

## **The Role of Culture in Early Expansions of Humans (Frankfurt and Tübingen)**

The objective of the Research Center “The Role of Culture in Early Expansions of Humans (ROCEEH)” is to seek answers to the following scientific questions: When, where and in which form did the interplay of changing climatic conditions, biological evolution and cultural development allow the genus *Homo* to move beyond the behavioral niche of a large African ape? How did *Homo* succeed in developing not only culturally but also human ecologically defined niches outside of Africa? These niches are notably characterized by a wide spectrum of material and cognitive innovations. The goals of the Research Center are to identify the spatial and temporal patterns of migration in Africa and Eurasia and to reconstruct possible causes of early human expansions starting about three million years ago and continuing up to the last glacial maximum 20,000 years ago. Through the investigation of early migrations in Africa and the subsequent settlement first of subtropical, then warm temperate, and finally cold temperate to polar regions of Eurasia, the project will follow the transformation of the human species from its biologically determined nature to a culturally driven organism. The history of human expansions opens up new perspectives on the temporal and spatial dimensions of the increasing independence of the genus *Homo* from its purely biological limitations.

Members of the Scientific Commission (and Members of the Academy\*), Karl Fuchs\*, Lothar Ledderose\*, Joseph Maran\*, Ekkehard Ramm\*, Volker Sellin\* (Chairman), Prof. Dr. Ofer Bar-Yosef (Cambridge, USA), Prof. Dr. Manfred Ehlers (Osnabrück), Prof. Dr. Bernhard Eitel (Heidelberg), Prof. Dr. Wulf Schiefenhövel (Andechs), Prof. Dr. Mark Stoneking (Leipzig), Prof. Dr. Elisabeth Vrba (New Haven).

Principal Investigators in Frankfurt: Volker Mosbrugger\*, Prof. Dr. Friedemann Schrenk. In Tübingen: Prof. Nicholas Conard Ph.D., Prof. Dr. Volker Hochschild.

Staff Members of the Research Center in Frankfurt: Dorothee Bauer, Knut Bretzke M.A. (until 31.7.2009), Dr. Angela Bruch, PD Dr. Miriam Haidle (Project Coordination), Dr. Christine Hertler, Dipl.-Biol. Chidi Nwokeji (since 1.8.2009), Patrick Schmidt M.A. (since 1.4.2009), Dipl.-Biol. Rebekka Volmer. In Tübingen: Prof. Dr. Michael Bolus, Dipl.-Inf. Zara Kanaeva, Dr. Andrew Kandel, Maria Malina, Dr. Michael Märker, Prof. Paul Goldberg Ph.D. (Visiting Professor from Boston University, Jun.-Aug. 2009).

The Research Center's second year was dedicated primarily to implementing the database created during the prior year. The structure of the database was developed into a fully functional final version. As part of a trial run, data from sites in Southern Africa were entered into the database. The research team also conducted field work in Africa, the Near East and Central Europe and collected data from excavated assemblages housed in museums. ROCEEH's network was developed and strengthened through the following sponsored activities: organizing a workshop in Cape Town, South Africa in February entitled "The interaction between environment and human expansions"; participating financially and organizationally in the 2<sup>nd</sup> Conference of the "African Association of Palaeanthropology and Palaeontology" in August in Arusha, Tanzania; organizing a 5-day symposium with workshops on the "Human Expansions and Global Change in the Pleistocene—Methods and Problems" in November in Frankfurt/M. The Senckenberg Research Center and the University of Tübingen formed the working group "Human Evolution and Ecology" (HEP) to forge increased scientific connections with the Research Center. The first edition of ROCEEH's biannual newsletter reporting on current research and new results appeared in the autumn of 2009. The intention of the newsletter is to keep existing cooperation partners up to date and awaken the interest of potential research partners. The newsletter can be downloaded on the Research Center's website accessible through [www.roceeh.net](http://www.roceeh.net).

### **ROCEEH Out of Africa Datenbank (ROAD)**

The entity relationship model was further enhanced in 2009 and then implemented using a PostgreSQL database system. Building on the foundation provided by JanusSuite (3Kon, Jena), Zara Kanaeva and Michael Märker refined the *ROAD* system to accommodate the specific needs of the project. With the help of the *ROAD* system, they successfully consolidated the PostgreSQL database system, Mapserver and several Web-GIS libraries. The implementation of a graphical user interface facilitates a simple, user friendly management system for both data and users. Data can be visualized analyzed and manipulated through Web-GIS functionalities, and users rights can be allocated. Most important, a backup strategy was developed and implemented for the entire system. The *ROAD* system is web-capable and accessible to the public (with limited user rights) through the project's homepage, [www.roceeh.net](http://www.roceeh.net). The team compiled and edited a handbook and user's manual containing descriptions of the tables contained in the database. The final version will be available on the website in early 2010.

To test the structure of the database, the procedure for data entry and the required analytical steps, the ROCEEH team decided to perform a test run. Through year's end, geographical, paleoecological, archaeological and bibliographical data for 163 find localities were entered into the database focusing on the Middle Stone Age of Southern Africa between 191,000 and 29,000 years before present (MIS 6-3). Partnerships were established with NEOTOMA, a database covering the paleoecology of the last five million years, and the SFB 806 "*Unser Weg nach Europa: Kultur-Umwelt-Interaktion und menschliche Mobilität im Späten Quartär*" (Our route to Europe: cultural-environmental interaction and human mobility in the Late Quaternary).

### **Data Collection and Field Work**

In addition to advancing the state of the database and extracting data from literature about Southern African localities, the scientists at the Research Center also performed supporting activities based on field work and research in museum collections. In South Africa, Andrew Kandel concluded the analysis of artifacts from Anyskop Blowout and Geelbek Dunes and began preparing a monograph about these localities. At the Iziko South African Museum, Christine Hertler examined the paleontological assemblages from Anyskop Blowout, Geelbek Dunes, Sea Harvest, Die Kelders and Swartklip. These localities will form the basis for paleoecological analysis using the eco-profiling method. Angela Bruch, together with Marion Bamford of the University of the Witwatersrand, Johannesburg, began an investigation of the macro-botanical remains from Sibudu Cave, KwaZulu-Natal. Prof. Paul Goldberg and Chris Miller supported the Research Center with geo-micromorphological investigations at Sibudu Cave and Diepkloof Rockshelter. With assistance from Angela Bruch the Working Group on African Past Vegetation (*WAVE*) was formed.

ROCEEH activities in East Africa included Christine Hertler's review of collections in the National Museum of Tanzania in Dar es Salaam. In cooperation with Prof. Anthony Marks of Southern Methodist University in Dallas, Andrew Kandel evaluated stone and ostrich eggshell artifacts from Mumba Rockshelter. The Universities of Frankfurt and Dar es Salaam organized a three-week field school near the archaeological and hominin localities of Makuyuni, Tanzania. Together with Prof. Dr. Charles Sanaane of the University of Dar es Salaam, Liane Giemsch and PD Dr. Ralf Schmitz from the LVR State Museum in Bonn led archaeological excavations in the Lower Manyara Beds. Christine Hertler and Friedemann Schrenk conducted surveys, as well as taphonomical and ecological studies, around Lake

Manyara. Together with Prof. Dr. Heinrich Thiemeyer and Prof. Dr. Andreas Junge of the University of Frankfurt, Michael Märker tested the application of geomagnetic and electrical resistance to the prospection of artifacts, mapped paleosols and undertook comparative studies using remote sensing maps.

In Armenia, Andrew Kandel and Dr. Boris Gasparyan of the National Academy of Sciences in Yerevan conducted a survey around Paleolake Vorotan. Additionally, they excavated for 12 days at Aghitu-3, the first cave site in Armenia with an Upper Paleolithic stratigraphy and well preserved organic remains, and completed the analysis of the finds. Angela Bruch continued paleobotanical studies in Armenia and Georgia within the framework of the Caucasus Project “*Die Umwelt des frühen Menschen in Armenien–Klima- und Vegetationsrekonstruktion für das frühe Pleistozän*” (The environment of early humans in Armenia–climate and vegetation reconstruction of the early Pleistocene) funded by the Volkswagen Foundation. The field work in Armenia fills existing gaps in data and profile entry, adds new dating results and opens new avenues for research. The first discovery in Armenia of a large mammalian fossil at least one million year old establishes new prospects for future research in Armenia. These results were presented in a workshop in Yerevan and will be documented in joint publications. Discussion, literature research and a 2-day field reconnaissance in Southern Georgia lay the foundation for a joint project with Armenian and Georgian colleagues about environmental reconstruction of early human landscapes with respect to paleoflora and paleofauna. Through meetings, reviewing collections of the Geological Survey of Iran and field trips, Angela Bruch discussed the possibility of expanding the research in Iran into the regions of Teheran and Tabriz. Dorothee Bauer treated and prepared the pollen samples collected from Armenia, Georgia and Iran. In Iran, the Research Center was supported by test excavations and surveys conducted by Nicholas Conard and Mohsen Zeidi in Ilam Province of western Iran, as well as Elham Ghasidian’s analysis of the Upper Paleolithic site Ghar-e Boof. Saman Heydari and Michael Märker evaluated data from Paleolithic surveys in the southern Zagros Mountains. Using GIS they created a model to improve prospection methods with the aim to locate new sites. In Syria the 2009 campaign focused mainly on the analysis of survey finds collected in the region of Ma’aloula. Andrew Kandel, Knut Bretzke and Nicholas Conard continued to expand the survey and prepared for an intensive field season in 2010.

Michael Bolus continued the analysis of the Middle Paleolithic and Aurignacian lithic artifacts from Geißenklösterle and furthered data collection from the cave sites of the Swabian Alb. Maria Malina digitalized profiles and other excavation data from the excavations at Hohle Fels near Schelklingen and analyzed data using GoCAD. She also coordinated the continuing excavations at Vogelherd and organized the wet screening and sorting of finds, led an 8-week excavation campaign at Hohle Fels, and completed technical and documentary work through the end of the year. A new cooperation project funded by the DFG began at the Lower Paleolithic site Schöningen in Lower Saxony.

During a stay in northeastern Spain, Michael Bolus analyzed finds from the site of Reclau Viver at the Museu Arqueològic Comarcal de Banyoles, focusing on the personal ornaments found in all of the archaeological layers. He visited the sites of Serinyà and reviewed the collections of several museums and institutions housing Lower Paleolithic to Magdalenian finds from the region. Under the framework of the VIGONI project “Pliocene-Pleistocene climatic trends on a latitudinal gradient from NW Germany to Central Italy” Angela Bruch completed the entry of climatic data from the Plio-Pleistocene of Northern Italy. Michael Märker and Dr. Florian Seiler of the German Archaeological Institute began a DFG project in July, 2009 about reconstructing the Classical cultural landscape of the Sarno Basin, Italy. This methodological contribution to ROCEEH has direct applications in reconstructing paleogeographical environmental conditions, paleogeomorphology, paleopedology and access to natural resources such as water.

## **Publications**

In 2009 the project team published a total of 25 research papers in which the work of the research center played a significant role:

- Bolus, M. 2009. Der Neandertaler – Verbreitung und Expansion einer europäischen Menschenform. In D. Bandini & U. Kronauer (eds.), *Früchte vom Baum des Wissens. 100 Jahre Heidelberger Akademie der Wissenschaft. Eine Festschrift der wissenschaftlichen Mitarbeiter.* Universitätsverlag Winter, Heidelberg, 21-33.
- Bolus, M. 2009. Aufbruch des modernen Menschen. Das Aurignacien. In *Archäologisches Landesmuseum Baden-Württemberg und Abteilung Ältere Urgeschichte und Quartärökologie der Eberhard Karls Universität Tübingen* (eds.), *Eiszeit. Kunst und Kultur.* Jan Thorbecke, Ostfildern, 92-44.

- Bramanti, B., Thomas, M. G., Haak, W., Unterlaender, M., Jores, P., Tambets, K., Antanaitis-Jacobs, I., Haidle, M.N., Jankauskas, R., Kind, C.-J., Lueth, F., Terberger, T., Hiller, J., Matsumura, S., Forster, P. & Burger, J. 2009: Genetic discontinuity between local hunter-gatherers and Central Europe's first farmers. *Science* 326, 137-140.
- Conard, N. J. & Bolus, M. 2009. Basislager der Kreativität. Die Höhlen der Schwäbischen Alb. In *Archäologisches Landesmuseum Baden-Württemberg und Abteilung Ältere Urgeschichte und Quartärökologie der Eberhard Karls Universität Tübingen (eds.), Eiszeit. Kunst und Kultur. Jan Thorbecke, Ostfildern, 113-115.*
- Conard, N.J. & Malina, M. 2009. Spektakuläre Funde aus dem unteren Aurignacien vom Hohle Fels bei Schelklingen, Alb-Donau-Kreis. *Archäologische Ausgrabungen Baden-Württemberg* 2008, 19-22.
- Conard, N.J., Malina, M. & Münzel, S.C. 2009. New flutes document the earliest musical tradition in southwestern Germany. *Nature* 460, 737-740.
- Conard, N.J., Malina, M. & Verrept, T. 2009. Weitere Belege für eiszeitliche Kunst und Musik aus den Nachgrabungen 2008 am Vogelherd bei Niederstotzingen-Stetten ob Lontal, Kreis Heidenheim. *Archäologische Ausgrabungen Baden-Württemberg* 2008, 23-26.
- Conard, N.J., Masri, M., Bretzke, K., Napierala, H.A., Welte, B. & Kandel, A.W. 2009. The 2008 Excavation at the Middle Paleolithic site of Wadi Mushkuna Rockshelter, Damascus Province, Syria. *Chroniques Archéologiques Syriennes*.
- Conard, N.J., Masri, M., Bretzke, K., Stahlschmidt, M. & Kandel, A.W. 2009. The 2008 TDASP Survey in the Damascus Province, Syria and the refinement of models of Paleolithic landuse. *Chroniques Archéologiques Syriennes*.
- Gabrielyan, I. & Bruch, A.A. 2009. The fossil Pomegranate (*Punica granatum* L. fossilis, Punicaceae) from Sisian site of South Armenia (Early Pleistocene) [in Russian]. *Flora, vegetation and plant resources of Armenia*.
- Haidle, M. N. 2009. How to think a simple spear? In S. A. de Beaune, F. L. Coolidge & T. Wynn (eds.) *Cognitive archaeology and human evolution*. Cambridge University Press, New York, 57-73.
- Haidle, M. N. 2009. Ein Speer ist ein Speer ist ein Speer? Kognitive Expansionen. In D. Bandini & U. Kronauer (eds.), *Früchte vom Baum des Wissens. 100 Jahre Heidelberger Akademie der Wissenschaft. Eine Festschrift der wissenschaftlichen Mitarbeiter*. Universitätsverlag Winter, Heidelberg, 35-41.

- Haidle, M. N. 2009. Mir ist heute gar nicht wohl! Erkrankungen und Verletzungen in der Altsteinzeit. In Archäologisches Landesmuseum Baden-Württemberg und Abteilung Ältere Urgeschichte und Quartärökologie der Eberhard Karls Universität Tübingen (eds.), *Eiszeit. Kunst und Kultur*. Jan Thorbecke, Ostfildern, 164-166.
- Haidle, M. N. 2009. Wege zur Kunst – Der Mensch als Schöpfer. In Archäologisches Landesmuseum Baden-Württemberg und Abteilung Ältere Urgeschichte und Quartärökologie der Eberhard Karls Universität Tübingen (eds.), *Eiszeit. Kunst und Kultur*. Jan Thorbecke, Ostfildern, 242-243.
- Haidle, M. N. & Smith, F. 2009. 600.000 Jahre Kehrwoche – Älteste Menschenfunde in Südwestdeutschland. In Archäologisches Landesmuseum Baden-Württemberg und Abteilung Ältere Urgeschichte und Quartärökologie der Eberhard Karls Universität Tübingen (eds.), *Eiszeit. Kunst und Kultur*. Jan Thorbecke, Ostfildern, 61-63.
- Hertler, C. 2009. Wandlungen in den Beziehungen zwischen Menschen und ihrer Umwelt. In D. Bandini & U. Kronauer (eds.), *Früchte vom Baum des Wissens. 100 Jahre Heidelberger Akademie der Wissenschaft. Eine Festschrift der wissenschaftlichen Mitarbeiter*. Universitätsverlag Winter, Heidelberg, 43-47.
- Märker, M. & Heydari-Guran, S. 2009. Application of data-mining technologies to predict Paleolithic site locations in the Zagros Mountains of Iran. Online Proceedings of the 37<sup>th</sup> Annual CAA Conference “Making History Interactive”, 2009 March 22-26, Williamsburg, Virginia. <http://www.caa2009.org/PapersProceedings.cfm>.
- Märker, M., Hochschild, V. & Kanaeva, Z. 2009. Multidisciplinary Integrative Georelational Database for Spatio-Temporal Analysis of Expansion Dynamics of Early Humans. Online Proceedings of the 37<sup>th</sup> Annual CAA Conference “Making History Interactive”, 2009 March 22-26, Williamsburg, Virginia. <http://www.caa2009.org/PapersProceedings.cfm>.
- Malina, M. 2009. Früher war nicht alles besser. Die Auswertung inkohärenter Grabungsdaten mit GoCAD am paläolithischen Höhlenfundplatz Hohle Fels. In R. de Beauclair, S. Münzel & H. Napierala (eds.), *Knochen pflastern ihren Weg. Festschrift für Margarethe und Hans-Peter Uerpman*. Verlag Marie Leidorf, Rhaden/Westf., 161-168.
- Malina, M. 2009. Kleinflächig und minutiös – Ausgrabungstechnik an urgeschichtlichen Fundplätzen. In Archäologisches Landesmuseum Baden-Württemberg und Abteilung Ältere Urgeschichte und Quartärökologie der Eberhard Karls Universität Tübingen (eds.), *Eiszeit. Kunst und Kultur*. Jan Thorbecke, Ostfildern, 267.

- Malina, M. & Ehmann, R. 2009. Elfenbeinspaltung im Aurignacien. Zur Herstellungstechnik der Elfenbeinflöte aus dem Geißenklösterle. *Mitteilungen der Gesellschaft für Urgeschichte* 18, 93-107.
- Micheels, A., Bruch, A. & Mosbrugger, V. 2009. Miocene climate modelling sensitivity experiments for different CO<sub>2</sub> concentrations. *Palaeontologia Electronica* 12(2), 6A. [http://palaeo-electronica.org/2009\\_2/172/index.html](http://palaeo-electronica.org/2009_2/172/index.html)
- Mosbrugger, V. & Haidle, M. N. 2009. The role of culture in early expansions of humans. In V. Sellin, E. Wolgast & S. Zwies (eds.), *100 Jahre Heidelberger Akademie der Wissenschaften, Die Forschungsvorhaben der Heidelberger Akademie der Wissenschaften 1909 – 2009*. Universitätsverlag Winter, Heidelberg, 15-19.
- Pelacani, S., Märker, M. & Rodolfi, G. 2009. Modelling the potential impact of groundwater dynamics on gully erosion and drainage basin evolution. In D.M. Ferrari & A.R. Guiseppi (eds.), *Geomorphology and Plate Tectonics*. Nova Science Publishers, Hauppauge/NY, 141-158.
- Serangeli, J. & Bolus, M. 2009. Europe during the Last Glaciation: Differences in perception North and South of the Alps. *Preistoria Alpina* 44, 9-15.

### Conferences and lectures

In 2009, the project team organized a workshop on “The interaction between environment and human expansions” in Cape Town, South Africa and a symposium with workshops on “Human Expansions and Global Change in the Pleistocene–Methods and Problems” in Frankfurt/M., Germany. In addition, the project team participated in 19 additional conferences. In summary, the team organized two conferences, one session, held 30 lectures and presented six posters. Furthermore, the project team introduced the project and components of the project’s work 19 times at various colloquia, lecture series, as part of Tübingen’s *Studium generale*, and at the *Akademientag* in Berlin.

- 26.01.2009 Tübingen, Germany: Seminar of the Evolution and Ecology Forum. *Paper Hertler*: Island life: Habitat and Ecology of Pleistocene *Homo erectus* in Java
- 11.02.2009 Ulm, Germany: Vortragsreihe des Ulmer Museums „Vom Neandertaler zum modernen Menschen“. *Paper Bolus*: Die Neandertaler – Eine europäische Menschenform verlässt ihren Heimatkontinent
- 23.-24.02.2009 Cape Town, South Africa: ROCEEH Workshop “The interaction between environment and human expansions”. *Paper Kandel, Bolus, Bruch, Haidle, Hertler, Märker*: The Role of Culture in Early Expansions of Humans – A New Research



- Center. *Paper Bruch* Pleistocene vegetation and climate – methods and possibilities.
- Paper Hertler*: Routes and timing of mammalian migrations over the Sunda Shelf
- 09.03.2009 Cape Town, South Africa: Seminar of the Department of Archaeology at the University of Cape Town. *Paper Hertler*: Eco-Profiling: Characterizing Hominin Habitats in Pleistocene Java
  - 22.-26.03.2009 Williamsburg, USA: CAA 2009 “Making History Interactive”. *Paper Märker, Hochschild, Kanaeva*: Multidisciplinary integrative georelational database for spatio-temporal analysis of expansion dynamics of early humans. *Poster Märker, Heydari, Conard, Kanaeva, Hochschild*: The application of a georelational database and data mining technologies for predictive site modelling for the Palaeolithic of the Iranian Plateau.
  - 31.03.-01.04.2009 Chicago/Illinois, USA: Annual Meeting of the Paleoanthropology Society. *Paper Hardy, Bolus, Conard*: How different were Neanderthals? Stone tool function in Aurignacian and Middle Paleolithic levels at Hohle Fels, Germany
  - 14.-18.04.2009 Ljubljana, Slovenia: 51. Tagung der Hugo Obermaier-Gesellschaft. *Paper Bolus, Bruch, Haidle, Hertler, Kandel, Märker*: The Role of Culture in Early Expansions of Humans – A New Research Center. *Paper Kandel*: Making sense of space in the Geelbek Dunes of Western Cape Province, South Africa. *Poster Kandel*: Environmental reconstruction across the Late Pleistocene to Holocene transition at Baaz Rockshelter, Damascus Province, Syria
  - 17.4.2009 Heidelberg, Germany: Heidelberger Akademie der Wissenschaften. *Paper Hertler*: The role of culture in early expansions of humans
  - 21.04.2009 Stuttgart, Germany: Vortragsreihe anlässlich der Großen Landesausstellung Baden-Württemberg „Eiszeit – Kunst und Kultur“. *Paper Bolus*: Europa im Umbruch – Die letzten Neandertaler und die ersten anatomisch modernen Europäer
  - 30.04-02.05.2009 Dresden, Germany: International Meeting on Geoarchaeology in Central Europe. *Paper Vogel, Märker*: Reconstruction of the pre-AD 79 paleosurface of the Sarno river basin using datamining and classification and regression methods. *Poster Heydari, Märker, Conard*: Geoarchaeologic predictive model for Paleolithic sites in the Zagros Mountains of Iran
  - 7.5.2009 Tübingen, Germany: Studium generale „Evolution: Paradigmen - Provokationen“. *Paper Haidle*: Die kognitive Voraussetzung für die Ausbreitung der Menschen

- 21.05.2009 Nürnberg, Germany: Tagung „Die Fruchtbarkeit der Evolution. Humanismus zwischen Zufall und Notwendigkeit“. *Paper Hertler*: Der deutsche Darwin – Ein biologisch-anthropologischer Blick auf Ernst Haeckel.
- 27.5.2009 Berlin, Germany: Akademientag „In den Netzen der Sprache“. *Posterpräsentation der Forschungsstelle*: Wie der Mensch zur Sprache kam - Sprachentwicklung der frühen Hominiden
- 10.6.2009 Nürnberg, Germany: Vortragsreihe der Naturhistorischen Gesellschaft Nürnberg „Darwin 2009“. *Paper Haidle*: Gene, Traditionen, Erfahrungen – Zur Entwicklung des menschlichen Denkens
- 25. Jul. 2009 Tübingen, Germany: ZNA Seminar, University of Tübingen. *Paper Kandel*: Tubingen-Armenian Paleolithic Project (TAPP): Survey and Excavation in the Vorotan Basin.
- 8.7.2009 München, Germany: Carl Friedrich von Siemens Stiftung. *Paper Haidle*: Kreativität, Kunst, Religion – Kognitive Entwicklung und soziale Dimension
- 16.-21.08.2009 Arusha, Tanzania: 50th Year of Zinjanthropus Discovery, 2nd Bi-annual Conference of the East African Association for Palaeoanthropology and Palaeontology (EAAPP). *Paper Hertler, Bolus, Bruch, Conard, Haidle, Hochschild, Kanaeva, Kandel, Märker, Mosbrugger, Schrenk*: The Role of Culture in Early Expansions of Humans – A New Research Center. *Paper Hochschild, Kanaeva, Märker, Bolus, Kandel, Hertler, Bruch*: ROAD - An Internet-Based Spatial Database for the Assessment of Early Human Expansions. *Paper Sanaane Hertler, Schrenk*: Pleistocene Primates in their Habitat at Makuyuni, Monduli District. *Poster Haidle, Bolus, Bruch, Hertler, Kanaeva, Kandel, Märker*: The Role of Culture in Early Expansions of Humans – ROCEEH: A New Research Center
- 02.-06.09.2009 Napoli, Italy: 13<sup>th</sup> Congress of the Regional Committee on Mediterranean Neogene Stratigraphy. *Paper Bruch, Martinetto, Bertini, Vassio, Fusco*: Quantification of Pliocene-Pleistocene climate in Northern and Central Italy based on palaeofloral data. *Paper Utescher, Bertini, Bruch, Mosbrugger, Pross, Wilde* Climate and vegetation variability in the early Pliocene – study on a latitudinal gradient from NW Germany to Central Italy. *Paper Vogel, Märker*: Reconstruction of the pre-AD 79 topography and environment of the Sarno river plain using core drillings and data mining technologies
- 07.-11.09.2009, Rimini, Italy: GEOITALIA. *Paper Märker, Rodolfi*: Soil erosion assessment in Italy: processes, landforms and methods

- 17.9.2009 Riva del Garda, Italy: EAA 15th Annual Meeting, Session “Innovation and evolution”. *Paper Stolarczyk & Haidle*: Innovative potential of chimpanzees. A comparative study of the tool behaviour
- 28.9.2009 Heidelberg, Germany: GWK-Sitzung. *Paper Haidle*: The Role of Culture in Early Expansions of Humans
- 28.09-01.10.2009 Izmir, Turkey: NECLIME annual meeting. *Paper Kern, Harzhauser, Mandic, Roetzel, Ćorić, Bruch, Zuschin*: Millennial-scale vegetation dynamics in an estuary at the onset of the Miocene Climate Optimum (Korneuburg Basin, Austria). *Paper Akkiraz, Akgün, Utescher, Wilde, Bruch, Mosbrugger*: Palaeoflora and climate of lignite-bearing Middle Miocene sediments in Seyitömer and Tuncbilek Basins, Kütahya Province, NW Turkey. *Paper Micheels, Bruch, Eronen, Fortelius, Mosbrugger, Utescher*: Climate sensitivity on increased CO<sub>2</sub> in the Late Miocene. *Paper Utescher, Bertini, Bruch, Mosbrugger, Pross, Wilde*: Evidence of marine isotope signals in Cenozoic continental climate curves based on palynological data – quantification of climatic change. *Paper Iamandei, Iamandei, Bruch*: Climatic and environmental significance of Pliocene Flora within Carpathian Area, Romania.
- 05.-07.10.2009 Bonn, Germany: 79. Jahrestagung der Paläontologischen Gesellschaft. *Paper Marjanyan, Harutyunova, Harutyunyan, Vasilyan, Gabrielyan, Bruch* Palaeoenvironmental interpretations on the faunal assemblage of Palaeovorotan river basin (Early Pleistocene, South Armenia). *Paper Scharrer, Bruch, Gabrielyan* Vegetations- und Klimaveränderungen im Kleinen Kaukasus im frühen Pleistozän - Vorläufige Ergebnisse.
- 6.10.2009 Frankfurt/M. , Germany: Wissenschaftlicher Beirat der Senckenberg Gesellschaft für Naturforschung. *Paper Haidle*: The Role of Culture in Early Expansions of Humans
- 06.-09.10.2009 Tarragona, Spain: Tagung „The Neanderthal Home: Spatial and Social Behaviours”. *Paper Conard, Bolus, Münzel*: Middle Paleolithic land use and spatial organization in the Swabian Jura, southwestern Germany
- 16.10.2009 Heidenheim, Germany: 14. Heidenheimer Archäologie - Kolloquium „Opfer – Gestalter – Zerstörer. Mensch und Umwelt in der Archäologie Südwestdeutschlands“. *FestPaper Haidle*: Paradiesische Zeiten? Menschen in eiszeitlicher Umwelt
- 19.-23.10.2009 Beijing, China: International Symposium on Paleoanthropology in Commemoration of the 80th Anniversary of the Discovery of the First Skull of Peking Man and the First Asian Conference on Quaternary Research. *Paper Hertler, Bolus,*

- Bruch, Haidle, Kanaeva, Kandel, Märker, Mosbrugger, Schrenk, Conard, Hochschild:*  
The Role of Culture in Early Expansions of Humans – A New Research Center
- 20.10.2009 Heidelberg, Germany: Vortragsreihe der Mitarbeiter der Heidelberger Akademie der Wissenschaften. *Paper Bolus:* Die Neandertaler – Leben und Ausbreitung einer erfolgreichen Menschenform
  - 29.-30.10.2009 Köln, Germany: Data Management Workshop, organized by CRC Transregio 32 and CRC 806. *Poster Schmidt, Märker, ROCEEH-Team:* ROAD: A multidisciplinary georelational database for spatio-temporal analysis of expansion dynamics of early humans. *Poster Schmidt, Märker, ROCEEH-Team:* Spatial assessment of early human expansions using ROAD: an example from Southern Africa.
  - 03.11.2009 Berlin, Germany: Gemeinsame Fachtagung des Deutschen Geoforschungszentrums (Potsdam), Alfred-Wegener-Instituts (Bremerhaven) und der Senckenberg Gesellschaft für Naturforschung (Frankfurt/Main). *Paper Hertler, Bruch, Schrenk, Mosbrugger:* Klimawandel und Evolution der Menschen
  - 04.11.2009 Frankfurt/M., Germany: Kolloquium des Instituts für sozial-ökologische Forschung. *Paper Hertler:* ROCEEH – Ein Projekt zur Erforschung der Ausbreitungsmuster früher Hominiden
  - 04.11.2009 Tübingen, Germany: Studium generale „Zwei große Landesausstellungen und Tübinger Grabungen. Kunst und Kultur der Eiszeit und die Entdeckung des Königreiches Qatna“. *Paper Haidle:* L’art pour l’art? Wege zur frühen Kunst
  - 11.11.2009 Tübingen, Germany: Studium generale „Zwei große Landesausstellungen und Tübinger Grabungen. Kunst und Kultur der Eiszeit und die Entdeckung des Königreiches Qatna“. *Paper Bolus:* Die ersten modernen Menschen Europas
  - 22.-26.11.2009 Santiago, Chile: IIX Congreso Geologico Chileno. *Paper Soto Bauerle, Märker:* Procesos dinamicos actuales del semiarido chileno asociados a la generacion de condiciones de riesgo. Salamanca, Region de Coquimbo
  - 25.11.2009 München, Germany: Bayerische Akademie der Wissenschaften und Bayerische Staatsbibliothek „Grenzfragen. Naturwissenschaften und Geisteswissenschaften im Gespräch“. *Paper und Podiumsdiskussion Bolus, Schrenk:* Menschwerdung und Kultur. Die Begegnung von Paläontologie und Urgeschichte im Heidelberger Akademieprojekt „The role of culture in early expansions of humans“
  - 1.12.2009 Hanoi, Vietnam: 19<sup>th</sup> Congress of the Indo-Pacific Prehistory Association, Session A1“Cognitive competence, cultural failure? Is the modernity discussion valid for

the Indo-Pacific area?”. *Organisation of session Haidle & Pawlik, Paper Haidle:*

Introduction – Pleistocene Modernity: An exclusively Afro-European issue?

- 09.12.2009 Tübingen, Germany: Vortragsreihe des Forum Scientiarum. *Paper Bolus:*  
Die Anfänge von Kunst und Musik und die Frage der kulturellen Modernität
- 18.12.2009 Frankfurt/M., Germany: Institut für sozial-ökologische Forschung Expert-  
Workshop „Sozial-ökologische Erforschung klimabedingter Biodiversitätsveränderungen  
in Versorgungssystemen“. *Paper Hertler:* Habitatveränderungen und Ernährungssysteme  
im Pleistozän.

## **Teaching**

In conjunction with their own research activities, the members of the project team strive to communicate the questions and results of their research to undergraduate students and to support the qualifications of graduate candidates:

- Teaching courses at the University of Frankfurt/Main: Christine Hertler
- Teaching courses at the University of Tübingen: Michael Bolus, Michael Märker
- Teaching courses in the framework of the International Erasmus Mundus Master's Program "Quaternary and Prehistory": Christine Hertler
- Supervision of Master's, Diploma and Doctoral Theses: Michael Bolus, Miriam Haidle, Christine Hertler, Andrew Kandel and Michael Märker
- Supervision of archaeotechnical apprentices: Maria Malina

In 2009, Michael Bolus was appointed as an extraordinary professor by the Faculty of Geosciences at the Eberhard Karls University of Tübingen.