

**Karl Szekiolda**  
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#### **EDUCATIONAL BACKGROUND:**

Docteur de l'Université, Sciences, University of Aix-Marseille, France.

#### **WORK EXPERIENCE:**

Hunter College (since 1982), and Member of the Doctoral Faculty of the Ph.D. Program in Earth and Environmental Sciences, City University of New York (CUNY) (since 1999) teaching graduate and undergraduate courses.

Held position of Adjunct/Research Professor at following institutions: NOAA's Cooperative Remote Sensing Science and Technology Center, CCNY'S Department of Electrical Engineering, CUNY (2000-2003), Marine Science of Long Island University (LIU), Southampton(2001), School of Continuing and Professional Studies of New York University (NYU) (1999-2001), Department of Physics, LIU Brooklyn (1998). In addition was Visiting Professor at Academia Sinica in Beijing (1988) and Visiting Full Professor, University of Hamburg (1976-1978), Assistant Professor in the College of Marine Studies, University of Delaware (1971-1975). Experience in international affairs include: Chief of Branch of the Environment and Natural Resources Management Division of Economic and Social Commission for Southeast Asia and the Pacific (ESCAP), United Nations in Bangkok (1996); held positions as Chief of Section and Chief of Unit at the United Nations from 1978-1996.

#### **RESEARCH:**

As Office of Naval Research/American Society for Engineering Education *Senior Faculty Fellow* at the Naval Research Laboratory, Washington, D.C., carried out analysis of hyperspectral data obtained from aircraft and satellite altitudes over the oceans, monitoring spatial and temporal events (summers, 2006-2010).

Under CUNY Research Foundation and Suffolk County Department of Health, was *Principal Investigator* for study on brown tides (2006-2008).

NOAA CREST research focused on remote sensing of coastal environment and detection of photosynthetic pigments and harmful algae blooms (2000-2003).

*Research Associate* at Columbia University Earth Engineering Center from 1997.

As *National Academy of Science Fellow* under NASA's Goddard Space Flight Center, did research with Nimbus satellite data (1969-1971).

#### **AWARDS:**

Office of Naval Research/American Society for Engineering Education (ONR/ASEE) *Senior Faculty Fellow* at the Naval Research Laboratory, Washington, D.C., for three consecutive summers, 2008-2010, and *Faculty Fellow*, summers 2006-2007.

2004 *Anastasia Van Burkalow Distinguished Service Award*.

1976 *Océ-van der Grinten Prize* for Monitoring marine pollution from space.

*National Academy of Sciences/National Research Fellow* at National Aeronautics and Space Administration (NASA) Goddard Space Flight Center, 1969-1971.

*Edmond Hustinx Prize for Chemistry*, 1962, Edmond Hustinx Foundation.

#### **PUBLICATIONS:**

Publications, first-authored, solo-authored and refereed:

Author of book: *Satellite Monitoring of the Earth*, John Wiley and Sons, Inc. New York, 1988.

For submission to *Journal of Applied Remote Sensing*: Eutrophication and Suspended Matter in the Yangtze River Effluent and Hangzhou Bay Observed with the Hyperspectral Imager for the Coastal Ocean (HICO), Karl H. Szekiolda, Wesley Moses, Jeffrey Bowles, Michael Corson, Ellen Bennert and Rong R. Li.

High Spatial Resolution Spectrometry of rafting macroalgae (Sargassum). Karl Szekiolda, George O. Marmorino, Jeffrey H. Bowles, David Gillis. *Journal of Applied Remote Sensing*, SPIE Digital Library, Vol. 4, 043529, 2010, 13 pp, <http://dx.doi.org/10.1117/1.3431044> .

Patch Recognition of Algal Blooms and Macroalgae. K. H. Szekiolda, J. H. Bowles, D. B. Gillis, W. Snyder and W. D. Miller, *SPIE Proceedings*, Vol. 7678, Ocean Sensing and Monitoring II, Weilin (Will) Hou; Robert A. Arnone, Editors, 20 April 2010, <http://dx.doi.org/10.1117/12.854772> .

Interpretation of Absorption Bands in Airborne Hyperspectral Radiance Data. Karl Szekiolda, Jeffrey H. Bowles, David B. Gilles and W. David Miller, *Sensors*, 9 (4), 2009, pp. 2907-2925, <http://www.mdpi.com/1424-8220/9/4/2907/pdf>

Brown Tide Final Report, Principal Investigator for CUNY Research Foundation Project No. 70694 with Suffolk County Department of Health, 2009, <http://www.peconicestuary.org/BrownTideA.pdf>

Bloom observations with satellites in the Peconic Bay. *Long Island Sound Foundation, Research Conference Proceedings 2008*, University of Connecticut, New London, CT, 2008, 35-36.

Airborne hyperspectral imaging of cyanobacteria accumulations in the Potomac River, Karl Szekiolda, George Marmorino, Shelia J. Maness, Timothy Donato, Jeffrey H. Bowles, W. David Miller, W. Joseph Rhea. *Journal of Applied Remote Sensing*, vol. 1, 2007, 1-14, <http://dx.doi.org/10.1117/1.2813574>

Use of the first and second chlorophyll absorption bands for marine biogeochemical patch recognition. *Indian Journal of Marine Sciences*, Special Issue: Ocean Color, vol. 34 (4), December 2005, pp. 387-395, [http://modis.gsfc.nasa.gov/sci\\_team/pubs/abstract.php?id=02785](http://modis.gsfc.nasa.gov/sci_team/pubs/abstract.php?id=02785).

Pattern recognition of marine provinces. *International Journal of Remote Sensing*, Vol. 26, No. 7, London, 2005, pp. 1499-1503.

### **Contributions to books**

Spatial Variability of River Plumes and Eutrophication, with D. McGinnis, co-author. In: *Biogeochemistry of Major World Rivers*, ed. by E.T. Degens et al., John Wiley and Sons, Inc., Chichester, 1991, pp. 1-24.

New Concepts in Patch Recognition of Suspended Matter in Coastal Areas, with D. McGinnis and R. Carey, co-authors. In: *Facets of Modern Biogeochemistry*, ed. by V. Ittekkot, et al., Springer Verlag, Berlin 1990, pp. 155-174.

Satellite Observations Over the North Sea, with D. McGinnis, P. Mc Clain and D. Clark, co-authors. In: *Biochemistry and Distribution of Suspended Matter in the North Sea and Implications to Fisheries Biology*, ed. by S. Kempe et al., Geological-Paleontological Institute, University of Hamburg, 1988, pp. 1-33.

Investigations with Satellites on Eutrophication of Coastal Regions, Response of the Somali Upwelling onto Monsoonal Changes. In: *Transport of Carbon and Minerals in Major World Rivers*, ed. by E.T. Degens et al., University of Hamburg, 1987, pp. 93-112.

The Changjian Regime, with D. McGinnis and E.T. Degens, co-authors. In: *Transport of Carbon and Minerals in Major World Rivers*, ed. by E.T. Degens et al., University of Hamburg, 1987, pp. 171-174.

Potential Use of Satellites for Assessing Pools and Fluxes of the Carbon Cycle. In: *The Global Carbon Cycle*, ed. by B. Bolin et al., John Wiley and Sons Inc., Chichester, 1979, pp. 379-402.

Eolian Dust Into the Northeast Atlantic. In: *Oceanography and Marine Biology: an Annual Review*, ed. by M. Barnes, Aberdeen, Aberdeen University Press, 16, 1978, pp. 11-41.

Spacecraft Oceanography. In: *Oceanography and Marine Biology: an Annual Review*, ed. by M. Barnes, Aberdeen, Aberdeen University Press, 14, 1976, pp. 99-166.

### **Edited**

*Satellite Remote Sensing for Resources Development*, Graham and Trotman, Ltd., London, 1986, 221 pp., with contribution on General Aspects of the use of Satellite Remote Sensing for Resources Exploration in Developing Countries, 1-21.

*Interregional Seminar on Development and Management of Resources of Coastal Areas*, with B. Breuer, co-editor, UN and the German Foundation for International Development, Berlin (West), 1976, 546 pp., with contribution on Coastal Mapping from Satellite Altitudes, 457-468.

### **Publications in scientific journals**

Spectral Reflectance measurements of estuarine waters, with C. Gobler, F. Moshary, B. Gross and S. Ahmed, co-authors. *Ocean Dynamics*, 53, 2003, pp. 98-102.

Investigations with Satellites on Eutrophication of Coastal Regions, Part III: the Patch Concept. In: *Transport of Carbon and Minerals in Major World Rivers, Part III*, ed. by E.T. Degens et al., *SCOPE/UNEP Special Issue*, 58, University of Hamburg, 1985, pp. 33-49.

Investigations with Satellites on Eutrophication of Coastal Regions, Part IV: the Changjiang River and the Huanghai Sea, D. McGinnis, co-author. In: *Transport of Carbon and Minerals in Major World Rivers, Part III*, ed. by E.T. Degens et al., *SCOPE/UNEP Special Issue*, 58, University of Hamburg, 1985, pp. 49-85.

Eutrophication of Coastal Regions, Part V: Note on the Amazon Saltwedge. In: *Transport of Carbon and Minerals in Major World Rivers, Part III*, ed. by E.T. Degens et al., *SCOPE/UNEP Special Issue*, 58, University of Hamburg, 1985, pp. 85-91.

Large-scale Mapping of Vegetation. In: *Transport of Carbon and Minerals in Major World Rivers, Part III*, ed. by E.T. Degens et al., *SCOPE/UNEP Special Issue*, 58, University of Hamburg, 1985, pp. 91-101.

Investigations with Satellites on Eutrophication of Coastal Regions, Part II, D. McGinnis and R. Gird, co-authors. In *Transport of carbon and Minerals in Major World Rivers, Part II*, ed. by E.T. Degens et al., *SCOPE/UNEP Special Issue*, 55, University of Hamburg, 1983, pp. 55-84.

Turbidity Zones Over the Rio de la Plata Region as Monitored with Satellites, L. Piatti and R. Legeckis, co-authors. In: *Transport of Carbon and Minerals in Major World Rivers, Part II*, ed. by E.T. Degens et al., *SCOPE/UNEP Special Issue*, 55, University of Hamburg, 1983, pp. 183-192.

Investigations with Satellites on Eutrophication of Coastal Regions., In: *Transport of Carbon and Minerals in Major World Rivers, Part I*, ed. by E.T. Degens, *SCOPE/UNEP Special Issue*, 52, University of Hamburg, 1982, pp. 13-37.

Scales of Oceanic Parameters as Monitored From Space, *Remote Sensing Quarterly*, 2, 1980, pp. 16-35.

Satellite Investigations on the Dynamics of the Subtropical and Antarctic Convergence Zones, *Deutsche Hydrographische Zeitschrift*, 36, 1983, pp. 25-43.

Investigations of Marine Resources in the Octava Region of Chile, *D + C*, Berlin, 2, 1979, pp. 27-28.

El Estudio del Ambiente Costero Mediante Sensores Remotos (trans. from English), University of Concepcion publication, 1979, pp. 412-440.

Interpretation of Satellite Data for the Near Coastal Region, *Kest Berichte*, 30, 1978, pp. 50-70.

Remote Sensing of Marine Renewable Resources. In: *Aerial/Spatial Remote Sensing and Marine Resources*, Brest, 1977, pp. 237-251.

Skylab Investigation of the Upwelling off the Northwest Coast of Africa, D. Suszkowski and P. Tabor, co-authors, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 37, 1977, pp. 205-213.

Fast Temperate Changes in the Upwelling Area Along the NW Coast of Africa, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 36, 1976, pp. 199-204.

Pattern Recognition of Suspended Material, J.T. Duvall, co-author, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 36, 1976, pp. 205-216.

Chlorophyll Determination of Phytoplankton: a Comparison of *in vivo* Fluorescence with Spectrophotometric Absorption, M.

Marker, co-author, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 36, 1976, pp. 217-219.

Use of Satellite Data in Coastal Zone Programmes, *Ocean Management*, 3, 1976 pp. 31-56.

Monitoring African Dust Events: Comparison of Satellite Imagery, Field Data and Laboratory Analysis, C. Brine, co-author, *Trans., Am. Geophys. Union*, 56, 1975, p. 6.

The Release of Manganese in Sea Water by Eolian Dust from Africa, C. Brine, co-author, *Deutsche Hydrographische Zeitschrift*, 28, 1975, pp. 120-123.

Variability of Sea Surface Temperatures in the Southern Indian Ocean, W. Shenk and V.V. Salomonson, co-authors, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 35, 1974, pp. 143-148.

A Multichannel Approach to Monitor Sea Surface Temperature from Space Along the Northwest Coast of Africa, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 35, 1974, pp. 363-364.

Fernerkundung von Fischfanggründen, *Umschau*, 74, 1974, p. 586.

The Hot Spot in the Ross Sea: Upwelling During Wintertime, *Tethys*, 6, 1974, pp. 105-110.

Observation of Suspended Material from Spacecraft Altitudes, *Deutsche Hydrographische Zeitschrift*, 27, 1974, pp. 159-170.

Chemical Aspects in Delaware Bay, *Delaware Bay Report Series*, 4, 145, 1973, p. 170.

Heterogeneities in Salinity in a River Plume, with S. Kupferman, co-author, *Estuarine and Coastal Marine Science*, I, 1973, pp. 419-424.

Nordwestküste von Afrika beobachtet durch ERTS-1, *Umschau*, 73, 1973, text to cover page.

Validity of Ocean Surface Temperatures Monitored from Satellites, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 35, 1973, pp. 78-86.

Nimbus Observations of Oceanic Upwelling. In: *Significant Accomplishments in Sciences*, NASA Goddard Space Flight Center, Greenbelt, Maryland, 1972, pp. 14-17.

Chlorophyll Structure in the Ocean, R.J. Curran, co-author. In: *Earth Resources Technology Satellite-1*, NASA Goddard Space Flight Center, Greenbelt, Maryland, 1972, pp. 139-141.

Upwelling Studies with Satellites, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 34, 1972, pp. 379-388.

Seasonal Sea Surface Temperature Variations in the Persian Gulf as Recorded by Nimbus 2 HRIR, with V.V. Salomonson and L.J. Allison, co-authors, *Limnology and Oceanography*, 17, 2, 1972, pp. 307-309.

Ozeanische Strukturen in Satellitenbildern, *Umschau*, 72, 1972, pp. 95-97.

Elemental Enrichment in Organic Films and Foam Associated with Aquatic Frontal Systems, with S.L. Kupferman, V. Klemas and D.F. Polis, co-authors, *Journal of Geophysical Research*, 77, 1972, pp. 5278-5282.

Satellite Ocean Temperature Analysis of the Indian Ocean, with W. Shenk, *Jour. Marine Biol. Ass.*, India, 14, 1972, pp. 102-108.

Oceanographic Applications of Color-Enhanced Satellite Imagery, with W.F. Mitchell, co-author, *Remote Sensing Environment*, 2, 1972, pp. 71-76.

Conditions Ecologiques duès à l'Evaporation dans les Etangs de Camargue, avec P. Kerambrun, *Hydrobiologie*, 37, 1971, pp. 273-283.

Remote Sensing of Ocean Currents and Sea Surface Temperature Changes Derived from the Nimbus 2 Satellite, with G. Warnecke, L.J. Allison and L.M. McMillin, co-authors, *Journal of Physical Oceanography*, I, 1971, pp. 45-60.

Anticyclonic and Cyclonic Eddies Near the Somali Coast, *Deutsche Hydrographische Zeitschrift*, 24, 1971, pp. 26-29.

Monsoonal Response in the Western Indian Ocean,, with W. Duing, co-author, *Journal of Geophysical Research*, 76, 1971, pp. 4181-4187.

Liberated Energy Potentially Available from Oxidation Processes in the Arabian Sea, *Deep-Sea Research*, 17, 1970, pp. 641-646.

Ein Einfluss verikaler Bewegungsvoränge auf die Konzentration Organischen Materials in Zirkulationszellen vor Kusten: Modellrechnungen, *Geochimica et Cosmochimica Acta*, 33, 1969, pp. 1233-1246.

Le Dosage du Carbone Particulaire et son Application dans le Golfe du Lion, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 32, 1969, pp. 318-343.

The Application of a Chemical Model to Calculate the "Theoretical" Organic Carbon in Sea Water. *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 33, 1969, pp. 14-19.

Effets eutrophiques débouché d'un grand fleuve (Grand Rhône), F. Blanc, M. Leveau et K.H. Szekiolda, *Marine Biology* 3, 233-242, 1969.

La Composition Elémentaire (C,H,N) dans *Sphaeroma serratum* et *S. hookeri* (Crustacea: Isopoda), *Marine Biology*, 1969, pp. 352-356.

Influence des Modifications Hydrologiques sur le Peuplement de *Sphaeroma* dans l'Etang de Berre, avec P. Kerambrun, *Cahiers de Biologie Marine*, 1969, pp. 301-308.

Vergleichende Untersuchungen uber den Gehalt an organischem Kohlenstoff im Meerwasser und dem Kalimpermanganatverbrauch, *Journal du Conseil Permanent International pour l'Exploration de la Mer*, 32, 1968, pp. 17-24.

The Transport of Organic Matter in the Bottom Water of the Ocean, *Sarsia*, 34, 1968, pp. 243-252.

Le Carbone Particulaire dans les Masses de l'Eau Profondes, *Marine Biology*, 2, 1968, pp. 71-72.

Situation Hydrologique et Distribution du Zooplankton dans le Nordouest de la Mer d'Arabie,, avec M. Leveau, *Sarsia*, 34, 1968, pp. 285-298.

#### **Proceedings and Technical reports**

Spectral recognition of marine bio-geochemical provinces with MODIS, First Workshop on Remote Sensing of the Coastal Zones, 5-7 June 2003, Ghent, Belgium, *EARSel*, 3 (2), 261-275.

Remote sensing of suspended matter in Long Island Sound. In: *Long Island Sound Research Conference Proceedings*, 2004, pp. 55-59.

Satellite Monitoring of Particulate Matter in Long Island Sound, *Fourth Proceedings of the Long Island Research Conference 1998*, November 13-14, 1998, State University of New York, Purchase, New York, pp. 95-105.

Marine and Coastal Resources Monitoring with Satellites. In: *Remote Sensing and Its Impact on Developing Countries*, ed. by C. Chagas and V. Canuto, Pontifical Academy, Vatican City, 1987, pp. 291-339.

Satellite Remote Sensing for Developing Countries. In: *Remote Sensing and Its Impact on Developing Countries*, ed. by C.

Chagas and V. Canuto, Pontifical Academy Vatican City, 1987, pp. 553-561.

Space Observations Over Fishing Grounds. In: *COSPAR: The Contribution of Space Observations to Global Food Information Systems*, Pergamon Press, 1978, pp. 173-179.

Remote Sensing of Marine Resources, *Proceedings Information Session of Aerial/Spatial Remote Sensing and Marine Living Resources Management, Eurocean*, 1976, pp. 47-58.

General Chemistry of the Coastal Waters of the Mid-Atlantic Coast, *Proceedings of Estuarine Research Federation*, College Park, Maryland, 1974, pp. 153-163.

Biomass in the Upwelling Area Along the Northwest Coast of Africa as Viewed with ERTS-1, R.J. Curran, co-author, *Symposium on Significant Results Obtained from the Earth Resources Technology Satellite- 1, Technical Presentations, Section B*, 1973, pp. 1385-1401.

Temperature and Chlorophyll Patches in the Upwelling Along the Northwest Coast of Africa, *Proceedings, American Society of Photogrammetry Fall Convention*, Lake Buena Vista, Florida, 1973, pp. 664-714.

Upwelling Studies with Satellites. In: *Proceedings of the Symposium on Remote Sensing in Marine Biology and Fishery Resources*, Texas A & M University, 1971, pp. 271-293.

The effect of Cyclonic and Anticyclonic water movements on the Distribution of Organic Matter, *NASA Technical Report, X-622-70-40*, Goddard Space Flight Center, Greenbelt, Maryland, 1970.

The Development of Upwelling along the Somali Coast as Detected with the Nimbus 2 and Nimbus 3 Satellites. *NASA Technical Report, X-651-70-419*, 1970, 52 pp.

Le Dosage Simultané du Carbone de l'Hydrogène de l'Azote dans le Matériel en Suspension dans l'Eau de Mer, Note Technique, 1968.

#### **PRESENTATIONS (last six years):**

Invited speaker, seminar on Topics in Atmospheric and Oceanic Sciences (TAOS), Stony Brook University School of Marine and Atmospheric Sciences, Stony Brook, NY, February 16, 2011, on Algal bloom detection by remote sensing.

Presented paper, First observations over Long Island Sound with Hyperspectral Imager for the Ocean (HICO), authors: Karl Szekielda, Michael Corson, Jeffrey Bowles, Ellen Bennert, at Long Island Sound Research Conference, Stamford, CT, 29-30 October 2010.

Invited participant to NASA Ocean Color History Workshop, St. Petersburg, FL, January 12-14, 2009.

Represented paper on Spatial and temporal scales of bloom observations with satellites in the Peconic Bay, authors: Karl H. Szekielda, Theresa Goergen and Hyojin Ahn, at Long Island Sound Foundation, Research Conference, New London, CT, October 30, 2008.

Invited speaker, Earth and Environmental Engineering, Columbia University, New York., NY, September 19, 2008, on Remote sensing spectrometry of algal blooms.

Presented paper on Detection of harmful algae blooms with remote sensing techniques, 10th Annual Wetlands and Watersheds Workshop, Ocean City, MD, October 22-24, 2007.

Presented paper on Hyperspectral imaging spectroscopy for eutrophication monitoring: spatial and temporal events (study with S.J. Maness, J.H. Bowles, G.O. Marmorino, D.B. Gillis, D.R. Korwan, G. Lamela, M.J. Montes, W.J. Rhea and W.A. Snyder), Seventh Annual Marine and Estuarine Shallow Water Science and Management Conference, September 25-27, 2006, Atlantic City.

Presented paper on Use of the first and second chlorophyll absorption bands for marine biogeochemical patch recognition, MTS/IEEE Oceans Conference 2005, September 21, 2005, Washington, D. C.

