

1. Record Nr.	UNINA9910583379503321
Autore	DeVivo Benedetto
Titolo	Environmental Geochemistry : Site Characterization, Data Analysis and Case Histories
Pubbl/distr/stampa	San Diego : , : Elsevier, , 2017 ©2018
ISBN	0-444-63763-X
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (646 pages)
Altri autori (Persone)	BelkinH. E LimaAnnamaria
Disciplina	551.9
Soggetti	Environmental geochemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Front Cover -- Environmental Geochemistry: Site Characterization, Data Analysis and Case Histories -- Copyright -- Contents -- Contributors -- Preface -- Acknowledgments -- Chapter 1: Field Methods in Regional Geochemical Surveys -- 1. Introduction -- 2. Sampling Media -- 3. Sampling Density -- 4. Sampling Network -- 5. Quality Assurance in Sampling -- 6. Sampling Procedures -- 6.1. General Aspects of the Fieldwork -- 6.2. Stream Waters -- 6.3. Sediments -- 6.4. Soils -- 7. Documentation of the Field Data -- 8. Photographing -- 9. Sample Archive -- References -- Chapter 2: Sampling Methods for Site Characterization -- 1. Introduction -- 1.1. Exploratory Sampling -- 1.2. Monitoring -- 1.3. Presence/Absence Sampling -- 2. Site Characterization -- 2.1. Initial Site Assessment -- 3. Basic Sampling Types -- 3.1. Random Sampling -- 3.2. Stratified Random Sampling -- 3.3. Systematic Sampling (Grid) -- 3.4. Judgmental Sampling -- 4. Some Further Sampling Considerations -- 4.1. Depth Sampling -- 4.2. Types of Samples -- 4.3. Number of Samples -- 4.4. Composite Sampling -- 4.5. Statistical Considerations -- 4.6. Sampling Bias -- 4.7. Control (Background) Samples -- 4.8. Sampling Tools -- 4.9. Field Measurement -- 4.10. Sample Handling -- 4.11. Documenting Sampling -- References -- Chapter 3: Contaminated Groundwater Sampling and Quality Control of Water Analyses -- 1. Introduction -- 2. Groundwater Sampling Objectives -- 2.1. Planning and Preparation --

- 3. Choosing the Right Portable Sampling Devices -- 3.1. Grab Samplers -- 3.2. Passive Diffusion Bag Sampler -- 3.3. SnapSampler -- 3.4. HydraSleeve -- 3.5. Inertial Pumps -- 3.6. Peristaltic Pumps -- 3.7. Gas-Operated Bladder Pumps -- 3.8. Electric Submersible Pumps -- 3.9. Common Materials Used in Sampling Devices -- 4. Avoiding Cross-Contamination -- 5. Water-Level Measurements.
- 6. Well Purging Techniques -- 6.1. Specified Number of Well Volumes -- 6.2. Low-Flow Purging -- 6.3. "No Purge" Sampling -- 6.4. Dedicated Pump Versus Portable Sample Collection -- 7. On-Site Water-Quality Measurements -- 7.1. Temperature -- 7.2. pH -- 7.3. Specific Electrical Conductance -- 7.4. Alkalinity -- 7.5. Dissolved Oxygen -- 7.6. Oxidation-Reduction Potential -- 8. Preservation and Handling of Samples -- 8.1. Filtration -- 8.2. Addition of Preservatives -- 8.3. Solvent Extraction -- 8.4. Cooling or Freezing -- 8.5. Sample Containers -- 9. Quality Assurance and Quality Control Procedures -- 9.1. Blank Samples -- 9.2. Laboratory Blanks -- 9.3. Field Blanks -- 9.4. Replicate Samples -- 9.5. Spiked Samples -- 9.6. Labeling -- 9.7. Transport -- 9.8. Laboratory Reception -- 9.9. Chain of Custody -- 10. Data Validation -- 10.1. Comparison of Field and Laboratory Values -- 10.2. Comparison With Other Samples From the Same Source -- 10.3. Comparison With Other Samples From the Area -- 10.4. Comparison of SEC and TDS -- 10.5. Evaluation of Charge Balance Errors -- 10.6. Comparison of Measured and Calculated TDS (or Measured and Calculated SEC) -- 10.7. Apparent Anomalies and Impossibilities -- 11. Health and Safety in Fieldwork -- References -- Chapter 4: The Collection of Drainage Samples for Environmental Analyses From Active Stream Channels -- 1. Introduction -- 2. Drainage Basins -- 3. Drainage Sampling -- 4. Sampling Strategy -- 5. Procedures -- 5.1. Generic Sampling Considerations -- 5.1.1. Reliability of Sampling Teams -- 5.1.2. Avoiding Contamination -- 5.2. Sampling Team and Responsibilities -- 5.3. Field Sampling Equipment -- 5.4. Sampling Procedures -- 5.5. Site Selection -- 5.6. Collecting a Stream Water -- 5.7. Collecting Stream Sediment -- 5.8. Collecting Panned Concentrate -- 5.9. Completion of Sampling.
- 5.10. Collecting Duplicate Samples -- 5.11. Dry Sites -- 5.12. Control Samples -- 5.13. Health and Safety -- 6. Discussion -- 6.1. Sampling Equipment -- 6.2. Representative Nature of Drainage Sediments -- 6.3. Other Drainage Site Media -- 7. Conclusions -- Acknowledgments -- References -- Chapter 5: Data Conditioning of Environmental Geochemical Data: Quality Control Procedures Used in the British Geological ... -- 1. Introduction -- 2. Planning Quality Control-Quality Assurance -- 2.1. Appropriate and Well-Documented Procedures -- 2.2. Sample Numbering -- 2.3. Control Samples -- 3. Raw Data Checking -- 3.1. Data Checking -- 3.2. Dealing with Missing, Semiquantitative and Unreliable Data -- 4. Statistical Analyses and Plotting of Control Sample Data -- 4.1. Control Charts -- 4.2. Duplicate-Replicate Plots -- 4.3. Hierarchical Analysis of Variance -- 5. Leveling Data -- 5.1. Between Batch and Between Field Campaign Data Leveling -- 5.2. Leveling Data With Differing Lower Limits of Detection -- 5.3. Leveling Data Determined by Different Analytical Method -- 6. Discussion -- Acknowledgments -- References -- Chapter 6: Gas Chromatographic Methods of Chemical Analysis of Organics and Their Quality Control -- 1. Introduction -- 2. Sample Preparation-Aqueous Samples -- 2.1. Purge and Trap -- 2.2. Headspace -- 2.3. Liquid/Liquid Extraction -- 2.4. Solid Phase Extraction -- 2.5. Solid Phase Microextraction -- 3. Sample Preparation-Soil Samples -- 3.1. Purge and Trap -- 3.2. Soxhlet Extraction -- 3.3. Shaker Table -- 3.4. Ultrasonic Probe -- 3.5. Accelerated Solvent Extraction -- 4. Clean-Up

Techniques -- 4.1. Adsorption "Clean-Up" Columns -- 4.2. Size-Exclusion Columns -- 4.3. Lipid Destruction -- 4.4. Sulfur Removal -- 4.5. Evaporation Steps -- 5. Instrumental Analysis -- 5.1. Flame Ionization Detector -- 5.2. Electron Capture Detector. 5.3. Nitrogen/Phosphorus Detector -- 5.4. Photo Ionization Detector -- 5.5. Mass Spectrometry -- 5.6. High-Resolution Mass Spectrometry -- 6. Data Analysis -- 6.1. External Standard Calculations -- 6.2. Internal Standard Calculations -- 6.3. Isotope Dilution Calculations -- 7. Quality Control -- 7.1. Internal QC -- 7.2. Method Blanks -- 7.3. Method Spikes (Laboratory Control Samples) -- 7.4. Matrix Spikes and Matrix Spike Duplicates -- 7.5. Surrogates -- 7.6. Duplicates -- 7.7. Reference Materials -- 7.8. External Laboratory QC -- References -- Chapter 7: Evaluation of Geochemical Background at Regional and Local Scales by Fractal Filtering Technique: Case Studies ... -- 1. Introduction -- 2. Multifractal Interpolation and Fractal Concentration-Area (C-A) Method -- 3. Background/Baseline Geochemical Map Obtained by Fractal Filtering (S-A) method -- 4. Pb and U Background Values for Campania Region Stream Sediments -- 5. Pb Background Values for the Volcanic Soils of the Metropolitan and Provincial Areas of Napoli -- 6. Conclusions -- Acknowledgments -- References -- Chapter 8: Geochemical Mapping of Urban Areas -- 1. Introduction -- 2. Definition of Geochemical Background and Baseline at an Urban Scale -- 3. Planning Urban Geochemical Mapping -- 4. Sampling Protocols and Field Activities -- 5. Sample Preparation and Analyses -- 6. Geochemical Data Presentation -- 6.1. GIS-Aided Techniques for Urban Geochemical Data Presentation -- 6.2. Dot Maps -- 6.3. Interpolation -- 6.4. Background and Baseline Maps -- 6.5. Multivariate Analysis and Scores Mapping -- 6.6. Risk Mapping -- Acknowledgments -- References -- Chapter 9: Chemical Speciation to Assess Bioavailability, Bioaccessibility and Geochemical Forms of Potentially Toxic Met ... -- 1. Introduction -- 2. PTMs Forms in Soil and Bioavailability. 3. The Need of Speciation and Speciation Methods of PTMs in Soil -- 4. Plant Bioavailability -- 4.1. Metals in Soil Solution -- 4.2. Single Chemical Methods to Assess Phytoavailable Metals in Soil -- 4.2.1. Soil Extraction of Readily Soluble PTMs With 1M NH₄NO₃ -- 4.3. Contrasting Aspects in the Use of Single Chemical Methods to Define Plant-Available PTMs -- 5. Human Bioavailability and Bioaccessibility -- 6. PTM Partitioning Between Soil Geochemical Phases -- 6.1. Sequential Chemical Extractions -- 6.2. The BCR Sequential Extractions -- 6.3. Problems and Options of Sequential Extractions -- 7. Applications of PTM Speciation for Risk and Remediation Assessment -- 8. Concluding Remarks -- References -- Chapter 10: Extraction and Characterization of Pore Water in Contaminated Soils -- 1. Introduction -- 1.1. Soil Pore Water and the Concept of (Bio)availability -- 1.1.1. Soil Pore Water Definition -- 1.1.2. Bioavailability and Soil Pore Water Sampling -- 2. Methods for Sampling Soil Pore Water -- 2.1. Field-Based Methods -- 2.1.1. Tension Samplers -- 2.1.2. Passive Samplers -- 2.2. Laboratory-Based Methods -- 3. Description and Discussion of Selected Methods -- 3.1. Rhizon Soil Moisture Samplers -- 3.1.1. Materials -- 3.1.2. Theoretical Basis of Method -- 3.1.3. Zone of Influence -- 3.1.4. Uses and Limitations for Soil Pore Water Extractions -- 3.2. Passive Diffusion Samplers-Microdialysis Probes -- 3.2.1. Materials -- 3.2.2. Theoretical Basis of Method -- 3.2.3. Uses and Limitations for Soil Pore Water Extractions -- 3.3. Centrifugation -- 3.3.1. Materials -- 3.3.2. Theoretical Basis of Method -- 3.3.3. Pore Water Extraction -- 3.3.4. Uses and Limitations for Soil Pore Water Extractions -- 3.4. Pressure Filtering (Squeezing) -- 3.4.1. Materials -- 3.4.2. Theoretical Basis of Method -- 3.4.3. Pore Water Extraction -- 3.4.4. Extraction Efficiency.

3.4.5. Uses and Limitations for Soil Pore Water Extractions.
