

**Maria Z. Hakuba**

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## **EDUCATION**

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**Ph.D. in Environmental Sciences** **2015**

ETH Zurich, Switzerland

Dissertation: *Solar absorption in the atmosphere – Improved estimates from surface and satellite observations*

Advisors: Martin Wild, Doris Folini, Christoph Schär

**M.S. in Environmental Sciences** **2011**

ETH Zurich, Switzerland

Major in Atmospheric and Climate Sciences, Minor in Renewable Energy technologies

Thesis: *Greenland in a changing climate – Topographic feedback on snow accumulation and large-scale circulation*

Advisors: Christoph Schär, Martin Wild, Doris Folini

**B.S. in Environmental Sciences** **2009**

ETH Zurich, Switzerland

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## **PROFESSIONAL EXPERIENCE**

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**Postdoctoral Fellow** **2015-present**

Colorado State University, Ft. Collins

Affiliated with and physically located at Jet Propulsion Laboratory, Pasadena

Research interests: global and regional energy budgets, radiative controls on water cycle and tropical large-scale circulation, study of tropical convection using GPS radio occultation measurements.

Advisor: Graeme L. Stephens

**Postdoctoral Research Assistant** **2015**

ETH Zurich, Switzerland

Research on shortwave absorption and cloud effects. Evaluation of global climate models.

Advisors: Martin Wild, Doris Folini

**Ph.D. candidate** **2011-2015**

ETH Zurich, Switzerland

Main foci of research:

- 1) Spatial representativeness of surface solar radiation measurements.
- 2) Improved estimates and characterization of atmospheric solar absorption.
- 3) Retrieval of cloud effects from in-situ radiation measurements.

Advisors: Martin Wild, Doris Folini

<b>Post Diploma Research Assistant</b> ETH Zurich, Switzerland Research on the topographic impact of the Greenland ice sheet. Advisors: Christoph Schär, Martin Wild, Doris Folini	<b>2011</b>
<b>Intern at Mauna Loa Observatory</b> NOAA GMD MLO, Hilo, Hawaii Maintenance and operation of instruments from various programs, Research on Asian dust. Advisor: John Barnes	<b>2009</b>
<b>Research Assistant</b> ETH Zurich, Switzerland Maintenance support of the Global Energy Balance Archive (GEBA). Advisor: Martin Wild	<b>2008-2010</b>
<b>Chief Editor Polykum</b> VSETH, ETH Zurich, Switzerland Editorial responsibilities for Polykum, Student Magazine at ETH Zurich (monthly circulation: 23'000)	<b>2007-2008</b>
<b>Editor Polykum</b> VSETH, ETH Zurich, Switzerland Journalist with Polykum, Student Magazine at ETH Zurich.	<b>2006-2007</b>
<b>Volunteer</b> Teaching and Projects Abroad, Sri Lanka. Tsunami relief work.	<b>2005</b>
<b>Freelance Journalist</b> Badische Zeitung, Bad Säckingen, Germany. Freelance journalist at a daily newspaper.	<b>2004-2005</b>

## **TEACHING EXPERIENCE (ETH ZURICH)**

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<b>Teaching Assistant</b> Bachelor course by Prof. Christoph Schär: Numerical Methods in Environmental Science.	<b>2011-2013</b>
<b>Teaching Assistant</b> Master course by Prof. Martin Wild: Radiation and Climate Change	<b>2012-2014</b>
<b>Teaching Assistant</b> Atmospheric Physics lab: Sun photometry experiments.	<b>2012-2013</b>

## PUBLICATIONS

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Stephens, G.L., **M.Z. Hakuba**, M. Hawcroft, J. Haywood, A. Behrangi, J. E. Kay, and P. J. Webster (2016), The Curious Nature of the Hemispheric Symmetry of the Earth's Water and Energy Balances, *Current Climate Change Reports*, doi:10.1007/s40641-016-0043-9.

**Hakuba, M.Z.**, D. Folini, and M. Wild (2016), On the zonal near constancy of fractional solar absorption in the atmosphere, *J. Climate*, **29**, 3423–3440, doi: 10.1175/JCLI-D-15-0277.1.

Sanchez-Lorenzo, A., M. Wild, M. Brunetti, J.A. Guijarro, **M.Z. Hakuba**, J. Calbó, S. Mystakidis, B. Bartok (2015), Reassessment and update of long-term trends in downward surface shortwave radiation over Europe (1939-2012), *J. Geophys. Res. Atmos.*, **120**, doi: 10.1002/2015JD023321.

Wild, M., D. Folini, **M.Z. Hakuba**, C. Schär, S. I. Seneviratne, S. Kato, D. Rutan, C. Ammann, E. F. Wood, G. König-Langlo (2014). The energy balance over land and oceans: an assessment based on direct observations and CMIP5 climate models, *Climate Dynamics*, **44**, doi:10.1007/s00382-014-2430-z.

**Hakuba, M.Z.**, D. Folini, A. Sanchez-Lorenzo, M. Wild (2014). Spatial representativeness of ground-based solar radiation measurements – Extension to the full Meteosat disk, *J. Geophys. Res. Atmos.*, **119**, doi:10.1002/2014JD021946.

**Hakuba, M.Z.**, D. Folini, G. Schaepman-Strub, and M. Wild (2014), Solar absorption over Europe from collocated surface and satellite observations, *J. Geophys. Res.*, **119**, doi:10.1002/2013JD021421.

**Hakuba, M.Z.**, D. Folini, A. Sanchez-Lorenzo, M. Wild (2013). Spatial representativeness of ground-based solar radiation measurements, *J. Geophys. Res.*, **118**, doi:10.1002/jgrd.50673.

**Hakuba, M.Z.**, A. Sanchez-Lorenzo, D. Folini, M. Wild (2013). Testing the homogeneity of short-term surface solar radiation series in Europe, *AIP Conference Proceedings*, **1531**, doi:10.1063/1.4804866.

**Hakuba, M.Z.**, D. Folini, M. Wild, and C. Schär (2012). Impact of Greenland's topographic height on precipitation and snow accumulation in idealized simulations, *J. Geophys. Res.*, **117** (D9), doi:10.1029/2011JD017052.

## REVIEWING ACTIVITIES

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Reviewer for Journal of Geophysical Research-Atmospheres, Journal of Applied Meteorology and Climatology, Remote Sensing of Environment, Current Climate Change Reports

## AWARDS AND RECOGNITIONS

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JPL Outstanding Postdoctoral Research Award	2016
Travel award to the AMS conference on Atmospheric Radiation (\$250)	2014

## ORAL PRESENTATIONS

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<i>Hemispheric Energy Balance from an Ocean Perspective</i> Postdoc Research Day Awards Ceremony, JPL, Pasadena	2016
<i>Hemispheric Surface Heat Budget from an Ocean Perspective</i> Research Seminar, Center for Climate Sciences, JPL, Pasadena	2016
<i>Cloud Effects on Atmospheric Solar Absorption in Light of Most Recent Surface and Satellite Measurements</i> International Radiation Symposium, Auckland, New Zealand.	2016
<i>On the zonal near constancy of fractional atmospheric solar absorption</i> International Radiation Symposium, Auckland, New Zealand.	2016
<i>Cloud Effects on Atmospheric Solar Absorption in Light of Most Recent Surface, Satellite, and GCM Datasets</i> AGU Fall meeting, San Francisco	2015
<i>Absorption of solar radiation in the clear and cloudy skies</i> IUGG General Assembly, Prague, Czech Republic.	2015
<i>Solar absorption in the clear and cloudy skies</i> EGU General Assembly, Vienna, Austria.	2015
<i>Solar absorption in the atmosphere - Improved estimates from surface and satellite observations</i> PhD defense, ETH Zurich, Switzerland	2014
<i>Solar absorption and cloud radiative effects observed at BSRN sites</i> 13 <sup>th</sup> BSRN Scientific Review and Workshop, Bologna, Italy.	2014
<i>Solar absorption in the atmosphere – Estimates from collocated surface and satellite observations</i> Invited presentations at NOAA GFDL Princeton, NASA JPL Pasadena, UCSD Scripps La Jolla, NOAA Boulder, NCAR Boulder.	2014
<i>Solar absorption in the atmosphere – Estimates from collocated surface and space-born</i>	2014

*observations*

AMS conference on Atmospheric Radiation, Boston.

*Solar absorption in the atmosphere – Estimates from collocated surface  
and satellite observations over Europe* **2014**  
EGU General Assembly, Vienna, Austria.

*Absorption of solar radiation – Towards estimates from ground-based solar  
radiation measurements and collocated satellite products* **2013**  
EGU General Assembly, Vienna, Austria.

*Disposition of solar energy – Towards estimates from BSRN measurements and  
collocated satellite products in Europe* **2012**  
12th BSRN Scientific Review and Workshop, Potsdam, Germany.