

## **CURRICULUM VITAE**

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Ashleigh van Smeerdijk Hood

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### **EDUCATION**

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**2009 - B.Sc. (Hons.): Earth Sciences, University of Melbourne**

Thesis: A Cryogenian reef of the northern Flinders Ranges and the origins of metazoan life

**2014 - Ph.D. (Geology), University of Melbourne**

Thesis: Neoproterozoic seas: ocean chemistry and marine carbonate mineralogy

#### ***Awards***

2006- Argus Exhibition Prize for Geology

2007- AusIMM award for Academic Excellence

Geology Prize

2008- GSA Frank Canavan Award

Geology Prize

2009- P.J. Crohn Award

VUEESC Sedimentology and Palaeontology Prize

2010- D.E. Thomas Medal (best mapping Hons. thesis in Victoria - Geology)

2011- Eric Mountjoy Prize (best student presentation, Bathurst Meeting, Bristol)

#### ***Skills developed***

Stratigraphic analysis, carbonate sedimentology and diagenesis, petrography (crystallography, thin section making, UV fluorescence, cathodoluminescence), geochemical analysis (stable isotopes, LA-IC-PMS spot and profile analysis, staining, electron microprobe, XRD), extensive fieldwork (more than six months; Australia and Africa, including sampling, mapping and constructing stratigraphic sections).

### **PROFESSIONAL EXPERIENCE**

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**2017- present – Postdoctoral Fellow at the University of Melbourne**

Funded by the Elizabeth and Vernon Puzey Fellowship and the University of Melbourne Early Career Researcher Grant. Research on Paleozoic-Precambrian sedimentology, geochemistry and marine processes. Skills involved: petrography, student supervision, field work, basic operation of laser ablation ICP-MS.

Teaching experience:

GEOL300003- Sedimentary Geology (field work on Port Phillip Bay, 2017)

GEOL200003- Earth Composition, Minerals and Magmas (lab classes)

**2015-2017 – Postdoctoral Fellow at Yale University**

Funded by the NASA NAI Post Doctoral Grant and the American Australian Chevron Fellowship. Research on Precambrian carbonates, diagenesis and isotope geochemistry. Skills involved: U, Cr, Sr isotope and trace metal geochemistry, operation of Element XR ICP-MS, setup of UP1936FX Laser Ablation system, class and field teaching, basic operation of Neptune Plus MC-ICP-MS, establishment of cathodoluminescence microscope lab.

Teaching experience:

Sedimentary Petrography (lab class: 2015, 2016)

Field Geology- Great Slave Lake, Canada (2016- organiser and co-leader of trip)

***2014-2015 – Precambrian Carbonates Research Fellow at the University of Melbourne***

Research on Precambrian carbonate sedimentology. Skills involved: teaching, field class organisation, Level 2 First Aid, 4WD experience, basic operation of laser ablation

Agilent 7700x ICP-MS. Teaching experience:

GEOL300009- Advanced Field Geology (Co-leader of trip: 2014)

***2010-2014 – School of Earth Sciences, University of Melbourne: tutoring and practical class (undergraduate, Masters, field) demonstrating, lab-assistance.***

Assistance in maintaining the Thin-Section Laboratory and the Sedimentary Geology Laboratory. Teaching assistance for:

EVSC100001- The Global Environment (including field trip) (2011-2013)

ERTH100002- Understanding Planet Earth (2011-2013)

GEOL200001- Geology of South East Australia (field course) (2010-2014)

GEOL200003- Minerals and Magmas (including three field trips) (2012)

GEOL200004- Field Mapping and Sedimentary Geology (2011-2012)

GEOL300003- Sedimentary Geology (2010-2014)

GEOL300002- Tectonics and Geodynamics (including 1 week field trip) (2010)

GEOL300006- Economic Geology (2012)

GEOL300009- Advanced Field Geology (2011-2013)

VIEPS Masters Course- Basin Analysis (2013, 2014)

Skills involved: educational practices, student instruction, fieldtrip organisation/logistics, safety and responsibility for student groups, teaching petrographic techniques for research, equipment maintenance, rock crushing/mineral separation experience.

***Other Employment History***

*2012-2013 – Teck Namibia: consulting work with M.W. Wallace.*

Basin-scale stratigraphic analysis of Neoproterozoic sequence in Namibia and Zambia for Cu. Skills involved: basin-scale stratigraphic correlations, core logging, field safety.

*2012-2013 – Buru Energy: consulting work with M.W. Wallace.*

Reservoir petrology and diagenetic analysis of drillcore from Canning Basin. Skills involved: petroleum diagenesis, porosity evaluation, UV microscopy, cathodoluminescence microscopy.

*2009-2010 – Newmont Tanami Operations: vacation work, Exploration Geology Group.*

Core logging, drill design, stratigraphy for near-mine exploration. Skills involved: grade control and exploration core logging, stratigraphic analysis, drill design.

2007-2008 – *Rio Tinto Iron Ore (Tom Price): vacation work, Structural Geology Group.*  
Face mapping, geochemical analysis, stratigraphic correlation, computer modelling.  
Skills involved: structural mapping, geotechnical stability requirements, mine safety practices, photogrammetry.

## GRANTS AND FELLOWSHIPS

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- 2009- AusIMM Education Endowment Fund Scholarship (AU\$7,000)
- 2010- Henry James Williams APA Scholarship (Melb. Uni. Prestigious Scholarship) and Baragwanath Studentship (combined total AU\$133,315; 3 years)
- 2011- APPEA Tony Noon Scholarship (AU\$3,000)
- 2012- IAS PhD Grant (€1,000)  
George Lansell Scholarship (AU\$10,000)
- 2014- American Australian Association Chevron Fellowship (US\$40,000)
- 2015- NASA Institute of Astrobiology Postdoctoral Fellowship (US\$141,580; 2 years)
- 2017- Elizabeth and Vernon Puzey Fellowship (AU\$136,000; 2 years)
- 2017- University of Melbourne Early Career Grant (AU\$38,300)

GSAV, PESA, IAS, MATS, Fermor and Bathurst society travelling scholarships for conference attendance (2010-2012) (total ~AU\$5,000)

## SCIENTIFIC PROFILE

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### *Research Publications (\*denotes student)*

1. **Hood, A.v.S.** and Blewett S.C.J. (Eds.) 2010. Abstract Volume, 24<sup>th</sup> Victorian Universities Earth and Environmental Sciences Conference. Geological Society of Australia Abstracts Number 99, 36p.
2. **Hood, A.v.S.**, Wallace, M.W., and Drysdale, R.N., 2011, Neoproterozoic aragonite-dolomite seas?: Widespread marine dolomite precipitation in Cryogenian reef complexes, *Geology*, 39, p871-874.
3. **Hood, A.v.S.**, Wallace, M.W., 2012, Synsedimentary diagenesis in a Cryogenian reef complex: Ubiquitous marine dolomite precipitation, *Sedimentary Geology*, 255-256, p56-71.
4. **Hood, A.v.S.**, and Wallace M.W., 2014, Marine cements reveal the structure of an anoxic, ferruginous Neoproterozoic ocean." *Journal of the Geological Society* 171, 741-744.
5. Wallace, M.W., **Hood, A.v.S.**, Woon, E.M.S., Hoffmann, K.H., Reed, C.P., 2014, Enigmatic chambered structures in Cryogenian reefs: The oldest sponge-grade organisms? *Precambrian Research* 255, 109-123.
6. Wallace, M.W., **Hood, A. v.S.**, Woon, E.M.S., Giddings, J.A., Fromhold, T.A., 2015, The Cryogenian Balcanoona reef complexes of the Northern Flinders Ranges: Implications for Neoproterozoic ocean chemistry. *Palaeogeography, Palaeoclimatology, Palaeoecology* 417, 320-336.
7. **Hood, A.v.S.**, Wallace, M.W., 2015, Extreme ocean anoxia during the Late Cryogenian recorded in reefal carbonates of Southern Australia, *Precambrian Research*, 261, 96-111.

8. **Hood, A.v.S.**, Wallace, M.W., Reed, C.P., Hoffmann, K.-H. and Freyer, E.E., 2015, Enigmatic carbonates of the Ombombo Subgroup, Otavi Fold Belt, Namibia: A prelude to extreme Cryogenian anoxia? *Sedimentary Geology* 324, 12-31.
9. **Hood A.v.S.**, Planavsky, N.J., Wallace, M.W., Wang, X., Bellefroid, E.J., Gueguen, B. and Cole, D., 2016, Integrated geochemical-petrographic insights from component-selective  $\delta^{238}\text{U}$  of Cryogenian marine carbonates, *Geology*, 34, p 935-938.
10. Tarhan L.G, **Hood, A.v.S.**, Droser M.L., Gehling J.G. and Briggs D.E.G., 2016, Exceptional Silicified Preservation of Earth's Earliest Animal Ecosystems, *Geology* 34, 951-954.
11. Zhang, S., Henehan, M.J, Hull, P.M., Reid, P., Hardisty, D.S, **Hood, A.v.S.**, Planavsky, N.J., 2017, On the reliability of ocean pH estimates derived from boron isotopes in shallow marine inorganic carbonates, *Earth and Planetary Science Letters*, 458, 380-393.
12. McMahon, S., **Hood, A.v.S.** and McIlroy, D., 2017, The occurrence and origin of subaqueous sedimentary cracks, *in* Brasier, A. T., McIlroy, D. & McLoughlin, N. (eds) *Earth System Evolution and Early Life: a Celebration of the Work of Martin Brasier*. Geological Society, London, Special Publications, 448.
13. Tarhan L.G, **Hood, A.v.S.**, Droser M.L., Gehling J.G. and Briggs D.E.G., 2017, Comment– Delusions of dirt: Ediacara organisms were not soil dwellers, *Geology*, 45.
14. Wallace M.W, **Hood A.v.S.**, \*Shuster, A., Greig, A., Planavsky, N.J. and Reed, C.P., 2017, Oxygenation history of the Neoproterozoic to early Phanerozoic and the rise of land plants, *Earth and Planetary Science Letters*, 466, 12-19.
15. **Hood A.v.S.** and Wallace, M.W., Neoproterozoic carbonate mineralogy and its palaeoceanographic significance, *Global and Planetary Change*, 160, 12-29.
16. \*Shuster, A., Wallace, M.W., **Hood, A.v.S.** and Jiang, G., 2018, The Tonian Beck Spring Dolomite: Marine dolomitization in a shallow, anoxic sea, *Sedimentary Geology*, 368, 83-104.
17. Wallace, M.W. and **Hood, A.v.S.**, 2018, Zebra textures: fracture networks produced by the force of crystallization during replacement reactions, *Sedimentary Geology*, 368, 58-67.
18. \*Lechte, M., Wallace, M.W., **Hood, A.v.S.** and Jiang, G., 2018, Did glacial fluids help ventilate the deep oceans in the Neoproterozoic? Insights from glacially-associated iron formations, *Precambrian Research*, 310, 443-462.
19. **Hood, A.v.S.**, Planavsky, N.J., Wallace, M.W. and Wang, X., 2018, Sedimentary carbonates as paleo-redox proxies, *Geochimica et Cosmochimica Acta*, in press.
20. Bellefroid E.J., Planavsky, N.P., **Hood, A.v.S.**, Halverson, G.P., and Spokas, K. Shallow water redox conditions of the Mid-Proterozoic Muskwa Assemblage, British Columbia, Canada, *Chemical Geology*, submitted.
21. Bellefroid, E.J., **Hood, A.v.S.**, Hoffman, P.F., Thomas, M.D., and Planavsky, N.J., Reconstructing Paleoproterozoic Atmospheric Oxygen Concentrations, *PNAS*, submitted.

22. Wallace, M.W., **Hood, A.v.S.**, Fayle, J., Horderm, E.S., O'Hare, T.F., Neoproterozoic marine dolomite hardgrounds and their relationship to cap carbonates, Precambrian Research, submitted.
23. McMahon, S.H., **Hood, A.v.S.** and Parnell, J., Activity of the ancient deep continental biosphere revealed by uranium isotopes in reduction spheroids, Nature Communications, in revision.
24. Wei, G, Ling, H.F, **Hood, A.v.S.**, Chen, X., Li, D., Wei, W., Wen, B., Gong, Z., Deciphering Ca isotope excursion in the Marinoan cap dolostone: implications for global climate after Snowball Earth, Earth and Planetary Science Letters, in revision.

#### ***Publications in advanced preparation***

25. **Hood A.v.S.**, Zhang, S. and Planavsky, N.J, Sustained high Mg conditions in Precambrian oceans, EPSL, in prep.
26. \*O'Connell, B., Dorsey, R.J., Hasiotis, S.T and **Hood, A.v.S.**, Sedimentology and ichonology of a Miocene-Pliocene Gulf of California mixed carbonate-siliciclastic platform, the Bouse Formation, Sedimentology, in prep.
27. **Hood, A.v.S.**, Cole, D., Planavsky, N.J., Wallace, M.W., and \*Lechte, M., Local oxygenation during the Late Devonian Mass Extinction, Geobiology, in prep.
28. \*Lechte, M., Wallace, M.W., **Hood, A.v.S.**, Li, W., Jiang, G., Planavsky, N.P., Halverson, G., Asael, D., and McColl, S., A glacial conveyer for the Neoproterozoic Oxygenation Event, Nature, in prep.

#### ***Conference Presentations***

- Geobiology, 2017
- Yale Women of Earth Science Symposium, 2017
- Goldschmidt, 2016, 2017
- Northeastern Geobiology Symposium, 2015, 2017
- GSA Annual Meeting, 2015, 2016
- AGU Fall Meeting, 2015
- Bathurst Meeting of Carbonate Geologists 2011, 2015
- GACMAC, 2015
- Fermor Meeting of the Geological Society, 2012
- IAS Meeting of Sedimentology, 2011, 2012
- Sprigg Symposium, 2011
- Vic. Universities Earth and Environmental Sciences Conference, 2009, 2010

#### ***Invited Research Presentations***

- Sprigg Symposium
- Geological Society of Namibia
- Geological Society of Australia
- Petroleum Exploration Society of Australia
- Field Naturalists Victoria
- Princeton University
- University of Tasmania

- University of Melbourne
- Yale University
- Teck Ltd. Namibia
- Pennsylvania State University
- University of California, Los Angeles
- Trinity College Dublin
- University of California, Santa Barbara

***Scientific Discipline Experience and Membership***

- Reviewer: Precambrian Research, Geology, AJS, IJ Speleology, Sedimentary Geology, Sedimentology, Nature Communications
- Student Representative, Petroleum Exploration Society of Australia, 2012-2014
- President and Secretary of the Earth Sciences Students Postgraduate Group (University of Melbourne), 2010-2012; Honours Representative and Committee Member of the Earth Sciences Students Society, 2008-2009
- Conference judge (student presentation), AGU, 2015; VUEESC, 2017
- Initiator and co-organiser of the Geological Society Australia (Vic) Student-Industry Night, 2011; and the Vic. Universities Earth and Environmental Sciences Conference, 2010, 2013
- Membership with: PESA, GSA, GSAV, AAPG, AGU
- Goldschmidt 2018 Session Convener
- Committee member of Women in Science Network and Science Early Career Academics Network (University of Melbourne)