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## Geomorphologic Analysis of the Goumud River Drainage Basin Based on Hypsometric Integral Value

ZHANG Jingchun, LI Chuanchuan, ZHANG Mei, LIU Gengnian

(College of Urban and Environmental Sciences, Peking University, Beijing 100871, China)

**Abstract:** The interaction between tectonics and climate on landform has sparked much interest over years. The hypsometric integral (HI) value could reflect both tectonic activity and climate change, and might be a promising tool that links those two aspects. Based on SRTM—DEM data, this paper withdraws the measuring indicators of the landform and hypsometric integral from the third order basins and some of the second order basins in the Goumud river drainage basin using GIS spatial analysis, discusses the area and space dependence for hypsometric integral, and presents its significance in indicating tectonics, lithology and the degree of glacial erosion. The results show: the HI value depends on area and space; the southern fault of east Kunlun (F<sub>4</sub>)—Xidatan (F<sub>3</sub>) fault can be divided into two parts: the east and the west by the Kunlun Pass; both of them show similar scenario that the activity decrease from the center to the sides; there is no apparent change in the activity of the central fault of east Kunlun (F<sub>1</sub>); intrusive rock shows greatest erosion resistance while schist shows least and carbonate rocks shows modest respectively; glacial processes could rework the landform and change the degree of erosion; the drainage basin with modern glacier and/or with extensively distributed paleo-glacier is of higher HI value and develops U-shaped valley compared to those without or with limited paleo-glacier.

**Key words:** Goumud river drainage basin; hypsometric integral value; geomorphologic analysis

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(然子桐)

# Variation of Soil Rapid Available Nitrogen Components and Its Implication in Napahai Lake Marsh Region, Northwest Yunnan Mountain

HU Jiming YUAN Han LI Jie DONG Yunxia MA Binbin

(Asian International Rivers Center, Yunnan University, Kunming 650091, China)

**Abstract:** Contents of Rapid Available N (RAN), Dissolved Organic N (DON), Ammonium N and Nitrate N at 3 layers (1<sup>st</sup> 0—10 cm, 2<sup>nd</sup> 10—20 cm, 3<sup>rd</sup> 20—30 cm) were analyzed for the 4 soil types: Abandoned Farmland, Mesophytic Meadow Soil (AFMMS), Mesophytic Meadow Soil (MMS), Wet Meadow Soil (WMS), and Marsh Soil (MS) in Napahai reserve, northwest Yunnan, China. It showed RAN and 3 components at each layer of MS were significantly higher than those at corresponding layers of other 3 soils. RAN and DON were mainly distributed at the 1<sup>st</sup> layers for 4 soils. Both orders of RAN and DON among 4 soils were mainly shown as AFMMS < MMS < WMS < MS. Except MS, RAN and 3 components at the 2<sup>nd</sup> and 3<sup>rd</sup> layers, as well the Ammonium N at the 1<sup>st</sup> layer, showed less variation among other 3 soils. Total percentage of the 3 components to RAN was only about 4.22%—7.92%. DON content nearly equaled to N content at each layer of MS, but the former was higher than the later for other 3 soils. DON/RAN (%) at each corresponding layer among the 4 soils behaved as AFMMS > MMS > WMS > MS, but DON/N at the 1<sup>st</sup> and 2<sup>nd</sup> layer as AFMMS > WMS > MMS > MS. This study indicated variations of soil water and vegetation significantly drove the variation of soil RAN and its components. Total contents of 3 components only accounted for few percentages of RAN, meaning still large part of hydrolysable soil organic N needs to be studied. Due to its easily usable and losable with water, DON might play more important roles in soil nitrogen suppletion and have important environmental implication, comparing to the relatively lower content of N. Becoming drying would increase relative DON percentage to RAN and exacerbate its loss of wetland soil.

**Key words:** wetland soil, rapid available N component, variation, implication, Napahai

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(然子桐)

# Evaluation Research of the Service Value of the Forest Ecosystem in Jiu Hua Mountain, Anhui

ZHANG Leqin, RONG Huijiang, XU Yang, XU Xingwang

(1. Resource Environment and Tourism Department, Chizhou College, Chizhou 247000, Anhui, China;

2. School of Economics & Management, Beijing Forestry University, Beijing 100083, China)


**Abstract:** Mountain Jiu Huashan, with forest cover of 76.25%, bearing the characteristics of buddism tourism, is a state level 5A tourist area. Over the years, focuses of managers and scholars of Mountain Jiu Huashan have been on the tourism value (of Jiu Hua Mountain), and the managers and scholars have no enthusiasm and initiative to protect the forest ecosystem because of the lack of their understanding the forest ecosystem service value, therefore, scientific assessment of forest ecosystem service value of Mountain Jiu Huashan can provide theoretical basis of scientific development and planning reasonably and is conducive to implement and promote the strategy of sustainable development and is also helpful to raise people awareness of protecting the forest resources of Mountain Jiu Huashan. Based on the assessment criteria of LY/T 721—2008 and the data provided by government agencies of Mountain Jiu Huashan, this paper probed the forest ecosystem service value of Mountain Jiu Huashan by the methods such as empirical research and willing investigation. The results showed that the forest ecosystem service value and the forest fruit production value of Mountain Jiu Huashan in 2009 were  $84\,208.50 \times 10^4$  Yuan (RMB) and  $4\,359.06 \times 10^4$  Yuan (RMB) respectively, and the ecosystem service value was 19.31 times of the real value of production. The values of different ecosystem services were as follows: value of water conservation > value of preserving soil > value of fixing carbon and releasing oxygen > value of biodiversity conservation > value of purifying environmental > value of forest recreation > value of nutrient accumulation. The results of the paper will provide the theoretical proofs and data support for the exploitation and utilization of Mountain Jiu Huashan eco-tourism resources, and improve the public awareness of the ecological environment protection in forest resource.

**Key words:** forest ecosystem; service value; evaluation; Jiu Hua Mountain

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