

# Jean-François Gaillard

---

## CONTACT INFORMATION

Department of Civil and Environmental Engineering  
McCormick School of Engineering and Applied Science  
Northwestern University  
2145 Sheridan Road, Evanston, IL 60208-3109

Office: +1 847 467-1376  
Fax: +1 847 491-4011  
Laboratory: +1 847 467-1074  
e-mail: jf-gaillard@northwestern.edu

## RESEARCH INTERESTS

Environmental Geochemistry, Aquatic Chemistry, Metal Speciation, Biogeochemical Cycles,  
Sediments, Early Diagenesis, Synchrotron Radiation, X-ray Absorption Spectroscopy

## EDUCATION

**Université Paris 7 & Institut de Physique du Globe de Paris, France**

*Docteur Ès Sciences Physiques: Chimie-Géochimie* **June 1987**

- Title: About some Processes in Early Diagenesis
- Advisor: Professor Gil Michard

**Université Pierre et Marie Curie, Paris VI, France**

*Docteur 3<sup>ième</sup> Cycle: Water Sciences,* **September 1982**

- Title: Early Diagenesis in Canadian Shield Lakes
- Advisor: Professor Gil Michard

**Université Pierre et Marie Curie, Paris VI, France**

*Diplôme d'Etudes Approfondies: Sciences de l'Eau,* **June 1980**

- MS in Water Sciences
- Project: Modeling Silica Dynamics in Lake Léman (Lake Geneva)

**Université Savoie Mont Blanc, Chambéry, France**

*Maîtrise de Sciences et Techniques Air et Eau,* **June 1979**

- BS in Environmental Engineering: Air and Water

## PROFESSIONAL EXPERIENCE

**Northwestern University, Evanston, Illinois, USA**

*Assistant, Associate, and then Professor* **September 1995 – present**

Department of Civil and Environmental Engineering, and  
Department of Earth and Planetary Sciences

**University of Notre Dame, Notre Dame, Indiana, USA**

*Visiting Professor and then Assistant Professor* **August 1991 – August 1995**

Department of Civil Engineering and Geological Sciences

**Université Paris 7 & Institut de Physique du Globe de Paris, Paris, France**

*Maître de Conférences* **September 1989 – present**

Laboratoire de Géochimie des Eaux,  
Unité de Formation et de Recherche de Chimie.

**Université de Genève, Genève, Switzerland**

*Maître Assistant* **September 1988 – August 1989**

Département de Chimie Minérale Analytique et Appliquée

**Université Paris 7 & Institut de Physique du Globe de Paris, Paris, France**

*Assistant des Universités* **September 1982 – August 1989**

Laboratoire de Géochimie des Eaux,  
Unité de Formation et de Recherche de Chimie.

HONOURS AND  
AWARDS

Research Initiation Awards, National Science Foundation, 1993-1996  
IUPAC Fellow (International Union of Pure and Applied Chemistry), 2007

PUBLICATIONS

Thomas S.A, Catty P., Hazemann J.-L., Michaud-Soret I., Gaillard J.-F. (2019) The role of cysteine and sulfide in the interplay between microbial Hg(II) uptake and sulfur metabolism. *Metalomics*, **11**, 1219-1229.

Huang R., Huo G., Song S., Li Y., Xia L., Gaillard J.-F. (2019) Immobilization of mercury using high-phosphate culture-modified microalgae. *Environmental Pollution*, **254**, 112966

Myers C.P., Pappas I., Makwana E., Begum-Gafur R., Utgikar N., Alsina M.A., Fitzgerald M., Trivedi H.M., Gaillard J.-F., Masters J.G., Sullivan R.J. (2019) Solving the Problem With Stannous Fluoride: Formulation, Stabilization, and Antimicrobial Action. *Journal of the American Dental Association*, **150**, (4 suppl), S5-S13.

Wilke C.M., Petersen C., Alsina M.A., Gaillard J.-F., Gray K.A. (2019) Photochemical interactions between n-Ag<sub>2</sub>S and n-TiO<sub>2</sub> amplify their bacterial stress response. *Environmental Science: Nano*, **6**, 115-126.

Xie M., Alsina M.A., Yuen J., Packman A.I., Gaillard J.-F. (2019) Effects of resuspension on the mobility and chemical speciation of zinc in contaminated sediments. *Journal of Hazardous Materials*, **364**: 300-308.

Thomas S.A., Rodby K. E., Roth E.W., Wu J., Gaillard J.-F. (2018) Spectroscopic and Microscopic Evidence of Biomediated HgS Species Formation from Hg(II)-Cysteine Complexes: Implications for Hg(II) Bioavailability. *Environmental Science & Technology*, **52**: 10030-10039.

Alsina M. A., Gaillard J.-F. (2018) Structural characterization of metal complexes in aqueous solutions: A XAS study of stannous fluoride. *Physical Chemistry Chemical Physics*, **20**, 12727-12735.

Wilke C.M., Wunderlich B., Gaillard J.-F., Gray K.A. (2018) Synergistic Bacterial Stress Results from Exposure to Nano-Ag and Nano-TiO<sub>2</sub> Mixtures under Light in Environmental Media. *Environmental Science & Technology*, **52** (5), 3185-3194.

Wilke C.M., Gaillard J.-F., Gray K.A. (2018) The critical role of light in moderating microbial stress due to mixtures of engineered nanomaterials. *Environmental Science: Nano*, **5**, 96-102.

Xie M., Wang N., Gaillard J.-F., Packman A.I. (2018) Interplay between Flow and Bioturbation Enhances Metal Efflux from Low-Permeability Sediments. *Journal of Hazardous Materials*, **341**, 304-312.

Thomas S.A., Gaillard J.-F. (2017) Cysteine Addition Promotes Sulfide Production and 4-Fold Hg(II)-S Coordination in Actively Metabolizing *Escherichia coli* *Environmental Science & Technology*, **51**, 4642-4651.

Alsina M. A., Gaillard J.-F., Keten S. (2016) Conformational changes during the permeation of Na<sup>+</sup> through a modified cyclic peptide nanotube promote energy landscape roughness. *Physical Chemistry Chemical Physics*, **18**, 31698-31710.

Wilke C.M., Tong T., Gaillard J.-F., Gray K.A. (2016) Attenuation of Microbial Stress due to n-Ag and n-TiO<sub>2</sub> Interactions under Dark Conditions. *Environmental Science & Technology*, **50**, 11302-11310.

Wang N., Tong T., Xie M., Gaillard J.-F. (2016) Lifetime and Dissolution Kinetics of Zinc Oxide Nanoparticles in Aqueous Media. *Nanotechnology*, (invited contribution), **32**, 324001.

Thomas S.A., Ma Q., Gaillard J.-F. (2016) Probing changes in Hg(II) coordination during its bacterial uptake. *Journal of Physics: Conference Series*, **712**(1), 012078.

- Xie M., Wang N., Gaillard J.-F., Packman A.I. (2016) Hydrodynamic Forcing Mobilizes Cu in Low-Permeability Estuarine Sediments. *Environmental Science & Technology*, **50** (9), 4615-4623.
- Binh C.T.T., Adams E., Vigen E., Tong T., Alsina, M.A., Gaillard J.-F., Gray K.A., Peterson C.G., Kelly J.J. (2016) Chronic addition of a common engineered nanomaterial alters biomass, activity and composition of stream biofilm communities. *Environmental Science: Nano*, **3**(3), 619-630.
- Ozaki, A., Adams E., Binh C.T.T., Tong T., Gaillard J.-F., Gray K.A., Kelly J.J. (2016) One-time addition of nano-TiO<sub>2</sub> triggers short-term responses in benthic bacterial communities in artificial streams. *Microbial Ecology*, **71**(2), 266-275.
- Tong T., Wilke C.M., Wu J., Binh C.T.T., Kelly J.J., Gaillard J.-F., Gray K.A. (2015) Combined Toxicity of nano-ZnO and nano-TiO<sub>2</sub>: From Single to Multinanomaterial Systems. *Environmental Science & Technology*, **49** (13), 8113-8123.
- Webb, S.M., and Gaillard J.-F. (2015) Zinc speciation in contaminated sediments: Quantitative determination of zinc coordination by x-ray absorption spectroscopy. *Aquatic Geochemistry*, **21** (2-4), 295-312.
- Xie M., Jarrett B.A., Da Silva-Cadoux C., Fetters K.J., Burton G.A., Gaillard J.-F., Packman A.I. (2015) Coupled Effects of Hydrodynamics and Biogeochemistry on Zn Mobility and Speciation in Highly Contaminated Sediments. *Environmental Science & Technology*, **49** (9), 5346-5353.
- Binh C.T.T., Petersen C.G., Tong T., Gaillard J.-F., Gray K.A., and Kelly J.J. (2015) Comparing acute effects of a nano-TiO<sub>2</sub> pigment on cosmopolitan freshwater phototrophic microbes using high-throughput screening. *PLoS One*, **10**(4), e0125613.
- Thomas S.A., Gaillard J.-F. (2015) The Molecular Structure of Aqueous Hg(II)-EDTA As Determined by X-ray Absorption Spectroscopy. *Journal of Physical Chemistry A*, **119** (12), 2878-2884.
- Tong T., Hill, A.N., Alsina M.A., Wu J., Shang K.Y., Kelly J.J., Gray K.A., Gaillard J.-F. (2015) Spectroscopic characterization of TiO<sub>2</sub> polymorphs in wastewater treatment and sediment samples. *Environmental Science & Technology Letters*, **2**(1), 12-18.
- Thomas S.A., Tong T., and Gaillard J.-F. (2014) Hg(II) bacterial biouptake: The role of anthropogenic and biogenic ligands present in solution and spectroscopic evidence of ligand exchange reactions at the cell surface. *Metallomics*, (6), 2213-2222.
- Alsina M.A., L. Zanella L., C.A. Hoel, G.E. Pizzaro, J.-F. Gaillard, and P.A. Pasten (2014) Arsenic Speciation in Sinter Mineralization from a Hydrothermal Channel of El Tatio Geothermal Field, Chile. *Journal of Hydrology*, **518**, 434-446.
- Binh C.T.T., Tong T., Gaillard J.-F., Gray K.A., and Kelly J.J. (2014) Acute Effects of TiO<sub>2</sub> Nanomaterials on the Viability and Taxonomic Composition of Aquatic Bacterial Communities Assessed via High-Throughput Screening and Next Generation Sequencing. *PLoS One*, **9**(8), e106280.
- Tong, T., Fang, K.Q., Thomas, S.A., Kelly, J.J., Gray, K.A., and Gaillard, J.-F. (2014) Chemical Interactions between Nano-ZnO and Nano-TiO<sub>2</sub> in a Natural Aqueous Medium. *Environmental Science & Technology*, **48**(14), 7924-7932.
- Binh C.T.T., Tong T., Gaillard J.-F., Gray K.A., and Kelly J.J. (2014) Common Freshwater Bacteria Vary in their Responses to Short-Term exposure to nano-TiO<sub>2</sub> in Natural Surface Waters. *Environmental Toxicology and Chemistry*, **33**(2), 317-327.
- Tong T., Shereef A., Wu J., Binh C.T.T., Kelly J.J., Gaillard J.-F., and K.A. Gray (2013) Effects of Material Morphology on the Phototoxicity of Nano-TiO<sub>2</sub> to Bacteria. *Environmental Science & Technology*, **47**(21), 12486-12495.

- Tong T., C.T.T. Binh, J.J. Kelly, J.-F. Gaillard, and K.A. Gray (2013) Cytotoxicity of commercial nano-TiO<sub>2</sub> to Escherichia coli assessed by high-throughput screening: Effects of environmental factors. *Water Research*, **47**, 2352-2362.
- Da Silva-Cadoux C., L. Zanella, and J.-F. Gaillard (2012) Selecting reference compounds for determining chemical speciation by X-ray absorption spectroscopy. *Journal of Analytical Atomic Spectrometry*, **27**, 957-965.
- Dahl A.L., J. Sanseverino, and J.-F. Gaillard (2011) Bacterial Bioreporter Detects Mercury in the Presence of Excess EDTA. *Environmental Chemistry*, **58**, 552-560.
- Hoel C.A., S. Xie, C. Benmore, C.D. Malliakas, J.-F. Gaillard, and K.R. Poeppelmeier (2011) Evidence for Tetrahedral Zn in Amorphous In<sub>2-2x</sub>Zn<sub>x</sub>Sn<sub>x</sub>O<sub>3</sub> (a-ZITO). *Zeitschrift für anorganische und allgemeine Chemie*, **637(7-8)**, 885-894.
- Zanella L., F. Casadio, K.A. Gray, R. Warta, Q. Ma, and J.-F. Gaillard (2011) The Darkening of Zinc Yellow: XANES Speciation of Chromium in Artist's Paints after Light and Chemical Exposures. *Journal of Analytical Atomic Spectrometry*, **26**, 1090-1097.
- Hoel C.A., J.M. Gallardo Amores, E. Morán, M.A. Álvaro-Franco, J.-F. Gaillard, and K.R. Poeppelmeier (2010) High-Pressure Synthesis and Local Structure of Corundum-Type In<sub>2-2x</sub>Zn<sub>x</sub>Sn<sub>x</sub>O<sub>3</sub> ( $x \leq 0.7$ ). *Journal of the American Chemical Society*, **132**, 16479-16487.
- Chen C., A. I. Packman, D. Zhang, and J.-F. Gaillard (2010) A multi-scale investigation of interfacial transport, pore fluid flow, and fine particle deposition in a sediment bed. *Water Resources Research*, W11560.
- Hoel C.A., T.O. Mason, J.-F. Gaillard, and Poeppelmeier K.R. (2010) Transparent Conducting Oxides in the ZnO – In<sub>2</sub>O<sub>3</sub> – SnO<sub>2</sub> System. *Chemistry of Materials*, **22**, 3569-3579.
- Hoel C.A., J.-F. Gaillard, and Poeppelmeier K.R. (2010) Probing the local structure of crystalline ZITO: In<sub>2-2x</sub>Sn<sub>x</sub>Zn<sub>x</sub>O<sub>3</sub> ( $x \leq 0.4$ ). *Journal of Solid State Chemistry*, **183**, 761-768.
- Chen C., A.I. Packman, and J.-F. Gaillard (2009) Using x-ray microtomography and pore-scale modeling to quantify sediment mixing and fluid flow in a developing streambed. *Geophysical Research Letters*, **36**, L08403.
- Chen C., A.I. Packman, and J.-F. Gaillard (2009). Temporal evolution of pore geometry, fluid flow, and solute transport resulting from colloid deposition. *Water Resources Research*, **45**, W06416.
- Petkov V., Y. Ren, I. Saratovsky, P. Pasten, S. Gurr, M. Hayward, K. Poeppelmeier and J.-F. Gaillard (2009), Atomic-scale structure of biogenic materials by total XRD: a study of bacterial and fungal MnO<sub>x</sub>. *ACS-Nano*, **3(2)**, 441-445.
- Gough H.L, Dahl A.L, Tribou, E., Noble, P.A., Gaillard, J.-F., Stahl, D.A. (2008), Elevated sulfate reduction in metal-contaminated freshwater lake sediments. *Journal of Geophysical Research - Biogeosciences*, **113**, G04037.
- Chen C., Packman A.I., Gaillard, J.-F. (2008) Pore-scale analysis of permeability reduction resulting from colloid deposition. *Geophysical Research Letters*, **35**, L07404.
- Gough H.L, Dahl A.L, Nolan M.A., Gaillard, J.-F., Stahl, D.A. (2008), Metal impacts on microbial biomass in the anoxic sediments of a contaminated lake. *Journal of Geophysical Research - Biogeosciences*, **113**, G02017.
- Alsina M., Saratovsky, I., Gaillard J.-F., and Pasten P.A. (2008), Arsenic Speciation in Solid Phases of Geothermal Fields. Chapter 15 in *Adsorption of Metals by Geomedia II: Variables, Mechanisms, and Model Applications*, **Volume 7**, edited by M. O Barnett and D. B. Kent, Elsevier, Amsterdam, The Netherlands, pp 417-440.

- Gaillard, J.-F., Chen, C., Stone, S., Lau, B., Keane, D.T., and Packman, A.I. (2007), Imaging of colloidal deposits in granular porous media by x-ray difference micro-tomography. *Geophysical Research Letters*, **34**, L18404.
- Smit, J.P., Kim H.-S., Saratovsky, I., Stark, K.B., Fitzgerald, G., Zajac, G.W., Gaillard, J.-F., Poeppelmeier, K.R., Stair, P.C. (2007) A Spectroscopic and Computational Investigation of the Vanadomolybdate Local Structure in the Lyonsite Phase  $Mg_{2.5}VMoO_8$ . *Inorganic Chemistry*, **46**, 6556-6564.
- Sahai, N., Lee Y.J., Xu H., Ciardelli M., Gaillard J.-F. (2007) Role of Fe(II) and Phosphate in Arsenic Uptake by Coprecipitation. *Geochimica et Cosmochimica Acta*, **71**, 3193-3210.
- Gaillard J.-F. (2007) Probing Environmental Particles and Colloids with X-Rays. In *Environmental Particles and Colloids: Behaviour, Structure, and Characterisation*, Eds. K.J. Wilkinson and J.R. Lead. IUPAC Series on Analytical and Physical Chemistry of Environmental Systems. Wiley, Chichester, pp 613-666.
- Packman A.I., Marion A., Zaramella M., Chen C., Gaillard J.-F., Keane D.T. (2006) Development of layered sediment structure and its effects on pore water transport and hyporheic exchange. *Water, Air, and Soil Pollution: Focus*, **6**, 433-442.
- Saratovsky, I., Wightman P.G., Pasten P.A., Gaillard J.-F., Poeppelmeier K.R. (2006) Manganese Oxides: Parallels between Abiotic and Biotic Structures. *Journal of the American Chemical Society*, **128**, 11188-11198.
- Peltier, E.F., Dahl. A.L., Gaillard, J.-F. (2005) Metal Speciation in Anoxic Sediments: When Sulfides can be Construed as Oxides. *Environmental Science & Technology*, **39**, 311-316.
- Santschi, P.H., Burd, A.B., Gaillard, J.-F., and Lazarides A.L. (2005) Transport of Materials and Chemicals by Nano-scale Colloids and Micro to Macro-scale Floccs in Marine, Freshwater, and Engineered Systems. In *Flocculation in Natural and Engineered Environmental Systems*, Eds I. Droppo, G. Leppard, S. Liss, and J. Milligant, CRC Press, pp 191-209.
- Kim, H.-S., Pasten, P.A., Gaillard, J.-F., Stair, P.C. (2003) Nanocrystalline Todorokite-like Manganese Oxide Produced by Bacterial Catalysis. *Journal of the American Chemical Society*, **125**, 14284-14285.
- Webb, S. M., Gaillard, J.-F., Ma L.Q., Tu, C. (2003) XAS Speciation of Arsenic in an Hyperaccumulating Fern. *Environmental Science & Technology*, **37**, 754-760.
- Peltier E.F., Webb, S. M., Gaillard, J.-F. (2003) Zinc and lead sequestration in an impacted wetland system. *Advances in Environmental Research*, **8**, 103-112.
- Taillefert, M., MacGregor B.J., Gaillard J.-F., Lienemann C.-P., Perret D., Stahl D.A. (2002) Evidence for a Dynamic Cycle Between Mn and Co in the Water Column of a Stratified Lake. *Environmental Science & Technology*, **36**, 468-476.
- Nolan M.A., and Gaillard J.-F. (2002) Probing Zinc Speciation in Contaminated Sediments by Square Wave Voltammetry at a Hg-Ir Microelectrode. In *Environmental Electrochemistry: Analyses of Trace Element Biogeochemistry*, Eds M. Taillefert and T. Rozan, ACS Symposium Series No **811**, 210-226.
- Taillefert, M., Gaillard, J.-F. (2002) Reactive Transport Modeling of Trace Elements in the Water Column of a Stratified Lake: Iron Cycling and Metal Scavenging. *Journal of Hydrology*, **256**, 16-34.
- Webb, S.M., Gaillard, J.-F., Jackson. B. E., Stahl D.A. (2001) An EXAFS study of zinc coordination in microbial cells. *Journal of Synchrotron Radiation*, **8**, 943-945.

- Gaillard, J.-F., Webb, S.M., Quintana J.P.G. (2001) Quick X-ray Absorption Spectroscopy for Determining Metal Speciation in Environmental Samples. *Journal of Synchrotron Radiation*, **8**, 928-930.
- Perret D., Gaillard J.-F., Dominik J., Atteia O. (2000) The Diversity of Natural Hydrous Iron Oxides. *Environmental Science & Technology*, **34**, 3540-3546.
- Webb S.M., Leppard G.G., Gaillard J.-F. (2000) Zinc Speciation in a Contaminated Aquatic Environment: Characterization of Environmental Particles by Analytical Electron Microscopy. *Environmental Science & Technology*, **34**, 1926-1933.
- Taillefert M., C.-P. Lienemann, J.-F. Gaillard, and D. Perret (2000) Speciation, Reactivity, and Cycling of Fe and Pb in a Meromictic Lake. *Geochimica et Cosmochimica Acta*, **64**, 169-183.
- Taillefert M. and J.-F. Gaillard (1999) Tentacle Ion Exchange Separation of Pb-NOM in Aquatic Samples. *Environmental Science & Technology*, **33**, 4107-4111.
- Sigman D.M., Altabet M.A., Francois R., McCorkle D.C., Gaillard J.-F. (1999) The isotopic composition of diatom-bound nitrogen in Southern Ocean sediments. *Paleoceanography*, **14**, 118-134.
- Banaszak J.E., S. M. Webb, B. E. Rittmann, J.-F. Gaillard, and D. T. Reed (1999) Fate of Neptunium in an Anaerobic, Methanogenic Microcosm. in Scientific Basis for Nuclear Waste Management, Material Research Society Symposium Proceedings, vol. 556, 1141-1149.
- MacGregor B. J., M. Taillefert, J.-F. Gaillard, D. A. Stahl, and C.-P. Lienemann (1998) Molecular Characterization of Microbial Populations in the Water Column of a Stratified Lake (Paul Lake, Michigan) related to chemical zonation. *Mineralogical Magazine*, **62A**, 933-934.
- Rabouille C., J.-F. Gaillard, J.-C. Relexans, P. Tréguer, M.-A. Vincendeau (1998) Recycling of Organic Matter in Antarctic Sediments: A Transect through the Polar Front in the Southern Ocean. *Limnology and Oceanography*, **43**, 420-432.
- Perret D., J.-F. Gaillard, J. Dominik, and O. Atteia (1998) Aquatic Hydrous Oxide Colloids: Evidencing the Ambiguities. *Mineralogical Magazine*, **62A**, 1151-1152.
- Taillefert M. and J.-F. Gaillard (1998) The Chemical Speciation of Pb in the Water Column of Paul Lake (MI). *Mineralogical Magazine*, **62A**, 1490-1491.
- Taillefert M., E. Rose, and J.-F. Gaillard (1997). Trace Metal Cycling in a Meromictic Lake: The Influence of Hydrous-Iron Particles and Dissolved Organic Matter. In *Contaminated Soils, Third International Conference on the Biogeochemistry of Trace Elements*, R. Prost Ed., Les Colloques de l'INRA, **85**, 289-302.
- Rabouille C., J.-F. Gaillard, P. Tréguer, and M.-A. Vincendeau (1997) Biogenic silica recycling in surficial sediments across the Polar Front of the Southern Ocean (Indian Sector). *Deep-Sea Research II*, **44**, 1151-1176.
- Gaillard J.-F. (1997) ANTARES -1: A Biogeochemical Study of the Indian Sector of the Southern Ocean. *Deep-Sea Research II*, **44**, 951-961.
- Lienemann C.-P., M. Taillefert, D. Perret, and J.-F. Gaillard (1997) Association of cobalt and manganese in aquatic systems: chemical and microscopic evidence. *Geochimica et Cosmochimica Acta*, **61**, 1437-1446.
- Relexans J.-C., J. Deming, A. Dinet, J.-F. Gaillard, and M. Sibuet (1996) Sedimentary Organic Matter and Micro-Meiofauna with Relation to Trophic Conditions in the Tropical North Atlantic. *Deep-Sea Research*, **43**, 1343-1368.
- Van Cappellen P., and Gaillard J.-F. (1996). Biogeochemical dynamics in aquatic sediments. In *Reactive transport in porous media*. Litchner P.C., Steefel C. I., and Oelkers E.H. Eds. Reviews in Mineralogy and Geochemistry, **Vol 34**, pp 335-376.

- Auffret G., T. Richter, J.-L. Reyss, C. Organo, E. Deloule, J.-F. Gaillard, B. Denneilou, C. Muller, B. Thomas, P. Watrenez, F. Grousset, A. Boelaert, P. Cambon, and J. Etoubleau (1996) Record of hydrothermal activity in sediments from the Mid-Atlantic Ridge south of the Azores. *Comptes Rendus de l'Académie des Sciences*, **323**, 583-590.
- Sarazin G., J.-F. Gaillard, L. Philippe, and C. Rabouille (1995). Chemical Diagenesis and Nutrients Fluxes at the Sediment-Water Interface of an Eutrophic Lake. *Hydrobiologia*, **315**, 95-118.
- Gaillard, J.-F. (1995). Principes et Processus Chimiques. In *Limnologie Générale*. (R. Pourriot and M. Meybeck Eds.), Masson, Paris, 115-156.
- Rabouille C., and J.-F. Gaillard (1994). Simulation of the Sediment Behavior During a Benthic Chamber Deployment on the Deep-Sea Floor. *Oceanologia Acta*, **17**, 405-416.
- Jahnke R.A., D. B. Craven, and J.-F. Gaillard (1994). The Influence of Organic Matter Diagenesis on CaCO<sub>3</sub> Dissolution at the Deep Sea Floor. *Geochimica et Cosmochimica Acta*, 2799-2809.
- Gaillard, J.-F. (1994). Early Diagenetic Modeling: A critical need for process studies, kinetics rates, and numerical methods. In *Trends in Chemical Geology*, Research Trends, Council of Scientific Information, Trivandrum, India, 239-252.
- Gaillard J.-F. (1993). Early Diagenesis in Canadian Shield Lakes. *Chemical Geology*, **107**, 453-456.
- Sarazin G., J.-F. Gaillard, L. Philippe and C. Rabouille (1993). Organic Matter Mineralization and Nutrient Fluxes at the Sediment-Water Interface of a Eutrophic Lake (Aydat Lake, Puy de Dôme, France). *Chemical Geology*, **107**, 471-476.
- Kump, L. R., R. A. Berner, D. E. Canfield, K.B. Follmi, J.-F. Gaillard, J. Lelieveld, and F. T. Mackenzie (1993) C, N, P, and S Biogeochemical Dynamics and Cycling in the Geologic Record. In *Interactions of C, N, P, and S Biogeochemical Cycles* (Eds R. Wollast, F.T. Mackenzie, & L. Chou), Springer Verlag, pp 491-493.
- Van Cappellen P., J.-F. Gaillard, and C. Rabouille (1993). Biogeochemical Transformations in Sediments: Kinetic Models of Early Diagenesis. In *Interactions of C, N, P, and S Biogeochemical Cycles* (R. Wollast, F.T. Mackenzie, & L. Chou, Eds.), Springer Verlag, pp 401-446.
- Rabouille C., P. Crassous, A. Kripounoff, J.-F. Gaillard, R. Jahnke, C. Pierre, and J-C. Relexans (1993). A model of Early Diagenesis in the Tropical North Atlantic: Processes and Mass Balances in the Sediments of the EUMELI Program. *Chemical Geology*, **107**, 463-466.
- Rabouille C., J.-F. Gaillard, M. Sibuet, and C. Beaucaire, P. Bonté, P. Crassous, R. Jahnke, A. Kripounoff, F. Legleux, J. Laureillard, L. Méjanelle, C. Pierre, J-C. Relexans, J-L. Reyss (1993) Sediment Geochemistry in the Three EUMELI Sites in the Tropical North-East Atlantic: General Presentation and First Results. *Annales de l'Institut Océanographique*, **69**, 35-42.
- Sibuet M., P. Albert, S. Charmasson, J. Deming, A. Dinet, J. Galeron, L. Guidi-Guilvard, M.-L. Mahaud, P. Buat-Ménard, G. Cahet, P. Crassous, J.-F. Gaillard, P. Geistdoerfer, R. A. Jahnke, A. Kripounoff, J. Laureillard, L. Méjanelle, R. Perron, C. Pierre, J.-C. Relexans, G. Rowe, M. Segonzag, A. Vangriesheim (1993) The Benthic Ecosystem in the Three EUMELI Sites in the Northeast Tropical Atlantic: General Perspectives and Initial Results on Biological Abundance and Activities. *Annales de l'Institut Océanographique*, **69**, 21-33.
- Auffret G., Geistdoerfer P., Gaillard J.-F., Reyss J.-L., Rabouille C., Voisset M., Coutelle A., Muller C., Kerbrat R., Monti S., Ondreas H., Mauviel A. (1992). Preliminary sedimentological and biological assessment of EUMELI project sites. *Comptes Rendus de l'Académie des Sciences*, **314**, 187-194.
- Gaillard, J.-F. and C. Rabouille (1992). Using Monod-Kinetics in Models of Early Diagenesis. In *Deep-Sea Food Chains and the Global Carbon Cycle*, Ed. G. T. Rowe and V. Pariente, Kluwer Academic, pp 309-324.

- Rabouille C., and J.-F. Gaillard (1991). Towards the EDGE: Early Diagenetic Global Explanation. A Model Depicting the Early Diagenesis of Organic Matter, O<sub>2</sub>, NO<sub>3</sub>, Mn and PO<sub>4</sub>. *Geochimica et Cosmochimica Acta*, **55**, 2511-2525.
- Rabouille C., and J.-F. Gaillard (1991). A Coupled Model Representing the Deep-Sea organic carbon mineralization and oxygen consumption in surficial sediments. *Journal of Geophysical Research*, **96**, 2761-2776.
- Gaillard, J.-F. (1991). Preparing for ANTARES: Flux of Biogenic Silica in the Southern Ocean: Water Column and Sediments. *La Mer*, **29**, 194-200.
- Rabouille C., and J.-F. Gaillard (1990). The Validity of Steady-State Calculations in Early Diagenesis: A Computer Simulation of Deep-Sea Silica Diagenesis. *Deep-Sea Research*, **37**, 625-646.
- Simonin J.-P., P. Turq, E. Soualhia, G. Michard, and J.-F. Gaillard (1989). Transport Coupling of Ions: Influence of Ion Pairing and pH-Gradient. *Chemical Geology*, **78**, 346-356.
- Gaillard J.-F., H. Pauwels, and G. Michard (1989). Chemical Diagenesis in Coastal Marine Sediments. *Oceanologia Acta*, **12(3)**, 175-187.
- Simonin J.-P., J.-F. Gaillard, P. Turq, and E. Soualhia (1988). Diffusion Coupling in Electrolyte Solutions: I. Transient Effects on a Tracer Ion, Sulfate. *Journal of Physical Chemistry*, **92**, 1696-1700.
- Gaillard J.-F., G. Sarazin, H. Pauwels, L. Philippe, D. Lavergne, and G. Blake (1987). Interstitial Water and Sediment Chemistries of Aiguebelette Lake (Savoy, France). *Chemical Geology*, **63**, 73-84.
- Span D., and J.-F. Gaillard (1986). An Investigation of a Procedure for Determining Carbonate Bound Trace Metals. *Chemical Geology*, **56**, 135-141.
- Gaillard J.-F., C. Jeandel, G. Michard, E. Nicolas, and D. Renard (1986). Interstitial Water Chemistry of Villefranche Bay Sediments: Trace Metals Diagenesis. *Marine Chemistry*, **18**, pp 233-247.
- Deloule E., and J.-F. Gaillard (1986). A Computation Method for Drawing Mineral Stability Diagrams on a Microcomputer. In *Microcomputer Applications in Geology, Computer and Geology*, (J. T.Hanley and D. F. Merriam Eds.), **Vol. 5**, Pergamon Press, pp 189-198.
- Deloule E., and J.-F. Gaillard (1984). A New Computation Method for Mineral Stability Diagrams. In *Computers in Earth Sciences for Natural Resources Characterization*, (J. J. Royer Ed.), CNRS publication, pp 623-634.
- Nriagu, J.O., and J.-F. Gaillard (1984). The Speciation of Pollutant Metals in Lakes Near the Smelters at Sudbury, Ontario. In *Environmental Impacts of Smelters*, (Ed. J.O.Nriagu), J. Wiley & Sons, pp 349-374.