# US Army Corps of Engineers

## Professional Experience

**Research Physical Scientist,** Environmental Laboratory, U.S. Army Engineer Research and Development Center, Vicksburg, MS., 2008 to present.

- Principal Investigator on work unit under the Environmental Benefits Analysis research program
  - Conceptual Model Building Tool
- Incorporation of an individual-based fish bioenergetics model into a high fidelity water quality model, CE-QUAL-ICM (sponsored by the System-wide Water Resources Program)
- Application of the coupled fish/water quality model to assess environmental impacts of Atlantic menhaden in Chesapeake By (co-sponsored by the System-wide Water Resources Program and the Chesapeake Bay Program)

**Oceanographer,** Contracted by U.S. Geological Survey Coastal and Marine Geology Program (employed by Environmental Careers Organization and Integrated Statistics), Woods Hole, MA, 2001 to 2008.

- Analysis and publication of time-series oceanographic data
- Processing and analysis of sea bottom photographs
- Validation of wave and sediment transport numerical models

**Graduate Research Assistant,** Mechanical and Aerospace Engineering Department, University of Florida, Gainesville, FL, 2004 to 2008.

- Environmental aerosol research
- Optical/Laser-based diagnostics (theoretical and applied)
- Flow cytometry research (improvements in single particle analysis)


**Dr. P. Soupy Dalyander**

Research Physical Scientist
ERDC, Environmental Laboratory
3909 Halls Ferry Rd., Vicksburg, MS 39180
601-634-4612
Patricia.A.Daylander@usace.army.mil


## Education

- **Ph.D.,** Mechanical Engineering, 2008
  University of Florida, Gainesville, FL
- **M.S.** Mechanical Engineering, 2006
  University of Florida, Gainesville, FL
- **M.S.** Geological Oceanography, 2001
  Oregon State University, Corvallis, OR
- **B.S.** Physics, Mathematics, 1999
  Eckerd College, St. Petersburg, FL

## Product Development

- **CEMCAT:** Conceptual Ecological Model Construction Assistance Toolbox. Desktop computer program to facilitate the creation and visualization of conceptual ecological models
- **CE-QUAL-ICM w/FBM:** High fidelity spatially and temporally resolved water quality model, with explicit modeling of fish bioenergetics. Designed to assess the impact of higher trophic levels (e.g., planktivorous fish) on eutrophication

## Awards/Honors

- 2010 ERDC Research and Development Award for CE-QUAL-ICM w/FBM Project
- 2008 Dissertation of the year, Mechanical and Aerospace Engineering Department, U. of Fl.
- 2007 Induction in Tau Beta Pi Engineering Honor Society, Florida Alpha chapter
- 2005 USGS STAR award as part of the Massachusetts Bay Project team
- 2004-2007 National Science Foundation Graduate Research Fellowship

## Selected Publications & Conference Presentations


- Dalyander, P.S. (2009). Integration of an Individual-Based Fish Bioenergetics Model into a Spatially Explicit Water Quality Model: Chesapeake Bay. Oral Presentation, National Conference on Ecosystem Restoration, Los Angeles, CA
- Dalyander, P.S., Gornushkin, I., and D.W. Hahn (2008). Numerical Simulation of Laser-Induced Breakdown Spectroscopy: Modeling of Aerosol Analysis with Finite Diffusion and Vaporization Effects. *Spec. Acta B* 63, 293-304.
- Dalyander, P.S., and D.W. Hahn (2008). Excimer Laser Photofragmentation/Fragment Detection for Analysis of the Oxygenated Hydrocarbon Ethyl-3-Ethyoxypropionate (EEP): Implications for Atmospheric Monitoring. *Appl. Spec.* 62, 1028-1037.
- Alexander (formerly Dalyander), P.S., and R.A. Holman (2004). Quantification of Nearshore Morphology Based on Video Imaging. *Mar. Geo.* 208, 101-111.


## Specialized Skills

- Quantitative and statistical analysis of time-series data
- Numerical model development, application, and validation (multiple programming languages, including Fortran, C, Matlab)
- Desktop software development (Visual Basic)
- Data dissemination/report publication, in traditional formats as well as electronic (PDF) and on-line (HTML) presentation (including meeting Section 508 compliance)
- Data acquisition and analysis with optical (diagnostic lasers, spectrometers, etc) and oceanographic (MIDAS, VMCMs, ADCPs, etc.) instrumentation, and automated systems control (Daqview, Labview)