ALEXANDRA E. PYE

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EDUCATION

Arizona State University *August 2016 - December 2022*
Geological Sciences PhD

University of St Andrews *2012 - 2016*
BSc (Hons) Geology Classification: 2:1

PUBLICATIONS

Pye, A. E., Hodges, K. V., Keller, C. B., Law, R. D., van Soest, M. C., Bhandari, B. and McDonald, C. S. (2022). Prolonged Slip on the South Tibetan Detachment Constrains Tectonic Models for Synorogenic Extension in the Central Himalaya. *Tectonics*, 41, e2022TC007298.

Pye, A. E., Hodges, K. V., Ehlers, T. A., van Soest, M. C., McDonald, C. S., and Bhandari, B. (in prep*). Constraining the Exhumation History of the Greater Himalayan Sequence, Kali Gandaki, central Nepal.

Pye, A. E., Hodges, K. V., Ehlers, T. A., van Soest, M. C., Leonard, J. S., Keller, C. B., Bhandari, B. and McDonald, C. S. (in prep*). Constraining the deformation history of the South Tibetan Detachment system in the Marsyandi Valley, central Nepal.

*in prep refers to fully drafted manuscripts undergoing final edits with co-authors.

CONFERENCE ABSTRACTS

Geological Society of America Annual Meeting *October 2022*
Pye, A. E.*, Hodges, K. V., Ehlers, T. A., Keller, C. B., van Soest, M. C., McDonald, C. S. and Bhandari, B. (2022). The Exhumation History of the Greater Himalayan Sequence, central Nepal, Geological Society of America Annual Meeting.

September 2019
Pye, A. E.*, Hodges, K. V., van Soest, M. C. and Bhandari, B. (2019). Constraints on the age of ductile extension along the basal South Tibetan Detachment, Annapurna Range, Central Nepal, Geological Society of America Annual Meeting.

American Geophysical Union Fall Meeting *December 2021*
Pye, A. E.*, Brunner, A. E., Hodges, K. V., McDonald., C. S., Osinski, G. R., van Soest, M. C. (2021). Establishing Best Practices for Dating Impact Structures Using the $^{40}Ar/^{39}Ar$ UVLAMP Technique: A Case Study from West Clearwater Lake. American Geophysical Union Fall Meeting.

International Conference on Thermochronology *September 2021*
Pye, A. E.*, Hodges, K. V., van Soest, M. C., McDonald, C., S. and Schultz, M. H. (2021). Empirically Testing the Helium Closure Temperature of Monazite, 17th International Conference on Thermochronology.

van Soest, M. C., Aigner, M.*, Hodges, K. V., **Pye, A. E.** (2021). Laser Ablation Depth Profiling of Helium in Accessory Minerals: Imaging Alpha Ejection Zones and Natural Helium Diffusional Loss Profiles, presented by Aigner, M. at 17th International Conference on Thermochronology.

*Presenting Author

RESEARCH EXPERIENCE

Postdoctoral Research Scholar *December 2022 - Present*
Group 18 Laboratories at School of Earth and Space Exploration.
Project: High spatial resolution $^{40}Ar/^{39}Ar$ chronometry of impact melts in lunar meteorites to better constrain the impact history of the Moon

PhD Student *August 2016- November 2022*
Advisor: Kip Hodges. Group 18 Laboratories at School of Earth and Space Exploration.
Dissertation Title: "The Evolution of Infrastructure-Superstructure Interactions in the Annapurna region, central Himalaya."

Undergraduate Student *March 2015 - March 2016*
Advisor: William McCarthy. University of St Andrews.
Dissertation Title: "The Metamorphic Evolution of the Dalradian Country Rocks that Surround the Omey Granite, Connemara, Ireland."

TEACHING EXPERIENCE

SES464 Solving Environmental Problems *Spring 2020*
Arizona State University - TA

SES494 Exploring Data with Python, SES598 Python for Graduate Research *Spring 2019*
Arizona State University - TA

GLG103 Introduction to Geology 1 Labs *Spring 2017*
Arizona State University - TA

GLG103 Introduction to Geology 1 Labs *Fall 2016*
Arizona State University - TA

AWARDS

SESE Summer Exploration Graduate Research Award *2021*
Research Funds granted $1000.

Geohost Award *2020*
Fully paid travel, conference registration and accommodation for the 36th International Geology Conference in Delhi. Conference postponed due to Covid-19.

SESE Safety Award *2020*
School of Earth and Space Sciences, Arizona State University
For demonstrating noteworthy safety practices, resulting in a safer work environment for the month of January.

Outstanding Graduate Teaching Assistant for a Laboratory Course *2019*
School of Earth and Space Sciences, Arizona State University
Exemplary service and dedication during the 2018-2019 academic year.

Geological Society of America Graduate Student Research Grant *2018*
Research Funds granted $1900.

FIELDWORK EXPERIENCE

Annapurna Region, Nepal *March 2020*
Arizona State University *3 Weeks*
Fieldwork studying the South Tibetan Detachment System in the Myagdi Khola Valley. Characterised deformation at the outcrop scale. Sample collection at the outcrop scale and along a transect from beneath the STDS across the Main Central Thrust. Fieldwork was cut short due to Covid-19.

Annapurna Region, Nepal *October-November 2018*
Arizona State University *4 Weeks*
Fieldwork studying different strands of the South Tibetan Detachment System in the Kali Gandaki and Marsyandi Valleys. Characterised deformation at the outcrop scale, as well as structural relationships between deformation fabrics and leucogranite intrusions. Sample collection at the outcrop scale and also along transects to collect samples for exhumation rate studies.

Swiss and Italian Alps *August 2015*
University of St Andrews *2 Weeks*
4th Year field trip to study the Alpine Orogeny in the Swiss and Italian Alps.

Connemara, Ireland *June 2015*
University of St Andrews *4 Weeks*
Dissertation fieldwork. Mapping a 5 km^2 area containing a granitic pluton and metamorphic country rocks, looking at different mineral assemblages and metamorphic grade. The country rocks had undergone regional metamorphism, and were overprinted by contact metamorphism due to the emplacement of the granite. Lab work carried out included petrographic analysis of thin sections and electron microprobe work.

Mull, Scotland *April 2015*
University of St Andrews *1 Week*
Mapping part of the granitic intrusions of the area. Mapping carried out in a group of four.

Ullapool, Scotland *April 2015*
University of St Andrews *1 Week*
Mapping the Moine thrust and the other smaller faults in the area. Mapping carried out in a group of four.

Aberfeldy, Scotland *March 2015*
University of St Andrews *2 days*
Structural field trip mapping the Tay Nappe.

Berwick, England *March 2015*
University of St Andrews *2 days*
Sedimentary field trip constructing sedimentary logs.

St Andrews Coastline, Fife, Scotland *September 2014*
University of St Andrews *1 week*
Geological mapping of the Fife coastline outside St Andrews. Mapping carried out in a group of four.

Sierra Norte, Spain *March 2014*
University of St Andrews *1 week*
Geological mapping of the Sierra Norte. Mapping carried out in a group of four.

Rio Tinto, Spain *March 2014*
University of St Andrews *1 week*
A field trip looking at the river chemistry and acid mine drainage.

Highlands, Scotland *March 2013*
University of St Andrews *1 week*
Field trip in the Scottish Highlands.

Other
During these years there have also been various 1 day trips around Fife looking at sedimentary and igneous areas and 1 to 2 day(s) trips in Arizona studying Geomorphology and Remote Sensing.

ANALYTICAL EXPERIENCE

Laser Ablation Inductively Coupled Plasma Mass Spectrometry.
Thermo Scientific *iCAP Q* mass spectrometer both in solution mode and with a Photon Machines *Analyte G2* ArF excimer laser. Analysing U,Th, Pb and REE.

Noble Gas Mass Spectrometry
ASI *Alphachron MKII* system quadrupole mass spectrometer. Conventional and laser ablation analysis of He isotopes

Nu Instrument *Noblesse* magnetic sector mass spectrometer. Analysing Ar isotopes during step heating experiments with a Photon Machines *Fusions* CO_2 infrared laser system. Ultra-violet laser ablation microprobe (UVLAMP) in-situ Ar isotopic analysis using an excimer laser. Diffusion cell experiment cycling temperatures on lunar feldspar. UVLAMP in-situ He isotopic analysis using an excimer laser for "double dating" (U-Th)/He and U/Pb analyses.

Sample Characterisation Experience
Horiba Scientific *XplorRA PLUS confocal* Raman microscope, used for rapid mineral identification and radiation damage quantification.

JEOL *JXA-8530F* electron microprobe, used for BSE images, EDS and WDS point analyses, and EDS and WDS maps.

ADE *PhaseShift MicroXAM* interferometeric microscope to measure volumes of ablated pits.

Mineral Separation
Standard mineral separation procedures for monazite, zircon, apatite, titanite, K-feldspar, muscovite, biotite and tourmaline.

OTHER SKILLS

Coding Experience
Python, Matlab

Data Reduction Software Experience
Iolite, MassSpec

Modelling Software Experience
QTQt, Pecube-D

Geospatial Software Experience
ArcGIS

I hold both British and American Driving Licences.

WORKSHOPS

GIS Geologic Maps Short Course *September 2017*
Arizona State University
Learnt how to construct geologic maps and cross sections using data bases in ArcGIS and data management structure NCGMP09v1.1

Summer Polar Bootcamp *August 2017*
Polar Geospatial Center.
Learning how to use commercial satellite imagery.

OUTREACH, DIVERSITY, INCLUSION

Junior Science and Humanities Symposium *Spring 2023*
Judge at the 2023 Arizona Regional Junior Science Humanities Symposium

URGE *Spring 2021*
Unlearning Racism in Geoscience, participated in the SESE pod.

Scottsdale Preparatory Academy *2nd October 2019*
Visiting speaker for 8th grade Earth Science classes.

Night of the Open Door *2018-Present*
Volunteer for the Group 18 Laboratories booth at Arizona State University.

SESE Open House *2017-Present*
Volunteer at Arizona State University SESE Open House.

Earth and Space Exploration Day *2016-Present*
Volunteer for the Group 18 Laboratories booth at Arizona State University.

Phoenix Comicon *May 2017*
SESE, ASU Booth Volunteer at Phoenix Comicon.

LEADERSHIP

Saints Leadership Course *September 2015*
Learning how to run a committee and how to better yourself as a leader.

University of St Andrews Vice President of the Netball Team *June 2015 - May 2016*
Ran the Social netball team and the Development Squad. This involved coaching the two teams and organising matches for the Development Squad. I also supported the President including attending meetings and running fitness circuits.

Coaching at Madras College *September 2014 - May 2016*
Volunteering at Madras College to coach secondary school netball.

University of St Andrews Second Team Netball Captain *June 2013 - May 2014*
Organised the second team and matches.

OTHER EXPERIENCE

GDF SUEZ E&P UK Ltd Legal Department *Summer 2013 & Summer 2014*
2013 - Assisted with the reorganisation of the departments document library and helped as a Legal Assistant.
2014- Assisted with the organisation of the departments hard copies of documents. Spent time with the Subsurface Geology Department to understand the role of a geologist in the Company.

The Kings School, Canterbury *Summer 2013, January 2014 & Summer 2014*
2013 - Assistant Sailing Coach
January 2014 - Assistant Netball Coach and Assistant in the Sports Department
Summer 2014 - Assistant Sailing Coach and Assistant in the Sports department. Also worked in the OKS Foundation Office assisting with organising events.

GDF SUEZ E&P UK Ltd QHSE Department *Summer 2011 & Summer 2012*
2011 - Researched the best available techniques for the hydrocarbon development process and how the Environmental Impact Identification Survey fits with this process.
2012 - Assisted with the reorganisation of the departments document library and assisted with adding meta data to the files.