

BIO-SKETCH OF FERNANDO GILBES-SANTAELLA

Fernando Gilbes-Santaella is an Associate Professor of the Geology Department in University of Puerto Rico at Mayaguez. He is also the director of the Center for Hemispherical Cooperation in Research and Education in Engineering and Applied Science (CoHemis). In 2002, he founded the Geological and Environmental Remote Sensing Laboratory (GERS Lab) with the mission of promoting and facilitating the education and research of remote sensing tools applied to the Earth System Science. As biological oceanographer he has several publications on environmental remote sensing, bio-optical properties, and coastal studies. Fernando has a B.S. in Biology and a M.S. in Marine Sciences from the University of Puerto Rico at Mayaguez, and a Ph.D. in Biological Oceanography from the University of South Florida. Current research involves multidisciplinary projects sponsored by the NSF and NOAA.

Contact Information:

Center for Hemispherical Cooperation (CoHemis)
University of Puerto Rico at Mayaguez
PO Box 9034
Mayaguez, PR 00681-9034
Phone: 787-265-6380
Fax: 787-265-6340
Email: gilbes@cacique.uprm.edu
Webpages: <http://cohemis.uprm.edu>
<http://gers.uprm.edu>



FERNANDO GILBES-SANTAELLA
DEPARTMENT OF GEOLOGY
UNIVERSITY OF PUERTO RICO AT MAYAGÜEZ
MAYAGÜEZ, PUERTO RICO 00681-9017

PHONE: (787) 832-4040 Ext. 3000

FAX: (787) 265-3845

EMAIL: gilbes@cacique.uprm.edu

WEB PAGE: gers.uprm.edu

EDUCATION

- 1996 Ph.D. in Oceanography, University of South Florida
- 1992 M.S. in Marine Sciences, University of Puerto Rico at Mayagüez
- 1988 B.S. in Biology, University of Puerto Rico at Mayagüez

ACHIEVEMENTS AND AWARDS

- 1998 Sackett Prize for Innovative Research
Department of Marine Science, University of South Florida
- 1998 Cited in Who's Who in Science and Engineering. 4th Edition
- 1995 Fellowship in the Global Change Research Program
NASA Grant No. NGT-30316
- 1992 Fellowship in the Graduate Student Researchers Program
NASA Grant No. NGT-70260
- 1989 Fellowship in the Graduate Student Researchers Program
NASA Grant No. NGT-70099
- 1993 JPL Summer Scholarship to attend the course "Processes of Global Change"
NASA Earth Science Summer School
- 1992 BBSR Summer Scholarship to attend the course "Remote Sensing in Oceanography"
Bermuda Biological Station for Research
- 1991 Young Investigator Award to attend the course "Primary Productivity in the Sea"
Brookhaven National Laboratory

WORK EXPERIENCE

- 07/05-Present Associate Professor, UPRM-Department of Geology
- 08/03-Present Director, UPRM-Center for Hemispherical Cooperation in Research and Education in Engineering and Applied Science (CoHemis)
- 01/02-06/05 Assistant Professor, UPRM-Department of Geology
- 08/02-07/03 Co-Director, UPRM- CoHemis

10/00-12/01 Post-Doctoral Investigator, UPRM
Center for Subsurface Sensing and Imaging Systems (CenSSIS)

01/98-12/01 Post-Doctoral Investigator, UPRM
Tropical Center for Earth and Space Studies (TCESS)

01/97-12/00 Post-Doctoral Investigator, UPRM-Department of Marine Sciences

08/92-12/96 Research Assistant in Remote Sensing
Department of Marine Science, University of South Florida

04/90-07/92 Biological Assistant & Clerk, Cabo Rojo National Wildlife Refuge
U.S. Fish and Wildlife Service, Caribbean Field Office, Boquerón, P. R.

08/90-05/91 Research Advisor (International Scientific Fair)
Science Research Academy for Gifted Students
Inter American University-San Germán Campus, San Germán, P. R.

January 1991 Consultant to U.S. Geological Survey, USGS - Caribbean Office

05/88-12/88 Research Assistant in Phytoplankton Dynamics
Center for Energy and Environment Research, Marine Ecology Division

07/87-08/87 Biological Technician (Wildlife), U.S. Fish and Wildlife Service
Caribbean Field Office - Boquerón, P. R.

08/86-05/88 Volunteer of the Scientific Research Auxiliaries Corps
Department of Natural Resources, Chapter of Ponce, Puerto Rico

Summer 1986 Field Work Assistant (Wildlife), U.S. Fish and Wildlife Service
Cabo Rojo National Wildlife Refuge

08/85-06/86 Biology Workshop Assistant, UPRM-Department of Biology

Summer 1985 Research Assistant (Water and Soil Quality), UPRM-Department of Biology

TEACHING EXPERIENCE

Aug 02-Present GEOL 6225 – Advanced Geological Remote Sensing
GEOL 4048 - Geological Applications of Remote Sensing

Jan 02-Present GEOL 3105 - Images of the Earth
GEOL 4049/4055 - Undergraduate Research

Aug 03-Present GEOL 6993 - Special Topics in Remote Sensing

Summer 2004 NOAA-NCAS Advance Course of Remote Sensing

Aug 98-Dec 01 CMOF 6445 - Oceanographic Remote Sensing I
CMOF 8446 - Oceanographic Remote Sensing II

December 2002 Bio-Optical Oceanography and Satellite Remote Sensing
Facultad de Ciencias, Universidad de la República, Uruguay

November 2000 Bio-Optical Oceanography and Satellite Remote Sensing
Facultad de Ciencias Exactas y Naturales
Universidad Nacional del Mar Del Plata, Argentina

July 1997 Remote Sensing in Coastal Environments
 Instituto Geográfico Agustín Codazzi
 Santa Fe De Bogotá, Colombia

PUBLICATIONS

- Torres J.L., R.A. Armstrong, J.E. Corredor, **F. Gilbes** (2007) Physiological Responses of *Acropora cervicornis* to Increased Solar Irradiance, *Journal of Photochemistry and Photobiology*, 83:839-850.
- Guild, L., B. Lobitz, R. Armstrong, **F. Gilbes**, A. Gleason, J. Goodman, E. Hochbergg, M. Monaco, and R. Berthold (2007) NASA Airborne AVIRIS and DCS Remote Sensing of Coral Reefs. In: *Proceedings of 32nd International Symposium on Remote Sensing of Environment*, San Jose, Costa Rica, June 25-29, 2007, pp. 1-4.
- Gilbes F.**, R.A. Armstrong, J. Goodman, M. Velez, S. Hunt (2006) CenSSIS SeaBED: Diverse Approaches For Imaging Shallow And Deep Coral Reefs. In: *Proceedings of Ocean Optics XVIII*, Montreal, Canada, October 9-13, 2006, pp. 1-8.
- Schellekens, J.H., **F. Gilbes**, G.D. Rivera, Y.C. Ysa, S. Chardon, Y. Fong (2005) Reflectance spectra of tropical vegetation as a response to metal enrichment in the substrate of West-central Puerto Rico, *Caribbean Journal of Earth Sciences*, 39:9-12.
- Ramirez-Beltran, N.D., **F. Gilbes**, J.M. Castro. (2004) A stochastic-Dynamic Model to Predict Fecal Coliforms at the Mouth of the Añasco River, *Coastal Environment V, Incorporating Oil Spill Studies*. C.A. Brebbia J.M. Saval Perez, and L. Garcia Audion (Editors), WIT Press.
- Singh, H., R. Armstrong, **F. Gilbes**, R. Eustice, C. Roman, O. Pizarro, J. Torres (2004) Imaging Coral I: Imaging Coral Habitats With The SeaBED AUV, *Subsurface Sensing Technology and Applications*, 5(1):25-42.
- Gilbes, F.** and R. A. Armstrong (2004) Phytoplankton Dynamics In The Eastern Caribbean Sea As Detected With Space Remote Sensing. *International Journal of Remote Sensing*, 25(7-8): 1449-1452.
- Armstrong, R.A., **F. Gilbes**, R. Guerrero, C. Lasta, and H. Miazán. (2004) Validation Of SeaWiFS-Derived Chlorophyll For The Rio De La Plata Estuary And Adjacent Waters. *International Journal of Remote Sensing*, 25(7-8):1501-1505.
- Gilbes, F.**, R. Armstrong, R.L. Miller, C.E. Del Castillo, M. Rosado, and N. Ramirez (2002) Bio-Optical Evidence Of Land-Sea Interactions In The Western Coast Of Puerto Rico. In: *Proceedings of Ocean Optics XVI*, Santa Fe, Nuevo Mexico, pp. 1-12.
- Lee-Borges, J., **F. Gilbes** and R.A. Armstrong (2002) Seawifs Validation At The Caribbean Time Series Station. In: *Proceedings of Ocean Optics XVI*, Santa Fe, Nuevo Mexico, pp. 1-7.
- Jiménez-Rodríguez, L. O., E. Rodríguez-Díaz, M. Velez-Reyes, **F. Gilbes**, C. A. DiMarzio. (2002) Automatic Coral Reef Detection By The Application Of Tikhonov Regularization To Inverse Modeling In Hyperspectral Images. In: *Ocean Remote Sensing and Applications*, *Proceedings of SPIE*, Vol. 4892.
- Gilbes, F.**, F. E. Müller-Karger, and C. E. Del Castillo. (2002) New Evidence For The West Florida Shelf Plume. *Continental Shelf Research*, 22:2479-2496.

Gilbes, F., R. A. Armstrong, R. M. Webb, and F. E. Müller-Karger (2001) Seawifs Helps Assess Hurricane Impact On Phytoplankton In Caribbean Sea. EOS, Transactions, American Geophysical Union, 82(45):529 and 533.

Alfonso, E., J. M. López, A. Dieppa, **F. Gilbes**, J. E. Corredor, J. M. Morell (2001) Trayectoria Anual De La Producción Primaria Diaria En El Caribe Oriental (Programa CaTS). Electronic version of the journal titled "Serie Oceanológica".

Cruz-Pol, S., M. Velez-Reyes, S. Hunt, H. Parsiani, J. Colon-Ustariz, L.O. Jimenez, R. Vasquez, and **F. Gilbes**. (2001) The Laboratory For Applied Remote Sensing And Image Processing At The University Of Puerto Rico At Mayagüez. IEEE Geoscience and Remote Sensing Society Newsletter, 121:15-19.

Gilbes, F. and R. A. Armstrong (2000) Inherent Optical Properties At The Caribbean Time Series Station (CaTS). In: Proceedings of Ocean Optics XV, Monaco, pp. 1-13.

Armstrong, R. A., J. M. López, and **F. Gilbes** (2000) Apparent Optical Properties At The Caribbean Time Series Station (CaTS). In: Proceedings of Ocean Optics XV, Monaco, pp. 1-5.

Del Castillo, C. E., **F. Gilbes**, P. G. Coble and F. E. Müller-Karger (2000) On The Dispersal Of Riverine Colored Dissolved Organic Matter (CDOM) Over The West Florida Shelf. Limnology and Oceanography, 45(6):1425-1432.

Del Castillo, C. E., **F. Gilbes**, P. G. Coble and F. E. Müller-Karger (1998) Optical Characteristics Of Dissolved Organic Matter During A Bloom On The West Florida Shelf. In: Proceedings of Ocean Optics XIV, Kailua-Kona, Hawaii, pp. 1-6.

Gilbes, F. and J. I. Vélez-Arocho (1998) The Caribbean Countries And The Inter-American Institute For Global Change Research. National Printers Inc., Mayagüez, P.R. 151 pp.

Gilbes, F., C. Tomas, J. J. Walsh, and F. E. Müller-Karger (1996) An Episodic Chlorophyll Plume On The West Florida Shelf. Continental Shelf Research, 16(9):1201-1224

Gilbes, F., J. M. López, and P. M. Yoshioka (1996) Spatial And Temporal Variations Of Phytoplankton Chlorophyll-A And Suspended Particulate Matter In Mayagüez Bay, Puerto Rico. Journal of Plankton Research, 18(1):29-43.

Gilbes, F. (1987) Cowbirds Control Project In Roosevelt Roads, Ceiba, Puerto Rico. U.S. Fish and Wildlife Service, Caribbean Field Office. Final Project Report, 50 pp.

MEETING PRESENTATIONS

Torres, D., S. Adréfouët, **F. Gilbes**, and F. Müller-Karger (2007) Comparing Methods and Sensors for Coral Reef Habitat Mapping in South Florida, USA. Oral Presentation, 32nd International Symposium on Remote Sensing of Environment, San Jose, Costa Rica.

Guild, L., B. Lobitz, R. Armstrong, **F. Gilbes**, A. Gleason, J. Goodman, E. Hochbergg, M. Monaco, and R. Berthold (2007) NASA Airborne AVIRIS and DCS Remote Sensing of Coral Reefs. Oral Presentation, 32nd International Symposium on Remote Sensing of Environment, San Jose, Costa Rica.

Zayas, C., **F. Gilbes**, R. Armstrong, and M. López (2007) Mapping Benthic Communities in Southwestern Puerto Rico using IKONOS. Poster Presentation, ASLO 2007 Aquatic Sciences Meeting, Santa Fe, New Mexico.

- Gilbes F.**, R.A. Armstrong, J. Goodman, M. Velez, S. Hunt (2006) CenSSIS SeaBED: Diverse Approaches For Imaging Shallow And Deep Coral Reefs. Poster Presentation, Ocean Optics XVIII Conference, Montreal, Canada.
- Gilbes, F.** and Chiques, G. (2005) Spectral Characterization of Sandy Beaches in Western Puerto Rico. Oral Presentation, 17th Caribbean Geological Conference, San Juan, PR.
- Arce, J., **Gilbes, F.**, and Goodman, J. (2005) Validation of Remote Sensors for Benthic Habitats Studies in Southwestern Puerto Rico. Poster Presentation, 8th International Conference of Remote Sensing for Marine and Coastal Environments, Halifax, Nova Scotia.
- Gilbes, F.** and Arce, J. (2004) Remote Sensing of Benthic Habitats in Southwestern Puerto Rico. Oral Presentation, ASLO/TOS Ocean Research Conference, Honolulu, Hawaii.
- Gilbes, F.**, Armstrong, R., Miller, R.L., Del Castillo, C.E., Rosado, M., and Ramirez, N. (2002) Bio-Optical Evidence of Land-Sea Interactions in the Western Coast of Puerto Rico. Oral and Poster Presentation, Ocean Optics XVI Meeting, Santa Fe, Nuevo Mexico.
- Lee-Borges, J., **Gilbes, F.**, and Armstrong, R. (2002) SeaWiFS Validation at the Caribbean Time Series Station. Poster Presentation, Ocean Optics XVI Meeting, Santa Fe, Nuevo Mexico.
- Rosado, M., **Gilbes, F.**, Armstrong, R. and Lee-Borges, J. (2002) Validation of Bio-Optical Algorithms in the Western Coast of Puerto Rico. Poster Presentation, Ocean Optics XVI Meeting, Santa Fe, Nuevo Mexico.
- Schellekens, J.H., **Gilbes, F.**, Rivera-Rivera, G.D. and Ysa, Y. (2002) Remote sensing of mineral deposits in tropical terranes. Porphyry copper deposits in west-central Puerto Rico. Oral Presentation, 16th Caribbean Geological Conference, Barbados.
- Gilbes, F.** (2002) Percepción Remota: Una Forma Diferente de Observar Nuestro Planeta. Oral Presentation, BIOS '02, La biología revolucionando el nuevo siglo. UPRM-Departamento de Biología. 1-mayo-02.
- Schellekens, J.H., **Gilbes, F.**, Rivera-Rivera, G.D., Chardon. S., Fong, Y., and Ysa, Y. (2002) Remote sensing of Metal Enriched Areas in Tropical Terranes. - Differences in Vegetation Reflectance. Oral presentation, 22nd Aniversario de Casa Pueblo, Adjuntas, PR.
- Gilbes, F.** (2002) Percepción Remota: Una forma diferente se Observar la Tierra. Presentación Oral, Simposio de Ciencias y Tecnología. Programa Upward Bound Ciencias y Matemáticas. Universidad Interamerica de Puerto Rico, Recinto de Ponce. 12-abril-2002
- Gilbes, F.** (2002) Hyperspectral Remote Sensing of Coral Reefs. Oral Presentation, Research and Industrial Collaboration Conference of the Center for Subsurface Sensing and Imaging Systems. Northeastern University, Boston, MA. January 29-30, 2002
- Schellekens, J.H., **Gilbes, F.**, Rivera-Rivera, G.D., and Ysa, Y. (2001) Remote sensing of mineral deposits in tropical terranes. Porphyry copper deposits in west-central Puerto Rico Poster Presentation, PRSGC First Congress on Integrating NASA Research and Education Projects in Puerto Rico, Hyatt Regency Cerromar Beach Resort. November 14-17, 2001
- Gilbes, F.** and Armstrong, R. (2000) Space Remote Sensing Of The Eastern Caribbean Sea. Poster Presentation) Oceans From Space Meeting, Venice, Italy.
- Armstrong, R. and **Gilbes, F.** (2000) Validation of SeaWiFS Chlorophyll Algorithm For The Rio De La Plata Estuary. Poster Presentation, Oceans From Space Meeting, Venice, Italy.

- Gilbes, F.** and Armstrong, R. (2000) Inherent Optical Properties At The Caribbean Time Series Station (CaTS). Poster Presentation, Ocean Optics XV Meeting, Monaco.
- Armstrong, R. and **Gilbes, F.** (2000) Apparent Optical Properties At The Caribbean Time Series Station (CaTS). Oral Presentation, Ocean Optics XV Meeting, Monaco.
- Del Castillo, C., **Gilbes, F.** and Coble, P. (1998) Optical Characteristics Of Dissolved Organic Matter During A Bloom On The West Florida Shelf. Poster, Ocean Optics XIV, Hawaii.
- Gilbes, F.** (1996) Analysis of Episodic Phytoplankton Blooming and Associated Oceanographic Parameters on the West Florida Shelf using Remote Sensing and Field Data. Ph.D. Dissertation, University of South Florida, 138 pp.
- Gilbes, F.** and Armstrong, R. (1996) AVHRR Detection of Orinoco River Plume Waters In The Eastern Caribbean Sea. Oral Presentation, ASLO Ocean Sciences Meeting, California.
- Gilbes, F.** (1992) The Relationship Between Phytoplankton Chlorophyll-A and Suspended Particulate Matter in Mayagüez Bay, Puerto Rico. Master Thesis, UPR-Mayagüez, 53 pp.
- Gilbes, F.** (1989) Estudio Preliminar Sobre el Análisis del Patrón de Distribución de Favia fragum en el Cayo San Cristobal en La Parguera, Puerto Rico. Oral presentation, XVI Symposium of Department of Natural Resources, San Juan, PR
- Gilbes, F.** (1989) Abundancia y Distribución de los Erizos De Mar (Clase Echinoidea) en la Costa Rocosa de la Isla Caja De Muertos. Oral presentation, IX Symposium of Wildlife of Puerto Rico. University of the Sacred Heart, San Juan, PR

SPONSORED RESEARCH

- Bio-Optical Properties and Remote Sensing of Coastal Waters (2002-2011) Cooperative Remote Sensing Science and Technology Center (CREST). NOAA
- Detection of Submerge Features Using Hyperspectral Remote Sensing (2000-2010) Engineering Research Center for Subsurface Sensing and Imaging Systems (CenSSIS). NSF
- Developing A Protocol To Use Remote Sensing As A Cost Effective Tool To Monitor Contamination Of Mangrove Wetlands (2006-2008) Puerto Rico Sea Grant
- Monitoring Nutrients Content In The San Juan Bay Estuary Using Hyperspectral Remote Sensing (2005-2007) Puerto Rico Water Resources and Environmental Research Institute.
- Contaminant and Erosion Control Baseline Database for the Puerto Mosquito Watershed, Vieques, PR. (2003-2007) Puerto Rico Sea Grant.
- Characteristics of Mesoscales Caribbean Eddies (2003-2007) U.S. Office of Naval Research.
- Monitoring the Water Quality Parameters of Mayagüez Bay. (2001-2004) EPA Grant through the Puerto Rico Water Resources and Environmental Research Institute.
- Remote Sensing of the Eastern Caribbean Sea (1995-2005) Tropical Center for Earth and Space Studies (TCESS). NASA
- Development and Validation of Bio-Optical Algorithms in Coastal Waters. (1999-2002) NASA
- Analysis of the Inherent and Apparent Optical Properties in Case 1 and Case 2 Waters of the Caribbean. (1998-2001) NASA

ORGANIZATIONS AND COMMITTEES

- Coordinator of Outcomes Assessment. UPRM-Geology. (2002-Present)
- Member of American Geophysical Union (1996-Present)
- Member of the Society of Latin American Remote Sensing Specialists (1996-2000)
- Member of Cousteau Society (1989-1992)
- Member of The Oceanography Society (1988-1991)
- Chairman of Bios'87, Department of Biology, November 2-13, 1987
- Chairman of the Biological Student Society UPR - Mayagüez Campus, 1986-1987
- Founding Member of the Scientific Research Auxiliaries Corps, DNR, 1986-1988

SPECIAL SKILLS

- Bilingual: Spanish and English
- Digital image processing: SeaDAS, ERDAS-Imagine, DSP, IDL, ENVI, and TeraScan
- Computer systems: Mac OS, Windows, Unix, Linux
- Oceanographic, Bio-optical, and Remote Sensing Techniques
- Advanced Scuba Diving (NAUI Certified)
- Development of WebPages using Macromedia Studio 8 Software Package