1. Record Nr. UNINA9910337891403321

Autore	Awange Joseph
Titolo	Environmental Geoinformatics : Extreme Hydro-Climatic and Food Security Challenges: Exploiting the Big Data / / by Joseph Awange, John Kiema
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-03017-2
Edizione	[2nd ed. 2019.]
Descrizione fisica	1 online resource (636 pages)
Collana	Environmental Science, , 1431-6250
Disciplina	363.7 363.700285
Soggetti	Environmental sciences Environmental monitoring Remote sensing Civil engineering Space sciences Environmental Science and Engineering Monitoring/Environmental Analysis Remote Sensing/Photogrammetry Civil Engineering Space Sciences (including Extraterrestrial Physics, Space Exploration and Astronautics)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Environmental Monitoring and Management -- Geodata and Geoinformatics -- Fundamentals of Surveying and Geodesy -- Modernization of GNSS -- The Global Positioning System -- Environmental Surveying and Surveillance -- Fundamentals of Remote Sensing -- Optical Remote Sensing -- Microwave Remote Sensing -- Image Interpretation and Analysis -- Fundamentals of Photogrammetry -- Digital Photogrammetry -- CORONA Historical De-classied Products -- Fundamentals of GIS -- Data Models and Structure -- Input of GIS Data -- GIS Database -- Spatial Analysis -- Web GIS and Mapping -- Unmanned Aircraft Vehicles -- Light Detection And

Ranging (LiDAR) -- Maps in Environmental Monitoring -- Satellite Environmental Sensing -- GNSS Reectometry and Applications -- Weather, Climate and Global Warming -- GNSS Sensing of Climate Variability -- Water Resources -- Land Management -- Marine and Coastal Resources -- Protection and Conservation of Animals and Vegetation -- Disaster Monitoring and Management -- Environmental Pollution -- Environmental Impact Assessment.

Sommario/riassunto

This second edition includes updated chapters from the first edition as well as five additional new chapters (Light detection and ranging (LiDAR), CORONA historical de-classified products, Unmanned Aircraft Vehicles (UAVs), GNSS-reflectometry and GNSS applications to climate variability), shifting the main focus from monitoring and management to extreme hydro-climatic and food security challenges and exploiting big data. Since the publication of first edition, much has changed in terms of technology, and the demand for geospatial data has increased with the advent of the big data era. For instance, the use of laser scanning has advanced so much that it is unavoidable in most environmental monitoring tasks, whereas unmanned aircraft vehicles (UAVs)/drones are emerging as efficient tools that address food security issues as well as many other contemporary challenges. Furthermore, global navigation satellite systems (GNSS) are now responding to challenges posed by climate change by unravelling the impacts of teleconnection (e.g., ENSO) as well as advancing the use of reflected signals (GNSS-reflectometry) to monitor, e.g., soil moisture variations. Indeed all these rely on the explosive use of “big data” in many fields of human endeavour. Moreover, with the ever-increasing global population, intense pressure is being exerted on the Earth’s resources, leading to significant changes in its land cover (e.g., deforestation), diminishing biodiversity and natural habitats, dwindling fresh water supplies, and changing weather and climatic patterns (e.g., global warming, changing sea level). Environmental monitoring techniques that provide information on these are under scrutiny from an increasingly environmentally conscious society that demands the efficient delivery of such information at a minimal cost. Environmental changes vary both spatially and temporally, thereby putting pressure on traditional methods of data acquisition, some of which are highly labour intensive, such as animal tracking for conservation purposes. With these challenges, conventional monitoring techniques, particularly those that record spatial changes call for more sophisticated approaches that deliver the necessary information at an affordable cost. One direction being pursued in the development of such techniques involves environmental geoinformatics, which can act as a stand-alone method or complement traditional methods.