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About this journal

...solutions to pollution in the biosphere...

• Covers all aspects of pollution and solutions to pollution in the biosphere
• Includes chemical, physical and biological processes affecting flora, fauna, water, air and soil
• Also presents papers on methods used in the study of environmental pollutants, environmental toxicology, biology and engineering related to pollution, and more

NEWS! Effective 2013, Water, Air, & Soil Pollution has changed its publication structure to a new publication model: Continuous Article Publishing. This means that papers will be published immediately after acceptance in a volume/issue. For more details, see the journal's Instructions For Authors, Part II.

Water, Air, & Soil Pollution is an international, interdisciplinary journal on all aspects of pollution and solutions to pollution in the biosphere. This includes chemical, physical and biological processes affecting flora, fauna, water, air and soil in relation to environmental pollution. Because of its scope, the subject areas are diverse and include all aspects of pollution sources, transport, deposition, accumulation, acid precipitation, atmospheric pollution, metals, aquatic pollution including marine pollution and ground water, waste water, pesticides, soil pollution, sewage, sediment pollution, forestry pollution, effects of pollutants on humans, vegetation, fish, aquatic species, micro-organisms, and animals, environmental and molecular toxicology applied to pollution research, biosensors, global and climate change, ecological implications of pollution and pollution models. Water, Air, & Soil Pollution also publishes manuscripts on novel methods used in the study of environmental pollutants, environmental toxicology, environmental biology, novel environmental engineering related to pollution, biodiversity as influenced by pollution, novel environmental biotechnology as applied to pollution (e.g. bioremediation), environmental modelling and biorestoration of polluted environments.

Articles should not be submitted that are of local interest only and do not advance international knowledge in environmental pollution and solutions to pollution. Articles that simply replicate known knowledge or techniques while researching a local pollution problem will normally be rejected without review. Submitted articles must have up-to-date references, employ the correct experimental replication and statistical analysis, where needed and contain a significant contribution to new knowledge. The publishing and editorial team sincerely appreciate your cooperation.

Water, Air, & Soil Pollution publishes research papers; short communications (urgent and significant research, generally not exceeding two journal pages); letters to the editor/comments/replies; review articles; mini-reviews; perspectives and book reviews.
There are no page charges to publish in this journal.

Note that special issues published from 2001-2009 were published in the companion journal *Water, Air, & Soil Pollution: Focus* (see ISSN 1567-7230). The journal no longer accepts special issues for publication, but will consider topical collections, which are ongoing collections of papers on specified themes. Please contact the Publisher for more details.

**Related subjects** » Environmental Sciences - Global Change - Climate Change - Hydrogeology - Pollution and Remediation - Soil Science

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**Remote Sensing of Soil and Water Quality in Agroecosystems**
de Paul Obade, Vincent; Lal, Rattan; Chen, Jiquan

**Effects of heavy metals in soil on microbial processes and populations (a review)**
Bååth, E.

**Chemical and Statistical Analysis of Precipitation in Singapore**
Balasubramanian, R.; Victor, T.; Chun, N.

**A review of atmospheric polycyclic aromatic hydrocarbons: Sources, fate and behavior**
Baek, S. O.; Field, R. A.; Goldstone, M. E. Show all authors (6)

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1. Assessing land cover and soil quality by remote sensing and geographical information systems (GIS)

May 2013
Vincent de Paul Obade | Rattan Lal

Abstract: Precise soil quality assessment is critical for designing sustainable agriculture policies, restoring degraded soils, carbon (C) modeling, and improving environmental quality. Although the consequences of soil quality reduction are generally recognized, the spatial extent of soil degradation is difficult to determine, because no universal equation or soil quality prediction model exists that fits all ecoregions. Furthermore, existing soil organic C (SOC) models generate estimates with uncertainties that may exceed 50%. Therefore it is possible that drastic changes in soil quality may be occurring in sites which are not identifiable on existing maps. Soil quality can either be directly inferred from SOC concentration, or through the assessment of the soil physical, chemical and biologic properties. Assessing the spatial distribution of SOC over large areas requires the calibration and development of models derived from laboratory or field based techniques. However, mapping SOC concentration in all soils is logistically challenging by using normal standard survey techniques. The availability of new generations of remotely sensed datasets and geographical information system (GIS) models (i.e. GEMS, RothC, and CENTURY) provides new opportunities for predicting soil properties and quality at different spatial scales. This article discusses the current approaches, identifies gaps and proposes improvements in techniques for measuring soil quality within agricultural fields.

2. Gully erosion and environmental change: importance and research needs

1 January 2003
J Poesen | J Nachtergaele | G Verstraeten | C Valentin

Abstract: Assessing the impacts of climatic and, in particular, land use changes on rates of soil erosion by water is the objective of many national and international research projects. However, over the last decades, most research dealing with soil erosion by water has concentrated on sheet (interrill) and rill erosion processes operating at the (runoff) plot scale. Relatively few studies have been conducted on gully erosion operating at larger spatial scales. Recent studies indicate that (1) gully erosion represents an important sediment source in a range of environments and (2) gullies are effective links for transferring runoff and sediment from uplands to valley bottoms and permanent channels where they aggravate off site effects of water erosion. In other words, once gullies develop, they increase the connectivity in the landscape. Many cases of damage (sediment and chemical) to watercourses and properties by runoff from agricultural land relate to (ephemeral) gullying. Consequently, there is a need for monitoring, experimental and modelling studies of gully erosion as a basis for predicting the effects of environmental change (climatic and land use changes) on gully erosion rates. In this respect, various research questions can be identified. The most important ones are: (1) What is the contribution of gully erosion to overall soil loss and sediment production at various temporal and spatial scales and under different climatic and land use conditions? (2) What are appropriate measuring techniques for monitoring and experimental studies of the initiation and development of various gully types at various temporal and spatial scales? (3) Can we identify critical thresholds for the initiation, development and infilling of gullies in different environments in terms of flow hydraulics, rain, topography, soils and land use? (4) How does gully erosion interact with hydrological processes as well as with other soil degradation processes? (5) What are appropriate models of gully erosion, capable of predicting (a) erosion rates at various temporal and spatial scales and (b) the impact of gully development on hydrology, sediment yield and landscape evolution? (6) What are efficient gully prevention and gully control measures? What can be learned from failures and successes of gully erosion control programmes? These questions need to be answered first if we want to improve our insights into the impacts of environmental change on gully erosion. This paper highlights some of these issues by reviewing recent examples taken from various environments.
3. Rapid urbanization in China: A real challenge to soil protection and food security

16 January 2007

Jie Chen

Abstract: To feed its 1.3 billion population with a per capita cultivated land far below the world average, China is already facing a great challenge of land scarcity. Accelerated urbanization along with explosive economic growth has further worsened the shortage of agricultural land over the last two decades. Increasing concern over land is expressed in terms of soil availability for grain production and soil quality degradation. Based on official statistics and data derived from satellite imagery, dynamics of China's cultivated land over the past two decades is outlined and the causes and destinations of cultivated land loss are analyzed in this paper. Particularly, urbanization-related land-use changes and their spatial variation across the country are demonstrated. Furthermore, impacts of urbanization and associated waste disposals, consequent shifts of soil utilization on areal soil quality are expatiated. It is initially concluded that China's cultivated land is shrinking at a rather shocking rate. Although conversion to urban and industrial uses took up a comparatively small share of total cultivated land loss, urbanization should still be considered as a great threat to future agricultural production for several reasons. Urbanization is increasing the risk of soil pollution through waste disposal and acid deposition derived from urban air pollution. Facing rapid urbanization, China is making positive policy responses to the challenge of decreasing availability of cultivated land and offering unremitting efforts towards the goal of national food security.

4. Effects of biochar on soil properties and erosion potential in a highly weathered soil

November 2013

Shih-Hao Jien | Chien-Sheng Wang

Abstract: Highly weathered soils in humid Asia are characterized by low soil fertility and high soil erosion potential. This study evaluates the influences of biochar made from the waste wood of white lead trees (Leucaena leucocephala (Lam.) de Wit) on the physicochemical and biological properties of long-term cultivated, acidic Ultisol. This study used three application rates (0%, 2.5%, and 5% (wt/wt)) of the biochar with an incubation time of 105d for all cases. Soils were collected at 21d, 42d, 63d, 84d and 105d during the incubation period to evaluate changes in soil properties over time. A simulated rainfall event (80mmh−1) was performed to estimate soil loss for all treatments at the end of the incubation time. Experimental results indicate that applying biochar improved the physicochemical and biological properties of the highly weathered soils, including significant increases in soil pH from 3.9 to 5.1, cation exchange capacity from 7.41 to 10.8cmol (+) kg−1, base cation percentage from 6.40 to 26.0%, and microbial biomass carbon (MBC) from 835 to 1262mgkg−1. Compared with the control (i.e., no biochar), biochar application decreased bulk density from 1.4 to 1.1Mgm−3, increased Ksat by 1.8 times and increased the mean weight diameter (MWD) of soil aggregates from 2.6cm to 4.0cm. Incorporating biochar into the soil significantly reduced soil loss by 50% and 64% at 2.5% and 5% application rates, respectively, compared with the control. The formation of macroaggregates in the biochar-amended soils is the critical factor to improve soil erosion potential. Based on these results, a 5% application rate of biochar is considered as suitable for highly weathered soil because this application rate efficiently improves soil physiochemical properties and reduces soil loss.

5. European small portable rainfall simulators: A comparison of rainfall characteristics

November 2013


Abstract: Small-scale portable rainfall simulators are an essential research tool for investigating the process