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Education

Ph.D., Department of Civil and Environmental Engineering, 2007

University of California, Davis

Advisor: David H. Schoellhamer

Dissertation title: Calibration and application of a tidal-timescale sediment transport model for simulation of estuarine geomorphic change under future scenarios

M.S.E., Coastal and Oceanographic Engineering Program, 2001

University of Florida, Gainesville

Advisor: Ashish J. Mehta

Thesis title: Trapping organic-rich fine sediment in an estuary

B.S.C.E., Department of Civil and Environmental Engineering, 1998

University of Michigan, Ann Arbor

Employment

Hydraulic engineer, 2001-present

U.S. Geological Survey

California Water Science Center

San Francisco Bay Sediment Project

Graduate research assistant, 1999-2001

University of Florida, Gainesville

Coastal and Oceanographic Engineering Program

Project Leadership

Computational assessments of scenarios of change for the Delta ecosystem (CASCaDE)

Led the development, calibration, and application of an estuarine geomorphic model to climate change and sea level rise scenarios. Geomorphic modeling was linked with ecological models of phytoplankton and fish life-history, to provide bounds on future scenarios of ecology in the Sacramento/San Joaquin Delta. Funded by CALFED, University of California Center for Water Resources, and the USGS Priority Ecosystems Science Program. Co-PI on project.

Sediment fluxes through Carquinez Strait

Quantified sediment fluxes through the seaward boundary of Suisun Bay, in order to close the sediment budget for Suisun Bay as a whole. Tidal scale measurements were used as surrogates to estimate sediment fluxes over a multi-year period. Funded by the California State Water Resources Control Board, and the USGS Priority Ecosystems Science Program. Co-wrote proposal.

Lateral variability of the estuarine turbidity maximum

Developed a method to estimate the center-of-mass of the estuarine turbidity maximum (ETM) in Carquinez Strait, using field data from four points in the cross-section. Applied the ROMS model to simulate ETM dynamics which responded to tidal energy, stratification, and lateral mixing. Funded by the California State Water Resources Control Board, and the USGS Priority Ecosystems Science Program. Co-wrote proposal.

Tidal wetland fluxes of water, carbon, and sediment

Established methods for developing a water, carbon, and sediment budget in a tidal wetland. Quantified the net water and sediment budget, and estimated errors in the measurement procedure. Funded by CALFED.

Controlled flood of the Colorado River, Grand Canyon

Discharge measurements using an ADCP were performed to check the attenuation of the flood wave during a controlled release from Glen Canyon Dam, on the Colorado River. Moving bed conditions and lack of GPS required innovative correction techniques for discharge measurement. Led flow and moving-bed measurements at the 60-mile station.

Flocculation Dynamics in San Francisco Bay

Particle size dynamics in the tidal Sacramento River were studied using laser-scattering devices, with concurrent turbidity, salinity, and velocity measurements. Established a uniform floc size-density relationship for San Francisco Bay using these and other measurements throughout the Bay. Funded by the USGS Priority Ecosystems Science Program.

Professional Qualifications

Neil Kamal Ganju

Application of public-domain ROMS hydrodynamic and sediment transport model in both Windows and Linux (parallel-processing) environments

Extensive use of MATLAB data analysis software

Participation in UnTRIM short course (by Ralph T. Cheng, USGS)

Participation in USGS Data mining/neural network course

Deployment/retrieval/data analysis of ADCPs, ADVs, water quality packages (Seabird, YSI, Hydrolab), LISST particle sizer

Peer-reviewer for *Estuaries; Estuarine, Coastal and Shelf Science; Continental Shelf Research; International Conference on Cohesive Sediment Transport* (INTERCOH) volumes

Department of the Interior Motorboat Operator Certification

Member; Sources, Pathways, and Loadings Workgroup of the Regional Monitoring Program in San Francisco Bay

Mentor for UC Davis engineering undergraduates

Awards

Five-time USGS performance award recipient (2007, 2006, 2005, 2004, 2002)

Rosenstiel School of Marine and Atmospheric Science Undergraduate Fellowship recipient (1996)

Induction to Chi Epsilon, National Civil Engineering Honor Society (1997)

Professional Memberships

American Geophysical Union

Chi Epsilon, National Civil Engineering Honor Society

Publications

Peer-reviewed articles

Downing, B.D., Boss, E., Bergamaschi, B.A., Fleck, J.A., Lionberger, M.A., Ganju, N.K., Schoellhamer, D.H., and Fujii, R., in review, Quantifying fluxes and characterizing compositional changes of dissolved organic matter in aquatic systems in situ using combined acoustic and optical measurements. *Limnology and Oceanography: Methods*.

Ganju, N.K., and Schoellhamer, D.H., in review, Simulations of decadal-timescale estuarine geomorphic change with a tidal-timescale model: Part II: effects of climate-change, sea-level rise, and watershed sediment supply. *Journal of Geophysical Research-Earth Surface*.

Ganju, N.K., Schoellhamer, D.H., and Jaffe, B.E., in review, Simulations of decadal-timescale estuarine geomorphic change with a tidal-timescale model: Part I: hindcasting of bathymetric change. *Journal of Geophysical Research-Earth Surface*.

Ganju, N.K., Knowles, N., and Schoellhamer, D.H., in press, Temporal downscaling of decadal sediment load estimates to a daily interval for use in hindcast simulations. *Journal of Hydrology*.

Ganju, N.K., and Schoellhamer, D.H., in press, Calibration of an estuarine sediment transport model to sediment fluxes for robust simulation of geomorphic evolution. *Continental Shelf Research*.

Ganju, N.K. and Schoellhamer, D.H., in press, Lateral variability of the estuarine turbidity maximum in a tidal strait. In: Kusuda, T., Yamanishi, H., Spearman, J., and Gailani, J.Z., Eds., *Sediment and Ecohydraulics: INTERCOH 2005*, Elsevier, Amsterdam, Netherlands.

Schoellhamer, D.H., Ganju, N.K., Mineart, P.R., and Lionberger, M.A., in press, Sensitivity and spin up times of cohesive sediment transport models used to simulate bathymetric change. In: Kusuda, T., Yamanishi, H., Spearman, J., and Gailani, J.Z., Eds., *Sediment and Ecohydraulics: INTERCOH 2005*, Elsevier, Amsterdam, Netherlands.

Gartner, J.W. and Ganju, N.K., 2007, Discharge measurements by acoustic Doppler current meter without global positioning during the 2004 Glen Canyon Dam Controlled Flood Release on the Colorado River. *Limnology and Oceanography: Methods*, 5, 156-162.

Ganju, N.K. and Schoellhamer, D.H., 2006, Annual sediment flux estimates in a tidal strait using surrogate measurements. *Estuarine, Coastal and Shelf Science*, 69, 165-178.

Ganju, N.K., Schoellhamer, D.H., Murrell, M.C., Gartner, J.W., and Wright, S.A., 2006, Constancy of the relation between floc size and density in San Francisco Bay. In: Maa, J.P., Sanford, L.H., and Schoellhamer, D.H., Eds., *Estuarine and Coastal Fine Sediment Dynamics - INTERCOH 2003*, Elsevier, Amsterdam, Netherlands, p. 75-91.

McKee, L., Ganju, N.K., and Schoellhamer, D.H., 2006, Estimates of suspended sediment entering San Francisco Bay from the Sacramento and San Joaquin Delta, San Francisco Bay, California. *Journal of Hydrology*, 323, 335-352.

Ganju, N.K., Schoellhamer, D.H., and Bergamaschi, B.A., 2005, Suspended sediment fluxes in a tidal wetland: measurement, controlling factors, and error analysis. *Estuaries* 28(6), 812-822.

Ganju, N.K., Schoellhamer, D.H., Warner, J.C., Barad, M.F., and Schladow, S.G., 2004, Tidal oscillation of sediment between a river and a bay: a conceptual model. *Estuarine, Coastal and Shelf Science*, 60(1), 81-90.

Jiang, J., Ganju, N.K., and Mehta, A.J., 2004, Estimation of contraction scour in riverbed using SERF. *ASCE Journal of Waterway, Port, Coastal, and Ocean Engineering*, 130(4), 215-218.

Mou, C., Ganju, N., Sridhar, K.S., and Krishan, A., 1997, Simultaneous quantitation of plasma doxorubicin and prochlorperazine content by high-performance liquid chromatography. *Journal of Chromatography B*, 703, 217-224.

Technical reports

Leatherbarrow, J.E., McKee, L.J., Schoellhamer, D.H., Ganju, N.K., and Flegal, A.R., 2005. Concentrations and loads of organic contaminants and mercury associated with suspended sediment discharged to San Francisco Bay from the Sacramento-San Joaquin River Delta, California. Report prepared for the Sources Pathways and Loading Workgroup of Regional Monitoring Program for Trace Substances in the San Francisco Estuary, San Francisco Estuary Institute, Oakland, California, 93 p.

Schoellhamer, D.H., Lionberger, M.A., Jaffe, B.E., Ganju, N.K., Wright, S.A., and Shellenbarger, G.G., 2005, Bay Sediment Budgets: Sediment Accounting 101. *The Pulse of the Estuary: Monitoring and Managing Contamination in the San Francisco Estuary*, San Francisco Estuary Institute, Oakland, California.

Schoellhamer, D.H., Shellenbarger, G.G., Ganju, N.K., Davis, J.A., and McKee, L.J., 2003, Sediment dynamics drive contaminant dynamics. *The Pulse of the Estuary: Monitoring and Managing Contamination in the San Francisco Estuary*, San Francisco Estuary Institute, Oakland, California, p. 21-26.

Buchanan, P.A., and Ganju, N.K., 2000-2003, Summary of suspended-sediment concentration data, San Francisco Bay, California, water year 2000-2003. U.S. Geological Survey Open File Report. (4 reports total)

McKee, L., Ganju, N., Schoellhamer, D., Davis, J., Yee, D., Leatherbarrow, J., and Hoenicke, R., 2002, Estimates of suspended sediment flux entering San Francisco Bay from the Sacramento and San Joaquin Delta. Report prepared for the Sources Pathways and Loading Workgroup of Regional Monitoring Program for Trace Substances in the San Francisco Estuary, San Francisco Estuary Institute, Oakland, California, 28 p.

Ganju, N.K., Mehta, A.J., Parshukov, L.N., and Krone, R.B., 2001, Loxahatchee River, Florida central embayment: sediment budget and trap evaluations. University of Florida Department of Civil and Coastal Engineering, report #UFL/COEL-2001/008.

Ganju, N.K., Barry, K.M., and Mehta, A.J., 2000. Performance report on the simulator of erosion rate function. University of Florida Department of Civil and Coastal Engineering, report #UFL/COEL-2000/011.

Conference papers

Gartner, J. W. and Ganju, N. K., 2002, A preliminary evaluation of near-transducer velocities collected with low-blank acoustic Doppler current profiler. Proceedings, ASCE 2002 Hydraulic Measurements and Experimental Methods Conference, Estes Park, Colorado, July 28 - August 1, 2002.

Schoellhamer, D.H., Buchanan, P.A., and Ganju, N.K., 2002, Ten years of continuous suspended-sediment concentration monitoring in San Francisco Bay and Delta. Proceedings of the Turbidity and Other Sediment Surrogates Workshop, Reno, Nevada, April 30 - May 2, 2002.

Conference abstracts (* indicates oral presentation)

*Ganju, N.K., and Schoellhamer, D.H., 2007, Applying a tidal-timescale model to simulate decadal-timescale scenarios of estuarine geomorphic change. Proceedings of the 2007 Estuarine Research Federation meeting, Providence, Rhode Island, November 4-8, 2007.

*Ganju, N.K., and Schoellhamer, D.H., 2006, Calibration of an estuarine sediment transport model to measured cross-sectional sediment fluxes for robust simulation of geomorphic change. Proceedings of the 2006 Physics of Estuaries and Coastal Seas Conference, Astoria, Oregon, September 18-22, 2006.

*Ganju, N.K., and Schoellhamer, D.H., 2005, Lateral displacement of the estuarine turbidity maximum in a tidal strait. Proceedings of the 8th International Conference on Nearshore and Estuarine Cohesive Sediment Transport, Saga, Japan, September 20-23, 2005.

Lionberger, M.A., Ganju, N.K., Schoellhamer, D.H., Downing, B.D., Bergamaschi, B.A., and Wheeler, G.A., 2004, Wetland fluxes of dissolved organic carbon and sediment at Browns Island, California. Proceedings of the 2004 CALFED Science Conference, Sacramento, California, October 4-6, 2004, p. 329.

*Ganju, N.K. and Schoellhamer, D.H., 2003, Tidal and vertical variability of flocc characteristics: Proceedings of the 7th International Conference on Nearshore and Estuarine Cohesive Sediment Transport Processes. Gloucester Point, Virginia, October 1-4, 2003, p. 6.

Bergamaschi, B.A., Downing, B.D., Wheeler, G.A., Schoellhamer, D.H., Ganju, N., Fram, M.S., Erickson, D.E., Kendall, C., Bemis, B.E., Stepanauskas, R., Hollibaugh, J.T., and Fujii, R., 2003, Quantifying the contributions of tidal wetlands to dissolved organic material in the San Francisco Estuary, California, USA. Proceedings of the 17th Biennial Conference of the Estuarine Research Federation, Seattle, Washington, September 14-18, 2003, p. 13.

Schoellhamer, D.H., Ganju, N.K., Gartner, J.W., Murrell, M.C., and Wright, S.A., 2003, Seasonal and longitudinal homogeneity of suspended sediment in San Francisco Bay, California. Proceedings of the 17th Biennial Conference of the Estuarine Research Federation, Seattle, Washington, September 14-18, 2003, p.119.

Downing, B., Wheeler, G., Emerson, S., Ganju, N., and Bergamaschi, B., 2003, Continuous, real-time optical measurement of DOC fluxes in a tidal wetland. Proceedings of the 6th biennial State-of-the-Estuary Conference, Oakland, California, October 21-23, 2003, p. 73.

Swanson, K., Shellenbarger, G.G., Schoellhamer, D.H., Ganju, N. K., Athearn, N., and Buchanan, P., 2003, Desalinization, erosion, and tidal changes following the breaching of Napa salt pond 3. Proceedings of the 6th biennial State-of-the-Estuary Conference, Oakland, California, October 21-23, 2003, p. 156.

Takekawa, J., Demers, S., Woo, I., Athearn, N., Ganju, N., Shellenbarger, G., Schoellhamer, D., and Perry, W.M., 2003, A bathymetry system for measuring sediment accumulation in tidal marsh restoration projects. Proceedings of the 6th biennial State-of-the-Estuary Conference, Oakland, California, October 21-23, 2003, p. 157.

Fujii, R., Bergamaschi, B.A., Ganju, N.K., Fleck, J.A., Burow-Fogg, K.R., Schoellhamer, D., Deverel, S.J., 2003, Preliminary Assessment of DOC and THM Precursor Loads from a Freshwater Restored Wetland, an Agricultural Field, and a Tidal Wetland in the Sacramento-San Joaquin River Delta. Proceedings of the 2003 CALFED Science Conference, Sacramento, California, January 14-16, 2003, p. 206.

Ganju, N.K., Bergamaschi, B., and Schoellhamer, D.H., 2003, Tidal wetland fluxes of dissolved organic carbon and sediment at Browns Island, California: Initial evaluation. Proceedings of the 2003 CALFED Science Conference, Sacramento, California, January 14-16, 2003, p. 208.