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Post-Doctoral Research

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Coupling semi-continuous radiocarbon distribution and advanced molecular characterization to con
2014-present

Dr. Prosper Zigah received his Ph.D. from the University of Minnesota, Minneapolis. As a postdoct
Ann McNichol (NOSAMS) and Dr. Daniel Repeta (MC&G), Prosper is using semi-continuous radioc
advanced spectrometric methods to understand the range and distribution of radiocarbon within me
dissolved organic carbon (DOC) and to link these to specific molecular properties in order to accur
through DOC and how DOC cycles. Prosper is also working on novel approaches to isolate and pu
from the deep ocean DOC for isotopic and molecular characterization. Together, these efforts woul
cyclin of molecules within the DOC, and help constrain the cycling of the largest reservoir of reduc



Reconstructing reservoir age for a better understanding of carbon cycling
2013-2015

Dr. Guillaume Soulet received his Ph.D. at the University of Aix-Marseille III, France. As a WHOI po:

calculate and reconstruct ^{14}C reservoir age offset. He is using the developed methodologies and re-understand carbon cycling and hydrologic changes of the Black Sea during the Holocene. He is currently measuring the atmospheric ^{14}C of aquatic sediments devoid of terrestrial macrofossil: the ^{14}C isocline.



Constraining Sources & Fates of Organic Molecules in the Oceans 2010-2013

Dr. Steven R. Beaupre received his Ph.D. from the department of Earth System Science at the University of California, San Diego. He is currently a postdoctoral investigator at WHOI. Steve used radiocarbon to constrain age spectra in complex natural and particulate organic carbon. He focused on 1) improving methods to separate populations of carbon on thermal stability, 2) developing an interface between sample extraction methods and NOSAMS measurement, and 3) modeling the global distribution of radiocarbon in the marine organic and inorganic carbon. Novel observations and interpretations are fundamental to constraining the origin, persistence, and fates of molecules in the sea, and hence their significance within the global carbon cycle.



Radiocarbon Analysis of Ultra-Small Samples and Polar Biomarkers 2010-2014

Dr. Sunita Shah did her Ph.D. work at Harvard University. As a postdoctoral scholar advised by Ann Van Mooy (MC&G), Sunita developed methods to make compound-specific radiocarbon measurements to quantify the effect that sedimentary archaeal communities have on TEX₈₆-based paleo-sea surface temperatures. To accommodate the small sample sizes, she also explored the use of an elemental analyzer to combine with radiocarbon measurement, reducing the process blank associated with closed-tube combustion and tested reduced-volume gas chromatography for the measurement of samples containing <5 micrograms of carbon.



Development of Interfaces for CFAMS 2008-2010

Dr. Cameron McIntyre received his Ph.D. from Macquarie University, Sydney, Australia. As a postdoctoral fellow at WHOI, he designed and constructed a novel gas chromatograph-combustion system for the continuous-flow ^{14}C accelerator mass spectrometry (CFAMS).

system (CFAMS). The complete GC-AMS system has been successfully operated and the first continuous radiocarbon measurements recorded. This technological breakthrough allows the rapid analysis of carbon and also paved the way for other analytical instruments to be coupled to the continuous-flow AMS system instrument and method development and their application to geochemical research.



Radiocarbon Dating Holocene Sea Levels 2008-2012

Dr. Andrea Hawkes did her Ph.D. work at the University of Pennsylvania. As a postdoctoral scholar at the University of Pennsylvania, she worked with USGS scientist Jeff Williams, Jeff Donnelly and USGS scientist Jeff Williams, Andrea dated basal peat samples from Bermuda in order to establish a continuous record of sea-level rise in Bermuda sea-level record that will be used to better understand North American deglacial history. She is also working on a high-resolution hurricane record for the Atlantic coast. The laminated sediments may allow for seasonal/yearly resolution hurricane record for the Atlantic coast. The laminated sediments may allow for seasonal/yearly resolution hurricane record for the Atlantic coast. Dr. Hawkes and colleagues want to look back over the past 10,000 years in the geologic record to get a full range of possible hurricane scenarios. This record spans times when the climate was different than today, providing important clues to how climate affects the intensity and frequency of hurricanes and what that may mean for Earth's climate changes in the future.



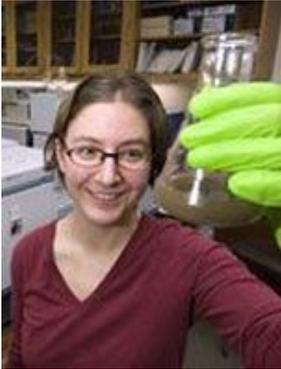
Continental Erosion: Radiocarbon Dating of Individual Organic Molecules from River Sediments 2007-2010

Dr. Valier Galy, received his Ph.D. at CRPG-CNRS, Institut National Polytechnique de Lorraine. As a postdoctoral scholar at the University of Pennsylvania, he worked with Tim Eglinton and Bernhard Peucker-Ehrenbrink, Valier worked on coupling radiocarbon measurements of molecular biomarkers with inorganic isotope tracers to study the source, transport and fate of organic carbon in the Brahmaputra river basin. He developed a record of the spatial and temporal variability of the sedimentary carbon system as well as characterizing petrogenic and organic carbon phases in these sediments. Radiocarbon dating shows that 50% of the carbon initially present in the Himalayan rocks is conserved during the erosion cycle. He is currently a staff scientist at WHOI.



Continuous Flow AMS

Dr. Ernst Galutschek received his Ph.D. from the University of Technology Vienna, Vienna, Austria. He worked as a Postdoctoral Investigator with Dr. Mark Roberts on the construction and initial characterization of the second-generation ion source, in conjunction with an AMS system, allows for the monitoring of ^{14}C in a continuous flow system. He worked to further develop a key component of the new system, the gas-accepting microwave-plasma ion source. He is currently a Postdoctoral Investigator at Energy of Canada Limited, Chalk River, Ontario, Canada.



Transport of Terrestrial Organic Carbon

2005-2007

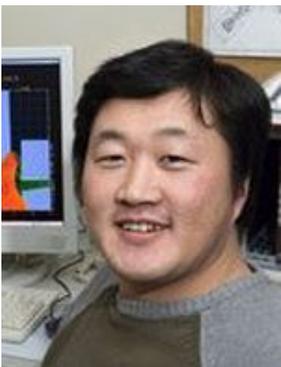
Dr. Angela Dickens, a Postdoctoral Scholar who received her PhD from the Department of Chemistry, University of Washington, Seattle, Washington, is working to understand how different forms of organic carbon (OC) move through the environment. Her postdoctoral research focused on using radiocarbon measurements to constrain the residence time of terrestrial vascular plant-derived OC is transported via river systems to the oceans. These residence times vary depending on the properties of the watershed (e.g. size, relief, and climate) and, in particular, on the residence time of OC within the watershed (e.g. in soils or floodplains). An understanding of these residence times is fundamental to our comprehension of the dynamics of carbon cycling, however, our current understanding of these time scales is limited.



New Applications for Continuous-Flow AMS

2005-2007

Dr. Brad Rosenheim, a Postdoctoral Investigator who received his Ph.D. from the Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, Florida, helped with the development of the Continuous-flow AMS for Carbon-14 measurement with Dr. Mark Roberts. This instrument, the first of its kind, will accept a wide range of sample types including GC, LC, automated carbonate preparation, and laser ablation. His specific interest is in the development of rapid analysis of carbonates to scan for the radiocarbon bomb curve and provide a first order age model. This will enable easy and rapid assessment of the age models of deep sea corals, zooxanthellate corals,



2004-2006

Dr. Baoxi Han, a Postdoctoral Investigator who received his Ph.D. from the Institute of Heavy Ion Physics, China, worked with Dr. Mark Roberts on the development of the Continuous-flow Accelerator Mass Spectrometry (CFAMS) system. Specifically, his efforts focused on ion optical modeling and design of the CFAMS beam line. In addition, he worked on the development of the data acquisition system and was involved in the research and development of the CFAMS system.

Other Postdoctoral Staff

Dr. Pascale Poussart, Postdoc Scholar - 9/2004 - 3/2006 from Harvard worked with Konrad Huguenot and Timothy Eglinton radiocarbon biomarkers in laminated ocean sediments.

Dr. Albert Benthien, Postdoc Investigator - 1/2003 - 1/2005, from University of Bremen, worked with Bob Schneider constructing a prototype gas ion source, a programmed-temperature combustion system.

Dr. Gesine Mollenhauer, Postdoc Scholar - 11/2002 - 5/2004, from University of Bremen, worked with Tim Eglinton and John H. Johnson on sedimentology."

Dr. Sang-Wook Kim, Postdoc Investigator - 11/1999 - 6/2002, a plasma engineer trained at the University of Chicago and the University of Bremen, worked with Bob Schneider developing the microwave plasma ion source for continuous flow AMS.

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