



## Research Article

# Geological and Ecological Environment of Chinese Historical Celebrities

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### Abstract

Historical celebrities play an important role in the development of human history. This paper has studied the geological and ecological environment of Chinese historical celebrities, the results show that The time-space evolution characteristics of historical celebrities is a true reflection and faithful record of the natural environment changes and human survivability in mainland China in 4,000 years. The distribution of the total number of historical celebrities in all provinces is subject to various factors, Among them, per capita annual income, population density, drinking water iodine content, annual average temperature, soil Mo, Ca, K, Sr, Mg and other indicators are positively correlated, but negatively correlated with altitude, river water hardness, soil As, and organic carbon.

Maintaining ideological and cultural celebrities and constructive political and military celebrities, critical thought and cultural celebrities and destructive political and military celebrities, the distribution of stratum age, rock type, soil type, ecological type and soil life element content of these important historical celebrities birthplaces, the distribution of stratum age, rock type, soil type, ecological type and soil life element content of these important historical celebrities birthplaces, there were significant differences. Among them, the contents of Ca, Na, Sr and other elements in the soil of the celebrities of critical and destructive history birthplace were significantly reduced, while Si, Al, K/Na, Ti, V, Zn, Cu, Mo, U, Pb, Hg, Cd, etc. elemental content is significantly increased. The natural geographical

environment restricts the quantity distribution of historical celebrities and also affects the social and historical functions of important historical celebrities. This research opens up a new field of cultural geography and psychogeology research.

**Keywords:** Historical celebrities; Social function; Geological ecological environment; Physical geography; Soil geochemistry; China

### 1. Historical Celebrities and Social Development

The issue of human-land relationship is a research topic that is always new and has unlimited potential. Chinese ancestors have long focused on the consideration of astronomical geological and biological relationships. It is said that ‘the classic of mountains and seas’ is the result of Dayu Kanyu territory. Zhouyi believed that "there are heaven and earth, then there are all things, then there are men and women. "Guan Zi", "the earth, the origin of all things,

the root of all life, Beauty and the evil, Virtue and dishonor, stupid and handsome, comes out of it. Huainanzi put forward the concept of "different lands produce different people".

Karl liitel, a German geographer, introduced cultural geography with his famous saying that "land affects man and man affects land"- The study of the origin, distribution, development and change of human culture and its relationship with the natural environment. Modern human geography has formed the environmental school represented by Lazare, the regional school represented by Huttner and Hart, the landscape school represented by Schruitel and Suhl, They all discuss the relationship between human activities and geographical environment. In cultural geography, the theories and thoughts on the relationship between man and land mainly include: environmental determinism, possibilism, adjustment theory, human ecology, environmental perception theory, cultural determinism and harmony theory [1].



Figure 1: Illustration of Chinese historical celebrities (Network picture).

Historians have multiple explanations for the cause of the decline of the ancient Roman Empire. Through the analysis of 40 skeletal bones, American scientists found that during the Roman Empire, the rich had obvious lead poisoning. Some American pharmacists believe that lead poisoning affected the civilization, progress, and talents of the Roman Empire, and eventually led to the decline and demise of the Empire [2]. In 1983, Jerome Nriagu calculated the daily lead intake of the Romans: 250 micrograms for nobles, 35 micrograms for civilians, and 15 micrograms for slaves [3].

In the 1970s, scientists recognized that childhood lead poisoning was a global public health problem [4, 5]. In Shanghai, 128 children, total IQ, operational IQ, and language IQ, the high lead group was significantly lower than the low lead group [6]. Early lead exposure in infants is one of the determinants of later mental development. There is a dose-response relationship between blood lead and children's behavioral abnormalities [7]. Historical celebrities refer to political figures, peasant uprising leaders, literary artists, thinkers, scholars, scientific inventors, etc., who once played an important role in history and still play a great role today [8-10]. Using the paradigm analysis method of psychological history,

Understanding the nation as a whole. The influence of important people may make history choose a certain direction. After choosing this general direction, The personal factors of important people also make certain details of history change personally. Studying the psychological characteristics of these individuals is of great significance [11].

## **2. Method and Technology**

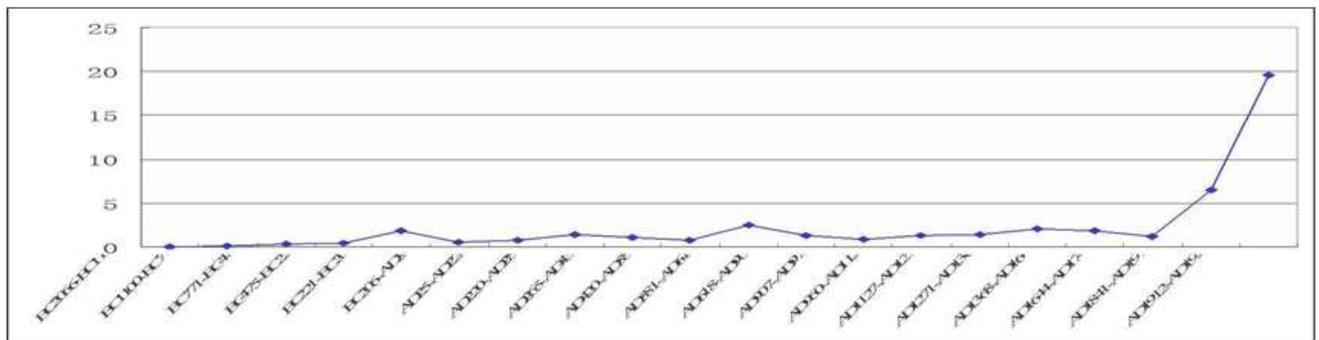
The factors of human health and longevity include society, environment and individual. Human beings live in a certain natural environment, and their health status and longevity are inevitably affected by various natural factors. How does the geographical environment affect the human life and the spiritual condition, is still a weak link [12]. To this end, the author extensively collected the geographical coordinates of the birthplaces of Chinese historical celebrities (Figure 1), the classification of social and historical functions, and the current natural geographical conditions, socioeconomic factors, and soil geochemical indicators, Use correlation analysis, this paper has discussed the relationship between the geological ecological environment and the spatial distribution and social functions of Chinese historical celebrities.

## **3. Physical Geography and Socio-Economic Constraints on the Spatial Distribution of all Historical Celebrities**

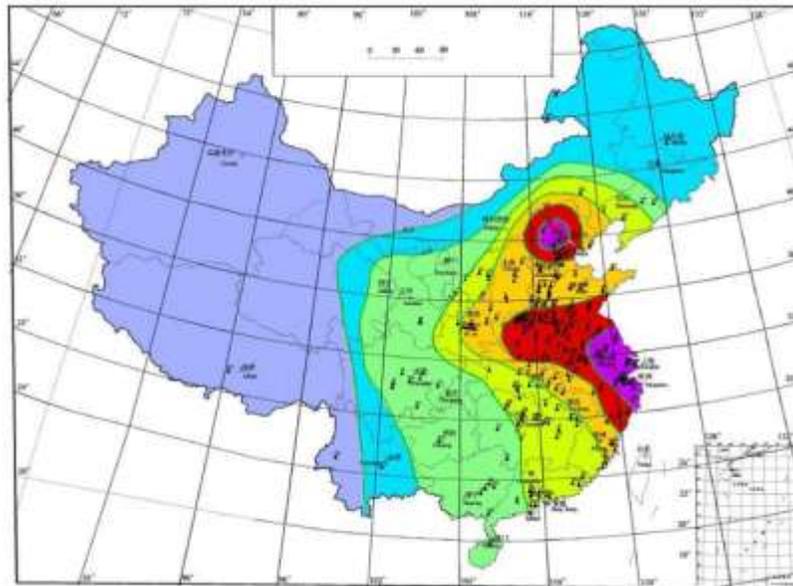
Population distribution is the spatial expression of population process, and population density is the main index to measure population distribution. The most remarkable feature of China's population is that the population distribution in the southeast half is highly dense, while the population distribution in the northwest half is extremely sparse; The second characteristic is that the population is obviously concentrated in the coastal areas; The closer to the inland, the more sparse the population; The third feature is the lowland directive property in the vertical direction of population. Factors influencing population distribution include natural factors

(climate, terrain, soil, water, mineral resources), social factors (mode of production and productivity level, level of economic development, mode of economic activity), historical and political factors [1]. China is famous for the continuity of its history, and the spatial and temporal distribution of the number of provinces of all its famous historical figures has remarkable characteristics.

Time distribution characteristics of historical celebrities: Population/time density distribution, evolving with time, presents a stage increase, among them, BC2066-BC221 increased linearly between 0.04-0.45 people/year, BC221-AD1840 fluctuated between 0.57 - 2.51 people/year, and AD1841-AD1927 jumped between 6.5-19.6 people/year (Figure 2).

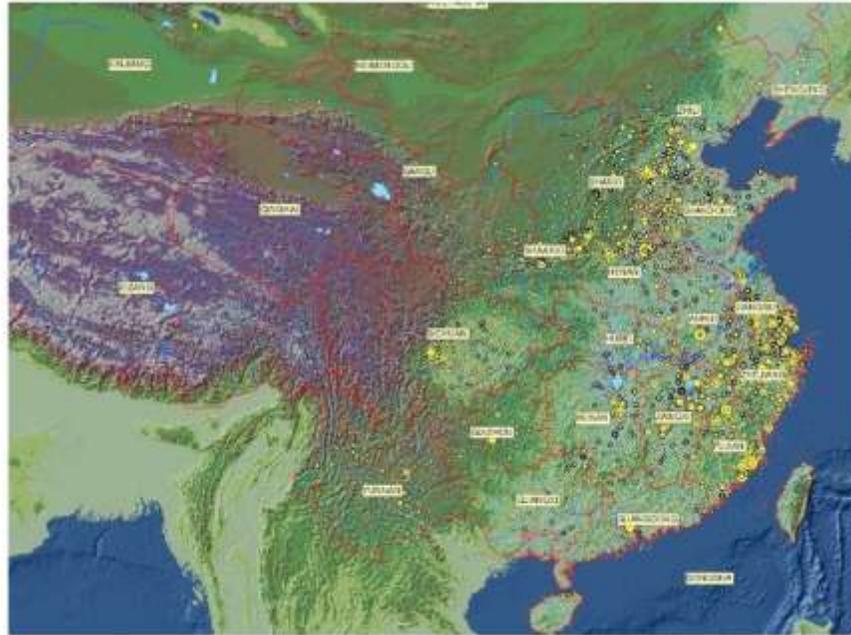


**Figure 2:** Time distribution curve of Chinese historical celebrities.



**Figure 3:** Distribution map of China's historical celebrity density and important historical celebrities birthplace.

The lines are contour lines of celebrity density distribution, and the black triangle is the birthplace of important historical celebrities.



**Figure 4:** Geographical distribution of 67,000 historical figures of known origin in CBDB (Harvard University, 2018).

Spatial distribution characteristics of historical celebrities: The highest number was 73.2 in Beijing and 42.6 in Shanghai, gradually decreasing to the west, south and north. Beijing, Nanjing - Hangzhou line 30, Jinan - Zhengzhou - Hefei - Wenzhou line 20, Jinzhou -Taiyuan - Xi 'an - Wuhan - Nanchang - Fuzhou line 10, Shenyang - Hohhot - Yinchuan - Lanzhou - Chongqing - Changsha - Guangzhou line 5, other areas 5-0.5 (people/10<sup>4</sup> km<sup>2</sup>) (Figures 3, 4 and 6).

The results of statistical analysis show that, there is a significant correlation between the density distribution of historical celebrities by provincial land area

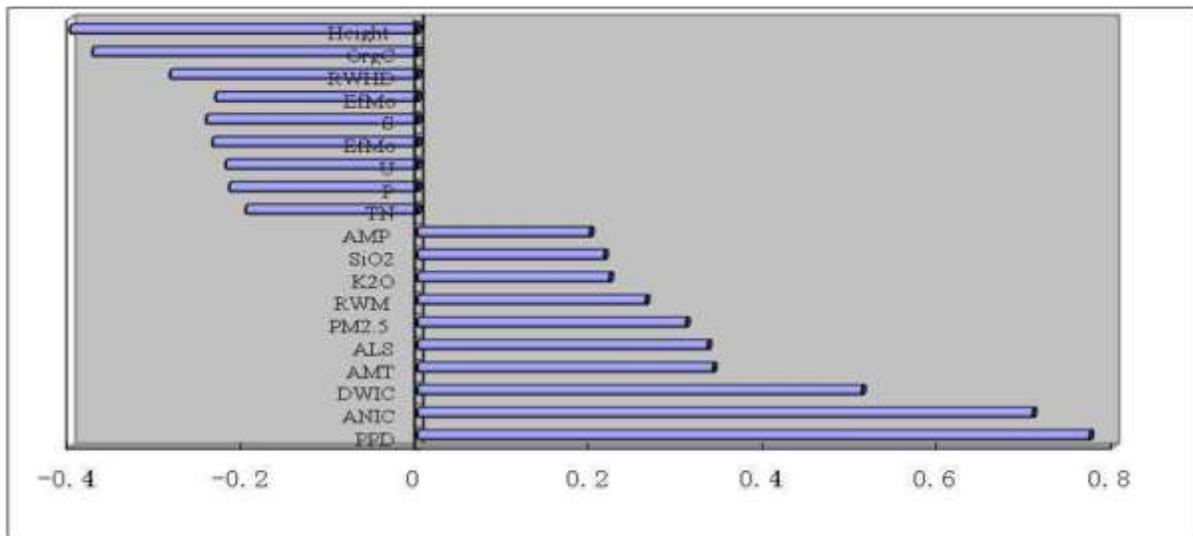
and a number of physical geography, social economy and soil geochemistry indexes (Figure 5).

**Physical geography conditions:** Iodine Content in Drinking Water DWIC0.3691, in 2012 PM2.5 0.3225, Annual Mean Temperature AMT0.2683, Rivers water Mineralization RWM 0.2287, Annual Mean Precipitation AMP 0.1171, Rivers water Hardness RWHD-0.1818, Altitude Height -0.2538.

**Social economic factor:** Per capita Annual income (2011) ANIC0.8015, Population Density (2010) PPD0.7485, Average Life-span ALS 0.3590.

**Soil geochemical indicators:** K<sub>2</sub>O0.1656, MgO0.1065, Se-0.1767, V-0.1817, U-0.1839, Total sulfur S-0.1869, Cd -0.1976, Mn-0.2131, Na<sub>2</sub>O-0.2142, Organic carbon OrgC-0.2658, As-0.3313 ( According to the China geological survey bureau 2014, the geochemical map of China).

**Influential factors of celebrity density taking cultivated land area as unit:** Mo0.2827, CaO0.1707, Sr0.1556, Mg0.1503, K<sub>2</sub>O0.1322, Ti-0.1639, Co-0.1879, Se-0.1959, As-0.2058, V-0.2078, Mn-0.2162, Na<sub>2</sub>O-0.2445.



**Figure 5:** Correlation coefficient diagram of Chinese historical celebrity density and influencing factors.

We can establish the relevant equation between them:  
 $lgy_1 = -0.1195l gx_1^5 - 0.2359l gx_1^4 + 0.4277l gx_1^3 + 0.5183x_1^2 + 0.1592l gx_1 + 0.9452, R^2 = 0.4649$   
 $lgy_1 = -12.793x_2^3 + 6.8068x_2^2 + 1.8163x_2 + 0.1066, R^2 = 0.2523$   
 $y_2 = 5.3338l gx_3^3 - 24.702l gx_3^2 + 36.167l gx_3 - 16.361, R^2 = 0.8158$

Where  $y_1$  is the historical celebrity density in terms of land area -number of people/ $10^4 km^2$ ,  $y_2$  is the density of historical celebrities in terms of cultivated land area- number of people / $10^4 hm^2$ .

$X_1 = ( \text{Iodine content in drinking water} \times \text{Average annual temperature} ) / ( \text{Elevation height} \times \text{River water hardness} )$ ,  
 $X_2 = ( K_2O \times MgO ) / ( As \times OrC )$ ,  
 $X_3 = ( Mo \times CaO ) / ( Na_2O \times Mn )$ .

Population migration is a reaction of people to a series of economic, social and political factors in a particular environment. The mechanisms to explain population migration include the stimulus factors caused by environmental changes and the factors caused by personal motivation changes [1].

**Xia, Shang and Zhou dynasties BC2200-BC256 and Qin and Han dynasties BC221-Ad220:** Taking Henan 62-76 as the center, to Shaanxi 58-54, Shanxi 42-9, Shandong 53-39, Hebei 28-22, Hubei 22-14 and Jiangsu 1-30, decreases successively, showing an approximate circular distribution.

**Three kingdoms - southern and northern dynasties 220-581:** Taking Henan 78 as the center, to 46 in Shandong, 35 in Jiangsu, 34 in Hebei, 34 in Shanxi, 23 in Gansu, 19 in Shaanxi, 18 in Anhui, 17 in Inner Mongolia and 15 in Sichuan, gradually decreases, presenting an ellipse extending in two directions of northwest and northeast.

**Sui, Tang, Five dynasties, Song dynasty 581-1279:** The overall number has increased significantly, nearly doubling. With Henan province 130 as the center, to Shaanxi 119, Shanxi 82, Hebei 80, Shandong 65, Xinjiang 37, Gansu 23, Sichuan 28, successively decreasing, at the same time, it forms the 78th subcenter of Zhejiang province, the distribution pattern shows a NW - SE zonal pattern.

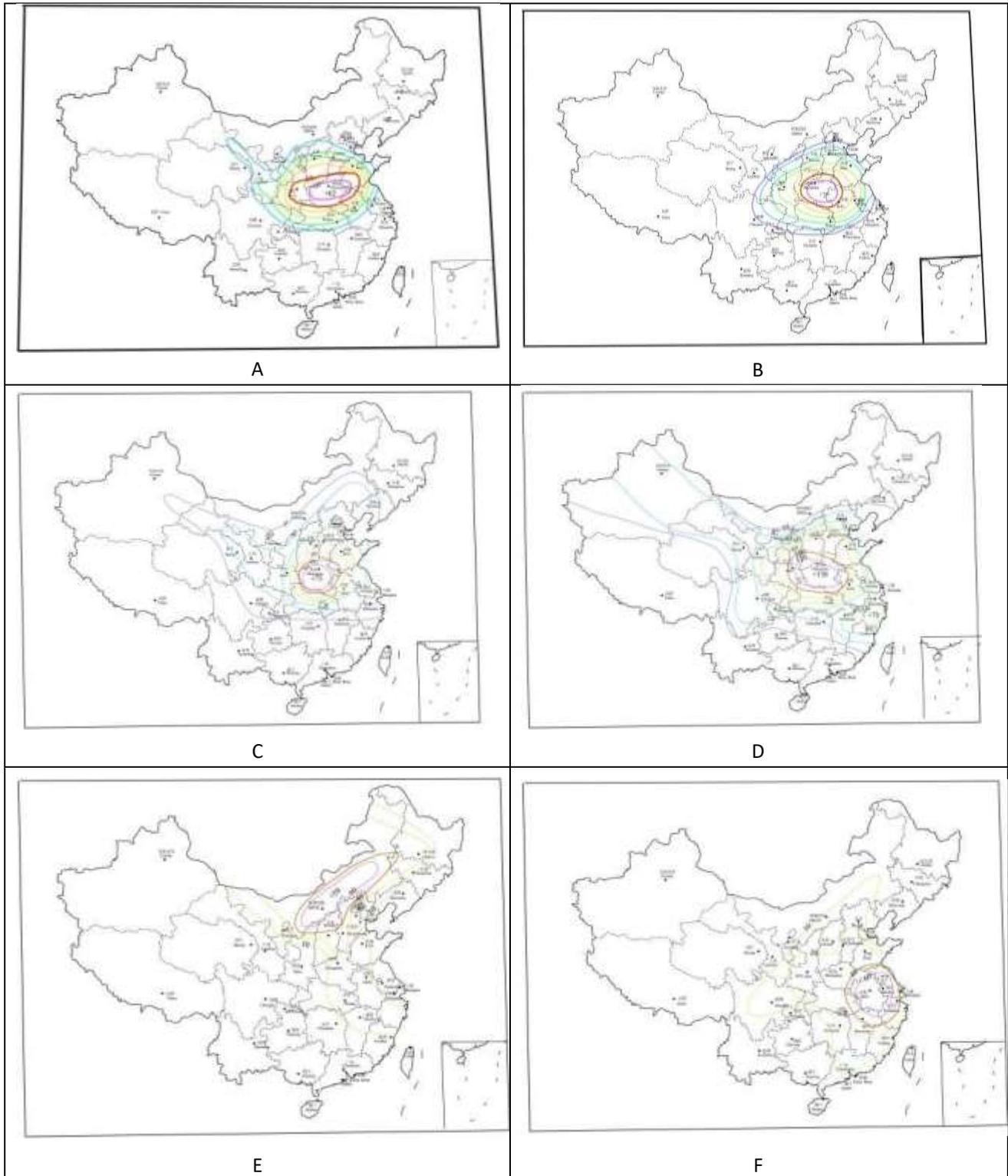
**Liao, Xia, Jin and Yuan dynasties 907-1368:** Centering on 89 members of Inner Mongolia grassland, it was ranked 37 in Hebei, 25 in Heilongjiang, 19 in Zhejiang, 14 in Henan and 14 in Beijing, decreasing successively, presents a northeast-southwest zonal distribution, reflecting the emergence

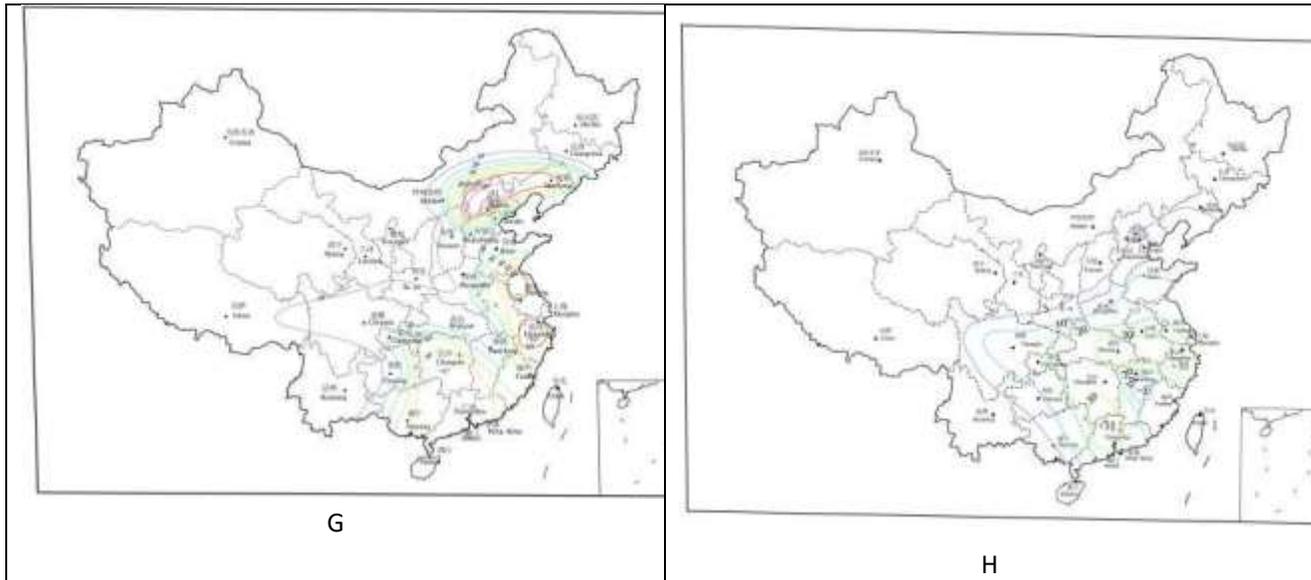
of northern nomads on the historical stage, forming a situation of separation and confrontation between the north and the south.

**During the Ming dynasty 1368-1644:** Centered in Jiangsu 71, to Anhui 66, Zhejiang 57, Jiangxi 36, Shaanxi 34, Henan 27, Hubei 21, Sichuan 15, Shanxi 14, Guangdong 13 and Fujian 13, in descending order, reflects the rise and revival of the Han nationality in the southeast coast.

**In the Qing dynasty 1616-1911:** The overall number is unprecedented, Beijing 93, Liaoning 62, Jiangsu 87, Fujian 64, Hunan 57, Guangdong 56 as the center, rapidly declines to below 10 to the west and north, forming a polycentric ring distribution towards the east coast, reflects the sharp conflict of multi-culture.

**In the early of the republic of China 1912-1927:** Centered on the southeast coast of Zhejiang 38, Guangdong 38 and Hubei 35, rapidly declines to below 5 to the northwest, reflects the leading role of important historical figures (Sun yat-sen and Chiang kai-shek) and important historical events (the revolution of 1911). The time-space evolution of historical celebrity density is a true reflection and faithful record of the evolution of natural environment and human survival ability in the Chinese mainland in the past 4,000 years.





**Figure 6:** The temporal evolution diagram of the quantity of Chinese historical celebrities in different provinces.

A-Xia-Shang-Zhou dynasties, B-Qin and Han dynasties, C-Three Kingdoms and the Northern and Southern dynasties, D- Sui, Tang, Five dynasties and Song dynasty, E- Liao Jin-Yuan Xia, F- Ming dynasty, G-Qing dynasty, H-In the early of the republic of China

#### **4. The Relationship Between Social Function and Ecological Environment of Important Historical Celebrities**

China has a long history, the development of history cannot be separated from human beings, it is mankind that makes history. Chinese all previous dynasties attached great importance to recording history, and the biography centered on characters became the main form of historical records compiled and revised by the dynasties' historians.

These documents record the historical figures handed

down from one dynasty to another. Through its story, biography, life experience and other aspects of the performance of different historical color.

Following the principle of playing an important leading role in major historical events, 248 important historical celebrities were selected from all historical celebrities. In terms of their social function and their professional field, the author divides these important historical celebrities into: Aa-UTCO- Maintain type thought and cultural celebrities, Ab-CPMP- Constructive political and military celebrities, Ba-CTCP Critical type thought and cultural celebrities, Bb-DPMP- Destructive political and military celebrities.

In terms of geological and ecological environment, there are obvious differences between the places of birth of the two types of celebrities.

Age distribution ratio of strata and rock mass The latter quaternary Q, cretaceous K, Jurassic J, devonian D, Sinian Z decreased significantly.

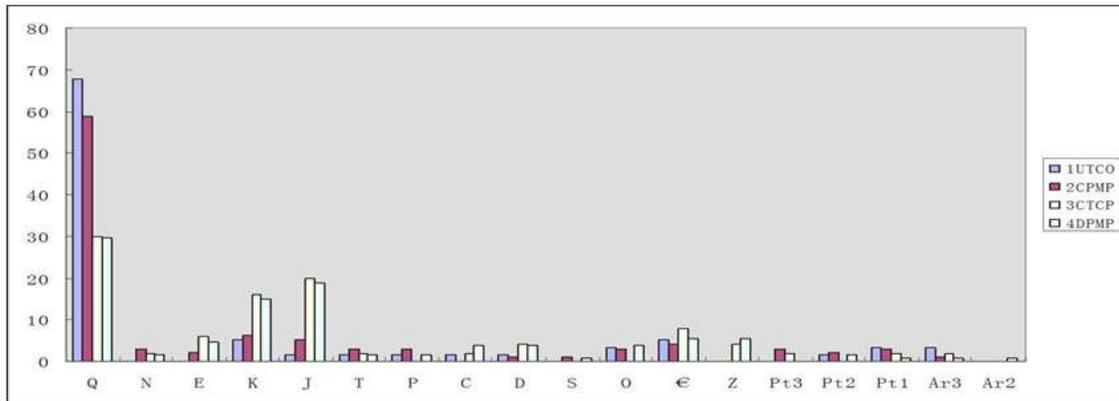
**Rock type distribution ratio:** The latter sandstone, siltstone, mudstone and loess decreased obviously. Clay rock, shale, peat coal seam, basalt, andesite, rhyolite, marl, granite and so on increase obviously.

**Soil type distribution ratio:** The latter has a significant decrease in fluvo-aquic soil, cinnamon soil and

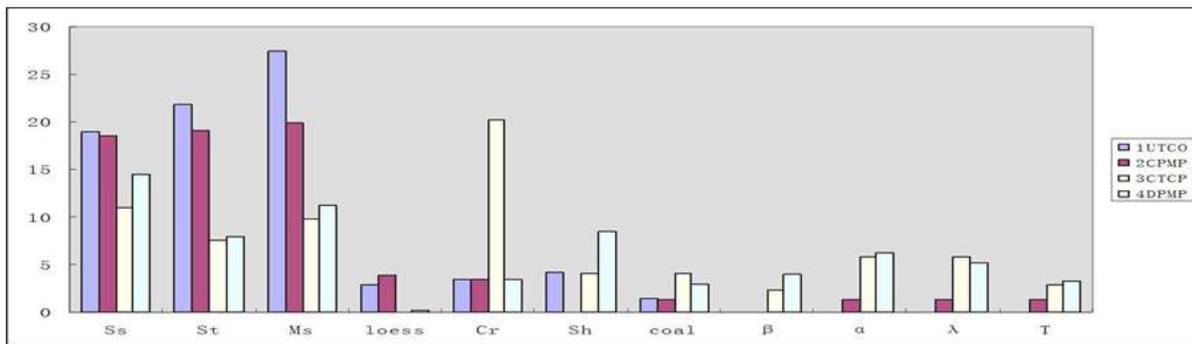
bauxite, paddy soil, red soil, latosolic red soil and yellow soil increased significantly.

**Ecological types:** The latter farmland decrease significantly, forest increases apparently.

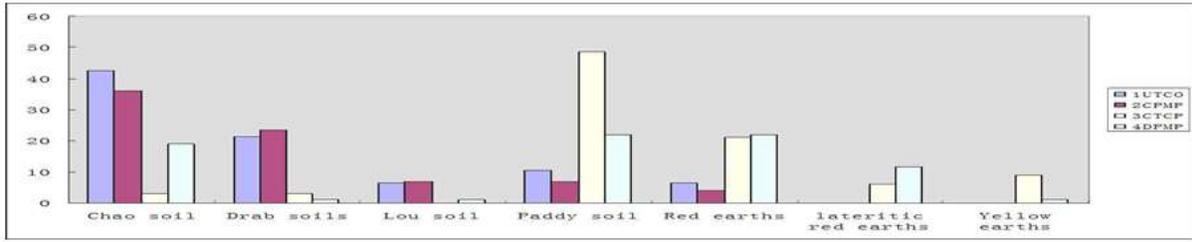
Soil life element content: The latter Ca, Na, Sr element content decreased obviously, Si, Al, K/Na, Ti, V, Zn, Cu, Mo, U, Pb, Hg, Cd element content increased obviously.



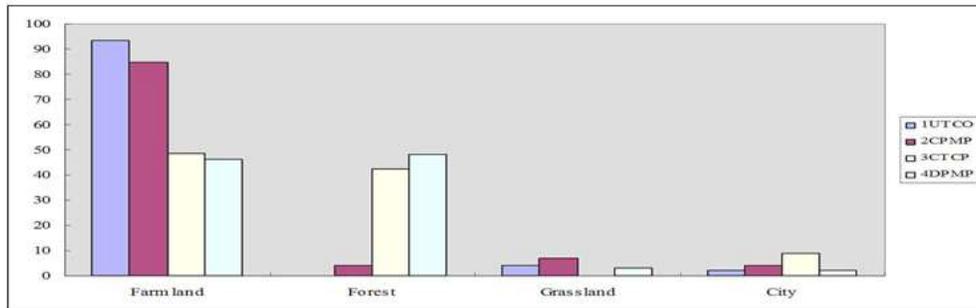
Distribution of stratum and rock mass geological ages in the birthplaces of China important historical celebrities.



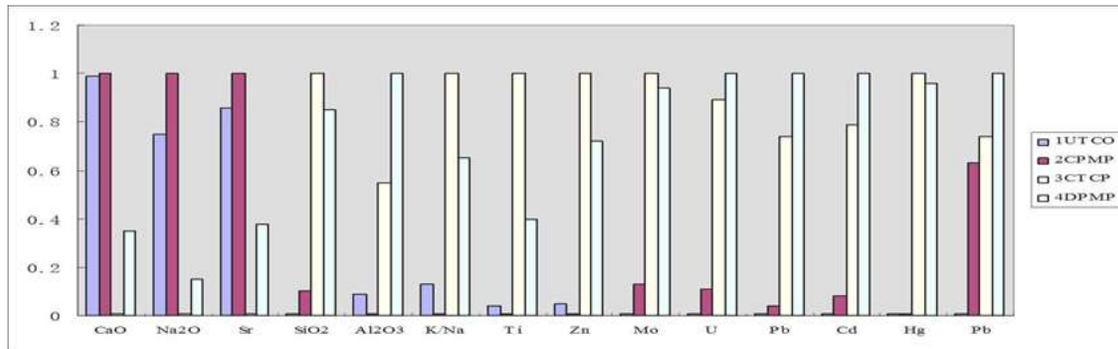
Distribution of rock types in the birthplaces of China important historical celebrities.



Distribution of soil types in the birthplaces of China important historical celebrities.



Distribution of ecological types in the birthplaces of China important historical celebrities.



Contrast of certain life elements in the soil of the birthplace of China important historical celebrities (standardization).

### 5. The Theoretical Significance of Statistical Results

Modern human geography and human ecology believe that, as an important part of civilization, human production and life are inseparable from the

appropriate material basis. The traditional agriculture that appeared 10,000 years ago and the modern industry that began two hundred years ago have greatly improved human viability and are a major event in the history of civilization. Fertile soil, clean

water, and rich mineral deposits are necessary for industry and agriculture. This means that human civilization will be subject to geological and geochemical conditions [13].

Soil geochemical characteristics not only restricts agricultural and forestry production, disease health, but also concerns the existence of historical and cultural celebrities and their social function types. In the process of growth and development, Animals and plants actively or passively ingest a certain proportion and form of chemical elements from the outside. Those elements essential for life to occur and maintain normal growth and development are called essential elements of life, such as C, H, O, N, P, S, Ca, Mg, Fe, Mn, K, Na, Cl, Zn, Cu, Mo, Se, I, Co, etc.; Those elements that can cause individual developmental disorders and even life-threatening are called life harmful elements. These are divided into completely harmful and unhelpful elements such as Pb, As, Hg, Cd, Cr<sup>6+</sup>, etc, and excessive or inappropriate forms of harmful elements such as F, Cl, I, Cu, Zn, N, Mo, Se, and the like.

Soil is the beginning of the biological cycle of elements and the most stable home to return. The geochemical distribution of elements in the soil layer and its biological chain relationships are critical to the impact of the human ecological environment. An element that is actively or passively absorbed by a living body in different forms, it becomes an integral part of the organism. Due to the difference in the types and contents of the elements, it is bound to affect the structure, physiological functions and even psychological functions of the organism. The spatial

distribution pattern of biomes with different functions will lead to different eco-environmental effects.

Lead is a non-degradable environmental pollutant. It can accumulate for a long time. It can enter the human body through the food chain - soil and air, involving the nervous system, causing paralysis of the limbs, permanent brain damage, and has damage to hematopoietic, digestive, cardiovascular and cerebrovascular systems. It is toxic to various tissues of the human body [14]. Ren Xiujuan et al. (2012) tested the soil barreling of farmland in the Chenzhou mining area of Hunan Province, in the treatment of soil lead pollution, with the increase of soil lead content, the lead content of maize roots, stems, cobs and grains showed a significant increase trend. The distribution of lead in various organs of corn is root > stem > cob > grain [15].

Gao Qi et al. (2010), the rice roots, stems, grains and stems have a certain enrichment of lead in soil [16]. Wang Lin (2005), using soil and water test methods, studied the absorption and accumulation characteristics of cadmium and lead in vegetables and toxic physiological response, the results showed that there was a significant positive correlation between the content of cadmium and lead in rapeseed and radish and the content of added heavy metals in soil [17]. Zhao Yong et al. (2008) studied that with the increase of Pb concentration in soil, the Pb content in five leafy vegetables in Zhengzhou showed an increasing trend, and positive correlation with Pb content in soil [18]. Deng Lujun et al. (2013) Potted plant experiment results showed that there was a linear and significant positive correlation between

lead treatment at different concentrations in soil and lead content and accumulation in potato tubers [19]. Wang Qiuli (2007) Shenyang urban test results, under the stress of soil lead pollution, within 24 hours, as time increases, the lipid peroxidation of alfalfa increases, the content of malondialdehyde increases, and the stability of the lysosomal membrane changes, and there is a certain dose-effect relationship with the lead content of the tissue [20].

In recent years, due to environmental pollution, children in some areas have high blood lead levels, which has become a hot spot for pediatricians and online consultation. Lead pollution is becoming a serious public health issue related to national security. There is a significant positive correlation between the data on the blood lead exceeding rate in children in different regions of China and the data on lead, zinc and calcium in the stream sediments of the corresponding sites.

location	Yinchuan	Huining	Jingtai	Jing Yuan	Pingchuan	Lijin	Baiyin	Beijing	Shanghai	Harbin	Langfang	Wuhan	Kunming	Taiyuan	Changsha	Geju	Shenzhen	Lanping
Excess rate	9.1	13.23	15.56	20.14	22.5	38.85	30.3	33.7	37.8	46	28.6	50	50	60	52.38	60	65	96.72
Soil Pb	11	18	22	18	19	25	32	30	35	24	24.8	38	48	25	30	90	65	1121
Soil CaO	5.0	7.0	6.0	5.0	4.5	4.0	3.5	3.0	1.3	1.5	6.01	1.8	1.4	5.6	0.26	1.3	0.18	0.56

Content unit:Pb、 Znµg/g, Ca%, source: China Geological Survey Bureau 2015 People's Republic of China Geochemistry Atlas

Excess rate of blood lead in Chinese children (%) and lead, zinc and calcium in stream sediments.

Through regression analysis, we can establish the following linear equation between children's blood lead exceeding rate (y) and stream sediment lead content:

$$y = 19.039\ln(x) - 27.219 \quad R^2 = 0.7348 \quad n=18, \quad \gamma=0.7027, \quad \gamma_{0.05}=0.4438$$

Between the children's blood lead exceeding rate (y) and the water sediment calcium content CaO%, we can establish the following linear equation:

$$y = 1.1179x^2 - 14.681x + 70.937 \quad R^2 = 0.5636 \quad n=18, \quad \gamma=-0.73199, \quad \gamma_{0.05}=0.4438$$

Tang Qing et al (2003), students who regularly reside in industrial development zones have significantly higher levels of lead in their hair than suburban students. High levels of lead in people who like high-lead foods (> 20η g/g, normal range 2.95-16.58η g/g, average 15.52η g/g), they showed poor learning, memory loss, inattention, short stature, pale and weak, poor exercise tolerance, poor visual and auditory susceptibility, susceptibility to colds, low immunity

and other symptoms [21].

Shi Tiantian et al (2003), 311 children aged 7-10 years in Jinzhou City, Children's IQ value was significantly negatively correlated with lead content in hair, and was significantly positively correlated with zinc and copper content in hair [22]. Cadmium is the strongest biologically toxic heavy metal element. It has strong chemical activity, high mobility and long-lasting toxicity in the environment. It is easy to endanger human health through the enrichment of the food chain. It has pathogenic, carcinogenic and mutagenic effects on the human body, and can induce diseases such as kidney decay, arthritis and cancer [23]. Soluble cadmium in the soil enters the human body through the food chain, causing damage to tissues and organs through long-term accumulation, and obvious lesions in the kidney, liver, lung, bone, reproductive system, cardiovascular system, gastrointestinal system, and pancreatic system. Cadmium pollution has a significant impact on female reproductive health [24].

Mercury pollution has the characteristics of persistence, migration, high bioaccumulation, strong toxicity, and any form of mercury in the environment can be converted into highly toxic methylmercury under certain conditions, with mutagenicity and teratogenicity and carcinogenic effects. Methylmercury is easily transferred from the mother to the fetus through the placenta. When mercury enters a pregnant woman, it can damage the central nervous system of the fetus, resulting in low cognitive ability in children. Mercury has long-range and trans-boundary pollution properties and has been listed as a

global pollutant by the United Nations Environment Programme [25]. A new evidence paper has highlighted the astonishing rates of child development from conception to the end of age two and the benefit of a holistic approach to children's health. The First Thousand Days has shown children are affected in multiple ways including through biology their experiences environment and diet their parent's health and lifestyle during pregnancy and the broader community [26].

In short, natural geography, geological background, soil type, ecological environment, geochemistry and other factors not only restrict agricultural production, human health, but also affect the historical celebrity density distribution and the social function types of important historical celebrities. This is a new field of cultural geography and psychogeology research.

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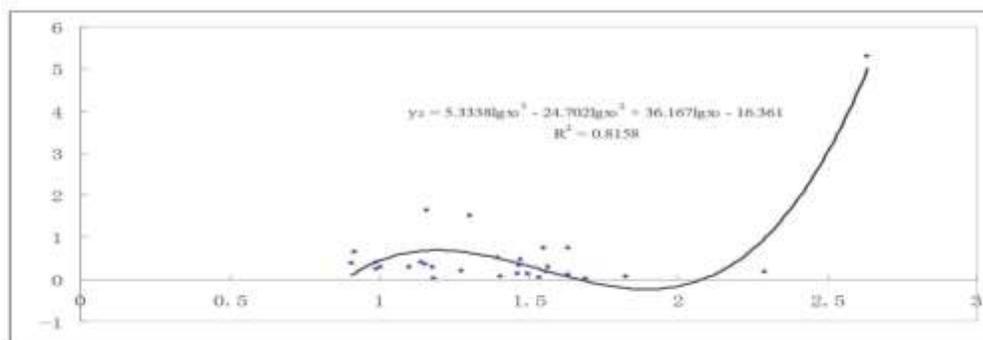
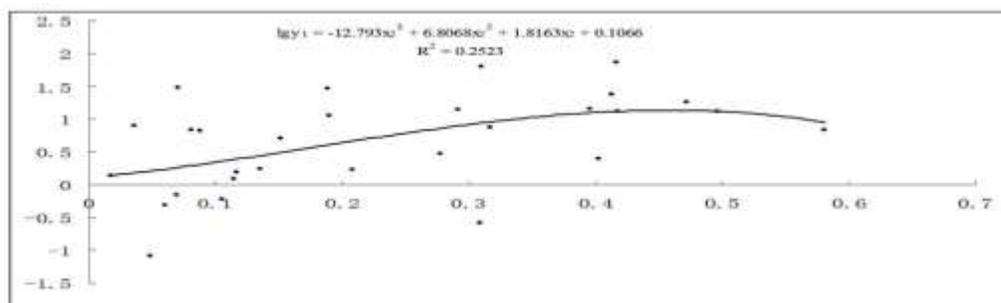
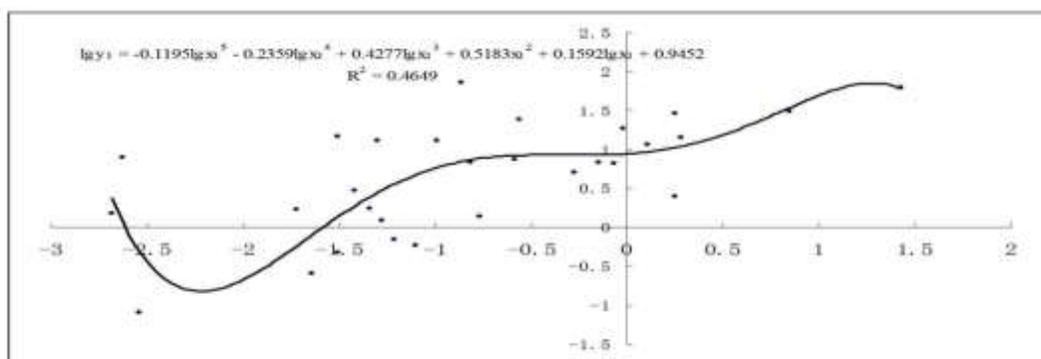
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Scatter plot of Chinese historical celebrities by province density y-related factors x.

Category	Q	N	E	K	J	T	P	C	D	S	O	€	Z	Pt <sub>3</sub>	Pt <sub>2</sub>	Pt <sub>1</sub>	Ar <sub>3</sub>	Ar <sub>2</sub>
UTCO	67.80	0.00	0.00	5.08	1.69	1.69	1.69	1.69	1.67	0.00	3.39	5.08	0.00	0.00	1.69	3.39	3.39	0.00
CPMP	58.76	3.09	2.06	6.19	5.15	3.09	3.09	0.00	1.03	1.03	3.09	4.12	0.00	3.09	2.06	3.09	1.03	0.00
CTCP	30.00	2.00	6.00	16.00	20.00	2.00	0.00	2.00	4.00	0.00	0.00	8.00	4.00	2.00	0.00	2.00	2.00	0.00
DPMP	29.69	1.56	4.69	14.84	18.75	1.56	1.56	3.91	3.91	0.78	3.91	5.47	5.47	0.00	1.56	0.78	0.78	0.78

Age distribution Proportion% of strata in the birthplace of important historical celebrities in China.

1Aa-UTCO- Uphold thinking and cultural celebrities, 4Bb-DPMP- Destructive cultural celebrities, 2Ab-CPMP- Constructive political and political and military celebrities. military celebrities, 3Ba-CTCP Critical thinking and

Cat	Cg	Qu	Ss	St	Ms	Cr	loess	Sh	Dol	MI	Ls	coal	Si	Fe	Mn	Pho	Sa
1	4.23	0.00	19.01	21.83	27.46	3.52	2.82	4.23	2.82	1.41	3.52	1.41	0.00	0.00	0.00	0.00	0.00
2	8.66	0.87	18.61	19.05	19.91	3.46	3.90	0.00	2.16	0.87	5.63	1.30	0.41	0.00	0.00	0.41	0.00
3	6.36	0.00	10.98	7.51	9.83	20.23	0.00	4.05	1.03	1.16	4.05	4.05	1.16	0.58	0.00	0.00	0.58
4	4.99	0.75	14.46	7.98	11.22	3.49	0.25	8.48	3.74	2.24	2.99	2.99	2.24	1.00	0.50	0.50	0.75
Cat	β	α	τ	λ	T	δ	ξ	γ									
1	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00									
2	0.00	1.30	0.00	1.30	1.30	0.00	0.00	0.00									
3	2.31	5.78	1.16	5.78	2.89	0.00	0.00	3.47									
4	3.99	6.23	0.75	5.24	3.24	0.75	0.25	2.74									
Cat	Gn	Gr	lep	am	Mb	Ph	Sch	Sl	Mt								
1	2.11	1.41	0.00	0.70	1.41	0.00	1.41	0.00	0.00								
2	0.43	0.87	0.00	0.41	1.30	0.41	1.30	0.87	0.00								
3	1.16	0.00	1.16	0.58	0.58	0.58	1.16	0.58	0.58								
4	1.25	0.75	0.50	0.50	1.00	0.75	1.00	1.25	0.25								

Rock type distribution proportion% in the strata of the important historical celebrities in China.

Conglomerate-Cg, Quartzite-Qu, sandstone-Ss, Dolomites-Dol, Marl-MI, Limestone-Ls, Peat coal seam-coal, Siltstone-St, Mudstone-Ms, Clay rock-Cr, shale-Sh, Siliceous rock-Si, Iron rock-Fe,

Manganese ore-Mn, Phosphorite-Pho, Rock salt-Sa, Basalt-β, Andesite-α, trachyte-τ, Rhyolite-λ, Tuff-T, Diorite-δ, syenite-ζ, granite-γ, Gneiss-Gn,

Granulite-Gr, leptite-lep, amphibolite-am, marble-Mb, phyllite-Ph, Schist-Sch, Slate-Sl, magnetite-Mt.

类别	3	5	6	7	9	10	11	12	13	17	15	21	29	30	31	32	34	37
1	0.00	6.38	4.26	21.28	6.38	0.00	6.38	0.00	0.00	42.55	0.00	0.00	2.13	0.00	0.00	0.00	10.64	0.00
2	0.00	4.17	8.33	23.61	6.94	0.00	4.17	0.00	0.00	36.11	1.39	2.78	0.00	2.78	0.00	0.00	6.94	2.78
3	0.00	0.00	6.06	3.03	0.00	9.09	21.21	6.06	0.00	3.03	0.00	0.00	3.03	0.00	0.00	0.00	48.48	0.00
4	2.11	3.16	8.42	1.05	1.05	1.05	22.11	11.58	1.05	18.95	0.00	0.00	3.16	0.00	2.11	1.05	22.11	0.00

Soil type distribution% in birthplaces of important historical celebrities in China.

3 Dark brown earths, 5 Brown earths, 6 Yellow brown earths, 7 Drab soils, 9 Lou soil, 10 Yellow earths, 11 Red earths, 12 lateritic red earths, 13 Latosol, 17 Chao soil, 15 Black soils, 21 Chestnut

soil, 29 Purplish soil, 30 Mein soil, 31 Aeolian sandy soil, 32 Solonchak, 34 Paddy soil, 37 Sub-alpine steppe soil.

Category	Farm land	Forest	Grassland	City
1	93.62	0.00	4.26	2.13
2	84.72	4.23	6.94	4.17
3	48.48	42.42	0.00	9.09
4	46.36	48.42	3.16	2.11

Ecological types% in the birthplaces of important historical celebrities in China.

type	CaO	MgO	OP	K <sub>2</sub> O	Na <sub>2</sub> O	Fe <sub>2</sub> O <sub>3</sub>	Zn	Cu	Cr	Mn	Co	F	V	Ti	Ni	Mo	S	SiO <sub>2</sub>	B	Al <sub>2</sub> O <sub>3</sub>	U	As	Hg	Cd	Pb	K/Na
1	4.23	1.89	56.6	2.26	1.42	4.42	63.9	22.3	64.6	64.0	1.2	52.3	77.9	40.77	26.5	0.62	16.6	63.2	50.7	12.8	2.16	10.2	27.0	0.103	20.49	1.59
2	4.27	1.75	57.1	2.29	1.57	4.37	63.2	21.9	60.9	63.5	1.2	50.1	78.1	40.57	26.4	0.66	17.6	63.6	49.6	12.7	2.26	10.2	26.7	0.109	21.12	1.46
3	1.39	1.27	55.8	2.42	0.98	4.66	77.6	25.0	60.3	67.6	1.2	49.6	84.9	45.90	25.7	0.93	10.5	67.1	57.6	13.3	2.99	10.2	74.1	0.163	32.12	2.47
4	2.41	1.42	58.3	2.27	1.07	4.47	73.6	23.6	57.3	63.5	1.2	50.3	80.3	42.69	26.2	0.91	13.2	66.5	52.5	13.8	3.09	10.6	72.0	0.179	36.26	2.12

Soil life element content in the birthplace of important historical celebrities in China.



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