

# Gift Supports Storm Water Research by Undergrads

A recent student research gift from the Paul Galvin Memorial Foundation Trust to Biosphere 2 will support the development of a monitoring and experiment program to better understand the chemistry of storm-water run-off, its impacts on ecosystems, and its potential application in water harvesting and irrigation of landscaping and gardening. The program will be run under the direction of Dr. Mitchell Pavao-Zuckerman, Assistant Research Professor with B2, and will fund exclusively undergraduate student-directed research projects. The research program will interface with existing student support (e.g., through programs such as the National Science Foundation-supported B2 Research Experiences for Undergraduates Program, and the UA Undergraduate Biology Research Program) and also support the

offering of directed research hours for credit and opportunities for honors thesis projects through the students' home departments at UA. The Storm Water Application and Monitoring Program (SWAAMP) will extend B2's outreach missions by providing information for Pima County and City of Tucson environmental managers and local stakeholders who are currently developing storm-water best management practices (BMPs) and regulations.

As arid cities such as Tucson grow in size, their demand for water resources increases greatly. One strategy to meet this need is to reconnect hydrologic flows in cities to capture rain-water and storm-water runoff through various water-harvesting approaches. Using storm water for irrigation and gardening presents challenges because of the potential for pollutants from the urban environment to

enter and concentrate in ecosystems. The flashiness of rain events in Tucson exacerbates this issue, as roads can sit for weeks or months accumulating pollutants before storms wash them into areas selected or designed to capture runoff for use. Thus, understanding the potential benefits and risks in using storm water for domestic and commercial irrigation purposes is an important application of ecohydrology research towards urban sustainability. The major questions addressed by the SWAAMP program include: (1) what are nitrate and heavy-metal loads to BMPs already in place in Tucson (curb-cuts, rain gardens, swales); (2) how do these chemical loadings impact normal ecosystem functions relating to nutrient cycling and plant growth; and (3) if storm-water runoff is used to grow plants, will it impact plant health or potentially transfer dangerous chemicals to people? ■

## Third Annual Amazon-PIRE Field Course Held in Brazil

From June 27 to July 9, Amazon-PIRE (Partnership for International Research and Education) held its third annual international field course on tropical forest dynamics and biogeochemistry in collaboration with the Instituto Nacional de Pesquisas da Amazônia (INPA) in Manaus, Brazil (<http://lba.inpa.gov.br/lba>). The course took place at three research sites near Manaus in the Amazon basin: the Alphonso Ducke Reserve, the Cuiciras Reserve (site of the longest continually operating eddy flux tower in the Amazon), and the Biological Dynamics of Forest Fragments Project (BDFFP), a 1000 km<sup>2</sup> landscape of primary rainforest, forest fragments, and a matrix of grassland and regenerating forest, that is the site of the world's longest-running experimental study of habitat fragmentation.

With the overall motivating question, What is the future of Amazon forests under climate change?, the primary theme for the 2010 summer field course and

field projects was "Understanding the Amazonian mosaic: from plateaus to valleys, from primary to secondary forests."

Seventeen instructors from universities and government agencies in Brazil, as well as instructors from the University of Arizona and Harvard University, met with 22 students from the U.S. and Brazil to focus on the effect of topography on forest dynamics and interactions with the atmosphere.

Amazon-PIRE, directed by ecology and evolutionary biology assistant professor and Biosphere 2 science steering committee member Scott Saleska, is a partnership between the U.S. and Brazil. U.S. funding is provided by the National Science Foundation's Office of International



Students learn how to prepare a Licor 6400 for leaf level photosynthesis measurements.

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For more information about Amazon-PIRE, see [www.amazonpire.org](http://www.amazonpire.org). ■