

## Scienze Della Terra 1

The Sahara-Sahel borderland occupies a critical geographical position due to its recurrent latitudinal shifts, continually having a strong impact on humans, animals and plants. Gobero is located at the southern limits of the present Sahara, in Niger. The archaeological record at this site encompasses the re-occupation of the Sahara ca 10,000 years ago until approximately 2000 years ago. During this long period, Gobero witnessed significant fluctuations in climate and water resource availability that resulted in cycles of human occupation, abandonment and re-occupation around a natural basin occupied by a palaeolake, until desertification became an irreversible process and the area turned into a no-return frontier for its occupants. This book presents the archaeological, anthropological and environmental data collected during the 2005 and 2006 field seasons at Gobero. Various factors highlight the extraordinary significance of this site. Thanks to its geographical position, straddling the ancient shifting border(s) of the Sahara and the Sahel, the Gobero's archaeological record reveals critical population movements in this part of Africa and different economic and technological strategies its inhabitants employed to adapt to changing environmental conditions. The presence of both settlement and burial features at Gobero gives a comprehensive view of the cultural, social, economic and funerary traditions of the people who lived and died at this site during almost the entire Holocene. The results from these archaeological investigations provide a term of reference for future research and interpretations of past human occupations in the Sahara, as well as North and West Africa.

Scienze della terraST. Scienze della terra. Per il biennio delle Scuole superioriGlossario di Scienze della TerraAlpha TestCorso di scienze della terra. Con espansione online. Per le Scuole superioriAnatomy of an Orogen: The Apennines and Adjacent Mediterranean BasinsSpringer

The Marcel Grossmann Meetings seek to further the development of the foundations and applications of Einstein's general relativity by promoting theoretical understanding in the relevant fields of physics, mathematics, astronomy and astrophysics and to direct future technological, observational, and experimental efforts. The meetings discuss recent developments in classical and quantum aspects of gravity, and in cosmology and relativistic astrophysics, with major emphasis on mathematical foundations and physical predictions, having the main objective of gathering scientists from diverse backgrounds for deepening our understanding of spacetime structure and reviewing the current state of the art in the theory, observations and experiments pertinent to relativistic gravitation. The range of topics is broad, going from the more abstract classical theory, quantum gravity, branes and strings, to more concrete relativistic astrophysics observations and modeling. The three volumes of the proceedings of MG13 give a broad view of all aspects of gravitational physics and astrophysics, from mathematical issues to recent observations and experiments. The scientific program of the meeting included 33 morning plenary talks during 6 days, and 75 parallel sessions over 4 afternoons. Volume A contains plenary and review talks ranging from the mathematical foundations of classical and quantum gravitational theories including recent developments in string/brane theories, to precision tests of general relativity including progress towards the detection of gravitational waves, and from supernova cosmology to relativistic astrophysics including such topics as gamma ray bursts, black hole physics both in our galaxy and in active galactic nuclei in other galaxies, and neutron star and pulsar astrophysics. Volumes B and C include parallel sessions which touch on dark matter, neutrinos, X-ray sources, astrophysical black holes, neutron stars, binary systems, radiative transfer, accretion disks, quasars, gamma ray bursts, supernovas, alternative gravitational theories, perturbations of collapsed objects, analog models, black hole thermodynamics, numerical relativity, gravitational lensing, large scale structure, observational cosmology, early universe models

and cosmic microwave background anisotropies, inhomogeneous cosmology, inflation, global structure, singularities, chaos, Einstein–Maxwell systems, wormholes, exact solutions of Einstein's equations, gravitational waves, gravitational wave detectors and data analysis, precision gravitational measurements, quantum gravity and loop quantum gravity, quantum cosmology, strings and branes, self-gravitating systems, gamma ray astronomy, and cosmic rays and the history of general relativity. Contents: On the Cosmological Singularity (Vladimir A Belinski) GRB Afterglow Discovery with Bepposax: Its Story 15 Years Later (Filippo Frontera) Rotation, Convection, and Core Collapse (W David Arnett) Spacetime Singularities: Recent Developments (Claes Uggla) Hidden Symmetries: From BKL to Kac–Moody (Philipp Fleig & Hermann Nicolai) Recent Results in Mathematical GR (Sergiu Klainerman) Higher Dimensional Black Holes (Harvey S Reall) Causal Dynamical Triangulations and the Search for a Theory of Quantum Gravity (Jan Ambjorn, Andrzej Görlich, Jerzy Jurkiewicz & Renate Loll) On Quantum Gravity, Asymptotic Safety, and Paramagnetic Dominance (Andreas Nink & Martin Reuter) Perturbative Quantum Gravity as a Double Copy of Gauge Theory and Implications for UV Properties (Zvi Bern) Type Ia Supernova Cosmology: Past and Future (Ariel Goobar) The Energetic Universe: A Nobel Surprise (Robert P Kirshner) Strong, Weak, Electromagnetic and Gravitational Interactions in Neutron Stars (Jorge Rueda & Remo Ruffini) Gravitational-Wave Physics and Astronomy Using Ground-Based Interferometers (David H Reitze & David H Shoemaker) Gamma-Ray Burst Prompt Emission (Bing Zhang) Black Holes, Supernovae and Gamma Ray Bursts (Remo Ruffini) Precision Tests of Theories of Gravity Using Pulsars (Michael Kramer) The Planck Mission: Recent Results, Cosmological and Fundamental Physics Perspectives (Nazzareno Mandolesi, Carlo Burigana, Alessandro Gruppuso & Paolo Natoli) Observation of a New Boson at a Mass of 125 GeV with the CMS Experiment at the LHC (Chiara Mariotti) Unavoidable CMB Spectral Features and Blackbody Photosphere of Our Universe (Rashid Sunyaev & Rishi Khatri) Search for the Standard Model Higgs Boson with the ATLAS Detector (Domizia Orestano) Readership: Graduate students in astronomy, astrophysics and cosmology, and scientists interested in general relativity, gravitation, astrophysics, quantum gravity, particle physics, cosmology and theoretical physics. Keywords: General Relativity; Gravitation; Astrophysics; Quantum Gravity; Particle Physics; Cosmology; Theoretical Physics

This is the first book to bring together practical examples from around the world to show how geomorphological evidence can help in effective land utilisation and hazard risk assessment. Case studies provide important lessons in risk management, and experts provide summaries of current research. The text also promotes good practice and effective land use, and looks at problems caused by misuse of the environment and potential solutions based on geomorphological evidence.

Dinosaur Tracks from Brazil is the first full-length study of dinosaurs in Brazil. Some 500 dinosaur trackways from the Cretaceous period still remain in the Rio do Peixe basins of Brazil, making it one of the largest trackways in the world. Veteran paleontologists Giuseppe Leonardi and Ismar de Souza Carvalho painstakingly document and analyze each track found at 37 individual sites and at approximately 96 stratigraphic levels. Richly illustrated and containing a wealth of data, Leonardi and de Souza Carvalho brilliantly reconstruct the taxonomic groups of the dinosaurs from the area and show how they moved across the alluvial fans, meandering rivers, and shallow lakes of ancient Gondwana. Dinosaur Tracks from Brazil is essential reading for paleontologists.

Integrated stratigraphy is essential for &lozf; detailed paleoecologic studies of critical intervals in Earth history &lozf; the calibration of the time scale for global use &lozf; the establishment of Global Stratotype Sections and Points (GSSPs) for the definition of chronostratigraphic boundaries. This book constitutes an excellent and probably unique example of how interdisciplinary stratigraphic and geochronologic studies are approached with modern

methodologies and techniques. It contains numerous unpublished, accurate radioisotopic dates of volcano-sedimentary layers interbedded in fossiliferous marine and continental Miocene sequences representing Mediterranean and Pacific environments. New, extremely detailed paleontologic data which constitute the basis for an accurate definition of the Miocene biostratigraphy, and the study of the ecologic evolution of Miocene marine environments are also included. The chapters are complimented by black-and-white photographs, graphic figures, and tables. Stratigraphers, paleontologists and sedimentologists plus geologists working in oil companies will certainly find this work of interest.

This is the first book in English reviewing and updating the geology of the whole Apennines, one of the recent most uplifted mountains in the world. The Apennines are the place from which Steno (1669) first stated the principles of geology. The Apennines also represent amongst others, the finding/testing sites of processes and products like volcanic eruptions, earthquakes, olistostromes and mélanges (argille scagliose), salinity crisis, geothermal fluids, thrust-top basins, and turbidites (first represented in a famous Leonardo's painting). As such, the Apennines are a testing and learning ground readily accessible and rich of any type of field data. A growing literature is available most of which is not published in widely available journals. The objective of the book is to provide a synthesis of current data and ideas on the Apennines, for the most part simply written and suitable for an international audience. However, sufficient details and in-depth analyses of the various complex settings have been presented to make this material useful to professional scholars and to students of senior university courses.

The Directory of Geoscience Departments 50th Edition is the most comprehensive directory and source of information about geosciences departments and researchers available. It is an invaluable resource for individuals working in the geosciences or must identify or work with specialists on the issues of Earth, Environmental, and related sciences and engineering fields. The Directory of Geoscience Departments 50th Edition provides a state/country-sorted listing of nearly 2300 geoscience departments, research departments, institutes, and their faculty and staff. Information on contact information for departments and individuals is provided, as well as details on department enrollments, faculty specialties, and the date and source of faculty and staff's highest degree. New in the 50th edition: Listing of all US and Canadian geoscience theses and dissertations accepted in 2012 that have been reported to GeoRef Information Services, as well as a listing of faculty by their research specialty.

Volume 2 provides an overview of the Mesozoic and Cenozoic evolution of Central Europe. This period commenced with the destruction of Pangaea and ended with the formation of the Alps and Carpathians and the subsequent Ice Ages. Separate summary chapters on the Permian to Cretaceous tectonics and the Alpine evolution are also included. The final chapter provides an overview of the fossils fuels, ore and industrial minerals in the region.

The crust of the Earth records the deformational processes of the inner Earth and the influence of the overlying atmosphere. The state of the Earth's crust at any time is therefore the result of internal and external processes, which occur on different time and spatial scales. In recent years important steps forward in the understanding of such complex processes have been made by integrating theory and observations with experimental and computer models. This volume presents state-of-the-art analogue and numerical models of processes that alter the Earth's crust. It shows the application of models in a broad range of geological problems with careful documentation of the modelling approach used. This volume contains contributions on analogue and numerical sandbox models, models of orogenic processes, models of sedimentary basins, models of surface processes and deformation, and models of faults and fluid

flow.

The proceedings from the September 1998 conference in Marshall, California contain 39 papers on the following topics: ophiolites, ocean crust, and global tectonics; oceanic lower crust and upper mantle; structure and physical properties of upper oceanic crust; hydrothermal processes; Pacific Rim ophiolites; and, Ophiolites from Iapetus, Rheic-Pleionic, Neotethyan, and Indian Oceans. Contributors include scientists with backgrounds in structural geology, tectonics, geophysics, petrology, and geochemistry. Numerous black and white illustrations (and one in color) are included. Annotation copyrighted by Book News Inc., Portland, OR

The Aeolian Islands form one of the most active geological structures in the Mediterranean area, comprising a number of active (Stromboli and Vulcano) and dormant (Panarea and Lipari) volcanoes. They have attracted the attention of scientists in modern and historical times and are the cradle of the scientific discipline of volcanology. This Memoir provides information on geological features of the Aeolian Islands volcanoes at a regional scale and for each island. The stratigraphy, structural evolution, eruptive and magmatic history of the Islands is presented, along with the geodynamic setting of the Aeolian volcanism and implications for magma origin and evolution processes. Particular focus is given to the active and dormant volcanoes and the related natural hazards. It includes a DVD with new 1:10,000-scale geological maps of the Aeolian Islands and bathymetric maps of sectors of the Aeolian archipelago, together with an extended dataset of rock compositions.

The Colli Albani Volcano contains 21 scientific contributions on stratigraphy, volcanotectonics, geochronology, petrography and geochemistry, hydrogeology, volcanic hazards, geophysics and archaeology, and a new 1:50 000 scale geological map of the volcano. The proximity to Rome and the interconnection between volcanic and human history also make this volcano of interest for both specialists and non-specialists.

The current Special Issue of Minerals entitled "New Mineral Species and Their Crystal Structures" contains articles with full descriptions of recently discovered mineral species (verneite, thermaerogenite, parafiniukite, nöggerathite-(Ce), cerromonite, aurihydrargyrumite, sharyginite, fiemmeite, oyonite, tiberiobardiite, and ariegilatite) and with recent results in the investigation of structures for minerals which were insufficiently studied in the crystal chemical aspect (rusinovite, barioferrite, kurchatovite, and clinokurchatovite). The described new minerals demonstrate a great chemical and structural diversity and are characterized by different formation conditions and mineral associations. The mineralogical discoveries come from many different localities around the world. All articles were prepared to a high scientific level, and the authors used a lot of modern methods for their investigation of the solid. The papers published in this Special Issue can be of interest not only to mineralogists and mineral collectors but also to physicists and chemists of solid, and specialists in the field of materials science.

The Mediterranean is one of the most studied regions of the world. In spite of this, a considerable spread of opinions exists about the geodynamic evolution and the present tectonic setting of this zone. The difficulty in recognizing the driving mechanisms of deformation is due to a large extent to the complex distribution in space and time of tectonic events, to the high number of parameters involved in this problem and to the scarce possibility of carrying out quantitative estimates of the deformation implied by the various geodynamic hypotheses. However, we think that a great deal of the present ambiguity could be removed if there were more frequent and open discussions among the scientists who are working on this problem. The meeting of ERICE was organized to provide an opportunity in this sense. In

making this effort, we were prompted by the conviction that each step towards the understanding of the Mediterranean evolution is of basic importance both for its scientific consequences and for the possible implications for society. It is well known, for instance, that the knowledge of ongoing tectonic processes in a given region and of their connection with seismic activity may lead to the recognition of middle long term precursors of strong earthquakes. The few cases of tentative earthquake prediction in the world occurred where information on large scale seismotectonic behavior was available. This led to identify the zones prone to dangerous shocks, where observations of short-term earthquake precursors were then concentrated.

Remote sensing data and methods are increasingly being implemented in assessments of volcanic processes and risk. This happens thanks to their capability to provide a spectrum of observation and measurement opportunities to accurately sense the dynamics, magnitude, frequency, and impacts of volcanic activity. This book includes research papers on the use of satellite, aerial, and ground-based remote sensing to detect thermal features and anomalies, investigate lava and pyroclastic flows, predict the flow path of lahars, measure gas emissions and plumes, and estimate ground deformation. The multi-disciplinary character of the approaches employed for volcano monitoring and the combination of a variety of sensor types, platforms, and methods that come out from the papers testify to the current scientific and technology trends toward multi-data and multi-sensor monitoring solutions. The added value of the papers lies in the demonstration of how remote sensing can improve our knowledge of volcanoes that pose a threat to local communities; back-analysis and critical revision of recent volcanic eruptions and unrest periods; and improvement of modeling and prediction methods. Therefore, the selected case studies also demonstrate the societal impact that this scientific discipline can potentially have on volcanic hazard and risk management.

This book is a printed edition of the Special Issue "New Insights in Stability, Structure and Properties of Porous Materials" that was published in *Minerals*. This volume comprises 17 contributions that address the architecture and geodynamic evolution of the Himalaya–Karakoram–Tibet (HKT) system, covering wide aspects, from the active seismicity of the present day to the remnants of the Proterozoic orogen. The articles investigate the HKT system at different scales, blending field research with laboratory studies. The role of various lithospheric components and their inheritance in the geodynamic and magmatic evolution of the HKT system through time, and their links to global geological events, are studied in the field. The laboratory research focuses on the (sub-)micrometre scale, detailing micro-structural geology, crystal chemistry, geochronology, and the study of circulating fluids, their preservation (trapped in fluid inclusions) and their evolution, distribution, migration and interaction with the solid host. An orogen over 2000 km long can be understood only if the processes at the nanometre and micrometre scales are taken into account. The contributions in this volume successfully combine these scales to enhance our understanding of the HKT system.

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