STOCKTON COLLEGE

THE RICHARD STOCKTON COLLEGE OF NEW JERSEY

Stockton Professor Uses Computational Science to Understand How Ecosystems Function

Dr. Russell Manson Travels to Iceland to Collect Data

For Immediate Release

Monday, May 23, 2011

Contact: **Tim Kelly**
Susan Allen
Office of Public Relations
Galloway Township, NJ 08240
Tim.Kelly@stockton.edu
(609) 652-4950

Galloway Township, NJ- "How fast does a stream breathe," asked Dr. Russell Manson, associate professor of computational science at The Richard Stockton College of New Jersey.

This is not a trick question; it's one real life application of computational science. Manson, a Galloway Twp. resident, recently traveled to Iceland and utilized a combination of cutting-edge technology with mathematics to find answers that may help us better understand our world and

control on organic carbon fluxes in networks of running fresh water. However, little is known about how changes in climate will influence these fluxes."

Some researchers are also searching for a scientific "holy grail;" a universal theory of living systems known as the metabolic theory of ecology. Manson said, "Our research contributes to this conversation but there is still a long way to go."

Measuring and adding up the individual metabolisms of each living organism within the stream is impossible, so the research team measured the dissolved oxygen level in the stream over a defined period. This method measures the total oxygen used by the ecosystem.

Manson explained, "One aspect of the metabolic theory of ecology hinges on the relationship between metabolism and temperature. We all know that temperature and metabolism are related. You only need to raise your metabolism by undertaking aerobic exercise and you feel your temperature rise also."

But comparing metabolism in different streams at different temperatures is fraught with difficulty. Manson said, "The complication is that stream metabolisms differ under varying latitude, altitude, temperature, sunlight and stream geology." Most streams carve through regions of varying elevation and are exposed to varying levels of sunlight. Experiments performed in the laboratory can control variables such as these, but the results are synthetic.