

## **VERTEX (1979-89)**

This list of VERTEX publications was compiled by Cindy Lee in 2010.

Altabet, M.A. and L.F. Small. 1990. Nitrogen isotopic ratios in fecal pellets produced by marine zooplankton. *Geochim. Cosmochim. Acta* 54: 155-163.

Andrews, C.C., D.M. Karl, L.F. Small, and S.W. Fowler. 1984. Metabolic activity and bioluminescence of oceanic faecal pellets and sediment trap particles. *Nature* 307: 539-541.

Berman, T., M. Nawrocki, G.T. Taylor and D.M. Karl. 1987. Nutrient flux between bacteria, bacterivorous nanoplanktonic protists and algae. *Mar. Microb. Food Webs* 2: 69-82.

Bernstein, R.E., P.R. Betzer, R.A. Feely, R.H. Byrne, M.F. Lamb and A.F. Michaels. 1987. Acantharian fluxes and strontium to chlorinity ratios in the North Pacific Ocean. *Science* 237: 1490-1494.

Bossard, P. and D.M. Karl. 1986. The direct measurement of ATP and adenine nucleotide pool turnover in microorganisms: A new method for environmental assessment of metabolism, energy flux and phosphorus dynamics. *J. Plank. Res.* 8: 1-13.

Bradner, H., M. Bartlett, G. Blackington, J. Clem, D. Karl, J. Learned, A. Lewitus, S. Matsuno, D. O'Connor, W. Peatman, M. Reichle, C. Roos, J. Waters, M. Webster, and M. Yarbrough. 1987. Bioluminescence profile in the deep Pacific Ocean. *Deep-Sea Res.* 34:1831-1840.

Britain, A.M. and D.M. Karl. 1990. Catabolism of tritiated thymidine by aquatic microbial communities and incorporation of tritium into RNA and protein. *Appl. Environ. Microbiol.* 56: 1245-1254.

Broenkow, W.W. 1982. A comparison between geostrophic and current meter observations in a California Current eddy. *Deep-Sea Res.* 29:1303-1311.

Broenkow, W. and N. Greene. 1981. Oceanographic results during VERTEX particle interceptor trap experiment, 17 August to 8 September 1980. Moss Landing Marine Laboratories Tech. Pub. 81-1. Moss Landing, CA. 109 p.

Broenkow, W. and R. Krenz. 1982. Oceanographic results from the VERTEX II particle interceptor trap experiment off Manzanillo, Mexico, 26 October to 18 November 1981. Moss Landing Marine Laboratories Tech. Pub. 82-1. Moss Landing, CA. 82 p.

Broenkow, W.W., A.J. Lewitus and R.E. Reaves. 1983. Oceanographic results from the VERTEX 3 particle interceptor trap experiment off central Mexico. Moss Landing Marine Laboratories Tech. Pub. 83-1. Moss Landing, CA. 77 p.

Broenkow, W.W., A.J. Lewitus and M.A. Yarbrough. 1985. Spectral observations of pigment fluorescence in intermediate depth waters of the North Pacific. *J. Mar. Res.* 43: 875-891.

Broenkow, W.W., A.J. Lewitus, M.A. Yarbrough and R.T. Krenz. 1983. Particle fluorescence

and bioluminescence distribution in the eastern tropical Pacific. *Nature* 302: 329-331.

Broenkow, W.W. and R.E. Reaves. 1985. Oceanographic results from the VERTEX 4 particle-trap experiment north of Hawaii, July-August 1983. Moss Landing Marine Laboratories Tech. Pub. 85-1. Moss Landing, CA. 103 p.

Broenkow, W.W. and R.E. Reaves. 1985. Oceanographic results from the VERTEX 5 particle-trap experiment across the California Current, May-July 1984. Moss Landing Marine Laboratories Tech. Pub. 85-2. Moss Landing, CA. 110 p.

Broenkow, W.W., M.A. Yarbrough, and M.A. Yuen. 1988. Oceanographic results from the VERTEX seasonal experiments. Moss Landing Marine Laboratories Tech. Pub. 88-1. Moss Landing, CA. 67 pp.

Broenkow, W.W., M.A. Yuen, and M.A. Yarbrough. 1992. VERTEX: Biological implications of total attenuation and chlorophyll and phycoerythrin fluorescence distributions along a 2000 m deep section in the Gulf of Alaska. *Deep-Sea Res.* 39: 417-438, ISSN 0198-0149, DOI: 10.1016/0198-0149(92)90081-4. (<http://www.sciencedirect.com/science/article/B757K-48BDKYP-3/2/36200da8bdcd2271f2986b76e8ed99d1>)

Bruland, K.W. 1980. Oceanographic distributions of Cd, Zn, Cu, and Ni in the North Pacific. *Earth Planet. Sci. Letts.* 47:176-198.

Bruland, K. W. 1983. Trace elements in sea-water. Pages 157-220 in: Riley, J. P. and R. Chester (eds.). *Chemical Oceanography*, Vol. 8. Academic Press, London.

Bruland, K. W. and K. H. Coale. 1986. Surface water  $^{234}\text{Th}/^{238}\text{U}$  disequilibria: Spatial and temporal variations of scavenging rates within the Pacific Ocean. p. 159-172. In: *Dynamic Processes in the Chemistry of the Upper Ocean*, ed. by J.D. Burton, P.G. Brewer, and R. Chesselet, Plenum Pub. Co.

Bruland, K., K.H. Coale and L. Mart. 1985. Analysis of seawater for dissolved cadmium, copper and lead: An intercomparison of voltammetric and atomic absorption methods. *Mar. Chem.*, 17, 285-300.

Bruland, K.W. and M.W. Silver. 1981. Sinking rates of fecal pellets from gelatinous zooplankton (salps, pteropods, doliolids). *Mar. Biol.* 63: 295-300.

Capodaglio, G., K.H. Coale, and K.W. Bruland. 1990. Lead speciation in surface waters of the eastern North Pacific. *Mar. Chem.* 29: 221-233.

Coale, K.H. 1990. Labyrinth of Doom: A device to minimize the "swimmer component" in sediment trap collections. *Limnol. Oceanogr.* 35: 1376-1381.

Coale, K.H. 1991. The effects of iron, manganese, copper and zinc on primary production and biomass in plankton of the subarctic Pacific. *Limnol. Oceanogr.* 36: 1851-1864.

Coale, K. H. and K.W. Bruland. 1985.  $^{234}\text{Th}/^{238}\text{U}$  disequilibria within the California Current. Limnol. Oceanogr. 30: 22-33.

Coale, K. H. and K. W. Bruland. 1987. Oceanic stratified euphotic zone as elucidated by  $^{234}\text{Th}/^{238}\text{U}$  disequilibria. Limnol. Oceanogr. 32:189-200.

Coale, K.H. and K.W. Bruland. 1988. Copper complexation in the Northeast Pacific. Limnol. Oceanogr. 33: 1084-1101.

Coale, K.H. and K.W. Bruland. 1990. Spatial and temporal variability in copper complexation in the North Pacific. Deep-Sea Res. 37: 317-336.

Cowen, J. and K.W. Bruland. 1985. Metal deposits associated with bacteria: Implications for Fe and Mn marine biogeochemistry. Deep Sea Res. 32:253-272.

Coale, K.H., A.F. Michaels and R. Pinto, 1986. General Blue Water Diving Procedures and Guidelines. In: Blue Water Diving Guidelines. Edited by J. N. Heine, California Sea Grant College Program Publication.

Coale, K.H., A.F. Michaels and R. Pinto, 1986. Appendix B: Blue Water Diving Equipment and Procedures Used at the University of California, Santa Cruz. In: Blue Water Diving Guidelines. Edited by J. N. Heine, California Sea Grant College Program Publication.

Cowen, J.P. and M.W. Silver. 1984. The association of iron and manganese with bacteria on marine macroparticulate material. Science 224: 1340-1342.

Craven, D.B. and D.M. Karl. 1984. Microbial RNA and DNA synthesis in marine sediments. Mar. Biol. 83: 129-139.

Cutter, G.A., 1982. Selenium in reducing waters. Science 217: 829 – 831.

Cutter G.A. and K.W. Bruland. 1984. The marine biogeochemistry of selenium: a re-evaluation. Limnol. Oceanogr. 29:1179-1192.

DeBaar, H., M. Bacon, P. Brewer and K.W. Bruland. 1985. Rare earth elements in the Pacific and Atlantic Oceans. Geochim. Cosmochim. Acta 49:1943-1959.

de Lappe, B.W. , R.W. Risebrough, and W. Walker II. 1983. A large-volume sampling assembly for the determination of synthetic organic and petroleum compounds in the dissolved and particulate phases of sea-water. Can. J. Fish. Aq. Sci. 40, Supplement 2: 322-336.

Donat, J.R. and K.W. Bruland. 1990. A comparison of two voltammetric techniques for determining zinc speciation in northeast Pacific Ocean waters. Mar. Chem. 28: 301-323.

Donat, J. R., P. J. Statham and K. W. Bruland. 1985. An evaluation of a C-18 solid phase extraction technique for isolating metal-organic complexes from central North Pacific Ocean waters. Mar. Chem. 18: 85-89.

Ellis, S.G. and L.F. Small. 1989. A comparison of gut evacuation rates of feeding and non-feeding *Calanus marshallae*. Mar. Biol. 103: 175-181.

Fellows, D., D.M. Karl and G.A. Knauer. 1981. Large particle fluxes and the vertical transport of living carbon on the upper 1500 meters of the northeast Pacific Ocean. Deep-Sea Res. 28A: 921-936.

Fisher, N.S. and S.W. Fowler. 1987. The role of biogenic debris in the vertical transport of transuranic wastes in the sea. In: Oceanic Processes in Marine Pollution, Vol. 2, Physicochemical Processes and Wastes in the Ocean (T.P. O'Connor, W.V. Burt & I.W. Duedall, eds.), Chapt. 16, pp. 197-207, R.E. Krieger Publ. Co., Inc., Malabar, Florida.

Fitzwater, S.E., G.A. Knauer and J.H. Martin. 1982. Metal contamination and its effect on primary production measurements. Limnol. Oceanogr. 27: 544-551

Fitzwater, S.E., G.A. Knauer and J.H. Martin. 1983. The effects of Cu on the adenylate energy charge, J. Plank. Res. 5: 935-938.

Flegal, A.R. and C.C. Patterson. 1985. Thallium concentrations in sea water. Mar. Chern. 15:327-31.

Flegal, A.R., B.K. Schaule and C.C. Patterson. 1984. Stable isotopic ratios of lead in surface waters of the central Pacific. Mar. Chern. 14: 281-287.

Flegal, A. R., D.M. Settle and C.C. Patterson. 1986. Thallium in marine plankton. Mar. Biol. 90: 501-3.

Fowler, S.W. 1987. VERTEX: Factors affecting the vertical flux of  $^{239+240}\text{Pu}$  and  $^{241}\text{Am}$  in the upper layers of the Northeast Pacific Ocean. Coll. Intern. Oceanol., Perpignan, p. 82, C.I.E.S.M., Monaco.

Fowler, S.W. 1989. Transport and redistribution of trace metals and radionuclides in the marine environment by biogenic particles. In: Proceedings of the Twenty-first European Marine Biology Symposium, Gdansk, 15-19 September 1986 (R.Z. Klekowski, E. Styczynska-Jurewicz and L. Falkowski, eds.), pp. 575-584, Ossolineum, Wroclaw.

Fowler, S.W. 1989. Biological control on the vertical flux of artificial radionuclides in marine waters. Nuclear Instruments and Methods in Physics Research A280: 529.

Fowler, S.W. 1992. Biological control on trace metal and radionuclide scavenging in marine waters. In: Biological Indicators for Environmental Monitoring, Serono Symposia Review No. 27, (S. Bonotto, R. Nobili, R.P. Revoltella, eds.), pp. 81-93, Ares-Serono Symposia, Rome, Italy.

Fowler, S.W., S. Ballestra, J. La Rosa and J. Gastaud. 1985. Biological control of transuranic flux through the upper water column of the northeast Pacific Ocean. Rapp. Comm. into Mer Medit. 29:189-193.

Fowler, S.W., S. Ballestra, J. La Rosa and R. Fukai. 1983. Vertical transport of particulate-associated plutonium and americium in the upper water column of the northeast pacific. Deep-Sea Res. 30: 1221-1234.

Fowler, S.W., S. Ballestra, J. La Rosa, E. Holm and J.J. Lopez. 1990. Flux of transuranium nuclides in the northwestern Mediterranean following the Chernobyl accident. Rapp. Comm. int. Mer Médit. 32: 317.

Fowler, S.W., P. Buat-Menard, Y. Yokoyama, S. Ballestra, E. Holm and H.V. Nguyen. 1987. Rapid removal of Chernobyl fallout from Mediterranean surface waters by biological activity. Nature 329: 56-58.

Fowler, S.W., P. Buat-Menard, S. Ballestra, Y. Yokoyama and H.V. Nguyen. 1988. Pathways of removal of Chernobyl-induced radionuclides from northwestern Mediterranean waters. In: Radionuclides: A Tool for Oceanography (J.-C. Guary, P. Guegueniat and R.J. Pentreath, eds.), p. 444, Elsevier Applied Science, London and New York.

Fowler, S. W. and N.S. Fisher. 1983. Viability of marine phytoplankton in zooplankton faecal pellets. Deep-Sea Res. 30: 963-969.

Fowler, S.W. and G.A. Knauer. 1986. Role of large particles in the transport of elements and organic compounds through the oceanic water column. Progr. Oceanogr. 16: 147-194.

Fowler, S.W., L.F. Small, J. La Rosa, J.-J. Lopez and J.-L. Teyssie. 1991. Interannual variation in transuranic flux at the Vertex time-series station in the northeast Pacific and its relationship to biological activity. In: Radionuclides in the Study of Marine Processes (P.J. Kershaw and D.S. Woodhead, eds.), pp. 286-298, Elsevier Applied Science, London and New York.

Gordon, R.M., J.H. Martin and G.A. Knauer. 1982. Iron in the north-east Pacific waters. Nature 299: 611-612.

Gowing, M.M. 1986. Trophic biology of phaeodarian radiolarians and flux of living radiolarians in the upper 2000m of the North Pacific central Gyre. Deep-Sea Res. 33: 665-674.

Gowing, M.M. 1993. Seasonal radiolarian flux at the VERTEX North Pacific time-series site. Deep-Sea Res. I 40: 517-545.

Gowing, M.M. 1993. Large virus-like particles from vacuoles of phaeodarian radiolarians and from other marine samples. Mar. Ecol. Progr. Ser. 101: 33-43.

Gowing, M.M. and W.N. Bentham. 1994. Feeding ecology of phaeodarian radiolarians at the VERTEX North Pacific time-series site. *J. Plankton Res.* 16: 707-719

Gowing, M.M. and S.L. Coale. 1989. Fluxes of living radiolarians and their skeletons along a northeast Pacific transect from coastal upwelling to open ocean waters. *Deep-Sea Res.* 36: 561-576.

Gowing, M.M. and M.W. Silver. 1983. Origins and microenvironments of bacteria mediating fecal pellet decomposition in the sea. *Mar. Biol.* 73:7-16.

Gowing, M.M. and M.W. Silver. 1985. Minipellets: A new and abundant size class of marine fecal pellets. *J. Mar. Res.* 43:395-418.

Harrison, W.G., L.R. Harris, D.M. Karl, G.A. Knauer and D.G. Redalje. 1992. Nitrogen dynamics at the VERTEX time-series site. *Deep-Sea Res.* 39: 1535-1552, ISSN 0198-0149, DOI: 10.1016/0198-0149(92)90046-V. (<http://www.sciencedirect.com/science/article/B757K-48B0WM2-1S/2/24fd9ad0361ca56b883547f97933541c>)

Hebel, D., G.A. Knauer and J.H. Martin. 1986. Trace metals in large agglomerates (marine snow), *J. Plank. Res.* 8: 819-824.

Karl, D. M. 1981. Simultaneous rates of ribonucleic acid and deoxyribonucleic acid syntheses for estimating growth and cell division of aquatic microbial communities. *Appl. Environ. Microbiol.* 42: 802-810.

Karl, D. M. 1982. Selected nucleic acid precursors in studies of aquatic microbial ecology. *Appl. Environ. Microbiol.* 44: 891-902.

Karl, D.M. 1986. Determination of in situ microbial biomass, viability, metabolism, and growth. In: J.S. Poindexter and E.R. Leadbetter, (eds.), p. 85-176, *Bacteria in Nature*, Vol. 2, Plenum Press, 385 pp.

Karl, D.M. and M.D. Bailiff. 1989. The measurement and distribution of dissolved nucleic acids in aquatic environments. *Limnol. Oceanogr.* 34: 543-558.

Karl, D.M. and P. Bossard. 1985. Measurement and significance of ATP and adenine nucleotide pool turnover in microbial cells and environmental samples. *J. Microbiol. Meth.* 3:125-139.

Karl, D.M. and P. Bossard. 1985. Measurement of microbial nucleic acid synthesis and specific growth rate by  $^{32}\text{PO}_4$  and [ $^3\text{H}$ ]adenine: Field comparison. *ppl. Environ. Microbiol.* 50: 706-709.

Karl, D.M., J.E. Dore, D.V. Hebel and C. Winn. 1991. Procedures for particulate carbon, nitrogen, phosphorus and total mass analyses used in the US-JGOFS Hawaii Ocean Time-Series Program. p. 71-77, In: D. Spencer and D. Hurd, eds., *Marine Particles: Analysis and Characterization*, American Geophysical Union, Geophysical Monograph 63.

Karl, D.M., W.G. Harrison, J. DORE et al. 1991. Chapter 3. Major Bioelements Workshop Report. p. 33-42, In: D. C. Hurd and D. W. Spencer, eds., Marine Particles: Analysis and Characterization, American Geophysical Union, Geophysical Monograph 63.

Karl, D.M., D.R. Jones, J.A. Novitsky, C.D. Winn and P. Bossard. 1987. Specific growth-rates of natural microbial communities measured by adenine nucleotide pool turnover. *J. Microbiol. Methods.* 6: 221-235

Karl, D.M. and Knauer, G.A. 1984. Detritus-microbe interactions in the marine pelagic environment: Selected results from the Vertex experiment. *Bull. Mar. Sci.* 35: 550-565.

Karl, D.M. and G.A. Knauer. 1984. Vertical distribution and exchange of organic matter in the northeast Pacific Ocean: Evidence for multiple zones of biological activity. *Deep-Sea Res.* 31: 221-243.

Karl, D.M., G.A. Knauer. 1989. Swimmers: A recapitulation of the problem and a potential solution. *Oceanogr. Mag.* 2: 32-35.

Karl, D.M., G.A. Knauer, J.H. Martin. 1988. Downward flux of particulate organic matter in the ocean: a particle decomposition paradox. *Nature* 332: 438-441.

Karl, D.M., G.A. Knauer, J.H. Martin, and B.B. Ward. 1984. Bacterial chemolithotrophy in the ocean is associated with sinking particles. *Nature* 309: 54-56.

Karl, D.M. and C.D. Winn. 1984. Adenine metabolism and nucleic acid synthesis: Applications to microbiological oceanography. In: Hobbie, J. E. and P. J. LeB. Williams (eds.). *Heterotrophic activity in the sea*, pp. 197-215.

Karl, D.M. and C.D. Winn. 1986. Does adenine incorporation into nucleic acids measure total microbial production?: A response to comments by Fuhrman et al. *Limnol. Oceanogr.* 31:1384-1394.

Knauer, G.A. Productivity and New Production in the Oceanic System. 1993. In: Wollast, R., F.T. Mackenzie and L. Chou (Eds.), *Interactions of C, N, P, and S Biogeochemical Cycles and Global Change*, Proceedings of a NATO ASI Workshop, Melreux (Belgium). Vol. 14. pp. 211-231.

Knauer, G.A., D. Hebel and F. Cipriano. 1982. Marine snow: major site of primary production in coastal waters. *Nature* 300:630-631.

Knauer, G.A., D.M. Karl, J.H. Martin and C.N. Hunter. 1984. In situ effects of selected "preservatives" on total carbon, nitrogen and metals collected in sediment traps. *J. Mar. Res.* 42: 445-462.

Knauer, G.A. and J.H. Martin. 1981. Primary production and carbon nitrogen fluxes in the upper 1500 m of the northeast Pacific. *Limnol. Oceanogr.* 26: 182-187.

Knauer, G.A. and J.H. Martin. 1981. Phosphorus-cadmium cycling in northeast Pacific waters. *J. Mar. Res.* 39: 65-76.

Knauer, G.A., J.H. Martin and R.M. Gordon. 1982. Cobalt in northeast Pacific waters. *Nature* 297: 49-51.

Knauer, G.A., J.H. Martin and D.M. Karl. 1984. The flux of particulate organic matter out of the euphotic zone, p. 136-150, In: Global Ocean Flux Study, Proceedings of a Workshop, September 10-14, 1982, Woods Hole, National Academic Press, Washington, D.C.

Knauer, G.A., D.G. Redalje, W.G. Harrison and D.M. Karl. 1990. New production at the VERTEX timeseries site. *Deep-Sea Res.* 37: 1121–1134, ISSN 0198-0149, DOI: 10.1016/0198-0149(90)90054-Y. (<http://www.sciencedirect.com/science/article/B757K-48BD1TY-4V/2/89c5b6b91f09de03bc2b496171c15427>)

Komar, P.O., A. P. Morse, L. F. Small and S. W. Fowler. 1981. An analysis of sinking rates of natural copepod and euphausiid fecal pellets. *Limnol. Oceanogr.* 26: 172-180.

Johnson, K.S., W.M. Berelson, K.H. Coale, T.L. Coley, V.A. Elrod, W. R. Fairey, H.D. Iams, T.E. Kilgore , and J.L. Nowicki. 1992. *Science* 257: 1242 – 1245.

Landing, W.M. and K.W. Bruland. 1987. The contrasting biogeochemistry of iron and manganese in the Pacific Ocean. *Geochim. Cosmochim. Acta*. 51: 29-43.

Landing, W.M. and K.W. Bruland. 1980. Manganese in the North Pacific. *Earth Planet. Sci. Letts.* 49:45-46.

Laws, E.A., D. Jone and D.M. Karl. 1986. Method for assessing heterogeneity in turnover rates within microbial communities. *Appl. Environ. Microbiol.* 52: 866-874.

Lee, C. and C. Cronin. 1984. Particulate amino acids in the sea: Effects of primary productivity and biological decomposition. *J. Mar. Res.* 42: 1075-1097.

Lee, C. and B. L. Olson. 1984. Dissolved, exchangeable and bound aliphatic amines in marine sediments: Initial results. *Org. Geochem.* 6: 259-263 •

Lee, C. and S. G. Wakeham. 1988. Organic matter in seawater: Biogeochemical processes. *Chemical Oceanography*, Vol. 9, (J. P. Riley, ed.), Academic Press. pp. 1-51.

Lewitus, A.J. and W.W. Broenkow. 1985. Intermediate depth pigment maxima in oxygen minimum zones. *Deep-Sea Res. Part A* 32: 1101-1115.

Martin, J.H. 1989. Vertex: phytoplankton/iron studies in the Gulf of Alaska. *Deep Sea Res. Part A*. 36: 649-680.

Martin, J.H. and S.E. Fitzwater. 1988. Iron deficiency limits phytoplankton growth in the north-east Pacific subarctic. *Nature* 331: 341 – 343.

Martin, J.H. and R.M. Gordon. 1987. Northeast Pacific iron distributions in relation to phytoplankton productivity. *Deep Sea Res. Part A* 35, Issue 2, February 1988: pgs. 177-196, ISSN 0198-0149, DOI: 10.1016/0198-0149(88)90035-0.  
(<http://www.sciencedirect.com/science/article/B757K-487DKW1-11/2/ae99ef7a5512e3adc88174cbb0e463c7>)

Martin, J.H., R.M. Gordon, S. Fitzwater, W.W. Broenkow, Vertex: phytoplankton/iron studies in the Gulf of Alaska, *Deep Sea Research Part A. Oceanographic Research Papers*, Volume 36, Issue 5, May 1989, Pages 649-680, ISSN 0198-0149, DOI: 10.1016/0198-0149(89)90144-1.  
(<http://www.sciencedirect.com/science/article/B757K-48BCJGF-42/2/b9ef8c9f50eba20ae04c49be2dc57288>)

Martin, J.H. and G.A. Knauer. 1982. Manganese cycling in northeast Pacific equatorial waters. *J. Mar. Res.* 40:1213-1225.

Martin, J.H. and G.A. Knauer, 1983. VERTEX: Manganese transport with CaCO<sub>3</sub>. *Deep Sea Res. Part A* 30: 411-425, ISSN 0198-0149, DOI: 10.1016/0198-0149(83)90075-4.  
(<http://www.sciencedirect.com/science/article/B757K-48C76N2-N/2/9ca695cefe1456189df214cdbf3ab90f>)

Martin, J.H. and G.A. Knauer, 1984. VERTEX: Manganese transport through oxygen minima. *Earth Planet. Sci. Letts.* 67: 35-47.

Martin, J.H. and G.A. Knauer, 1985. Lateral transport of Mn in the north-east Pacific Gyre oxygen minimum. *Nature* 314: 524-526.

Martin, J. H., G.A. Knauer, W.W. Broenkow, K.W. Bruland, D.M. Karl, L.F. Small, M.W. Silver and M.M. Gowing. 1983. Vertical transport and exchange of materials in the upper waters of the oceans (VERTEX): introduction to the program, hydrographic conditions, and major component fluxes during VERTEX I. MLML Tech. Publ. 83-2. 40 p.

Martin, J. H., G. A. Knauer and R.M. Gordon. 1983. Silver distribution and fluxes in northeast Pacific waters. *Nature* 305: 306-309.

Martin, J.H., G.A. Knauer, and W.W. Broenkow. 1985. VERTEX: the lateral transport of manganese in the northeast Pacific. *Deep-Sea Res.* 32: 1405-1427, ISSN 0198-0149, DOI: 10.1016/0198-0149(85)90056-1. (<http://www.sciencedirect.com/science/article/B757K-48CG4H5-27/2/7e96b58898560bd7bdc1f65a775230b5>)

Martin, J.H., G.A. Knauer, D.M. Karl, and W.W. Broenkow. 1987. VERTEX: carbon cycling in the northeast Pacific. *Deep-Sea Res.* 34: 267-285. , ISSN 0198-0149, DOI: 10.1016/0198-0149(87)90086-0. (<http://www.sciencedirect.com/science/article/B757K-48BD27C-8T/2/674be0b3d4f06a64ef02c4e6f3d6a885>)

- Michaels, A.F. 1988. Vertical distribution and abundance of acantharia and their symbionts. *Mar. Biol.* 97: 559-569.
- Michaels, A.F. 1991. Acantharia abundance and symbiont productivity at the VERTEX seasonal station. *J. Plankton Res.* 13: 399-418.
- Michaels, A.F. and A.R. Flegal. 1990. Lead in marine planktonic organisms and pelagic food webs. *Limnol. Oceanogr.* 35:287-295
- Michaels, A.F. and M.W. Silver. 1988. Primary production, sinking flux and the microbial food web. *Deep-Sea Res.* 35: 473-490.
- Michaels, A.F., M.W. Silver, M.M. Gowing and G.A. Knauer. 1990. Cryptic zooplankton "swimmers" in upper ocean sediment traps. *Deep-Sea Res.* 37: 1285-1296
- Orrett, K. and D.M. Karl. 1987. Dissolved organic phosphorus production in surface seawaters. *Limnol. Oceanogr.* 32: 383-395.
- Orians, K.J., E.A. Boyle, and K.W. Bruland. 1990. Dissolved titanium in the open ocean. *Nature* 348: 322-325.
- Orians, K. and K.W. Bruland. 1985. Dissolved aluminum in the central North Pacific. *Nature* 316:427-429.
- Orians, K.J. and K.W. Bruland. 1988. Dissolved gallium in the open ocean. *Nature* 332: 717-719.
- Orians, K.J. and K.W. Bruland. 1988. The marine geochemistry of dissolved gallium: a comparison with dissolved aluminum. *Geochim. Cosmochim. Acta* 52: 1-8.
- Orians, K.J. and K. W. Bruland. 1986. The biogeochemistry of aluminum in the Pacific Ocean. *Earth Planet. Sci. Letts.* 78:397-410.
- Pace, M.L., Knauer, G.A., Karl, D.M. and Martin, J.H. 1987. Primary production, new production and vertical flux in the eastern Pacific. *Nature* 305: 803-804.
- Rau, G.H., D.M. Karl, and R.S. Carney. 1986. Does inorganic carbon assimilation cause  $^{14}\text{C}$ -depletion in deep-sea organisms? *Deep-Sea Res. Part A* 33: 349-357.
- Rue, E. L., G. J. Smith, G.A. Cutter and K.W. Bruland, 1997. The response of trace element redox couples to suboxic conditions in the water column. *Deep Sea Res.* 44:113-134.
- Silver, M.W. and K.W. Bruland. 1981. Differential feeding and fecal pellet composition of salps and pteropods and the possible origin of the deep-water flora and olive green cells. *Mar. Biol.* 62: 263-273.

Silver, M.W., and Gowing, M.M. 1991. The "Particle" Flux: Origins and biological components. *Prog. Oceanogr.* 26: 75-113.

Silver, M.W., Gowing, M.M., Davoll, P.J. 1986. The association of photosynthetic picoplankton and ultraplankton with pelagic detritus through water column (0–2000 m). *Can. Bull. Fish. Aquat. Sci.* 214:311–341.

Silver, M.W., M.M. Gowing, D.C. Brownlee, and J.O. Corliss. 1984. Ciliated protozoa associated with oceanic sinking detritus. *Nature* 309: 246-248.

Silver, M., C. Pilskaln, and D. Steinberg. 1991. The biologist's view of sediment trap collections: problems of marine snow and living organisms. IN: *Sediment Trap Studies in the Nordic Countries*, 2: P. Wassman, A.S. Heiskaven, and O. Lindahl (eds.), *Symposium Proceedings*, pp. 76-93.

Small, L.F. and S.W. Fowler. 1982. Carbon and nitrogen release by tropical zooplankton. *EOS* 63: 959.

Small, L.F., S.W. Fowler, S.A. Moore and J. LaRosa. 1983. Dissolved and fecal pellet carbon and nitrogen release by zooplankton in tropical waters. *Deep-Sea Res.* 30: 1199-1220.

Small, L.F., G.A. Knauer and M.D. Tuel. 1987. The role of sinking fecal pellets in stratified euphotic zones. *Deep-Sea Res.* 34: 1705-1712.

Smith, R.K. and M.M. Gowing. 1988. Mesopelagic-bathypelagic planktonic foraminifera from the North-Central Pacific. *Am. Zool.* 28: A32-A32.

Taylor, G.T. and D.M. Karl. 1991. Vertical fluxes of biogenic particles and associated biota in the eastern North Pacific: Implications for biogeochemical cycling and productivity. *Glob. Biogeochem. Cycl.* 5: 289-303.

Taylor, G. T. D.M. Karl and M.L. Pace. 1986. Impact of bacteria and zooflagellates on the composition of sinking particles: An in situ experiment. *Mar. Ecol. Prog. Ser.* 29: 141-155.

Tilbrook, B.D. and D.M. Karl. 1995. Methane sources, distributions and sinks from California coastal waters to the oligotrophic North Pacific gyre. *Mar. Chem.* 49: 51-64.

Tuel, M.D. and G.A. Knauer. 1982. Improvement of the pre-deployment net closure procedure used with opening/closing plankton nets. *J. Plankton Res.* 4: 973-975.

Urrere, M.A. and G.A. Knauer. 1981. Zooplankton fecal pellet fluxes and vertical transport of particulate organic material in the pelagic environment. *J. Plank. Res.* 3: 369-387.

Wakeham, S.G. 1987. Steroid geochemistry in the oxygen minimum zone of the eastern tropical North Pacific Ocean. *Geochim. Cosmochim. Acta* 51: 3051 3069.

- Wakeham, S.G. 1989. Reduction of sterols to stanols in particulate matter at oxic anoxic boundaries in seawater. *Nature* 342: 787-790.
- Wakeham, S.G. 1995. Lipid biomarkers for heterotrophic alteration of suspended particulate organic matter in oxygenated and anoxic water columns of the ocean. *Deep Sea Res.* 42: 1749-1771.
- Wakeham, S.G. and E.A. Canuel. 1986. Lipid composition of the pelagic crab *Pleuroncodes planipes*, its feces, and sinking particulate matter in the equatorial North Pacific Ocean. *Org. Geochem.* 9: 331-343.
- Wakeham, S.G. and E.A. Canuel. 1988. Organic geochemistry of particulate matter in the eastern tropical North Pacific Ocean: Implications for particle dynamics. *J. Mar. Res.* 46: 183-213.
- Wakeham, S.G., K.H. Freeman, T.K. Pease and J.M. Hayes. 1993. A photoautotrophic source for lycopane in marine water columns and sediments. *Geochim. Cosmochim. Acta* 57: 159-165.
- Wakeham, S.G., R.B. Gagosian, J.W. Farrington, and E.A. Canuel. 1984. Sterenes in suspended particulate matter in the eastern tropical North Pacific. *Nature* 308: 840-843.
- Wakeham, S.G. and C. Lee. 1993. Production, transport, and alteration of particulate organic matter in the marine water column. In: *Organic Geochemistry* (M. Engel and S. Macko, eds.), Plenum Press, pp. 145-169.
- Wakeham, S.G., C. Lee, J.W. Farrington, and R.B. Gagosian. 1984. Biogeochemistry of particulate organic matter in the oceans: Results from sediment trap experiments. *Deep-Sea Res.* 31: 509-528.
- Winn, C.D. and D.M. Karl. 1984. Laboratory calibrations of the <sup>3</sup>H-adenine technique for measuring rates of RNA and DNA synthesis in marine phytoplankton and bacteria. *Appl. Environ. Microbiol.* 47: 835-842.
- Winn, C.D. and D.M. Karl. 1984. Microbial productivity and community growth rate estimates in the tropical North Pacific Ocean. *Biof. Ocean.* 3: 123-145.
- Winn, C.D. and D.M. Karl. 1986. Diel nucleic acid synthesis and particulate DNA concentrations: Conflicts with division rate estimates by DNA accumulation. *Limnol. Oceanogr.* 31: 637-645.
- Wuchter, C., S. Schouten, S.G. Wakeham, and J.S. Sinninghe Damsté. 2006. Archaeal tetraether membrane lipid fluxes in the northeastern Pacific and the Arabian Sea: Implications for TEX86 paleothermometry. *Paleoceanography* 21: PA4208, doi:10.1029/2006PA001279.

## VERTEX THESES

- Cutter, G.A. 1982. Processes affecting the distribution and speciation of selenium in seawater. Ph.D. Dissertation, University of California, Santa Cruz.
- Teas, N.G. 1982. Observation of currents off Manzanillo, Mexico estimated using vorticity and density. M.S. Thesis, San Jose State University and Moss Landing Marine Laboratories.
- Cipriano, F.W. 1983. A review of the radiocarbon-uptake primary production method: Selected modifications developed and tested. M.S. Thesis, San Jose State University.
- Cowen, J.P. 1983. Iron and manganese depositing bacteria in the Pacific. Ph.D. Dissertation, University of California) Santa Cruz.
- Hebel, D.V. 1983. Concentration and flux of trace metals, carbon-nitrogen, and particulate matter in marine snow. M.A. Thesis, San Francisco State University.
- Landing, W.M. 1983. The biogeochemistry of manganese and iron in the Pacific Ocean. Ph.D. Dissertation, University of California, Santa Cruz.
- Andrews, C.A. 1984. Microbial populations and bioluminescence of oceanic fecal pellets and sediment trap particles. M.S. Thesis, University of Hawaii.
- Burns, D.J. 1984. Glutamine synthetase activity in marine phytoplankton. M.S. Thesis, University of Hawaii.
- Lewitus, A.J. 1984. The distribution of in situ fluorescence, bioluminescence and light attenuation in the North Pacific. M.S. Thesis, San Jose State University and Moss Landing Marine Laboratories.
- Orrett, K. 1984. A novel approach to DOP production rate estimates in epipelagic ocean waters. M.S. Thesis, University of Hawaii.
- Winn, C.D. 1984. Microbial nucleic acid synthesis in oligotrophic seawaters. Ph.D. Dissertation, University of Hawaii.
- Eastman, S.T. 1985. Copper effects on primary production rates of size fractionated phytoplankton populations in the Central North Pacific Gyre. M.S. Thesis, San Jose State University.
- Donat, J.R. 1988. Trace metals in seawater: The simultaneous determination of cobalt and nickel and a field comparison of techniques for determining organic complexation of copper and zinc, Chemistry Ph.D. thesis. University of California, Santa Cruz

Michaels, A.F. 1988. Acantharia in the carbon and nitrogen cycles of the Pacific Ocean. Ph.D. Dissertation. University of California, Santa Cruz, 226 pp.

Orians, K.J. 1988. The marine geochemistry of hydrolysis elements, aluminum and gallium, Chemistry Ph.D. University of California, Santa Cruz.

Yuen, M.A. 1990 Red and orange fluorescence and beam attenuation to intermediate depths in the northeast Pacific. M.S. Thesis. San Jose State University. San Jose, CA. 74 pp.

Tilbrook, B. 1992. Methane Sources and Sinks in Upper Ocean Waters, Ph.D. Dissertation, University of Hawaii.