

SURESH-KUMAR SANTHANA-VANNAN

Environmental Science Division

Oak Ridge National Laboratory

P.O. Box 2008, MS 6407

Oak Ridge, TN 37830

(Phone): 865-241-6181 (E – Mail): santhanavans@ornl.gov

Education:

- **Master of Science** (August 2001 – May 2003)
University of Maryland
College Park, MD
- **Bachelor of Engineering** (August 1997 – May 2001)
Anna University
Chennai, India

Experience:

- Currently working as a Research Associate at **Oak Ridge National Laboratory-DAAC (Distributed Active Archive Center)** on development of Web based tools and software for satellite data processing, development and management of WebGIS system, managing and analyzing Geo-Spatial data (March 2005 – present)
- Worked as a Faculty Research Assistant at the **University of Maryland, Department of Geography** on WebGIS, software development for assisting active fire monitoring (June 2003 – February 2005)
- Worked on burnt area validation using Landsat data at **NASA Goddard Space Flight Center** (October 2001 – May 2003)
- Assisted in developing a Panchayat (sub-County level) resource information system at the **Institute of Remote sensing**, Chennai (June 1999 – August 1999)

Computer Skills:

- **Programming:** Visual Basic, JavaScript, ASP, XML, HTML, ActiveX, PHP, Perl
- **Databases:** MSSQL Server 2000, used SQL server extensively in conjunction with ArcSDE, MySQL
- **GIS software:** Arcview 3.x, PC-Arcinfo, ArcGIS, ArcSDE, Mapobjects, ArcObjects.
- **WebGIS:** OpenGIS specifications (WMS, WFS, WCS), Minnesota Map server, ArcIMS, ArcGIS Server.
- **Image processing software:** ENVI, ERDAS Imagine, IDRISI, PCI – Geomatica, GDAL

- **Operating Systems:** Red Hat LINUX, UNIX, Windows XP, 2000 Advanced Server, 98, 95 and NT
- Working knowledge of C, FORTRAN, JAVA, Microsoft Office Suite, Grads, Microstation, AUTOCAD, MATLAB and Oracle

Projects:

- Developed Perl, JavaScript, DOS and UNIX shell scripts for bulk processing of satellite data and ingest into Web based systems.
- Implemented AJAX (Asynchronous JavaScript and XML) web technology for seamless web pick lists. Refer to: <http://webmap.ornl.gov/magt2/mas.html>
- Implemented new tools within web framework using PHP, Perl, JavaScript for raster query, analysis and information discovery. Refer to <http://daac.ornl.gov/mapserver.shtml> for more information.
- Used OpenSource CGI for web based GIS programming.
- Development of an e-mail based alert system using MapObjects2.2 and Visual Basic 6.0. The system uses data from ArcSDE and creates JPGs of user-defined areas illustrating the location of fire pixels. This is completely automated.
- ArcSDE database management through SDE and SQL server scripts. Developed a number of scripts for managing data, creating real-time subsets and general administration of the WebGIS system
- Development of a WebGIS system using ArcIMS, ArcSDE and MSSQL server 2000. The system provides active fire data near real-time through a series of customizable maps. Various database level optimizations were implemented to serve over two million records to users over the web. Refer to <http://maps.geog.umd.edu> for more information.
- Implementation of ActiveX connector over the web for providing GIS data across slim network connections. This has been extensively used in regions of Asia and Africa.
- Implemented OpenGIS protocols within the WebGIS framework.
- Performed Quality Control/Analysis on vector, raster and other geospatial data products.
- Installed a complete WebGIS system at CSIR, Satellite Application Centre (SAC), South Africa.
- GIS Application to Crime management – The system uses GIS as the front end with a database as a backdrop and provides management, analysis and sharing capabilities for effective crime analysis (Secured an "S" Grade (10/ 10) for this undergraduate project)

Training:

- ESRI's training course on "ArcSDE Administration for SQL Server"
- Short course on Sybase, Visual Basic, Visual C++ and Software Engineering at National Institute of Information Technology (NIIT), India

Conferences/Workshop attended:

- Workshop on Computational Science for Natural Resource Managers, Knoxville, Tennessee, *April 2006*
- 25th Annual ESRI User Conference, San Diego, California, *July 2005*
- Open Source Geospatial 2005, Minneapolis, Minnesota, *June 2005*
- Environmental Concerns in Rights-of-Way Management, 8th International Symposium, Saratoga Springs, New York, *September 2004*
- 4th Annual ESRI Federal User Conference, Washington D.C, *January 2004*

Presentations:

- Presented at workshop on establishing the IndoFlux network in Chennai, India between July 12th and 16th 2006. This bilateral workshop helped develop a blueprint for a long-term biogeochemical monitoring network in India to assess the impact of global environmental change.
-
- GIScience 2004, College Park, Maryland. Diane Davies, **Suresh Kumar**, Jacques Descloitres, Philip Frost, and H. Vosloo: Integration of Remote Sensing and WebGIS Technologies for Monitoring Active Fires, *October 2004*
- India – United States Conference on Space Science, Applications and Commerce, Bangalore, India. Diane Davies, **Suresh Kumar**, Jacques Descloitres, and Jeff Schmaltz: Near-Real Time Satellite Data for Fire Management in India: MODIS Rapid Response System & Web Fire Mapper, *July 2004*
- Tech2004, College Park, Maryland. Diane Davies, **Suresh Kumar** and Chris Justice: MODIS Rapid Response System and Web Fire Mapper: Global Fire Detection & Imagery, *March 2004*
- ESRI-MUG 2004 Annual Conference. Diane Davies and **Suresh Kumar**: Near Real Time Application of Remote Sensing and GIS, *December 2004*

Publications:

Davies, D., **S. Kumar**, and J. Descloitres. (2004). Global fire monitoring using MODIS near-real-time satellite data. *GIM International*, 18(4):41-43.

Roy, D., P. Frost, C. Justice, T. Landmann, J. Le Roux, K. Gumbo, S. Makungwa, K. Dunham, R. Du Toit, K. Mhwandagara, A. Zacarias, B. Tacheba, O. Dube, J. Pereira, P. Mushove, J. Morisette, **S. K. Santhana Vannan**, and D. Davies. (2006). The Southern Africa Fire Network (SAFNet) regional burned area product validation protocol. *International Journal of Remote Sensing*. Vol. 26, No. 19, 10 October 2005, 4265–4292

Korontzi, S., J. McCarty, T. Loboda, **S. Kumar**, and C. Justice (2006), Global distribution of agricultural fires in croplands from 3 years of Moderate Resolution Imaging Spectroradiometer (MODIS) data, *Global Biogeochem. Cycles*, 20, GB2021, doi:10.1029/2005GB002529.

Davies, D. K., **S. K. Santhana Vannan**, P.E. Frost, H.F. Vosloo, J. Descloitres, J. Schmaltz, J. Musinsky. (*In review*). Integrating Remote Sensing and WebGIS technologies to improve the delivery of global MODIS active fire data for fire management and decision support.