in Australia, Spain and Greece: Analysis and Comparison
- 2009 Leutwyler D. (Bachelor Thesis, ETH Zurich): Mid-latitude Perturbations initiated by Tropical Convection
- 2008 Brunner N. E. (Master Thesis, ETH Zurich): Forced stationary Rossby Waves in an Equatorial beta-plane one-layer shallow water model
- 2007 Tay P. (Bachelor Thesis, ETH Zurich): Forced Quasi-Geostrophic Rossby Waves in a stratified Fluid
- 2007 Čampa J. (Diploma Thesis, ETH Zurich): Interactions of Forced sub-tropical Rossby Waves with extra-tropical Flow
- 2007 Ablinger M. (Diploma Thesis, University of Munich): Data and Results from the field Campaign AllgEx in the Allgäu

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### INTERNATIONAL CONFERENCES AND WORKSHOPS

- Apr 2009 EGU General Assembly, Vienna (Austria)
- Feb 2009 International Conference on Southern Hemisphere Meteorology and Oceanography, Melbourne (Australia)
- Jan 2009 IPY-Thorpex-Norway annual meeting, Rømskog (Norway)
- Nov 2008 Conference on Teleconnection in Atmosphere and Oceans, ICTP Trieste (Italy)
- Nov 2007 AMMA Conference, Karlsruhe (Germany)
- Oct 2007 7th EMS / 8th ECAM Meeting, San Lorenzo de El Escorial (Spain)
- Sep 2007 LATSIS Symposium, Zurich (Switzerland)
- Sep 2007 DACH, Hamburg (Germany)
- Jul 2007 IUGG, Perugia, (Italy)
- Dec 2006 THORPEX STISS Meeting, Landshut (Germany)
- Oct 2006 13th Cyclone Workshop, Monterey, California (USA)
- Apr 2006 EGU General Assembly, Vienna (Austria)
- Jul 2004 11th national AMOS Conference, Brisbane, (Australia)
- Feb 2002 9th national AMOS Conference, Melbourne, (Australia)

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### INVITED TALKS

- Sep 2009 The Dynamics of Heat Lows, Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland
- May 2009 The Greenland Tip Jet, GFDL, Princeton University, Princeton, NJ, USA
- Feb 2009 Mid-latitude response to stationary and non-stationary tropical forcing, Monash University, Melbourne, Australia
- Feb 2008 Mid-latitude response to stationary and non-stationary tropical forcing, Geophysical Institute University of Bergen, Norway

- Feb 2008 Mid-latitude response to stationary and non-stationary tropical forcing, Meteorological Institute University of Oslo, Norway
- Nov 2006 Subtropical Forcing of Extra-tropical Flow, Meteorological Institute Munich, Germany
- Jul 2006 Heat Lows revisited, Meteorological Institute Munich, Germany

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## SCIENTIFIC INTERESTS

Heat Low Dynamics  
 Orographic Flow  
 Wave - mean flow interaction  
 Tropical - Extra-tropical interactions

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## SCIENTIFIC COLLABORATIONS

**Wave - mean flow interaction**, Prof. Dr. Isaac M. Held, GFDL, Princeton University, USA.  
**Interaction of tropical forcing with the mid-latitudes**, em. Prof. Dr. Huw C. Davies, Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland.  
**Heat Low dynamics and Wildfire Weather**, em. Prof. Dr. Roger K. Smith, University of Munich, Germany, Prof. Dr. Michael J. Reeder, Monash University, Australia.  
**European Heat Wave 2003**, Prof. Dr. Christoph Schär and Dr. Erich M. Fischer, ETH Zurich, Switzerland.  
**Hydrostatic adjustment**, em. Prof. Dr. Joseph Egger, University of Munich, Germany, Dr. Stephen T. Garner, GFDL, Princeton University, USA.  
**Greenland Tip Jet**, Dr. Kjetil Våge, Woods Hole Oceanographic Institution, USA, Dr. Andreas Dörnbrack, DLR, Institute for Atmospheric Physics, Oberpfaffenhofen, Germany.  
**Interaction of the Madden-Julian-Oscillation with the mid-latitudes**, Prof. Dr. Richard Moore, Naval Postgraduate School, Monterey, USA, Dr. Olivia Martius, Institute for Atmospheric and Climate Science, ETH Zurich, Switzerland.

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## FIELD EXPERIMENTS

- Oct 2008 Irminger Sea Cruise Kn194 with the Research Vessel Knorr, Irminger Sea
- Mar 2008 IPY-Thorpex Andøya-campaign, Norway
- Aug 2007 Flow over and around Hofjökull Experiment (FLOHOF), Iceland
- Jul – Aug 2005 Allgäu Experiment (AllgEx), Germany
- Sep 2004 Arctic Cruise ARK XX/3 with the Research Vessel Polarstern, Polar Sea
- Oct 2002 Gulf Line Experiment (GLEX), Australia

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## PUBLICATIONS

Våge, K., Spengler, T., Davies, H. C. and R. S. Pickart, 2009: Multi-event analysis of the Greenland tip jet based upon 45 winters in ERA-40. *Climatology. Quart. J. Roy. Meteor. Soc.*, Oct B, 1999-2011

Spengler, T., Schween, J. H., Ablinger, M., Zängl, G. and Egger, J., 2009: Thermally driven Flows at an asymmetric valley exit: Observations and Model Studies at the Lech Valley exit. *Mon. Wea. Rev.*, **137**, 3437-3455

Spengler, T. and Egger, J., 2009: Comments on "Dry-Season Precipitation in Tropical West Africa and Its Relation to Forcing from the Extratropics". *Mon. Wea. Rev.*, **137**, 3149-3150

Spengler, T. and Smith, R. K., 2008: The dynamics of heat lows over flat terrain. *Quart. J. Roy. Meteor. Soc.*, **134**, Oct B, 2157-2172

Spengler, T., Reeder, M. J. and Smith, R. K., 2005: The Dynamics of Heat Lows in Simple Background Flows. *Quart. J. Roy. Meteor. Soc.*, **131**, Oct B, 3147-3166

Jackson, G. E., Smith, R. K. and Spengler, T., 2002: The Prediction of low-level convergence lines over northeastern Australia. *Aust. Meteor. Mag.*, **51**, 13-23

#### SUBMITTED ARTICLES

Moore, R. W., Martius, O. and Spengler, T.: The Modulation of the Subtropical and Extratropical Atmosphere in the Pacific Basin in Response to the Madden Julian Oscillation. *Mon. Wea. Rev.*, **submitted**

Reuder, J., Ablinger, M., Ágústsson, H., Brisset, P., Brynjólfsson, S., Garhammer, M., Jóhannesson, T., Jonassen, M. O., Kühnel, R., Lämmlein, S., de Lange, T., Lindenberg, C., Malardel, S., Mayer, S., Müller, M., Ólafsson, H., Rögnvaldsson, Ó., Schäper, W., Spengler, T., Zängl, G., Egger, J., 2009: FLOHOF 2007: An overview of the mesoscale meteorological field campaign at Hofsjökull, Central Iceland. *Meteor. Atmos. Phys.*, **submitted**

#### EXTENDED ABSTRACTS

Spengler, T., Schwierz C. and Davies, H. C., 2006: Sub-tropical synoptic-scale forcing of extratropical flow: Diagnostic analysis and model simulations. *Second THORPEX International Science Symposium (STISS) Extended Abstracts*, 88-89

#### ARTICLES IN PREPARATION

Spengler, T., Egger, J and Garner, S. T.: Hydrostatic adjustment to atmospheric temperature and mass anomalies with applications to rain formation. *in prep.*

Spengler, T., Čampa, J. and Davies, H. C.: Influence of lateral shear upon the space-time evolution of Rossby wave propagation from the sub-tropics. *in prep.*

Spengler, T. and Smith, R. K.: The Dynamics of Heat Lows over elevated terrain. *in prep.*

Spengler, T., Čampa, J. and Davies, H. C.: Mid-latitude response to stationary and non-stationary tropical heating: Non-linear global Simulations with a zonally asymmetric Jet Stream. *in prep.*

Spengler, T. and Davies, H. C.: On stationary Rossby waves modified by basic shear. *in prep.*

#### THESES

Doctoral Thesis *Influence of the ambient flow upon Rossby wave propagation between the tropics and extra-tropics*, Thomas Spengler, Doctoral Thesis, July 2009. Copy available at <http://e-collection.ethbib.ethz.ch/eserv/eth:31159/eth-31159-02.pdf>

Diploma Thesis *The Dynamics of Heat Lows in simple background Flows*, Thomas Spengler, Diploma Thesis, May 2005.

Honours Thesis *Development and Deformation of Heat Lows with Applications to Prefrontal Westerly Troughs in Australia*, Thomas Spengler, Honours Thesis, Sep 2002.

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## PROFESSIONAL ASSOCIATIONS

- 2003 – Today Member of the German Meteorological Society (DMG)  
2009 – Today Member of the American Meteorological Society (AMS)  
2001 – 2008 Member of the Australian Meteorological and Oceanographic Society (AMOS)

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## SKILLS

### LANGUAGES

- German Fluent (mother tongue)  
English Fluent  
Norwegian Little  
Italian Little

### COMPUTING EXPERIENCES

- Programming: FORTRAN, Matlab, Maple, Linux shell scripts  
Visualization: NCAR Graphics, GrADS, Matlab  
System: UNIX, Linux, Windows, Mac  
Software: Microsoft Office, Adobe Illustrator

### ADMINISTRATIVE AND OTHER QUALIFICATIONS

- Research Group As assistant in Prof. Huw C. Davies group at ETH Zurich I was in charge of organizing group events and the weekly group seminar as well as coordinating some of the teaching.
- PhD Representative During my doctorate studies at the Institute for Atmospheric and Climate Science, ETH Zurich, I was elected as representative of the doctorate students of the institute. As representative I was in charge of communicating issues and conveying needs of the doctorate students to the institute board and discuss possible solutions. Another goal was to strive for improvements in the internal institute communication.
- Administrative Training I attended several project management courses at ETH Zurich.
- Field Experiments Due to my participation in and conduction of field experiments I am familiar with the financial and logistic project administration for field campaigns.
- Journal Reviews I am regularly asked to take on reviews of various peer-reviewed meteorological journals (e.g. AMS Journals, Tellus, QJ RMetS).

### OTHER INTERESTS

- Education Conveying science to the public and to school children.
- Research Getting involved with projects yielding a better understanding of the Meteorology and the forecasting needs in third world countries.
- Hobbies Music, Cycling, Paragliding, Literature, Hiking, Sailing

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## UPDATED

January 15, 2010