

# CURRICULUM VITAE

**René HEIM** (Postdoctoral Researcher)

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## Education

- 2015-2019 Joint PhD (Grade 1.0 “Magna Cum Laude”), Macquarie University Sydney/Australia and Universität Hamburg/Germany
- 2012-2014 Master of Science (Grade: 1.12), Universität Hamburg/Germany
- 2010-2010 Semester Abroad, University of Valencia/Spain
- 2008-2012 Bachelor of Science (Grade: 2.1), Bioengineering-University of Applied Sciences Hamburg/Germany
- 2003-2006 Vocational Education (Grade: 3.0), Biological-Technical-Assistant

*German Grading Scale*

1.0-1.3 = Excellent

1.7-2.3 = Good

2.7-3.3 = Satisfactory

3.7-4.0 = Sufficient

5.0 = Insufficient

## Awards and Grants

- 2020 Travel Grant – Flanders Scientific Research Fund
- 2018 Fellow – German Scholarship Foundation (€17400)
- 2018 University Hamburg MIN Graduate School (DAAD) (€1800)
- 2018 Ecology Across Borders, Student Poster Prize Winner (£250)
- 2017 Barbara Rice Memorial Award, Best Project Presentation (AU\$500)
- 2016 Ecological Society of Australia, Travel Grant (AU\$240)
- 2016 Tony Price Award for Plant Biology Research (AU\$1000)
- 2015 Macquarie University Research Excellence Scholarships (AU\$52800)

2010 Erasmus Scholarship (€1200)

## Publications and Projects

- 2019 **Heim RHJ**; Guo X; Rowland D; Zare A. Image-by-image calibration of thermal infrared data. Not published.
- 2019 **Heim RHJ**; Oldeland J. Monitoring apple scab (*Venturia inaequalis*) disease development on apple plantation using multispectral aerial imagery. In progress.
- 2019 Funghi C, **Heim RHJ**, Schuett W, Griffith SC, Oldeland J. 2020. Estimating food resource availability in arid environments with Sentinel 2 satellite imagery. *PeerJ* 8, e9209 doi: 10.7717/peerj.9209
- 2019 **Heim RHJ**; Wright IJ; Oldeland J; Carnegie AJ; Pegg GS; Krey L. Assessing physical leaf traits on Eucalyptus species to predict myrtle rust susceptibility. Not published.
- 2019 Geedicke I; Oldeland J.; **Heim RHJ**; Leishman M. Changes in wetland communities in modified estuaries over a 40-year time period. In progress.
- 2019 **Heim RHJ**; Carnegie AJ; Zarco-Tejada PJ. Breaking down barriers between remote sensing and plant pathology. *Tropical Plant Pathology*, 44, 4, doi: 10.1007/s40858-019-00300-4
- 2019 **Heim RHJ**; Wright IJ; Scarth P; Carnegie AJ; Taylor D; Oldeland J. Multispectral, aerial disease detection for myrtle rust (*Austropuccinia psidii*) on a lemon myrtle plantation. *Drones*, 3, 25, doi: 10.3390/drones3010025
- 2019 **Heim RHJ**; Wright IJ; Geedicke I; Allen A; Oldeland J. Developing a spectral disease index for myrtle rust (*Austropuccinia psidii*). *Plant Pathology*, 68, 738-745, doi: 10.1111/ppa.12996
- 2018 Chang HC; **Heim RHJ**; Tomkins K. Hyperspectral discrimination of invasive Orange Hawkweed (*Hieracium aurantiacum*) in the Mount Kosciuszko National Park, New South Wales, Australia. Not published.
- 2018 **Heim RHJ**; Wright IJ; Chang HC; Carnegie AJ; Pegg GS; Lancaster EK; Falster DS; Oldeland J. Detecting myrtle rust (*Austropuccinia psidii*) on lemon myrtle trees using spectral signatures and machine learning. *Plant Pathology* 67, 1114-1121, doi: 10.1111/ppa.12830.
- 2015 **Heim RHJ**; Jürgens N; Große-Stoltenberg A; Oldeland J. The Effect of Epidermal Structures on Leaf Spectral Signatures of Ice Plants (*Aizoaceae*). *Remote Sensing* 7, 16901–16914, doi: 10.3390/rs71215862.

2015 Falter C; Ellinger D; von Hülsen B; **Heim RHJ**; Voigt CA. Simple preparation of plant epidermal tissue for laser microdissection and downstream quantitative proteome and carbohydrate analysis. *Frontiers in Plant Science* 6, 1-9, doi:10.3389/fpls.2015.00194

## Employment History

2020-date	<b>Postdoctoral Researcher</b> – UAV Research Centre, Department of Plants and Crops, University of Ghent, Belgium
2019-2020	<b>Postdoctoral Researcher</b> – Herbert Wertheim College of Engineering, University of Florida, United States of America
2017-2018	<b>R&amp;D - Product Development</b> (Plant disease and stress detection) – SKYLAB GmbH, Hamburg
2017-2018	<b>Research Assistant</b> – Department Environmental Sciences Macquarie University
2016-2016	<b>Administration</b> - Department Biological Sciences Macquarie University
2012-2015	<b>Freelancer</b> - Technical Service and Transport - Schirmherrschaft GmbH Hamburg, Germany
2012-2015	<b>Freelancer</b> Technical Service and Promotion - Fleck Promotions GmbH Hamburg, Germany
2012-2015	<b>Research Assistant</b> Biodiversity Evolution and Ecology of Plants – Department of Biology, Universität Hamburg
2011-2012	<b>Trainee</b> Plant Pathology - Department of Biology, Universität Hamburg
2009-2009	<b>Trainee</b> Metal Processing - Facilities Engineering Hamburg, Germany
2007-2008	<b>Employee</b> Plasma Fractionation, Octapharma GmbH Springe, Germany

## Supervision and Teaching

2019	Thesis (Ph.D.). Mentoring (TBA), Dylan Stewart, Electrical and Computer Engineering, University of Florida, USA
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- 2019 Thesis (Ph.D.). Mentoring (Interactive Segmentation with Automatic Feature Learning), Xiaolei Guo, Electrical and Computer Engineering, University of Florida, USA
- 2018 Honours Thesis (B.Sc.). Supervisor (Using physical leaf traits to predict myrtle rust (*Austropuccinia psidii*) susceptibility), Larissa Krey, Department of Biology, Universität Hamburg, Germany
- 2017 Thesis (M.Sc.). Co-supervisor (Evaluating the use of Remote Sensing to locate weeds in Kosciuszko National Park), Chad Ajamian, Department of Environmental Sciences Faculty of Science and Engineering, Macquarie University, Sydney, Australia
- 2017-2017 Tutor - S1 BIOL114 Organisms to Ecosystems, Macquarie University, Sydney, Australia
- 2017-2017 Tutor - S1BIOL373 Aquatic Ecosystems, Macquarie University, Sydney, Australia
- 2016-2017 Tutor - S2 BIOL347 Plants and Ecosystems, Macquarie University, Sydney, Australia
- 2016-2017 Tutor - S2 BIOL227 Ecology, Macquarie University, Sydney, Australia
- 2016-2016 Lecturer - S2 BIOL115 The Thread of Life, Macquarie University, Sydney, Australia
- 2015-2015 Lecturer - Principles in Botany (61-008), Universität Hamburg, Germany

#### Academic and Non-Academic Services

- 2018-date Leadership - Open Plant Pathology Network, <https://www.openplantpathology.org/>
- 2017 Teaching - R Programming Introductions (+40 h)
- 2017 Founder - Macquarie University R Statistical Environment Users Group, Macquarie University, Sydney, Australia
- 2017 Higher Degree Research Representative for Field Work Administration - Biological Sciences Macquarie University, Sydney Australia
- 2016 Founder - R Statistical Environment Users Group, Department of Biological Sciences, Macquarie University, Sydney, Australia
- 2015 Established research collaboration between the working group of Prof. Norbert Jürgens, Universität Hamburg, Germany and Prof. Ian Wright, Macquarie University, Australia

- 2015      Technical support - ecology workshop by Dr. Ute Schmiedel – Universität Hamburg, Germany
- 2015      Organisation - Career Information Day - Biocentre Klein Flottbek, Universität Hamburg, Germany
- 2015      Organisation - Summer Fair 2015 - Biocentre Klein Flottbek, Universität Hamburg, Germany
- 2009      Student Representative - University of Applied Sciences, Hamburg, Germany
- 2008      Freshman Tutor - University of Applied Sciences, Hamburg, Germany

### Key Skills and Languages

German	Native
English	C2 (TOEFL iBT score 100/120)
Spanish	B2

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R Environment	Certified Software Instructor <small>(e.g. R Markdown, caret, hsdar, ggplot2, raster)</small>
GIS Software	Advanced <small>(e.g. QGIS, ArcGIS, Agisoft Metashape)</small>
Office Software	Professional <small>(e.g. Word, PowerPoint, Excel, OneNote)</small>
HTML/CSS	Beginner
Python	Advanced <small>(e.g. Numpy, Pandas, Scipy, OpenCV, Rasterio)</small>
Graphic Design	Advanced <small>(e.g. Inkscape, Photoshop, Prezi)</small>

### Presentations

- 2019      **(Invited Talk)** “Assimilation of remote sensing in plant pathology: The case of myrtle rust in Australia”. Presented at: 30th Annual Meeting of the Tree Protection Co-operative Programme (TPCP) and the DST-NRF

Centre of Excellence in Tree Health Biotechnology (CTHB), Pretoria, South Africa

- 2018 **(Conference Talk)** "Multiscale remote sensing of plant pathogens: Detecting and monitoring myrtle rust". Presented at: Eucalyptus 2018 Conference "Managing Eucalyptus plantations under global changes", Montpellier, France
- 2018 **(Conference Talk)** "Multiscale remote sensing of plant pathogens: Detecting and monitoring myrtle rust". Presented at: International Congress of Plant Pathology 2018, Boston, Massachusetts, U.S.A.
- 2017 **(Conference Poster)** "Multiscale Remote Sensing of Plant Pathogens: Detecting Myrtle Rust in Australia". Presented at: Ecology Across Borders: Joint Annual Meeting 2017, Ghent, Belgium
- 2017 **(Conference Talk)** "*Hyperspectral Remote Sensing of Plant Pathogens: Detecting and Monitoring Myrtle Rust*". Presented at: Higher Degree Research Conference 2017 Macquarie University, Sydney, Australia
- 2016 **(Conference Talk)** "*I spy with my drone eye: high capacity detection and monitoring of Myrtle Rust*". Presented at: 2016 Ecological Society of Australia Annual Conference, Fremantle, Australia
- 2016 **(Conference Talk)** "*I spy with my little eye: Spectral detection and monitoring of plant species susceptible to Myrtle Rust*". Presented at: Higher Degree Research Conference 2016 Macquarie University, Sydney, Australia
- 2016 **(Invited Talk)** "*I spy with my little eye: Remote and near-range spectral detection of plant species susceptible to Myrtle Rust*". Presented at: Queensland Centre for Advanced Technology (CSIRO Robotics) Pullenvale, Brisbane, Australia
- 2016 **(Invited Talk)** "*Remote Sensing, Drones, and Plant Pathogens: A general introduction and a closer look on Myrtle Rust detection.*" Presented at: EcoSciences Precinct CSIRO and Queensland Government, Brisbane, Australia
- 2016 **(Conference Talk)** "*Aerial and hyperspectral near-range spectrometry of Puccinia psidii (Myrtle Rust)*". Presented at: Unmanned Aircraft Systems for Remote Sensing Applications Conference 2016, Brisbane, Australia
- 2015 **(Conference Poster)** "*Spectral responses of leaf surface traits of Aizoaceae*". Presented at: The Ecological Society of Germany, Austria and Switzerland Conference 2015, Goettingen, Germany
- 2015 **(Invited Talk)** "*M.Sc. Graduation Opening Speech*". Presented at: Biocentre Klein Flottbek Department of Biology Universität Hamburg, Hamburg, Germany

2015

**(Workshop Talk)** "*Spectral responses of leaf surface traits of Aizoaceae*". Presented at: EnMAP Summerschool by Earth Observation Center of German Aerospace Center (DLR), Lauenburg, Germany