

ARCHON courses Geoarchaeology 2019-2020

UNIVERSITY of
STIRLING



Erasmus+

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RESEARCH INSTITUTE FOR
CULTURE, HISTORY AND HERITAGE



Faculty
of Humanities

Global Geoarchaeology: theory and practice

4-6 March 2020, Vrije Universiteit Amsterdam

(3 days, 2 ects)

Teachers: Professor Ian A. Simpson, (i.a.simpson@stirling.ac.uk)
Dr. Sjoerd J. Kluiving (s.j.kluiving@vu.nl)

The course takes place, Wednesday and Friday in the new NU (New University) building on the VU Campus. Thursday will be in the field. <https://www.vu.nl/en/about-vu-amsterdam/contact-info-and-route/route-description/map-vu-campus/index.aspx>

Wednesday 4 March 2020, 9.00 – 17.00, NU-5A-65, room on 5th floor in new NU building.

Concepts and applications

- Session 1: 'Reading global' soils and sediments
- Session 2: Regional Geoarchaeologies – case studies
- Session 3: Guided preparation and short student presentations on research projects with a geoarchaeological focus,
- Session 4: Short introduction on field day with theory of maps, sediments and soils

Thursday 5 March 2020, 9.00 – 17.00

Fieldwork Practice

- Session 5: Wekeromse Zand (Pleistocene and Holocene records)
- Session 6: Amstelveen (Holocene records)

Friday 6 March 2020, 9.00 – 17.00, NU-4A-67, room on 4th floor in new NU building.

Laboratory practice

- Session 7. Mapping exercise NW Europe and discussion
- Session 8: Lacquer peel description exercise and discussion NW Europe
- Session 9: Thin section micromorphology of Wekeromse Zand thin sections
- session 10: Synthesis, discussion and outlook on research report.

Assessment: 40% blog post, 60% research report

Introduction:

Geoarchaeology is a growing and evolving research discipline at the intersection between geomorphology, environmental history and archaeology (Butzer, 2008). Geoarchaeology as a research field continues to grow as analyses and techniques more typically used in earth and environmental sciences are shown to have use in interpreting the archaeological record (Diskin et al, 2013). Geoarchaeology is ‘the science that studies geo-bio-archives in an archaeological context by also considering historical and archaeological data sources in its syntheses’; it emphasizes a multidisciplinary role, as a sub discipline of geomorphology, between the geosciences and cultural sciences (Engel & Brückner, 2014). Geoarchaeology provides insights into landscape reconstructions, human behaviors, and cultural processes that are a backdrop to landscape change (Kluiving et al, 2015). In this course, a toolbox is presented to study geoarchaeological research problems in a range of cultural and environmental contexts.

Objectives:

This research-led course gives theoretical and practical frameworks for interpreting soils, sediments and landscapes as records of the past and provides training in field and laboratory methods that identify, quantify and evaluate early human activities and environmental imprints. These understandings and skills contribute new landscape histories in different regions of the world. This work offers important and challenging perspectives on how interpretations of soils and sediments contribute to how people lived with and adapted to environmental change and has resonance with contemporary debates on sustainability, resilience and heritage management.

Learning outcomes:

- Understanding the principles of interpreting landscapes and sediment stratigraphies as records of the past.
- Understanding the contributions of landscape studies and sediment analyses in the interpretation of key aspects of landscape history including multi-scale and multi-topical cartographic analysis, sediment description (from outcrop, core and lacquer peel), coring practice, as well as micro-morphological observations.
- Ability to integrate landscape histories and sedimentary evidence with inter-disciplinary sources, including documentary, archaeological and environmental information, to address broader issues of society – environment change interactions.
- The module provides a foundation for research-based field and laboratory Dissertation and Thesis topics in geoarchaeology and landscape history.

Acquired skills:

- Competence in the application of science-based methods to answer archaeological research questions.
- Competence in the description, analyses and interpretation of soils and sediments from archaeological contexts.
- Competence in cross-disciplinary approaches applied to society-environment interactions.

Assessment:

Blog Post (40%): Highlighting learned themes during the programme

Research report (60%). (3000 words, excl. figures, images, photos and references): Highlighting geoarchaeological applications to student research programmes.

The minimum grade to obtain a pass for a module is a 60% score.

Admission, logistics:

Students can administer for this course by contacting the ARCHON office at secretary@archonline.nl.

Any questions relating to the content of the course can be sent to Sjoerd Kluiving, s.j.kluiving@vu.nl.

The course will finish with a blog post and a research report due 1 week after the course. The location of the course is in room TBA at the VU University Amsterdam, De Boelelaan 1079-1085, 1081 HV Amsterdam, see for route and travel descriptions <http://www.vu.nl/en/about-vu-amsterdam/contact-info-and-route/route-description/index.asp>

Reading:

Reading for this unit is found as general texts on geoarchaeology and environmental history giving context to the module, and as research papers. It is **strongly recommended** that the references are read prior to the lecture / seminar session as a foundation for discussion.

1. Soils, sediments and environmental history

ArchaeoGLOBE Project Authors (2019). Archaeological assessment reveals Earth's early transformation through land use. *Science*, 365 no. 6456 897-902. <https://doi.org/10.1126/science.aax1192>

Anderson, D.E., Goudie, A.S. and Parker, A.G. (2013). *Global Environments through the Quaternary*. 2nd Edition, ISBN: 978-0-19-969726-7. Oxford University Press.

Goldberg, P. and Macphail, R. I., (2006). *Practical and Theoretical Geoarchaeology*. ISBN: 978-0-632-06044-3. Blackwell.

Roberts, N., (2014). *The Holocene: An Environmental History*. 3rd Edition, ISBN: 978-1-4051-5521-2 Wiley-Blackwell.

Waters, C.N., Zalasiewicz, J.A., Williams, M., Ellis, M.A., and Snelling, A.M. (Eds.) (2014). *A Stratigraphic basis for the Anthropocene*. Geological Society, London, Special Publication 395. <http://sp.lyellcollection.org/content/395/1/1.full>

2. Geoarchaeology, general

Kluiwing, S.J., Engel, M., Heyvaert, V.M., Howard, A.J., 2015. Where earth scientists meet Cleopatra: Geoarchaeology and geoprosection of ancient landscapes. *Quaternary International*, 1-3.

Butzer, K.W., 2008. Challenges for a cross-disciplinary geoarchaeology: the intersection between environmental history and geomorphology. *Geomorphology* 101, 402-411.

Diskin, S., Heyvaert, V., Pavlopoulos, K., Schütt, B., 2013. Geoarchaeology: a toolbox of approaches applied in a multidisciplinary research discipline. *Quaternary International*, 1-3.

Engel, M., Brückner, H., 2014. Late Quaternary environments and societies: progress in geoarchaeology. *Zeitschrift für Geomorphologie, Supplementbände* 58, 1-6.

3. Mediterranean and Near East Geoarchaeology

Ghilardi, M, D. Psomiadis, S. Cordier, D. Delanghe-Sabatier, F. Demory, F. Hamidi, T. Paraschou, E. Dotsika, E. Fouache (2012). The impact of rapid early- to mid-Holocene palaeoenvironmental changes on Neolithic settlement at Nea Nikomideia, Thessaloniki Plain, Greece, *Quaternary International*, Volume 266, 17 July 2012, Pages 47-61, ISSN 1040-6182, <http://dx.doi.org/10.1016/j.quaint.2010.12.016>.

Groenhuijzen, M.R., Kluiwing, S.J. & Gerritsen, F. (2015). Geoarchaeological research at Barcın Höyük: implications for the Neolithisation of northwest Anatolia. *Quaternary International*, 367, 51-61. doi: 10.1016/j.quaint.2015.03.001

Koopman, A., Kluiwing, S.J., Holdaway, S.J. & Wendrich, W. (2016). The Effects of Holocene Landscape Changes on the Formation of the Archaeological Record in the Fayum Basin, Egypt. *Geoarchaeology*, 31(1), 17--33. doi: 10.1002/gea.21538

Lichtenberger, A., Raja, R., Seland, E.H., Kinnaird, T. and Simpson, I.A., (2019). Urban-Riverine Hinterland Synergies in Semi-Arid Environments: Millennial-Scale Change, Adaptations, and Environmental Responses at Gerasa/Jerash. *Journal of Field Archaeology*. <https://doi.org/10.1080/00934690.2019.1625619>

5. South Asian Geoarchaeology

Coningham, R.A.E., Acharya, K.P., Strickland, K.M., Davis, C.E., Manuel, M.J., Simpson, I.A., Gilliland, K., Tremblay, J., Kinnaird, T.C., and Sanderson, D.C.W. (2013). The earliest Buddhist shrine: Excavating the birthplace of the Buddha, Lumbini (Nepal). *Antiquity* 87, 1104-1123.

Coningham, R., Acharya, K.P., Barclay, C., Barclay, R., Davis, C.E., Graham, C., Hughes, P.N., Joshi, A., Kelly, L., Khanal, S., Kilic, A., Kinnaird, T., Kunwar, R.B., Kumar, A., Maskey, P.N., Lafortune-Bernard, A., Lewer, N., McCaughie, D., Mirnig, N., Roberts, A., Sarhosis, V., Schmidt, A., Simpson, I.A., Sparrow, T., Toll, D.G., Tully, B., Weise, K., Wilkinson, S., Wilson, A. (2019). Reducing disaster risk to life and livelihoods by evaluating the seismic safety of Kathmandu's historic urban infrastructure: enabling an interdisciplinary pilot. *Journal of the British Academy*, 7(s2), 45–82. DOI <https://doi.org/10.5871/jba/007s2.045>

Gilliland, K., Simpson, I.A., Adderley, W.P., Burbidge, C.I., Cresswell, A.J., Sanderson, D.C.W., Coningham, R.A.E., Manuel, M., Strickland, K., Gunawardhana, P., Adikari, G. (2013). The dry tank: development and disuse of water management infrastructure in the Anuradhapura hinterland, Sri Lanka. *Journal of Archaeological Science* 40, 1012-1028.

Perera, N., Kourampas, N., Simpson, I.A., Deraniyagala, S.U., Bulbeck, D., Perera, J., Szabó, K., Oliveira, N.O. Fuller, D. (2011). People of the ancient rainforest: anatomically modern late Pleistocene foragers at the Batadomba-lena rockshelter, Sri Lanka. *Journal of Human Evolution* 61, 254-269.

6. North Atlantic Geoarchaeology

Golding, K.A., Simpson, I.A., Wilson, C.A., Lowe, E.C., Schofield, J.E. and Edwards, K.J. (2015). Europeanization of sub-Arctic environments: Perspectives from Norse Greenland's outer fjords. *Human Ecology* 43, 61-77.

Nelson, M.C., Ingram, S.E., Dugmore, A.J., Streeter, R., Peeples, M.A., McGovern, T.H., Hegmon, M., Arneborg, J., Kintigh, K.W., Brewington, S., Spielmann, K.A., Simpson, I.A., Strawhacker, C., Comeau, L.E.L., Torvinen, A., Madsen, C.K., Hambrecht, G., Smiarowski, K. (2016). Climate challenges, vulnerabilities and food security. *Proceedings of the National Academy of Sciences (PNAS)* 113, 298-303.

Simpson, I.A. Dugmore, A.J., Thomson, A. and Vésteinsson, O. (2001). Crossing the thresholds: human ecology and historical patterns of landscape degradation. *Catena* 42, 175-192.

Simpson, I.A., Vésteinsson, O., Adderley, W.P. and McGovern, T.H. (2003). Fuel resources in landscapes of settlement. *Journal of Archaeological Science* 30, 1401-1420.