Benjamin George Jacob

INSTITUTION AND LOCATION	DEGREE *(if*	YEAR(s)	FIELD OF STUDY
Department of Global Health University of South Florida		2011-present	Research Assistant Professor
School of Medicine, University of Alabama at Birmingham, Alabama		2007-2011	Research Assistant Professor
University of Illinois at Urbana-		2005-2007	NIH Post-doctoral in Epidemiology
Champaign, IL		2004	
University of Miami, Miami, FL	Ph.D.	2001	Environmental Management
Tulane University, New Orleans, LA	M.Sc.	1998	Epidemiology
Hawaii Pacific University, Honolulu, HI	MSPH	1996	Mathematics

A. Selected peer-reviewed publications

Publications

Jacob B.G., Scaffer S. Alao S. Moradi Ali Paris M**. Randomizing joint conditional independent default probabilities via a binomial risk model mixture distribution to induce unperturbed covariate homoskedascity for robustifying inferencial Bayesian asymptotical abstractions in Euclidean nearest-neighbor eigenspace for iteratively geo-spectrotemporally interpolating county-level Hyperendemic Tuberculosis foci in Florida** *American Journal of Applied Mathematics and Statistics,* (in press 2016)

Jacob, B.G. Shafer S. Alinda P. Loun D, McKinnon A. Munu D.. Katabarwa M. N., Lakwo T. Habomugish P.. Unnasch T. R **Lexicographically, cartesian-ordered, differential calculi in canonically extractable in-situ near infra-red fluorescence quantum spectroscopic sub-surface continuous geodesic fluxions for metaheursitic chorophyll-*a* translucent emissivty mapping intermittently canopied immature narrow riverine tributary *Simulium damnosum* s.l. oviposition sites for bio-optically delineating multivariate normalized Gaussian processes elucidatively administrated by prior covariances and a spline within a reproducing non-frequentist simultaneous diagonalization of amalgamized positive definite kernels in Hilbert space: Implementation of a 'Slash and Clear' control intervention in two eco-georeferenceable agro-village complexes in northern Uganda Uganda** *Journal of Geophysics and Remote sensing* (in press 2016)

Moradi A. Schaffer S, Izurieta R. Hoare l. Pettersen T.M., Jacob BG. **The persistence of tuberculosis in the United States: Spatial analysis and predictive modeling in the move toward elimination of Tuberculosis** (*Journal of Public Health and Epidemiology.* In press)

Jacob B.G. and Novak R.J. 2015 **Pernicious quasi-normal non-monotonic Poissionian non-negativity constraints for optimally rectifying incompatibilistic endeogeneity in sub-meter resolution pseudo-Euclidean regression space employing analogs of the Pythagorean theorem and parallelogram laws for semi-parameterically demarcating non-trivial land cover wavelength filters and time series impulse-response metrological functions in an invertible Hermitian transjugate matrix while consolidating synergistic semi-logarithmic non- ordinate axis-scaled covariances in C++ for forecasting episodical yellow fever sylvatic, case distributions in an eco-georeferenceable irrigated riceland complex in Gulu, Uganda** *Journal of Applied Mathematics and Statistics,* (in press)

Jacob B.G. and Novak R.J. 2015 **Integrating a Trimble Recon X 400 MHz Intel PXA255 Xscale CPU® Mobile Field Data Collection System Using Differentially Corrected Global Positioning System Technology and a Real-Time Bidirectional Actionable Platform within an ArcGIS Cyberenvironment for Implementing Malaria Mosquito Control.** *Advances in Remote Sensing;* 3(3):141-196

Jacob BG, Novak RJ, Toe LD, Sanfo M, Griffith DA, Lakwo Unnasch T. **Ecogeographically and Non-Ecogeographically Forecasting Discontinuously Canopied Seasonally Hyperproductive Trailing Vegetation Precambrian rock *Simulium damnosum* s.l., Eco-epidemiological Capture Point Morphometrics by Geo-spectrotemporally Iteratively Stochastically Interpolating Metrizable Sub-Mixel Mean Solar Exoatmospheric Quantum Scalar Irradiance Wavelength Periodicities where θ_i is a Zenith Angle and Diatomically Etiolated Xanthophylls with Azimutually Isotropic Sources of Chloroplastic Carotenoid Zeaxanthins Stoichiometerically Extracted from a RapidEye™ Red Edge Normalized Difference Vegetation Index Reference Biosignature: A Case Study in Burkina Faso and Uganda** (*Journal of Geophysics and Remote sensing* 2015 5(1);. 12-103.

Jacob B.G , Mendoza D.M, Ponce M., Caliskan S., Moradi M, Gotuzzo E,. Griffith D.A., Novak R.J. 2014 **Pseudo R^2Probablity Measures, Durbin Watson Diagnostic Statistics and Einstein Summations for Deriving Unbiased Frequentistic Inferences and Geoparameterizing Non-Zero First-Order Lag Autocorvariate Error in Regressed Multi-Drug Resistant Tuberculosis Time Series Estimators American** *Journal of Applied Mathematics and Statistics* 2(5):252-301.

Jacob B. J., Novak L. Toe, Sanfo, S. Caliskan , Unnasch T. 2014. **Denoising a model employing automated bandwidth selection procedures and pre-whitened Euclidean-based quadratic surrogates in PROC ARIMA for optimizing asymptotic expansions and simulations of onchocerciasis endemic transmission zones in Burkina Faso** *Journal of Public Health and Epidemiology* 6(11): 347-389 ,

Jacob1 B G., Griffith D A, Caliskan Semiha, Gunawardena Dissanayake 3,. Novak Robert J 2013 **Heuristically optimizing logarithmically transformed mean zero Gaussian vectors in PROC ARIMA using a random deviation from an intercept term and a normal frequency distributed Autoregressive Integrated Moving Average Time Series for forecasting malarial regressors in Uganda** *International Journal of Geographic Information System*. 11(1): 1 – 143.

Jacob B. J., Novak L. Toe, Sanfo, S. Caliskan , Unnasch T. 2013. **Finite –Difference derivatives of a fist-order integral approximation quantized with a default Quasi-Newton Optimizer and a Pseudo-**

Lipschitzian property for predictive mapping spatially inhomogenous *Similium damnosum* s.l. explanatory covariates. *Journal of Statistics: Advances in Theory and Applications* 10(10):1-250.

Jacob B.G., R.J. Novak, L. Toe, M.S. Sanfo, S. Caliskan, R. Tingueria, A. Pare, M. Noma, L. Yameogo, T.R. Unnasch, (2013), **"Definability of combinatorial functions and their linear recurrence relationships within a polylogarithmic triangularizable matrix in ArcGIS employing surjective bilipschitz functions and other isomorphisms of metric spaces for forecasting seasonal endemic onchocerciasis transmission zones in Burkina Faso,"** *Scientific Journal of Pure and Applied Sciences,* 2, (12) :42-61

Jacob Benjamin G., Fiorella Krapp, Mario Ponce, Nanhua Zhang, Semiha Caliskan, Daniel A. Griffith, Eduardo Gotuzzo and Robert J. Novak (2013), **A Bayesian Poisson specification with a conditionally autoregressive prior and a residual Moran's coefficient minimization criterion for quantitating leptokurtic distributions in regression-based multi-drug resistant tuberculosis treatment protocols,** *Journal of Public Health and Epidemiology*. 5(3) :122-143.

Jacob, B. G, Ranjit de Alwiss, Semiha Caliskan, Daniel A. Griffith, Dissanayake Gunawardena, Robert J.2013 **A Random-effects Regression Specification Using a Local Intercept Term and a Global Mean for Forecasting Malarial Prevalence.** *American Journal of Computational and Applied Mathematics* 3(2): 49-67.

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Jacob BG. Toe L. Sanfo MS., Afriyie A., Ibrahim MI., Griffith DA, Novak RJ Unnasch Thomas. 2012 **Quasi-likelihood techniques in a logistic regression equation and probability density functions from an inverse Wishart-distributed matrix for identifying intra-cluster covariate coefficients of *Simulium damnosum s.l.* riverine habitats in Togo** *Geospatial Information Science* 15(2):117-133.

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Jacob BG, Griffith DA, Mwangangi JM Gathings DG, Mbogo CB, Novak RJ (2011) **A cartographic analyses using spatial filter logistic model specifications for implementing mosquito control in Kenya** *Urban Geography* Vol 32: 363-377

Jacob BG, Morris JA, Caamano EX, Griffith DA, Novak RJ.(2011) **Geomapping generalized eigenvalue frequency distributions for predicting prolific *Aedes albopictus* and *Culex quinquefasciatus* habitats based on spatiotemporal field-sampled count data** *Acta Tropica.* 2:61-68

Jacob BG. Mwangangi JM Mbogo CB, Novak RJ (2011) **A Taxonomy of Unmixing Algorithms Using Li-Strahler Geometric- Optical Model and other Spectral Endmember Extraction Techniques for Decomposing a QuickBird Visible and Near Infra-red Pixel of an *Anopheles arabiensis* Habitat** *Open Remote Sensing* 17(3)-11-24.

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Jacob BG, Burkett N, Luvall J, Parcak S, McClure CJW, Estep L, Hill GE, Cupp EW, Novak RJ, Unnasch TR. **Developing GIS-Based Eastern Equine Encephalitis Vector-host Models in Tuskegee, Alabama**. 2010. *International Journal of Health Geographics, ,* 9**:**12-21.

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Jacob BG, Griffith DA, Novak RJ, 2008. **Decomposing malaria mosquito aquatic habitat data into spatial autocorrelation eigenvectors in a SAS/GIS® module.** *Transactions in GIS* 12: 341--364.

Joseph M. Mwangangi, Ephantus J. Muturi, Josephat I. Shililu, Simon M. Muriu, Benjamin Jacob, Ephantus W. Kabiru, Charles M. Mbogo, John I. Githure and Robert Novak. 2008. **Contribution of different aquati habitats to adult *Anopheles arabiensis* and *Culex quinquefasciatus* (Diptera: Culicidae) production in a rice agroecosystem in Mwea, Kenya**. *Journal of Vector Ecology*. 33 (1): 129-138.

Muturi Ephantus J.**,** Joseph Mwangangi, Josephat Shililu, Benjamin G. Jacob, Charles Mbogo, John Githure, and Robert Novak. 2008. **Environmental factors associated with the distribution of *Anopheles arabiensis* and *Culex quinquefasciatus* in a rice agro-ecosystem in Mwea, Kenya**. *Journal of Vector Ecology*. 33 (1): 56-63.

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Muturi, Ephantus J. Simon Muriu, Josephat Shililu, Joseph Mwangangi, Benjamin G. Jacob, Charles Mbogo, John Githure, And Robert Novak. 2008. **Effect of rice cultivation on malaria transmission in central Kenya**. *American Journal of Tropical Medicine and Hygiene*. 7(8): 270-275

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Mwangangi JM, Muturi EJ, Mbogo CM, Jacob BG, Kabiru EW, Shililu JI, Githure JI and Novak RJ. 2008. **Distribution of mosquito larvae within the paddy and its implication on larvicidal application in Mwea rice irrigation scheme, central Keny**a. *Journal of the American Mosquito Control Association*. 24 (1):36-43.

Muturi EJ, Muriu S, Shililu J, Mwangangi J, Jacob BG, Mbogo C, Githure J and Novak RJ. 2008. **Effect of rice cultivation on malaria transmission in central Kenya.** *American Journal of Tropical Medicine and Hygiene*. 78(12): 270-275.

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GRANTS

1)PhD research Support: National Institute of Health (NIH): ICIDR Urban Mosquito Control (PI: Beier J) and Research Supplement Underrepresented Minority (RSUM) (# U19 AI45511 and F06TW05588).

The major goal of this project was to develop new interdisciplinary approaches for the control of malaria – related urban mosquito habitat using GIS/remote sensing and spatial modeling in Kisumu and Malindi, Kenya

2) Post-doctoral research support: National Institute of Health (NIH): Microbial Control of Immature *Anopheles* Mosquitoes (PI: Novak, RJ) and Research Supplement Underrepresented Minority (RSUM) (# U01 A154889).

The major goal of this project was to measure the impact of Integrated Vector Management through larval control and environmental management on *Anopheles* mosquitoes in rice agro-Ecosystems in Kenya.

3) **College of Public Health University of South Florida; Internal Research Award Cartographic Stochastic Abstractions of Interpolated County-level Hyperendemic, tuberculosis Transmission foci in Hillsboruogh County, Florida (PI: Jacob BG) 10009-640800-PUBS11-0092771**

The objectives are to: (1) generate multiple GIS stepwise regression models using time series dependent predictor variables (2) filter all latent autocorrelation error coefficients in residual estimates; and, (3) construct Bayesian random-effects hierarchical generalized linear model specifications for adjusting spatial and non-spatial structures in a cluster-based model to identify high risk populations of TB in Hillsborough County in Florida for implementing control strategies /

4) **Spatial Modeling of Onchocerciasis foci in Africa using remote sensing NIH : Research Award: R01-TW008508;**

The objectives are to: 1) construct real-time regression maps using satellite data to determine covariates associated to seasonally productive capture points2) delineate vulnerable populations based on Euclidean distance measurements from agro-village centroid GPS coordinates 3) to spatially differentiate difference in a control strategy (Slash and Clear) targeting productive seasonal georeferenced, discontinuously canopied, immature *S. damnosum* s.l. habitats in narrow and wide agro-village tributaries