

## 24 JIEQI RURAL CLIMATE TOURISM IN CHINA

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*Received 12 March 2019; Accepted 01 April 2019; Published 20 April 2019*

### ABSTRACT

*Industrialization and urbanization of China have triggered various social tourism demand for returning back to rural areas to experience more local and nature tourism products and services in China, while, there are still various problems for sustainable development of rural tourism in China tourism market. This paper roots in 24 Jieqi climate culture to propose 24 Jieqi rural climate tourism as creative pattern for accelerating rural climate tourism sustainable development in China. Based on the natural and cultural climate tourism resources of 24 Jieqi in rural areas, this paper proposes the 24 Jieqi rural climate tourism in China through exploring 24 Jieqi climate culture evolution and transformation from ancient to contemporary China in rural areas, analyzing how the development of 24 Jieqi rural climate tourism to catalyze the 24 Jieqi climate culture's regeneration and reproduction and to figure out the whole transformation mechanism of 24 Jieqi climate culture in modern China, exploring the natural and cultural 24 Jieqi rural climate tourism resources and its sustainable utilization models in rural climate tourism market and then further put forward big data integration development patterns of 24 Jieqi rural climate tourism because of irresistible integration trend in China's society with the advancement of climate technology, the more individualization of tourism demand and intellectualization of tourism technology. Moreover, this paper tries to construct the integration development system of 24 Jieqi rural climate tourism from multidisciplinary, trans-disciplinary and interdisciplinary perspectives.*

**Keywords:** 24 Jieqi, Rural Climate Tourism, 24 Jieqi Rural Climate Culture, 24 Jieqi Rural Climate Tourism Resources, Integration Development.

### INTRODUCTION

24 Jieqi has successfully been listed as World Intangible Culture Heritage in 2016 and has achieved more and more attentions from government system, education system, media system and diverse cultural researches in China.

For 24 Jieqi is the unique culture heritage created and handed down by ancient Chinese, various rural culture had been permeated into different Jieqi and had generated particular life style or folk-customs adapting to local climate condition's dynamic changes from one Jieqi to another. The essence of 24 Jieqi in rural areas has embraced both natural and cultural treasures that need to be explored in modern China when facing rural tourism transformation and in-depth

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development through considering creative utilization of scientific knowledge of 24 Jieqi and cultural advantages embedded into rural lifestyle.

However, contemporary researches in China were not focus on rural tourism from climate tourism perspective in rural areas and not systematically analyzed 24 Jieqi climate tourism resources to explore sustainable utilization model in contemporary China tourism market.

Therefore, for 24 Jieqi Intangible Culture Heritage preservation and sustainable development in rural areas, this paper firstly proposes 24 Jieqi rural climate tourism in China context, explores 24 Jieqi rural climate culture transformation mechanism in China and the 24 Jieqi rural climate tourism resources that summarized into Tian, Di and Ren resources system, put forwards Upgraded Endogenetic Creative Source as core of sustainable utilization of 24 Jieqi rural climate tourism resources and the creative cycling sustainable utilization model of 24 Jieqi rural climate tourism resources in modern China tourism market.

## **METHODOLOGY**

Based on combination method of literature review that summarized by this paper utilise meta-analytic review method, argument based review and systematic review all together to analyse 24 Jieqi, rural climate tourism and there integration in China tourism market, which also promote in-depth exploration that proposed in this paper for Jieqi rural climate tourism sustainable development pattern. Based on China Knowledge Resource Integrated Database (CNKID) (<http://www.cnki.net>), this paper search contemporary research of 24 Jieqi, rural tourism by entering “er shi si jie qi” and “xiang cun lv you” into keywords, title and subject as searching contemporary research of 24 Jieqi and rural tourism in China. There are about 358 articles of 24 Jieqi (<http://kns.cnki.net/kns/brief/result.aspx?dbprefix=SCDB&crossDbcodes=CJFQ, CDFD, CMFD, CPDF, IPFD, CCND, CCJD>) from 01/01/1975 to 26/03/2019. Meanwhile, there are about 8203 articles of rural tourism in China (<http://kns.cnki.net/kns/brief/result.aspx?dbprefix=SCDB&crossDbcodes=CJFQ, CDFD, CMFD, CPDF, IPFD, CCND, CCJD>) from 01/01/1992 to 26/03/2019. The keywords co-occurrence networks naturally generated by visualization analysis function of CNKID.

## **LITERATURE REVIEW**

### **Jieqi Research in China**

Contemporary in China, the researches of 24 Jieqi are mainly distributed in disciplines of Ethnology, Traditional Chinese Medicine, Agriculture resources and environment, Astronomy, Atmospheric science, Culturology, Folklore, Arts, Literature and Education, etc., to analyse 24 Jieqi from their discipline perspective. Natural science primarily focus on the natural climate characteristics of 24 Jieqi and its dynamic climate change rules in different regions of China, such as the temperature and precipitation analysis (Liang & Wu, 2018), climate change (Qian et al., 2018; Qian et al., 2011), spatial distribution of energy resources (Dong et al., 2017) and climate adaptation (Yangjiciren, 2014) of 24 Jieqi in specific region. Meanwhile, the researches of 24 Jieqi in natural science are mainly in disciplines of Traditional Chinese medicines and integrated traditional Chinese and Western

medicine. The natural climate features of 24 Jieqi have relationship with diverse diseases as well as their mechanism in different Jieqi, which emphasize to obey dynamic features of 24 Jieqi climate conditions in specific regions of China to keep wealth and actively adapt to the climate characteristics to protect people from diverse disease through 24 Jieqi food therapy, medicine treatment, combination of different types of wellness preservation (Deng, 2016; Ma, 2013; Shi, 2011; Zheng & Zhao, 2016). Therefore, natural science primarily focuses on the natural features of 24 Jieqi climate conditions and its dynamic fluctuation rules as well as its relationship with human health.

After 24 Jieqi have been listed into intangible cultural heritage of UNESCO, most social science have gradually noticed its values in society and try to explore the formation and development of 24 Jieqi in China (Liu, 2017; Shen, 2001), its essences as part of traditional Chinese culture (Cui, 2009; Shang & Zhou, 2015), its preservation and current inheriting situation in China (Wang, 2017; Zhou, 2015a). 24 Jieqi have been discussed by culture and culturology and folklore perspective to analyse the aesthetic culture of 24 Jieqi (Reng, 2017), different folklore in different regions of China at the same Jieqi or in different Jieqi respectively (Wang, 2017; Xiao, 2015; Zhou, 2015b). In some application disciplines such as visual design focus on 24 Jieqi cultural visual design, creative Jieqi cultural products design, 24 Jieqi color image design as well as visual happiness in different Jieqi and so forth (Jin, 2017; Wang, 2018; Yang & Jiang, 2018; Zhu, 2017). It also have been utilised in landscapes and architecture discipline to discuss 24 Jieqi landscapes expression, landscapes design and landscapes atmosphere creation and organization (Chen, 2018; Wang & Li, 2018; Xu et al., 2017). For sustainable protection and inheritance of 24 Jieqi, the education system have actively integrated it into daily curriculum for providing students opportunities to learning 24 Jieqi climate wisdom of China and try to experience nature by perceiving them in daily life (Wang, 2011; Wu, 2018). Therefore, social science are mainly focus on the cultural and social essences of 24 Jieqi as well as its values as traditional Chinese culture that experienced and inherited by Chinese from one generation to another. 24 Jieqi generated from agriculture civilization of ancient China and hand down by Chinese, which are now seldom to be noticed a vital resources that could be utilized in rural tourism in China.

### **Rural Tourism Research in China**

In China rural tourism research have accumulated to a large scale that focus more on sustainable development of rural tourism in China for considering current situations and problems of rural tourism to arrange leisure agriculture industry, community participation, new rural villages construction together (He, 2019; Peng & Bai, 2018; Zhang, 2009). More specifically, for sustainable development of rural tourism in China, there is a huge trend of contemporary China rural tourism development paths through integrating rural tourism with diverse resources in society to creative energetic and sustainable power in rural tourism products and services for more sustainable development in contemporary society. Such as integrating arts and artistic activities into rural areas and specific rural tourism products and services provision (Chen et al., 2017), integrating rural tourism with culture creativity industry (Li, 2013; Yan, 2017), local culture (Ma & Wang, 2018), developing ecological tourism of rural areas through considering local ecological comparative advantages (Zhang, 2015), enhancing rural tourism development efficiency by utilising smart tourism infrastructure (Lv, 2015),

internet facilities (Lu, 2018) as well as actively collaborating with local communities for reaching co-existence and co-creation in rural tourism practices (Wang, 2013; Zhou, 2018). However, within current researches of rural tourism in China there are seldom researches focus on integrating 24 Jieqi into rural tourism and there also lack of in-depth analysis of 24 Jieqi climate culture transformation that will bring great opportunity for 24 Jieqi become vital resources for rural tourism development in 24 Jieqi rural climate tourism perspective (Figure 1).

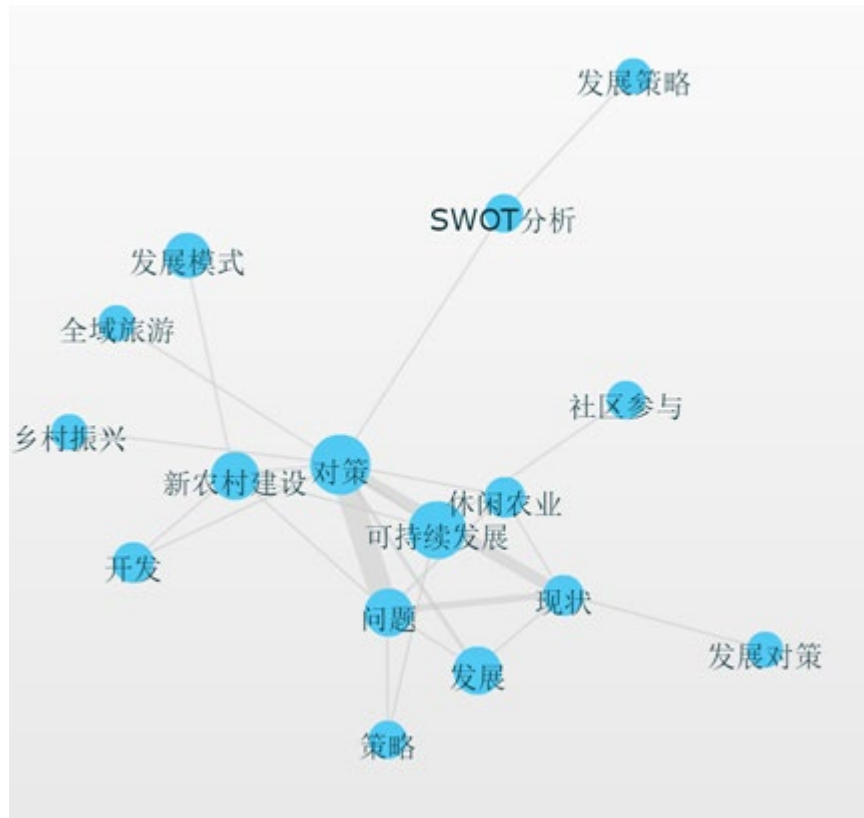


Figure 1. Keywords co-occurrence of rural tourism researches in China.

## JIEQI RURAL CLIMATE CULTURE TRANSFORMATION IN CHINA

To understand the origin and evolution of 24 Jieqi rural climate culture, abbreviated as 24 JQRCC. The production, institution and life culture of 24 JQRCC are proposed in this research to systematically analyze the historical development and regeneration of 24 JQRCC in a new era of Chinese society. For 24 Jieqi generated and constructed by ancient Chinese for accurately estimating dynamic climate changes in each Jieqi and guiding agriculture production, which naturally formed the production culture of 24 JQRCC. As an agriculture civilization society of ancient China, proper institutions and rules had been built and enacted to support and regulate daily operation of agriculture production which is the main economy industry in ancient China and also the key revenue of government so that institution culture of 24 Jieqi had been constructed and handed down from one generation to another in ancient China. Consequently, the development and boom of production and institution culture of 24 JQRCC naturally permeated directly into daily life of ancient Chinese and influenced their life arrangement and dynamic behaviors changes according to the natural and cultural influence of 24 Jieqi in ancient

Chinese society (Wo, 2017) (Figure 2).

Given the dynamic social changes from ancient to modern China, the 24 JQRCC transformed as the tourism industry of China dramatically developed. An in-depth exploration of climate tourism followed the tendency of experience and existential tourism practices. Products and services were designed to meet the demands of tourists relative to the active reactions of industries and the appropriate adjustments that follow this tendency. Therefore, the 24 JQRCC transformed internally in structure and interaction relationship of basic elements, catalyzed by rural climate tourism development through 24 Jieqi rural climate culture resources' efficient utilization in rural climate tourism market and adapted to tourism development trend of China society.

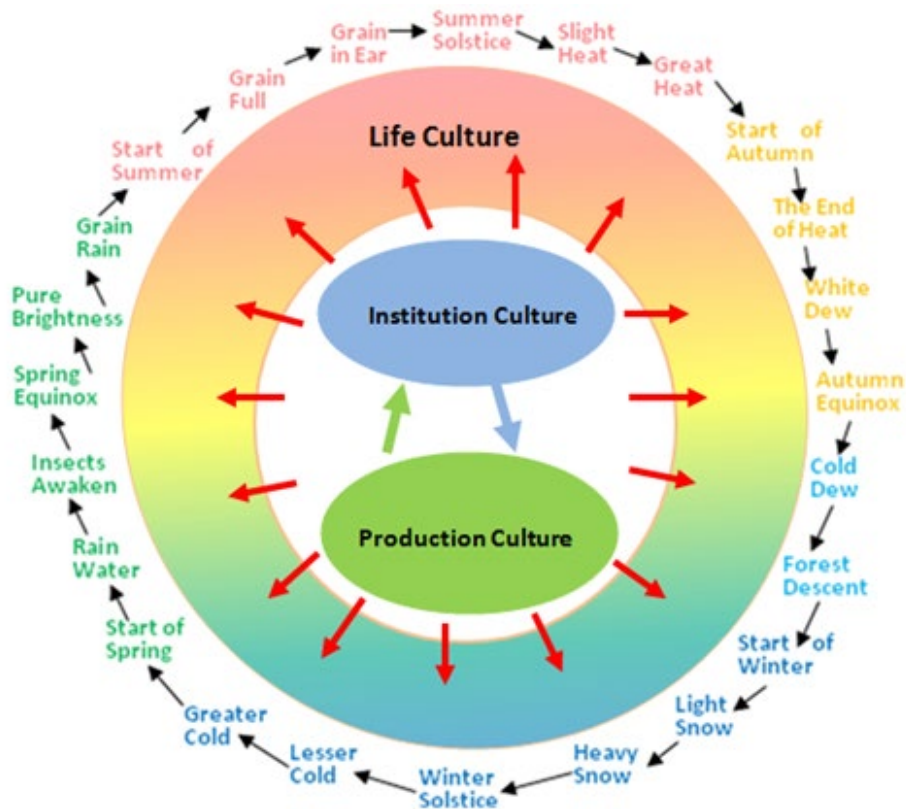


Figure 2. Essence of 24 Jieqi rural climate culture in ancient China (in the Agriculture Civilization Society).

### Internal Transformation of 24 JQRCC

In ancient China, the production culture of 24 JQRCC focused on agricultural production for human survival. The institution culture of 24 Jieqi was established and inherited from one dynasty to another to promote political stability (Li, 2010). These cultures were integrated into the daily life of the ancient Chinese and gradually formed the life culture of 24 Jieqi. Therefore, in this period, the production, institution and life culture of 24 Jieqi accelerated the development of agricultural civilization. Thus, this stage can be regarded as the development stage of the 24 JQRCC. However, when China became the Republic of China and during the Reform and Opening-up of the People's Republic of China, the main production patterns of society shifted from agriculture to manufacturing industry. The manufacturing industry was less influenced by the climate conditions of

specific regions. Hence, the production culture of 24 JQRCC shrank and the institution culture of 24 Jieqi was abolished. Political environments and institutions changed dramatically, whereas the life culture of 24 Jieqi was gradually ignored and disappeared although it changed slower than the production and institution culture of 24 Jieqi (Li, 2005; Zhang, 2010; Xu, 2010). This stage can be recognized as the stagnation stage of 24 JQRCC (Figure 3).

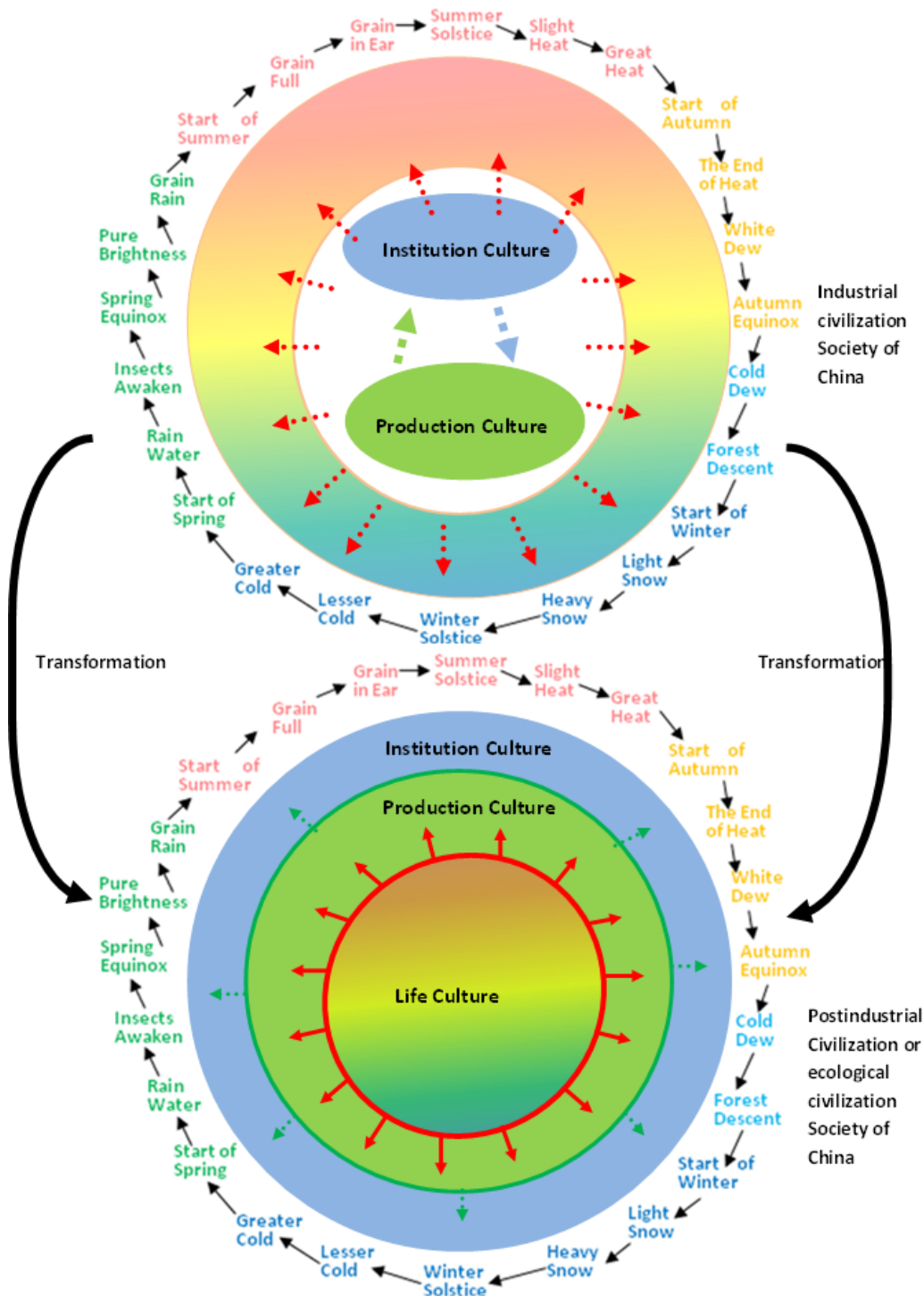


Figure 3. The internal transformation of 24 Jieqi rural climate culture in modern China.

The interactions among the production, institution and life culture of 24

JQRCC in different social contexts transformed the 24 JQRCC. The New Normal Situation Stage of the People's Republic of China (Shi & Zhang, 2015; Jin, 2015) significantly differed from ancient China and the Republic of China (1912-1949). During the New Normal Situation Stage, modern China is dominated by the life culture of 24 Jieqi which have been noticed and needed by Chinese in daily life as economy prosperous and culture revitalization in China society. This trend has further affected production culture of China from focusing on first and second industry into service industry, especially the booming of rural climate tourism and has emphasized and oriented toward local people or tourists' need to produce rural climate tourism products or services rather than agriculture production efficiency so the production culture of 24 JQRCC have changed dramatically and its resources scopes have enlarged from not only focusing on natural climate resource of 24 Jieqi but also cultural resource of 24 Jieqi to creatively produce rural climate tourism products and services (Figure 3).

Influenced and triggered by life and production culture transformation of 24 JQRCC, the institution culture of 24 JQRCC in tourism fields has also changed. The particular institutions of 24 Jieqi astronomy and calendar, agriculture institutions for agriculture production in different Jieqi and the etiquette institutions in particular Jieqi of ancient China have become intangible heritage resources in rural climate tourism in each Jieqi, attracting tourists and local residents.

In addition, the institution of 24 JQRCC will influence the holiday and leisure institution of China gradually improved in the future, which will not only adapt to the flexible holiday institution demand of Chinese in modern China and further offset disadvantages of contemporary holiday institution in China (Cai, 2014; Dong & Zhang, 2015; Zhang, 2015) but also promote the 24 Jieqi rural climate tourism development through 24 Jieqi life culture resources utilization, integration and reproduction in 24 Jieqi holiday as well as the production efficiency improvement in rural climate tourism market in each Jieqi (Wei, 2017).

The function of 24 Jieqi holiday institution or holiday choice is guiding social behavior of Chinese to experience leisure and enrich their body and soul through diverse holiday activities, accelerating social economy development by stimulating holiday consumption in local leisure activity and tourism activity and also promoting tourism industry and related industry development through supply proper products and services for tourists and people seeking leisure life (Zhang et al., 2014; Zhang, 2015; Wu, 2017).

Flexible holiday choices Institution of 24 Jieqi could be arranged and permeated into contemporary holiday institution of China when considering more connection between 24 Jieqi holidays with paid holiday institutions. The more advancement of paid holidays within 24 Jieqi will become a win-win choices for more flexibility and individualization of tourists, for tourists destination development and dynamic management within 24 Jieqi, for tourist attractions creations and design obeying the natural and cultural rules of 24 Jieqi within China society, for the harmonious connection and interaction of life culture, production culture and holiday institution culture of 24 Jieqi in climate tourism of contemporary China, which will naturally and profoundly influence 24 JQRCC reproduction and regeneration in rural climate tourism practices.

Therefore, the internal structure transformation of 24 JQRCC have been occurred in China society and will more deeply explored, interacted and promoted in rural climate tourism practices. Additionally, social division of labor changed significantly. The deeper the division of society, the more the Chinese are emancipated from the first and second industries and participated in the service industry (Jin, 2015), especially the tourism industry in New Normal Situation Stage

of the People's Republic of China (Xu, 2010). The 24 JQRCC has an opportunity to regenerated and recreated in rural climate tourism of China and further accelerate the internal transformation, interaction and upgrading when more and more tourists influenced by 24 Jieqi climate culture in China society permeated through education system and media system as well as the governmental promotion (Liao & Li, 2016; Ma, 2018; Luo, 2018).

### **Interaction Mechanism of Stock and Increment 24JQRCC in Rural Climate Tourism**

From ancient to modern China, the stock and increment culture of 24 Jieqi exist and interact with each other through rural climate tourism practices. These cultures serve as resources for further exploration and creation of particular products or services to meet tourist demands in modern China.

The stock culture of 24 JQRCC refers to the culture that appeared in ancient China regardless of the material or mental patterns it displayed (Xu & Chen, 2015). These patterns accounted for 5000 years of history of ancient China. More Precisely, the stock culture of 24 Jieqi include the ancient production culture of 24 JQRCC (Long, 2017; Mahamuti, 2017) such as seeding cultivation in Start of Spring, crops planting in Insect Awaken, fertilizing and weeding in Spring Equinox, pest controlling in Grain Rain and so forth summarized by ancient Chinese (the time sequence and particular agriculture production process will a little bit different in each Jieqi in China for the large territory and diverse climate zones in each part of China) (Zhao & Zhang, 2004; Hu, 2007; Ma, 2009; Wang, 2012; Zhang & Cao, 2015); the ancient institution culture of 24 JQRCC (Chen, 2017) such as the astronomy institutions in each dynasty of ancient China, the agriculture institutions in each Jieqi for guiding farmer's behaviors in each agriculture production process, the etiquette institution in each Jieqi performed from empire to normal ancient Chinese in different dynasties etc. (Chen, 1995; Ge, 2001; Song, 2006; Gao, 2010; Li & Chen, 2010; Zhao, 2015); the ancient life culture of 24 JQRCC (Reng, 2017) such as art culture of 24 Jieqi (various folk-customs, traditional Chinese literature of 24 Jieqi, Chinese paintings, calligraphy, embroidery, paper-cut of 24 Jieqi, etc.) (Xiao, 2015; Wang, 2017), living environment culture in different Jieqi and different climate region of China (Zhou & Liu, 1999; Zhang et al., 2015; Hu, 2016), clothes culture (symbolic reflection of 24 Jieqi phenological phenomena of local creatures and particular style patterns for adapting local dynamic climate changes in different Jieqi) (Feng, 2002; Ai, 2004; Cui, 2014; Na, 2014; Shao, 2017), traditional Chinese medicine culture and food therapy culture of 24 Jieqi and so forth.

The increment culture of 24 JQRCC refers to the culture that will be created and regenerated in the 24 Jieqi of daily life, which were nourished and enriched by the stock culture of 24 Jieqi in different dynasties of ancient China and extensively facilitated by modern advancements. For instance, rooted in the stock culture of 24 Jieqi, more and more increment culture of 24 Jieqi has been created or redeveloped such as the creation of 24 Jieqi picture books for children (Zhan, 2017), new exploration of 24 Jieqi landscapes expression (Xu et al., 2017), the creative exploration of 24 Jieqi cultural documentary (Dong, 2017), the visual conversion of 24 Jieqi culture (Xiao, 2017) and so forth. In terms of rural climate tourism practice, the increment culture of 24 JQRCC is created and newly explored by tourists, tourism companies or tourism managers in particular tourist destinations in



different Jieqi and all aspects of rural climate tourism activities or processes. For example, the new tourist attractions creation in different Jieqi such as 24 Jieqi folk-customs (Zhou, 2015), 24 Jieqi art exhibition (Yuan, 2015), 24 Jieqi B&B Hotel products and services, etc. In addition, this culture will be promoted and flourished by means of science and technology achievements in information facilities, transportation infrastructures, GIS applications and so forth. Hence, the increment culture of 24 JQRCC in climate tourism process is the product of cultural reproduction. Increment culture involves stock culture and bridges the cultural gap of 24 JQRCC between ancient and modern China through active interactions in the cultural reproduction process (Figure 4).

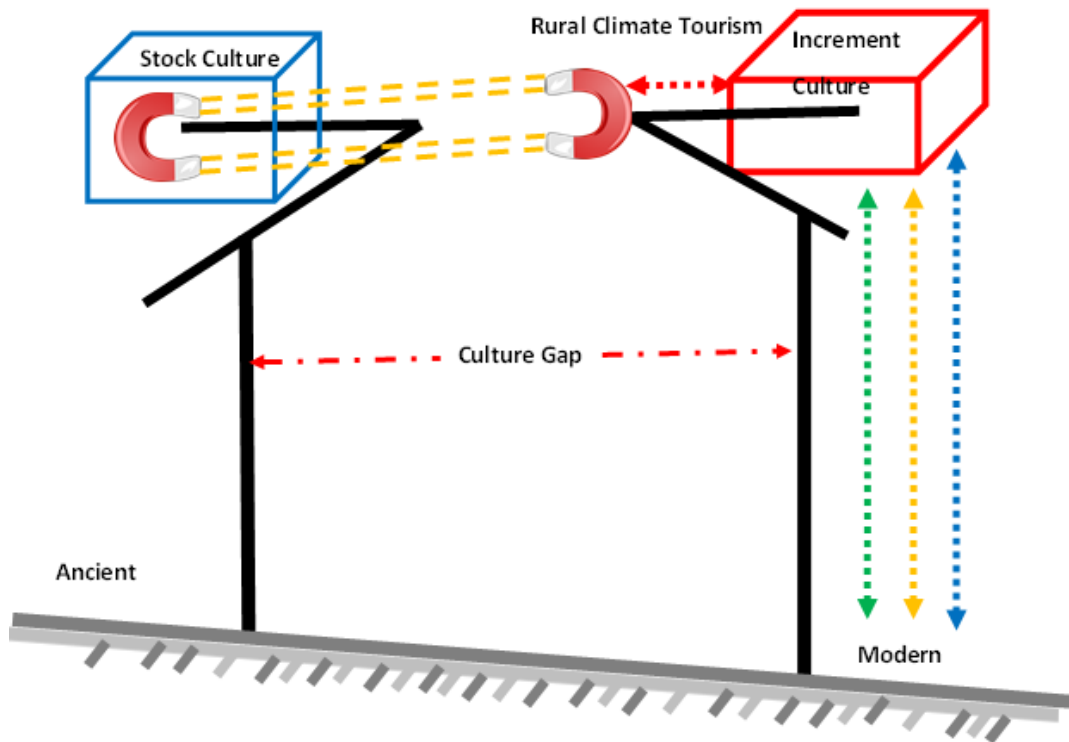


Figure 4. The 24 JQRCC reproduction process in 24 Jieqi rural climate tourism.

Moreover, the increment culture of 24 Jieqi in climate tourism practices require supply-side (particular destinations, tourist attractions and natural or cultural landscapes), demand-side (tourist preferences, structures, scales, payment capacity and backgrounds in a particular society) and intermediate or correlate industries (transportation system, information system, market and online agents) to react and interact with each other quickly and actively from life, institution and production culture of 24 JQRCC in modern China through rural climate tourism practices in society. Consequently, influenced by modern society's characteristics, the increment culture of 24 Jieqi will lead to diverse and abundant elements that differ from those of ancient times. These elements will better fit and satisfy modern tourists' preferences and deepen culture communications through 24 JQRCC explorations.

The stock and increment culture of 24 JQRCC interact with each other in rural climate tourism practices, especially as China entering into deeply exploration of supply-side revolution in tourism industry. Enriched and nourished by stock culture accumulated from ancient time, modern China embraced the abundant treasures of 24 JQRCC in diverse forms, such as materials, mental experiences or knowledge, institutions and behaviors. This stock culture could be re-utilized and

re-produced through modern Chinese's active participation and recreation. To better appreciate the stock culture of 24 Jieqi, its increment culture could be catalyzed by rural climate tourism practices through enforcement such as an in-depth excavation of life culture of 24 Jieqi handed down from ancient China to develop new products and services for rural climate tourism, which also cater to the demands of contemporary tourists (Figure 4).

24 Jieqi rural climate tourism is vital for the reproduction of 24 JQRCC. 24 Jieqi rural climate tourism preserves the philosophical essence of 24 JQRCC but also embraces various and diverse patterns of particular climate cultures in different Jieqi for in-depth development in rural climate tourism planning, management, marketing, products and service redesigning and tourist destination and tourist attractions upgrading through exploring 24 Jieqi or particular Jieqi. This development meets tourist needs and significantly supports culture reproduction and practice system rather than the use of shallow conception that lack life essences. Meanwhile, the annual and seasonal progress of each Jieqi is a natural climate cultural exhibition in China from the North to the South and from the East to West. Tourists could allow the experience of local climate culture and immerse into the local social pace of life, production and institution culture of 24 Jieqi to constructively support their fulfillment from external to internal needs, satisfying tourists in each Jieqi.

## **JIEQI RURAL CLIMATE TOURISM IN CHINA**

### **Essences of 24 Jieqi Rural Climate Tourism in China**

Climate tourism practices are obvious and popular in China all the time and still increasingly appear upward tendency in contemporary China tourism market (Lin et al., 2013; Yan, 2014). Under vigorous demand background of climate tourism in China, the climate tourism products and services have appeared diversity, such as traditional winter tourism (Wang, 2009; Liu, 2013; Yang et al., 2017), the summer tourism (Wang & Zhang, 2006; Dong & Chen, 2016; Zhao, 2017), winter resort tourism and summer resort tourism (Wu, 2010; Luo, 2010); cultural climate health preserving tourism (Ruan, 2014; Mao, 2017) and Jieqi culture tourism (Gao et al., 2017; Zhang & Deng, 2017; Huang, 2017); ecological phenology tourism such as bird seeing tourism (Wang, 2008; Li, 2013; Lin, 2017), flower tourism (Tang, 2007; Zhang, 2015; Li, 2016), colorful leaves tourism (Gao, 2015; Lv & Jiang, 2015; Yan et al., 2016; Fang & He, 2016) and meteorological landscape tourism, etc.

Yang (2018) proposed that climate tourism refers to a comprehensive tourism activity that attracts tourists to experience natural climate conditions, as well as the climate adaptation culture of human beings in certain regions of societies; this activity is organized and managed by the tourism industry to satisfy various tourists' needs in diverse forms, such as meteorological sightings, climate phenomena, leisure and vocation in certain climate resorts in the summer or winter and exploration and learning activities of climate folk customs (Yang, 2018). In China context, 24 Jieqi is pivotal climate knowledge system handed down from ancient time and embrace various and diverse cultural treasures of Chinese life adapting to local climate conditions in different Jieqi. Therefore, 24 Jieqi climate tourism also has been proposed for further exploring China climate tourism from theoretical and practical perspective (Yang, 2018). In climate tourism, the tourist

attraction of climate resource includes not only the aforementioned natural climate resources but also the humanity climate adaptation landscapes (namely, cultural climate resources), which embrace materials, behaviors, institutions and mental wealth created by humans for adapting to climate conditions around them (Yang, 2018).

The natural and cultural phenomena of 24 Jieqi generated and flourished in rural areas since ancient China so that it is naturally and unavoidably to propose 24 Jieqi rural climate tourism in China rural tourism development context. From concept perspective, rural tourism had been proposed and discussed thoroughly by researchers. For instance, He & Li (2002) summarized that from narrow sense rural tourism is the tourism activities that organized through treating natural and cultural objects with rurality features as tourist attractions in rural areas (He & Li, 2002). Liu (2006) indicated that rural tourism is the tourism activities that attracts tourists to relaxing, sightseeing, experiencing, learning and so forth through tourist attractions of rural customs and practices composed by rural geography, rural materials and scenery, rural customs, rural landscapes and particular phenomena in rural areas (Liu, 2006). From resource and function perspectives, Li & Zhang (2018) argued that rural tourism is the newly development patterns of agriculture sightseeing and experience tourism and the rural leisure vocation tourism that attracts tourists through tourists attractions of rural nature environment, rural scenery, settlement building landscapes, rural customs culture; aims for rural sightseeing, rural leisure, rural custom experiencing and rural vocation; depends on supporting of agriculture production, agriculture landscapes, farmer' life and so forth (Li & Zhang, 2018).

Considering the development and drastic transformation of China economy and society, rural tourism faced deeper exploration for satisfying tourists' diverse demand and flourishing rural tourism market in particular rural areas. Therefore, from 24 Jieqi climate tourism perspectives, it is worthwhile to explore 24 Jieqi rural climate tourism which embrace traditional rural tourism characteristics summarized by researchers mentioned above like rurality and happen in rural areas. Apart from that, 24 Jieqi rural climate tourism focus mostly on the natural and cultural climate tourism resources in each Jieqi to create, establish, organize or manage particular natural, cultural or compounded 24 Jieqi tourist attractions for tourists to experience various rural climate tourism activities. Inspired by 24 jieqi wisdom of ancient Chinese and interacted with harmonious modern life wisdom in each Jieqi, 24 Jieqi rural climate tourism attempt to guide tourists, tourism suppliers to deepen their perception and creative experience in each Jieqi and harmoniously follow the natural rules to organize their life and operations in 24 Jieqi rural tourism activities. The wisdom of 24 Jieqi reveal change is core of life that need adapting to it with creative mind and sensitive soul, which embrace relative stable for everything accumulating and growing gradually. That means 24 Jieqi rural climate tourism welcome the changes of local climate conditions, the changes phenological phenomena of plants, animals and human beings, the changes of social customs for enriching leisure life and so forth; and also enjoy the relative stable process to slow down and appreciate beautiful life.

In addition, for new tendency of active and constant interactions between rural and urban in China, more and more qualified and talented personnel will flux back or flux into rural areas, which will become precious treasures for 24 Jieqi rural climate tourism development because of deeper understanding of life and creative exploration of 24 Jieqi climate tourism resources in rural areas with talented inspiration and artistic appreciation as well as new accumulation and gathering of talent people into rural areas with diverse education background to harmoniously

melt into rural areas and open new era of 24 Jieqi rural climate tourism in modern China, corresponding to 24 Jieqi rural climate culture transformation trend (Huang, 2017).

### **Jieqi Rural Climate Tourism Resources in China Tourism Market**

To deeper pursuing sustainable development of 24 Jieqi rural climate tourism in China, it is indispensable to explore the 24 Jieqi Rural Climate Tourism Resources. In China's context, the 24 Jieqi is pivotal rural climate tourism resources from natural and cultural aspects that cannot be ignored. Meanwhile, within 24 Jieqi, various natural rural climate tourism resources from Tian and Di or their combination phenomena occurred in particular climate region and geographical location. Furthermore, cultural climate tourism resources can be summarized as an output of Ren when interacting with Tian and Di in certain society with different levels of civilization. Therefore, the 24 Jieqi rural climate tourism resources can be classified and gathered into Tian, Di and Ren aspects inspired by ancient wisdom of China. Moreover, the relativity and features of comparative advantage of 24 Jieqi rural climate tourism resources should be emphasized in a more open and high mobility rural climate tourism market of China.

#### **Jieqi rural climate tourism resource — 24 Jieqi rural Tian resource**

24 Jieqi Tian resources refer to dynamic climate condition changes in different Jieqi in particular rural areas or diverse climate conditions of different rural areas in each Jieqi, as well as specific climatic and meteorological phenomena that attract tourists' attentions or become tourist attractions could be utilized and deeper developed as particular rural climate tourism products or services organized within various rural climate tourism activities.

For climate conditions changes gradually within 24 Jieqi cycle, particular rural areas experience slight differences of climate conditions from one Jieqi to another, which become important tourist attraction factor that influence tourists' rural climate comfortable feelings as well as excite tourists who never experience before, becoming pivotal rural climate tourism resources for rural climate tourism development. From a broader perspective, for China territory embraces diverse climate zones from north to south and from east to west, at the same Jieqi different rural areas of China have appeared diverse climate conditions, which has become relative resources for rural climate tourism in particular rural areas have more comfortable climate conditions and enable them to accelerate those comparative advantages to supply specific rural climate tourism products and services (Figure 5).

In summer Jieqi, such as slight heat and great heat, most rural resorts that embrace cool climate conditions became popular tourist attractions or destinations and most tourists from the south regions of China flowed into the middle and west regions, such as Shangri-La and Jiuzhaigou Valley in Sichuan Province or the northeast regions, such as Yichun rural areas in Heilongjiang Province, Changbai Mountain rural areas in Jilin Province and Dandong Green River rural areas in Liaoning Province. In

summer Jieqi, especially in Slight Heat and Great Heat, thousands of tourists swarmed to the Seaside rural resort. For instance, the Dongji and Shengsi Islands in Zhejiang Province, the Xiaoyangkou in Jiangsu Province and the Bangchui Island in Liaoning Province (Figure 5).

In winter Jieqi, from Light Snow to Great Cold, most tourists from the northeast region of China traveled to the south rural areas searching for warmer winter resorts, especially Sanya rural areas, Hainan Province. According to the scientific calculation of comfortable degree in ten rural areas of the south, Lin & Guo (2003) indicated that Haikou, Sanya and Zhanjiang are the most comfortable areas for rural winter resort, which have longer comfortable periods than Xiamen, Guilin and Guangzhou (Lin & Guo, 2003). By contrast, most tourists from the south attempted to experience winter climate including snow and entered north regions of China. Therefore, the climate distribution in China and its dynamic changes within the 24 Jieqi created diverse and abundant resources for climate tourism (Figure 5).

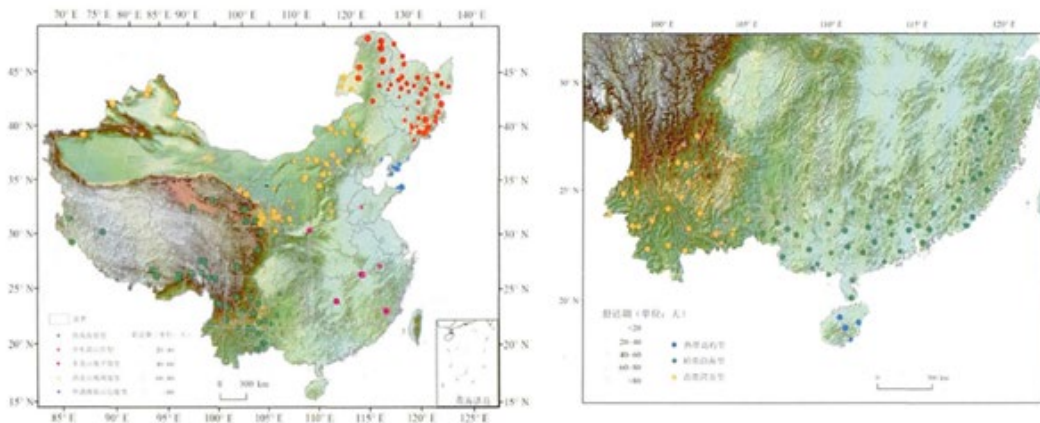


Figure 5. Comfortable period distribution of summer and winter rural resorts in summer and winter Jieqi (Chen, 2015).

In terms of specific climatic and meteorologic phenomena in particular Jieqi of rural areas in China, which also has become a vital resource of rural climate tourism? For instance, the summer and winter solstice are the best periods to appreciate polar lights in Mohe rural areas, Heilongjiang Province, which is the northernmost part of China. Additionally, the Summer Solstice Festival is held by Chinese in North Polar Village to celebrate the longest day time within a year called “White Night,” when some particular celestial phenomena simultaneously appear, such as polar light, sunrise and sunset between the shortest times.

Meanwhile, the rime has appeared mostly in Heavy Snow, Winter Solstice, Lesser Cold and Greater Cold Jieqi and it also appeared in the Start of Spring, Cold Dew and Forest Descent Jieqi, which have become popular rural climate tourism resources for the winter tourism market. Regional distribution is mostly in the northeast region of China such as in Songhua Lake and the Rime Island of Jilin rural areas, Jilin Province and Kuerbin rural areas, Heilongjiang Province; Southwest rural region especially in Xinjiang Province and some regions along the reaches of the Yellow and Yangtze Rivers. In Addition, the rime also has appeared in mountain rural regions, such as Heng Mountain, Hunan Province (Chen,

2005) and Lu Mountain, Jiangxi Province (Jiang, 2015) (Figures 6).

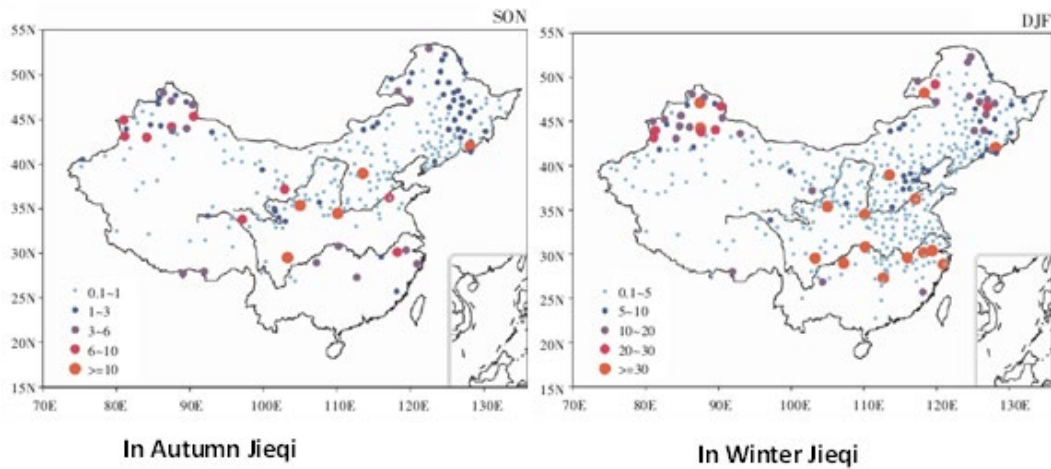


Figure 6. Total day of Rime that happened in autumn and winter Jieqi (Zhou et al., 2016).

### Jieqi rural climate tourism resource — 24 Jieqi rural Di resource

24 Jieqi rural Di resources refer to the adaptation reactions of diverse plants and animals' phenological changes according to 24 Jieqi dynamic climate condition changes, which in particular rural areas have become tourists' attractions of rural climate tourism practices in particular Jieqi of China such as phenological changes of flowers, diverse plants, birds and so forth. In *Jing Chu Sui Shi Shuo* written by Tan Zong, Nanchao Dynasty recorded that flowers blossomed 24 times from the Jieqi of lesser cold to grain rain. For instance, in lesser cold, three flowers blossomed in each Hou (five days a Hou), which are plum blossom, Camellia and Narcissus; in pure brightness, tung, wheat and willow flowers blossomed in sequence (Cheng, 2010). To explore more flowers in other Jieqi, Tingding Wang (1891) summarized 13 flowers in summer and autumn Jieqi, which balanced the flowers blossoming 24 times a year and 2 flowers blossoming each month (Wang, 1891).

Accordingly, flower blossoming is a phenological phenomenon under a particular climate condition, which is an important natural climate tourism resource developed and explored. In climate tourism practices, rape flowers that blossom in rain water are the hottest flower for the climate tourism in China (KCHANCE, 2011). Rural areas in Wuyuan, Hanzhong, Xinghua and Luoping have explored rape flowers as their tourist attractions of rural climate tourism. Furthermore, jasmine flower starts to blossom in Grain in Ear and lasts until the White Dew, it has also been utilized as a pivotal rural climate tourism resource in Heng County, Guangxi Province (Zhang, 2012). Apart from the above mentioned rural areas in China, other rural areas also have taken good advantages of flower growth laws in different Jieqi to establish destination images for rural climate tourism (Figure 7).

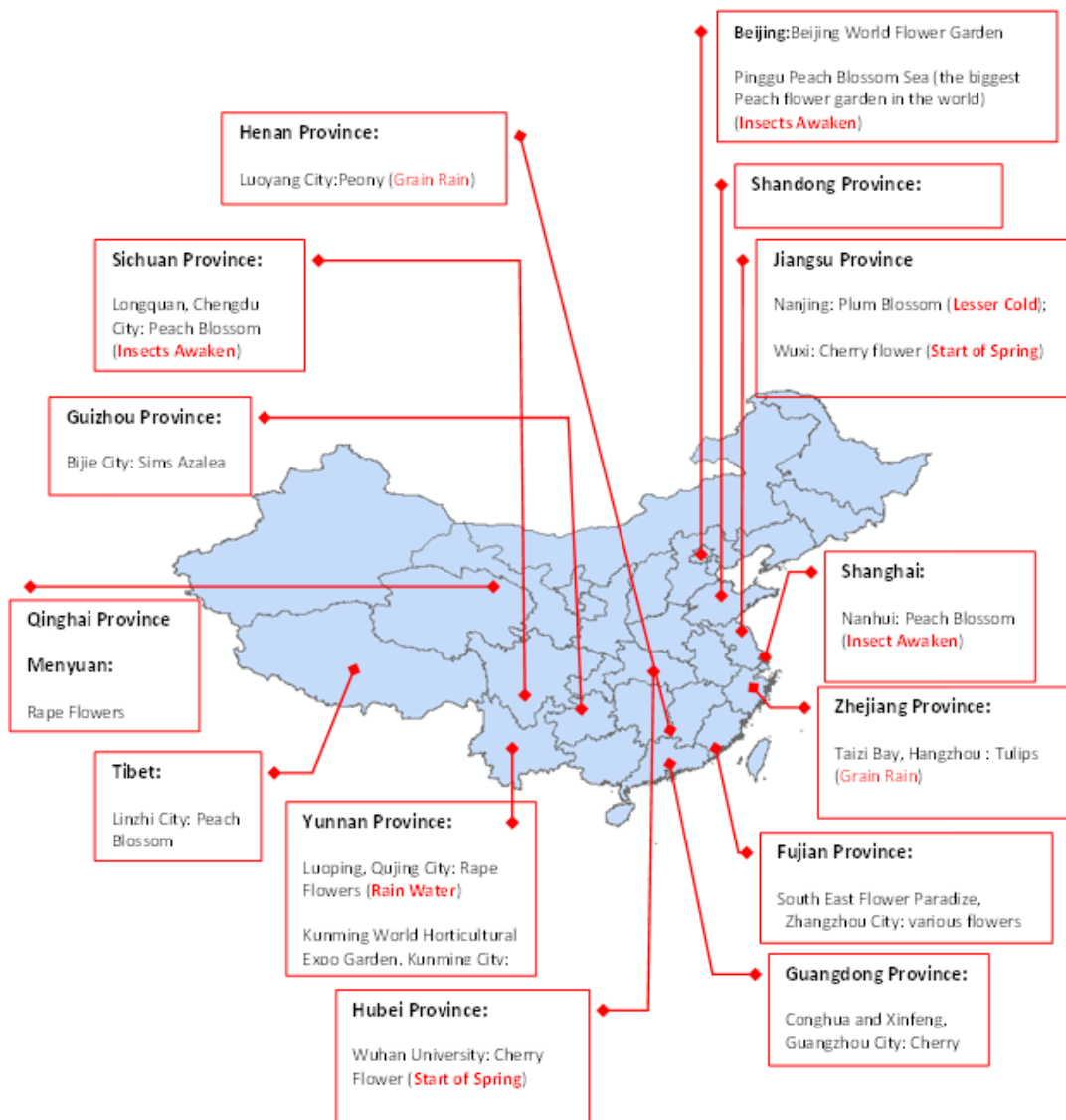


Figure 7. 24 Jieqi flowers blossoming of rural Di resources in China.

The phenological changes of birds in 24 Jieqi reflect part of a region’s climate situation, which becomes a rural climate tourism resource for product or service design that focused on simple or professional rural climate tourism of birds seeing and birds photographing. According to Yue Ling Qi Shi Er Hou Ji Jie (a collective interpretation of the 72 phenological terms) recorded the phenological changes of birds in different Jieqi in rural areas. For instance, wild geese fly from south to north in Rain Water; the yellow warbler sings and the eagle offspring starts to hatch while the cuckoo sings in its courtship period in Insect Awaken; the swallow arrives in Spring Equinox; the cuckoo preens and the hoopoe lands in the mulberry in Grain Rain; the butcherbird starts to sing while the woodchat stops to tweet in Grain in Ear; the eagle cleaves to the sky in Slight Heat and so forth.

For example, the annual migration behavior of diverse birds in different Jieqi form the east, middle and west migration routes in China, which have become pivotal segmental resources for rural climate tourism in each Jieqi (Figure 8). From light snow to pure brightness, the oriental white stork, the white-naped crane, wild geese and little swan fly from the inner Mongolian grassland, northeast swamp and Siberian wilderness to the

Poyanghu Nature Reserve, Jiujiang City, Jiangxi Province, which accumulates more than 70,000 diverse birds; in Grass See, Yi-Hui-Miao Autonomous County of Weining, more than 150 species of birds, especially the black-necked crane, gather here from start of winter to greater cold; the Meilan District, Haikou City, Hainan Province is the famous egrets paradise in winter Jieqi. Moreover, some rare bird species distribute across various regions of China, which are also a pivotal climate tourism resources for bird watching in different Jieqi (Figure 9).



Figure 8. North-south migration route of birds in China (You, 2017).

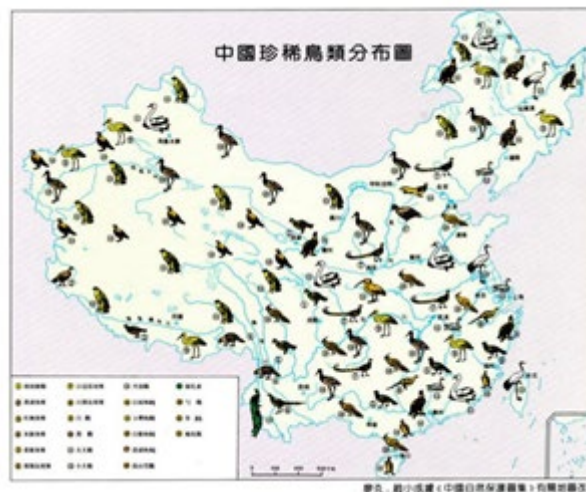


Figure 9. Distribution maps of rare birds in China (Liao & Zhao, 2017).

**Jieqi rural climate tourism resource — 24 Jieqi rural Ren resource**

24 Jieqi rural Ren resources refer to the cultural climate adaptation resources of rural climate tourism in different Jieqi, which not only include ancient cultural resources (stock culture of 24 Jieqi rural climate culture) of 24 Jieqi in rural areas but also openly embrace 24 Jieqi rural increment climate culture created, regenerated, reproduced or reorganized by contemporary Chinese adapting to dynamic climate condition changes of



Tian and phenological changes of Di. Most of the life culture of 24 Jieqi rural climate culture has been utilized as precious 24 Jieqi rural climate tourism resources.

### Flower Culture Resources of 24 Jieqi

The phenological changes of flowers in different Jieqi along with the flower culture in particular rural areas have become pivotal resources of climate tourism. For instance, porcelain, painting, poetry, embroidery, bodiless lacquer ware, sculpture, jade plate, paper cut and clothes have flowers in 24 Jieqi from ancient times as their inspiration and artistic forms, which are embedded in the basic life experiences of the Chinese (Figure 10). In rural climate tourism practices, flower culture festivals are held in different rural regions of China, which became popular climate tourist attractions based on the phenological nature of flowers in different Jieqi combined with flowers culture in local communities.

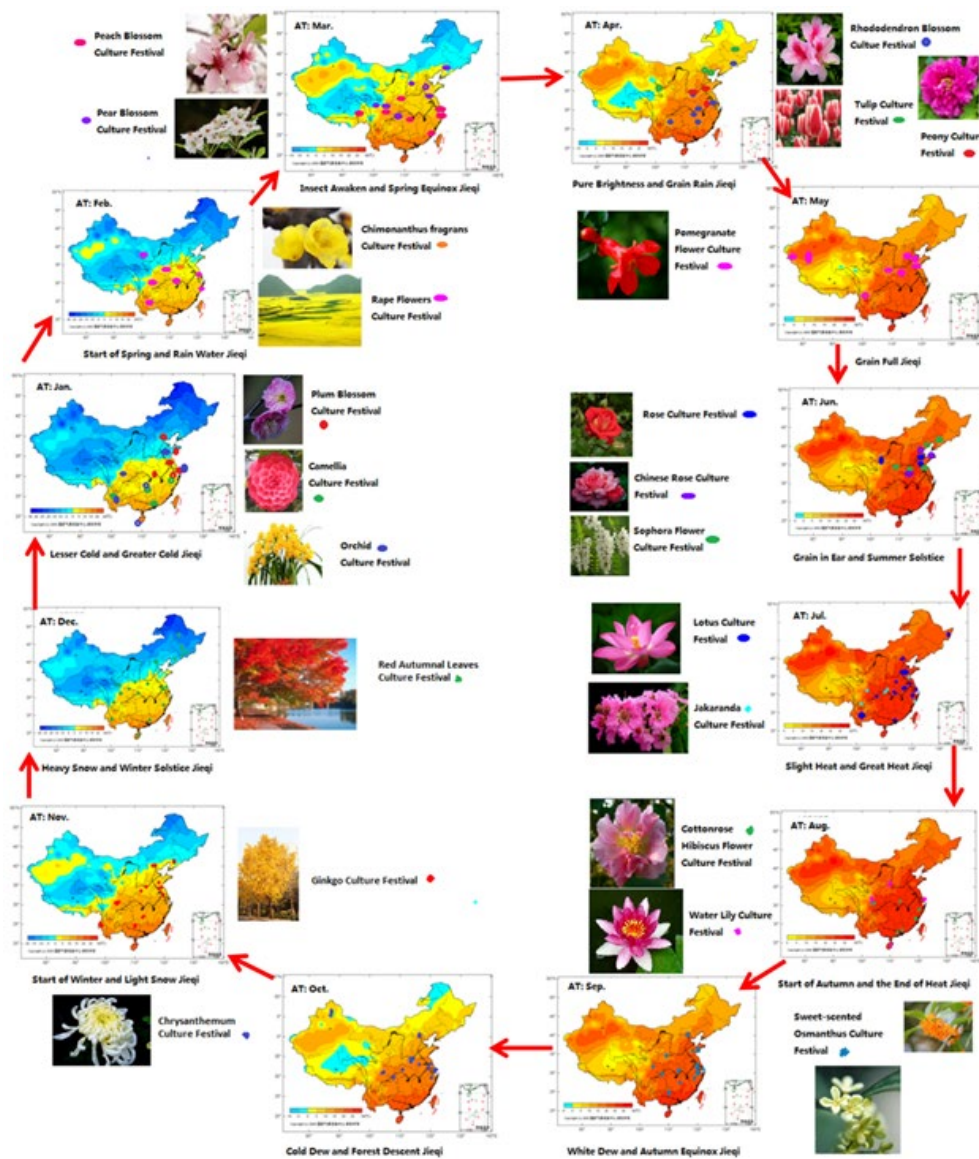


Figure 10. Flower and leaves culture festival in 24 Jieqi of China.

Note: AT refers to Average Temperature in each month

For instance, in Lesser Cold, international plum blossom and camellia culture festival are held in Nanjing, Jiangsu Province and Dali, Yunnan Province, respectively. In Insect Awaken, international peach and pear blossom culture festival has been held in Chengdu rural areas and Jinchuan County, Sichuan Province. In Grain Full, international pomegranate flower culture festival is celebrated in Zaozhuang rural areas, Shandong Province. An in-depth and comprehensive understanding of flower culture resources in different Jieqi of China will determine the exploration patterns of rural climate tourism products and services and accelerate the formation of comparative advantages in rural climate tourism market for avoiding homogenization of supply.

### **The Bird Culture Resources of 24 Jieqi**

In regions south of the Yangtze River, the ancient Chinese discovered paddy by observing the food foraging of birds, which led them to cherish the birds that inspired them to cultivate paddy and appreciate birds by eating bird food, sowing in bird land, living in bird-like buildings, using ornaments and clothes of birds, speaking bird language, writing bird words and erecting bird badges (Chen, 1996). Many paintings, calligraphy, embroidery and dancing are inspired by birds or utilized as raw material for creation. Bird worship developed and evolved in daily life from the ancient times until today in different rural areas of China. For instance, the sparrow is treated as God sending grain to humans in rural areas of Zhejiang Province and Fenghua, Ningbo City and offering sacrifices to the Sparrow God is normal in spring equinox (Chen, 2003). Furthermore, bird totems are significant in the totem culture of China that has been handed down from ancient generations. For example, the swallow is the totem of the Shang Dynasty, which profoundly impacted the history and culture of China. The phoenix, rooster and swallow are cherished as sun birds worshiped by the Chinese from the imperial culture and folk customs' perspective (Chen, 2003). In addition, bird totems still influence the daily life of the Chinese, especially their various artistic works, such as traditional sculpture, jade ware, pottery and porcelain of birds, as well as photographic exhibitions of birds in modern life. From a regional perspective, various ethnic minorities in China embraced diverse bird totems across different regions influenced by the climate conditions and adaptation culture. For instance, in the southwest region of China, the Yi nationality have green turtledove, black turtledove, white chook, phoenix, eagles and wild geese totems along with taboos, rites, myths and arts of totems used in daily life. The totems of the Naxi and Hani nationalities are owl and quail, respectively and the Khmus worship waterfowl, hornbill, crested myna and Chinese bulbul as their totems (Xiao, 2013).

### **Wellness Culture Resources of 24 Jieqi**

In traditional Chinese medicine theory, the 24 vertebra and internal organs of humans correspond with the 24 Jieqi, which indicates the different emphasis on wellness in each Jieqi. Meanwhile, the theory also suggests that phenological changes of humans in the 24 Jieqi have their own laws that should be obeyed when pursuing a happy and wealthy life that reflects the harmonious relationships among climate condition (Tian), basic elements of land (Di) and human being (Ren). In ancient China, observing, analyzing and summarizing experiences and knowledge of Tian and Di can adjust behaviors for adapting nature and protecting health conditions to some extent in different Jieqi. Nourished by 5,000 years of

development and practices, various wellness patterns in rural areas are created, redeveloped and handed down from ancient time in different Jieqi to adapt to the dynamic changes of climate environment that influenced all aspects of human life. For instance, the 24 Jieqi recipes of wellness (Shao, 2006; Li, 2010), wellness prescription of traditional Chinese medicine (Taiwan Health Culture Research Center of China, 2010; Chen, 2013), acupuncture point therapy and meridian point wellness (Zhao, 2013), wellness environment with different climate conditions in the 24 Jieqi from macro-climate and microclimate design in particular rural areas for various health preservation purposes (Yang, 2010; Chen, Wang & Pei, 2016; Chen, Ren & Lin, 2016), traditional Chinese Wushu for wellness especially Tai Chi and Wellness Guiding Methods created and compiled by Chen (871-989) (Tie, 1506; Zhang, 2013) and currently practiced by the Chinese. Hot spring wellness combined with the 24 Jieqi wellness key points of humans for health treatment (Yu, 2017) are recognized as a pivotal climate adaptation culture in rural areas of Chinese for wellness. As for music therapy for wellness, Wuyin Therapy theory of traditional Chinese medicine in Huang Di Nei Jing introduced Guqin (a seven-string plucked instrument handed down from ancient China) wellness music as the most important melody for wellness. Wuyin Therapy theory explains the relationship among five Yin or sounds (Shang, Jiao, Yu, Wei and Gong), five basic elements (Jin, Mu, Shui, Huo and Tu), five human organs (lungs, liver, kidney, heart and spleen), five human emotions (happiness, missing, fear, anxiety and anger) and five conditions of everything in the world (growth, development, change, harvest and collection) within five climates (spring, summer, long summer, autumn and winter). In practice, the ancient Chinese explored the 24 Jieqi Guqin wellness according to different organ characteristics of humans in different Jieqi and their basic needs to play different Guqin music with various rhythms. For example, in start of spring, play Yang Chun for preserving the liver and smoothing the psychological feeling of remembering with longing, whereas in cold dew, play Qiu Jiang Ye Bo for preserving the lungs and expressing happy emotions (Guqinzhaji, 2017).

### **Clothes Culture Resources of 24 Jieqi**

Influenced by dynamic climate changes and the regional climate culture, which have been developed and explored as pivotal rural climate tourism resources in different Jieqi according to local climate conditions. Diverse clothes tourist attractions have been deeply enhanced and developed to create new tourists products and services and further promote tourists' experience perceptions and satisfactions, catalyzing the 24 Jieqi climate culture reproductions in climate tourism activities. Precisely, as vital 24 Jieqi climate culture, the Han clothes (汉服) in Xianyang city (Zhang, 2011), Xuzhou city (Yu & Zhang, 2013) and Sankong Scenic Spot of Qufu (曲阜) (Zhang, 2016) have been treated as important climate tourism resources and have been developed into different tourism products and services according to local climate conditions of each Jieqi (Figure 11).



**Figure 11. Clothes culture of Red Yao minority (红瑶族) and Zhuang Minority (壮族) during cold dew Jieqi in Guilin Hongyao village and Longji Rice terrace tourists' scenic spot.**

Note: These photos were offered by author and used with the permission of the performers, tourists, receptionists and local minorities

In Minority rural areas of China, the 24 Jieqi clothes culture influenced tremendously by local climate conditions and minority adaptation culture in particular Jieqi and already developed as tourists attractions in particular tourists destinations of China. For example, the Miao Minority (苗族) clothes (Zeng, 2012), the Zang Minority (藏族) clothes (Cao, 2016), the Hongyao Minority (红瑶) clothes (Liu & Chen, 2017) (Figure 12), the Yi Minority (彝族) clothes (Li & Zhang, 2017), the She Minority (畲族) clothes (Li & Xiang, 2017) and so forth have been redeveloped and deeper explored to create cultural rural climate tourism products in different Jieqi through extracting characteristics cultural symbols in minorities daily clothes to creative design new climate tourism products, holding the off-line minority clothes experiential activities at different Jieqi, redesigning new clothes products according to local Jieqi conditions and finally regenerating 24 Jieqi clothes culture in climate tourism practices.



Figure 12. Folk customs in spring and summer Jieqi in China.

### Folk Custom Culture Resources of 24 Jieqi

Rooted in agriculture civilization, various folk customs are recorded and present in China, especially in rural areas for guiding agriculture production and

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management and arranging regular rites, ceremonies, festivals, particularly the Jieqi, which became a significant cultural resource of 24 Jieqi rural climate tourism (Figures 12 and 13). For instance, In Start of Spring, for welcoming spring and praying a happy year, local people in Funing (阜宁), Jiangsu Province, held “Beating Spring Cattle (打春牛)” activity. For protecting and revitalizing traditional sacrifice in start of spring in Jiuhua County (九华乡) of Quzhou rural areas, the start of spring sacrifice held about three days, attracted 12 thousands tourists and created 0.2 million Yuan tourism revenue for this small village no more than thousand people; the 24 Jieqi climate culture of folk-custom has been regenerated through developing more than 30 types tourist attractions of local food, traditional handicrafts and exhibitions and through establishing 24 Jieqi rural climate culture experiential fields in local hotels, restaurants, local artistic works and so forth (Hu & Zhou, 2018). Moreover, various folk customs, rites and ceremonies in each of the Jieqi developed around China because of the diverse climate conditions and local cultures, such as the ocean sacrifice in grain rain in Rongcheng, Jiaodong, Shandong Province. In the start of summer, tasting food such as fresh fruits are a popular folk custom in the Jiangsu Province (Ma, 2015; Zhou, 2015; Bao, 2015; Li & Zhang, 2017) (Figures 12 and 13).



Figure 13. Folk customs in autumn and winter Jieqi in China.

## 6 INTEGRATED AND SUSTAINABLE DEVELOPMENT SYSTEM OF 24 JIEQI RURAL CLIMATE TOURISM

### Integrated Development and Sustainable System of 24 Jieqi Rural Climate Tourism Based on Bigdata

#### Meteorological technology triggered meteorological big-data for China rural climate tourism development

Meteorological technology mostly focuses on meteorological and microclimate environment observation and detection techniques by means of advanced scientific meteorological equipment such as meteorological satellites, airplanes, radars and so forth, which already has established meteorological observation system that include ground meteorological observation, upper air meteorological observation, remote sensing of atmosphere and meteorological satellites observation. With upgradation of meteorological equipment from one generation to another, such as there are 7 meteorological satellites called Wind-Cloud Series has upgraded from Wind-Cloud I, Wind-Cloud II and Wind-Cloud III to Wind-Cloud IV which have made breakthrough in more than 20 core techniques such as high precision image positioning, micro vibration measurement and so on achieving international advance level. After Wind-Cloud IV having been put into service, it is able to more accurately operate meteorological observation, weather forecasting, climate and weather numerical simulation, etc. (Zhou et al., 2005; Xu & Zhang, 2014; Chen, 2016; Xing et al., 2017).

Consequently, the volume of meteorological data has increased dramatically for more auto ground meteorological observation stations has been established and more meteorological satellites will be launched in the future as well as the observation frequency shorter in every minute than before, which will directly increase 15~40 times of data volume every day reaching more than 30 TB per day and promoting the coming of professional meteorological big-data era in China (Shen, 2014; Shen, 2016). Moreover, with the development of Internet and mobile phone technology, more and more internet meteorological big-data has been accumulated through various sources such as sensing equipment data and picture data uploaded by individuals through mobile terminal, searching engine data and so forth, which accounts for larger volume than professional meteorological big-data (Shen, 2016). The harmonious collaboration of professional and internet meteorological big-data together consist of meteorological big-data in China and interact with each other to accelerate data communication and data complementation with the advancement of China big-data technology trend (Shen, 2016).

The development of meteorological big-data has profoundly promote abilities and accuracy of weather forecasting, climate simulation, statistical analysis of regional weather and climate, climate phenomena warning, etc. (Wang, 2017). Therefore, it has directly influenced rural areas on dynamic climate changes and phenological changes of plants and animals and production and life behaviors of local people, which also has directly impacted on rural climate tourism and its specific arrangement of various activities in rural areas. For meteorological big-data is the



foundation of rural climate tourism that need further exploration of data mining, data analysis and data creative utilization for rural climate tourism demand (tourists climate tourism preferences, consumption ability, consumption structure, consumption levels and so on), rural climate tourism supply (particular tourist attraction and tourists destination designing, planning, arrangement, management, marketing, upgrading, etc.) and harmonious collaboration and complementation of diverse rural climate tourism resources utilized in rural climate tourism cycling model in 24 Jieqi.

### **Meteorological information supported by meteorological big-data for China rural climate tourism development**

Different from meteorological big-data which systematically produced and accumulated by professional and nonprofessional meteorological department and mostly focused on supply-side technology advancement, meteorological information is the terminal product of meteorological data that produced and processed according to particular demands such as public meteorological information goods such as weather forecasting or particular meteorological disasters forecasting and alarming, specific meteorological information goods for different industry such as agriculture, transportation, tourism, etc., commercial meteorological information goods for particular demands.

Based on meteorological big-data upgradation and advancement in China, meteorological information also will provide various and diverse services in all aspects of rural climate tourism in different Jieqi. For meteorological and climate information has influenced tourists (travel motivation, comfortable perception, experiences, decision making and changing, behavioral tendency or travel assessment, etc.) in particular rural climate tourism activities, rural climate tourism operators (specific rural climate tourism activities arrangement, rural climate tourism related products and services adjustment such as accommodation, food supply and transportation), tourists attractions and destinations designing and planning for rural climate tourism in different Jieqi obeying to the dynamic climate conditions (Matzarakis, 2006, Scott & Lemieux, 2010; Rutty, 2014).

As the information of weather and climate in particular region of China becoming more and more accuracy within 24 h/day, 15 days or 30 days, the meteorological information in particular Jieqi, in shorter travel period like 1-3 days, longer travel period like 5-10 days or more than 15 days, has conveniently provided by diverse types of meteorological information App in contemporary China (Xu & Hu, 2016; Xu, 2017; Gong et al., 2018) such as Yongtai County weather forecasting by Moji Weather APP (Figure 14), which has existed more than 600 weather APP reaching more than 35 million downloads by Chinese since 2014 (Gong et al., 2018). Contemporary meteorological information platforms have been established and successfully operated in China such as China Meteorological Data Platform and Climate Platform, which has provided various and diverse meteorological information based on big-data and also has established the communication and sharing mechanisms not only for public meteorological services proposes but also for commercial exploration (Liu, 2017, Zhang, 2018).



Figure 14. Current weather and climate information in Yongtai County of China in Moji Weather App.

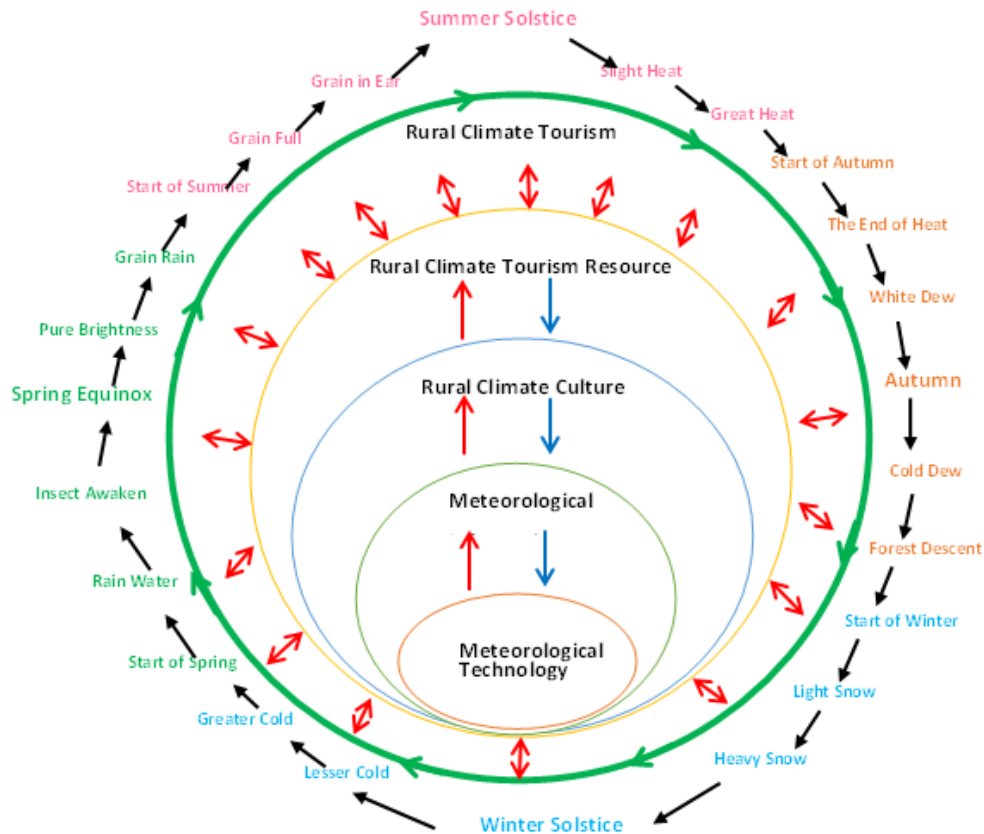
As a result, tourist's meteorological information based on big data has influenced and will constantly impact preferences and behaviors of tourists then will promote active supply particular rural climate tourism products and services by tourism operators, tourism companies through tourists' attractions and tourists' destinations designing and planning in different Jieqi according to local climate conditions. In addition, for 24 Jieqi reflect 15days average climate situations in different regions of China rural areas, it is relatively stable than weather in everyday, which enable to guide people's behaviors when participating activities of agriculture production, leisure life and cultural folk-customs and consequently valuable to guide 24 Jieqi rural climate tourism development in contemporary China through complementing shorter time period weather information and longer time period climate or microclimate information together to arrange and manage rural climate tourism activities and its dynamic harmonious adjustment obeying rules of climate conditions changes and human behaviors in rural society.

## **Integrated and Sustainable Development System of 24 Jieqi Rural Climate Tourism**

The integration development system of 24 Jieqi rural climate tourism reflect close interaction and integration of natural and social science both in theoretical construction and in practices. As core elements, meteorological technology provides basic support to observe and explore meteorological and climatic conditions and dynamic meteorological and climate changing rules in different Jieqi of particular rural areas, which actively accelerated by social technology advancement and upgradation as a whole. The development of meteorological technology naturally will produce diverse meteorological information for rural climate tourism such as agriculture meteorological information for various natural and cultural tourists attractions of rural climate tourism, meteorological comfortable information for tourists in different Jieqi of particular tourists destinations of rural climate tourism, dynamic meteorological changing rules information for dynamic rural climate tourism activities arrangement and management, etc.

The creative utilization of meteorological information in all aspects of rural life will influence Chinese's daily life contents and organizational patterns in particular climate regions in different Jieqi, which has naturally and constantly trigger the formation of rural climate culture in particular rural areas and its reproduction and regenerations following the social transformation from one generation to another. In specific cultural context of rural areas, the focusing point of meteorological information has varied from on region to another because of contextual specialty and cultural differences, which has required creative utilization of meteorological information to innovate and arrange rural climate tourism activities and diverse products and services in specific Jieqi. As climate changes and social cultural transformation, the rural climate culture also has faced transformation to reproduce and regenerate in contemporary rural areas of China and also will trigger new development in rural climate tourism practices.

As a broader contextual and cultural environment, rural climate culture and its transformation has influenced the recognition and creative utilization of rural climate tourism resources which not only include natural climate tourism resources as usual or traditional opinion but also embrace diverse cultural climate tourism resources that generated and upgraded in different society as a whole as well as in particular climate culture regions of rural areas. Rural climate culture transformation will theoretically and practically impact deeper understanding, exploration and utilization of rural climate tourism resources in 24 Jieqi rural climate tourism. Meanwhile, as social development and demand upgradation of China rural climate tourism market, new utilization models and exploration patterns of rural climate tourism resources in contemporary climate tourism practices will conversely accelerate the new development of rural climate culture, the supply patterns and requirement of rural meteorological information and new exploration of meteorological technology in rural climate tourism practices (Figure 15).



**Figure 15. Basic elements and structure of integration development system of 24 Jieqi rural climate tourism.**

Therefore, meteorological technology, meteorological information, rural climate culture, rural climate tourism resources together permeate into 24 Jieqi rural climate tourism in all aspects, which generate harmonious and interactive integration development system for 24 Jieqi rural climate tourism in China and will promote in-depth and profound development of specific rural climate tourism in particular Jieqi of rural areas. As dynamic climate condition changes from one Jieqi to another, rural climate tourism has experienced sequentially development cycling through adapting to natural climate conditions, utilizing phenological changes rules, creative exploring interactions and harmonious complementation of natural and cultural rural climate tourism resources in specific Jieqi as well as the whole cycling process.

### **The Interaction Mechanism of Integrated and Sustainable Development System of 24 Jieqi Rural Climate Tourism**

Influenced by the technology development and culture revitalization and transformation of China society, intelligentization and Big-data trend have permeated into all aspects of China society, which have dramatically accelerated and promoted demand-side and supply-side interacting with integration development system of 24 Jieqi rural climate tourism when creative following the tendency of supply-side and demand-side intelligentization and efficient Big-data utilization in rural climate tourism practices both from demand and supply side.

Intelligentization of tourists who equipped with smart phones upgraded

from one generation to another have utilized diverse meteorological information based on meteorological technology, which also influenced by social culture tendency as a whole and rural climate culture specialty; then they have diverse preferences of rural climate tourism and formed various segmental demand trends in rural climate tourism market; consequently, specific rural climate tourism products and services providers will interact with tourists in rural climate tourism market and supply corresponding products and services for satisfying tourists' particular demands, which will promote tourism companies, tourists destinations planners and managers, tourists attractions designers and dynamic operators naturally and creatively interact with integration development system of 24 Jieqi rural climate tourism and self-improve themselves through upgradation in the big trend of intelligitization and big data in contemporary climate tourism market.

Through more and more close communication and interaction, the integration development system of 24 Jieqi rural climate tourism will conversely influence demand-side (tourists) and supply-side (rural climate tourism providers, operators and managers, etc.) in rural climate tourism market and facilitate technology integrate into rural climate tourism practices through harmonious intelligitization and big data utilization. The dynamic changes from one Jieqi to another have triggered different adapting rules of rural climate tourism, therefore rural climate tourism activities, the arrangements or managements of specific rural climate tourism products and services will appear diversity through various interaction and integration patterns of rural climate tourism in particular Jieqi (Figure 16).

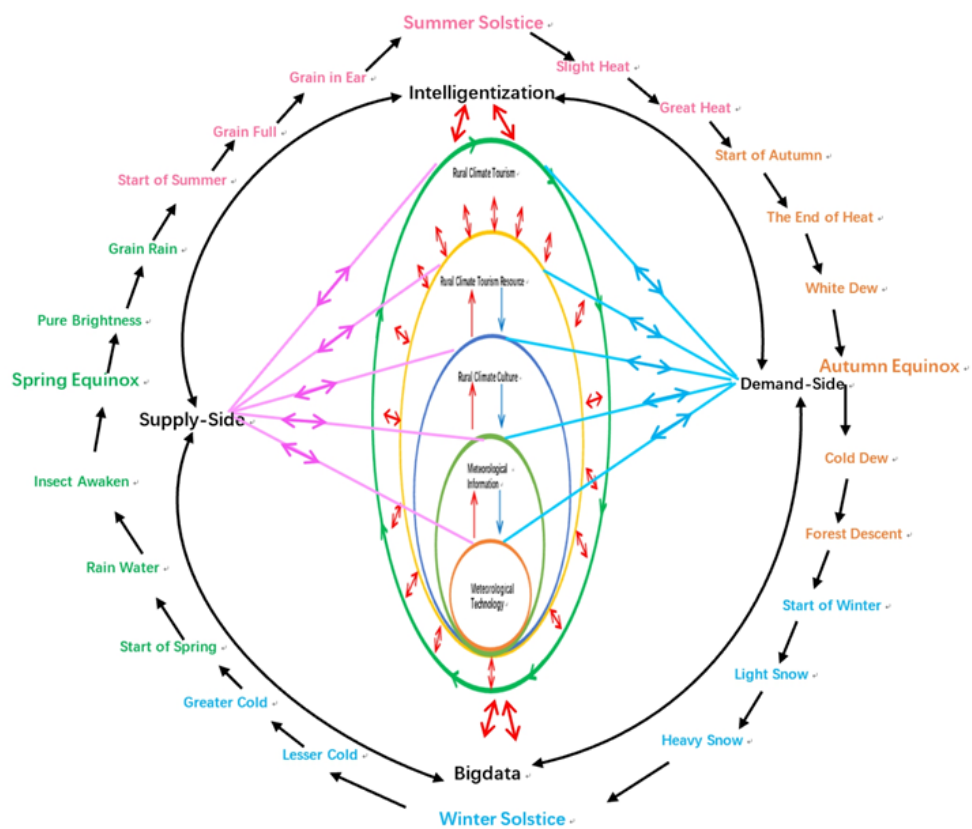


Figure 16. The interaction mechanism of integration development system of 24 Jieqi rural climate tourism.

## **Creative Sources of Integrated and Sustainable Development System**

As China enter into New Normal Situation Stages of economy and society development, the in-depth exploration of diverse resources and in-depth labor division in the third industry has accelerated by profound development and transformation of China tourism industry. Undeniable urbanization trend has attracted millions of Chinese entering into cities for pursuing more development choices and self-fulfillment through participating into diverse activities in cities. After more than 30 years development, the whole personnel qualities in cities have achieved great advancement in modern China than rural areas. Therefore, for creative and sustainable utilization 24 Jieqi rural climate tourism resources in China tourism market, it is wise to recognize the core issue is to establish creative and innovative source of sustainable utilization model of 24 Jieqi rural climate tourism resources in tourism market.

The creative source is qualified personnel and its innovative combinations. Apart from traditional creative sources of personnel only focusing on local farmers and local talented people, the creative sources of sustainable utilization model of 24 Jieqi rural climate tourism resources need to attract and integrate qualified and talented personnel in cities who have diverse education background and embrace talents of 24 Jieqi life culture to rural areas where grasp the opportunity to develop rural climate tourism. Because 24 Jieqi rural climate tourism has obeyed the transformation trend of 24 Jieqi rural climate culture in modern China, which has promoted 24 Jieqi rural climate tourism resources to be utilized not only from natural resources perspective but also creatively cultural resources perspective that regenerated and reproduced by talented personnel with deep understanding of life, sensitive perception of rural climate culture and creativity abilities. Through attracting and absorbing talented people from cities, local farmers, local talented people and so forth, the creative core and source will be established for exploring and creatively utilizing 24 Jieqi rural climate tourism resources to create particular rural climate tourism products and services, satisfying tourists' diverse demands in modern China.

More precisely, the resources of 24 Jieqi rural climate tourism depend on talented people both from rural areas and cities to understand contemporary life in rural areas for tourists, which creative rural climate tourism activities not only for experiencing traditional rural landscapes and life styles but also for in-depth life upgradation in rural areas through creatively 24 Jieqi rural climate tourism activities organization and management. Through Permeating into 24 Jieqi rural climate tourism activities, tourists will not only understand rural life in shallow aspects but influence themselves in a more diverse, colorful and in-depth experiencing level, which embrace commercial exploration with tourists' individual development both from body to soul in conscious or unconscious situations of rural climate tourism activities or environments that created.

The internal structure and operation mechanisms of creative source need to be analyzed for it will determine the driven model of 24 Jieqi rural climate tourism resources and its sustainable utilization in modern China. There will be three typical structures of creative source that is the Endogenic Creative Source, the Exogenic Creative Source and the Symbiotic Creative Source. The Endogenic Creative Source mainly depends on rural labors to create rural climate tourism products or services, which mostly limits by local human resources' quality; the

Exogenic Creative Source primarily draws support from urban labors to create rural climate tourism products or services, which enriches and enhances local human resources while limits by connection without constant supporting; the Symbiotic Creative Source co-creates by connective collaboration of local and urban human resources with constant interactive and communication to co-develop rural climate tourism in 24 Jieqi. For sustainable utilization of 24 Jieqi rural climate tourism resources, the creative source faces upgradation reality for Upgraded Endogenic Creative Source to promote internal and external resources integration and creative utilization of 24 Jieqi rural climate tourism resources in rural tourism market.

The Upgraded Endogenetic Creative Source (Figure 17) bases on local human resources, urban human resources rooted in rural areas through attracting policies or collaboration activities and their close interactions and communication to learn from each and upgrade each other in rural climate tourism practices, which will become pivotal creative source for 24 Jieqi rural climate tourism resources' sustainable utilization in modern China. Moreover, both rural human resources and urban human resources participate into 24 Jieqi rural climate tourism activities to co-create particular rural climate tourism activities for tourists in particular climate regions.



**Figure 17. The upgraded endogenic creative source in sustainable utilization model of 24 Jieqi rural climate tourism resources.**

### **Creative Cycling of Integrated and Sustainable Development System of 24 Jieqi Rural Climate Tourism**

Driven by Upgraded Endogenic Creative Source, the sustainable utilization model of 24 Jieqi rural climate tourism resources could be summarized as creative cycling sustainable utilization model that follow natural climate condition changes in each Jieqi, utilize phenological changes of flowers, plants and animals, organize primitive cultural rural climate resources handed down from agriculture civilization of China, creative generate and produce new cultural resources reflecting new adaptation of rural life by Chinese and finally creatively integrate all the resources together to create comprehensive rural climate tourism products and services in each Jieqi and systematically connect one Jieqi with another through taking great advantages of both natural and cultural rural climate tourism resources (Figure 18).

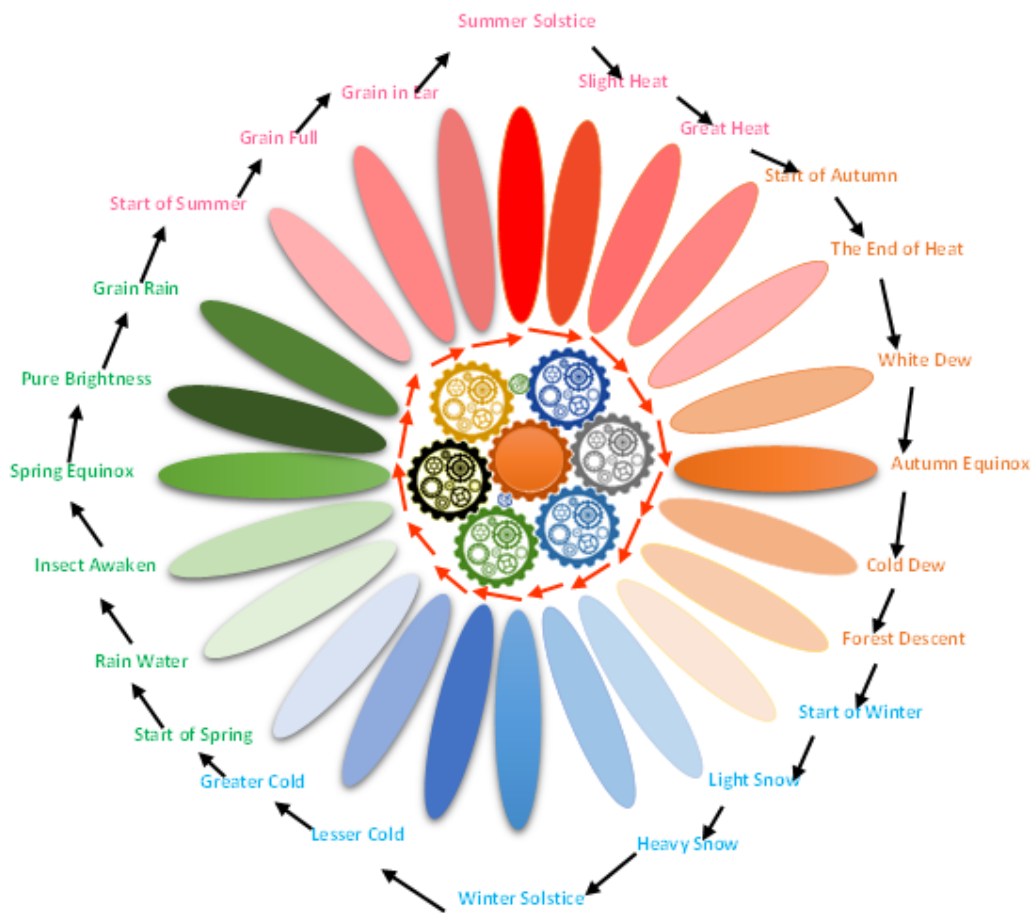


Figure 18. Creative cycling sustainable utilization model of 24 Jieqi rural climate tourism resources.

There are two creative cycling paths, that is the internal creative cycling path of human resources organizing, upgrading, co-learning, interacting and collaborating to trigger more and more cultural rural climate tourism resources utilization model in particular Jieqi reflecting Jieqi features and local Jieqi culture through creative symbolization and commercialization of rural climate tourism products and services, such as diverse literature activities of rural climate tourism in particular Jieqi like Spring Equinox or Pure Brightness, artistic exhibition or communication activities reflecting traditional or contemporary rural life, particular rural folk-custom of each Jieqi, etc.; another is the external creative cycling adapting to dynamic climate changes of rural climate condition and natural phenomena growth and disappearing, which need to focus on particular Jieqi rural climate tourism resources utilization and creatively organizes specific cultural climate tourism activities while accumulating and generating new cultural rural climate tourism activities in some disadvantageous Jieqi with little natural climate tourism resources.

The sustainable utilization of 24 Jieqi rural climate tourism resources depend closely on internal structure and abilities of creative sources to wisely organize 24 Jieqi rural climate tourism activities in continue sequences focusing on typical advantages from one Jieqi to another. Through this sustainable utilization model, the 24 Jieqi rural climate tourism resources will be explored deeper in



particular tourist attractions designing and planning, rural climate tourism products creation and generation, rural climate tourism services refining and upgrading, etc. In addition, the sustainable utilization of 24 Jieqi rural climate tourism resources should also focus on external driven forces such as diverse tourists' demand in particular Jieqi, which directly influence the utilization structure and level of rural climate tourism resources. The internal and external driven model of sustainable utilization will promote supply-side in-depth development in rural tourism market and will guide demand-side upgradation through interaction in rural climate tourism practices.

## **CONCLUSION AND DISCUSSION**

### **Conclusion**

This paper systematically analyses 24 Jieqi climate culture that face dramatic transformation in contemporary China. The essences of 24 Jieqi have changed from oriented toward production culture as a core in agriculture civilization and institutional culture as constant support for its sustainable development in ancient to orient toward life culture as core in modern industrialization or post-industrialization of China society. This changes also bring 24 Jieqi into new production pattern in the third industry, especially tourism industry, to become vital production resources of particular rural climate tourism products and services so that the production culture of 24 Jieqi in modern China changed and will need new institutional support such as 24 Jieqi holiday institution or leisure policy in contemporary China society.

Rooted in agriculture civilization, 24 Jieqi rural climate culture have various stock resources that could be creative utilized in rural climate tourism market. Meanwhile, there are also plenty of increase and new generating 24 Jieqi rural climate culture that could be created in daily life of modern China with the help of ancient 24 Jieqi climate culture and contemporary people's life style, life passion and meaning of life that constructed by them. Therefore, 24 Jieqi rural climate culture have stock resources and increasement resources that interacted with each other to generate new 24 Jieqi rural climate culture in China society. Something pass away that we think but something flourish just inside Chinese heart that they can feel and co-create together in life as meaning to pursue.

For sustainable and integration of rural tourism in China, it is essential to propose 24 Jieqi 24 Jieqi rural climate tourism that embrace prosperous 24 Jieqi rural climate culture and generated from agriculture civilization and creative utilize diverse 24 Jieqi rural climate tourism resources to create 24 Jieqi climate tourism products and services for satisfying up-soaring demand of China tourism market. Based on interaction among Tian, Di and Ren, 24 Jieqi rural climate tourism resources have embraced Tian resources of astronomical, meteorological, climatological phenomena resources that happened in different Jieqi and different regions of China. As 24 Jieqi climate change dynamically, various phenological changes also become vital 24 Jieqi climate tourism resources such as flowering phase in different Jieqi and bird migration from one Jieqi to another in China. As for Tian and Di dynamic changes, the people live in the environment embraces by diverse 24 Jieqi Tian and Di resources will adapt to the environment as well as create various 24 Jieqi climate culture such as flower culture, bird worship culture, wellness culture and diverse folk customs, which also have become essential climate tourism resources in different Jieqi of China tourism market.

Contemporary China faces powerful trend of digital development trigger

big data utilization and Intellectualization of the whole society under irresistible technology development and infrastructure advancement of internet, communication, internet of things in China. Both the supply side and demand side of tourism industry become somatization and intellectualization so that the 24 Jieqi rural climate tourism need to develop under integrated and sustainable development system that composed by essences elements of meteorological technology, meteorological information, rural climate culture, rural climate tourism resources that together enrich 24 Jieqi rural climate tourism in contemporary society and interact with each other to promote both supply side and demand dynamic transformation in rural climate tourism market. Within the integrated and sustainable development system of 24 Jieqi rural climate tourism, it embraces power to accelerate creative and cycling innovation in 24 Jieqi rural climate tourism products and services through utilize and integrate diverse talents resources in contemporary China society.

### **Theoretical implication**

This paper proposes 24 Jieqi integrated into rural tourism in China from climate tourism perspective, which enrich climate tourism theoretical implication field in contemporary rural tourism development of China and explore rural climate tourism in 24 Jieqi dynamic changes situations. Rural tourism is not just a place in rural areas that people to travel but a place with dynamic changes essences that embraces diversity and power appeal tourists to enjoy. Therefore, 24 Jieqi rural climate tourism have enriched rural tourism development pattern in contemporary China tourism market. Meanwhile, this paper proposes integrated and sustainable development system of 24 Jieqi rural climate tourism in China to embrace natural and social disciplines together to promote 24 Jieqi rural climate tourism developments from multi-disciplinary, trans-disciplinary and interdisciplinary perspective.

### **Management implication**

This paper proposes 24 Jieqi rural climate tourism resources that could be creative utilized in specific Jieqi rural climate tourism products and services production in contemporary climate tourism market. In terms of specific scenery management regions of rural climate tourism, it also could emphasize dynamic climate tourism resources utilization in different Jieqi cycling system and dynamic provision of specific scenery according to 24 Jieqi natural, cultural and interactive climate changes and resources comparative advantages. In hotel and restaurants, it also could provide different and diverse services for tourists in different Jieqi of different rural areas of China. Creative talents' dynamic organization in different Jieqi to co-create diverse and innovative rural climate tourism products and services for tourists in different Jieqi also the most powerful implication in contemporary rural climate tourism practices.

### **Discussion**

For future sustainable development of 24 Jieqi rural climate tourism in contemporary China tourism market, it is essential to consider accumulation of

diverse talents to creatively utilize 24 Jieqi rural climate tourism resources to provide specific rural climate tourism products and services in different Jieqi, to consider talents training in local rural areas for in-depth talents creation and accumulation as vital human resources to support 24 Jieqi rural climate tourism resources creation and utilization for long term sustainable development of 24 Jieqi. For 24 Jieqi not just a concept and a symbol of traditional China culture but also a power life style that need to be enriched and developed by contemporary Chinese. Therefore, 24 Jieqi rural climate tourism not just to promote local tourism development but to accelerate local society transformation and let local people could be enrich from inside to outside and to fulfill people's life-long development in contemporary China rural areas.

For China today, most people and tourism industry will try to utilize popular concept such as culture and intangible cultural heritage to develop tourism economy in the short term but ignore the long-term culture development and culture new generation in tourism field and tourism catalyzed mechanism. However, the development and civilization phase determine its current situations, which need wiser and long-term strategies godliness in China rural climate tourism.

## REFERENCES

- Ai, S.J. (2004). Study on clothes culture of Uygur ethnic group. Unpublished Master's Thesis.
- Bao, Y.J. (2015). The Chun Wu Qiu Dong from the perspective of intangible culture heritage. *Agricultural Archaeology*, 35(3), 108-113.
- Cai, J.M. (2014). Suggestion on further adjusting and improving China Holiday Institution. *The Journal of Humanities*, (7), 22-29.
- Cao, Y.C. (2016). Study on the Zang minority women clothes culture and tourism resources development in Danqu. Southwest University for Nationalities. Unpublished Master's Thesis.
- Chen, E.F. (2009). Study on the Ji Tian etiquette of Han dynasty. *Academic Forum of Nandu*, 29(3), 13-15.
- Chen, H. (2015). Types of summer and winter comfortable climates in china and their temporal and spatial distribution. *Nanjing University of Information Science & Technology*, 32-41 (in Chinese).
- Chen, M. (2017). The enlightenment of artistic involvement in rural tourism development path in China. *Southern Agriculture*, 11(16), 78-82 (in Chinese).
- Chen, M. (2018). Landscape design of 24 solar terms square. *Meiji Times (City Edition)*, (8), 123 (in Chinese).
- Chen, M.D. (1995). Monthly Jieqi, the Yin-Yang School and Astronomic Calendar Laws. *Chinese Culture*, (2), 185-195.
- Chen, Q., Ren, D. Y., & Lin, L. T., 2016. Graphic Analysis of Gardens and Landscapes with Mountains and Rivers • Dynamic Home Environment Wellness Landscapes. Chemical Industry Press. (in Chinese)
- Chen, Q., Wang, L. & Pei, H.B. (2016). Graphic analysis of city gardens and landscapes • static home environment wellness landscapes. *Chemical Industry Press* (in Chinese).
- Chen, Q.J. (1996). Bird culture of China. *Shanghai: Xue Lin Publishing House* (in Chinese).
- Chen, Q.J. (2003). The formation, development and evolution of bird worship in China. *Journal of East China Normal University (Philosophy and Social Sciences)*, 51(5), 19-27+121 (in Chinese).
- Chen, R.D. (2013). 24 Jieqi wellness prescription of traditional Chinese medicine. *Hubei Science and Technology Press* (in Chinese).
- Chen, Z.H. (2016). Study on history and creativity of meteorology science and technology under multi-dimensions perspectives: Reviews of 2<sup>nd</sup> Meteorology Science and Technology Academic Seminar. *The Chinese Journal for the History of Science and Technology*, 37(1), 134-137.
- Cheng, J. (2010). Textual research on news of twenty-four flowers blossom. *Yuejiang Academic Journal*, 2(1), 111-122 (in Chinese).
- Cui, Y. (2009). Cultural details of 24 solar terms. *Agricultural Archaeology*, (3), 162-166 (in Chinese).
- Cui, Y. (2014). The main characteristics and formation reasons of Chu clothes culture. *Huazhong Normal University. Unpublished Master Thesis*.

## Yang & Li

- Deng, R. (2016). Study on the relationship between the distribution of solar terms and meteorological factors in children with cough variant asthma. *Master, Guangzhou University of Traditional Chinese Medicine*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1016266349.nh&DbName=CMFD2017> Available from: CNKI: Master (in Chinese).
- Dong, D.M. & Chen, X. (2016). Study on summer tourism products development in Haerbin city. *Economic Research Guide*, (21), 167.
- Dong, D.M. (2017). Spatial and temporal distribution of 24 solar terms heat resources in North China Plain from 1961 to 2014. *Agrometeorology of China*, 38(3), 131-140 (in Chinese).
- Dong, J.R. & Zhang, F. (2015). Study on the optimization of China legal holiday institution. *Overseas English*, (21), 179-181.
- Dong, Y. (2017). The creative exploration of 24 Jieqi cultural documentary. *China Radio & TV Academic Journal*, (12), 97-99.
- Fang, H. & He, J.Y. (2016). Golden autumn leaves appreciating season-more than 40 thousand mu colorful leaves in best seeing season. *Greening and Life*, (10), 4-10.
- Feng, S. (2002). The geography climate environment and the clothes of the Oroqen [Olunchun]. *Nationality (living in Heilongjiang Province)*, (3), 117-118.
- Gan, C.H. (2016). China economy transformation and industry upgradation under new normal situation. *Journal of Nanjing University of Finance and Economics*, (2), 1-10.
- Gao, H. (2010). Literature review of China ancient agriculture. *Chinese Agricultural Science Bulletin*, 26(9), 391-394.
- Gao, J. (2017). Traditional culture education exploration in popularization base of science technology - Case of Shanghai Natural History Museum holding 24 Jieqi exhibition. *East China Science & Technology*, (6), 60-63.
- Gao, W.Z. (2015). Empirical research of Ginkgo tourism market structure and tourists behaviors - Case of Nanxiong city of Guangdong province. *Issues of Forestry Economics*, 35(5), 452-455+461.
- Ge, C.H. (2001). The etiquette culture of China. *Economic Science Press*. 124-131, 152-158.
- Gong, J.L. (2018). Brief analysis development situation of mobile phone weather app service in China. *Advances in Meteorological Science and Technology*, 8(1), 38-40.
- Guqinzhaji. (2017). It's beautiful when Guqin meet the 24 Jieqi. Retrieved from: [http://www.sohu.com/a/161467579\\_176817](http://www.sohu.com/a/161467579_176817) (in Chinese).
- He, J.M. & Li, L.H. (2002). Exploration and discussion of rural tourism concept. *Journal of Southwest China Normal University (Philosophy & Social Sciences Edition)*, (5), 125-128.
- He, Y. (2019). Problems and path choices for sustainable development of rural tourism. *China Market*, (6), 66-67 (in Chinese).
- Hu, C.H. (2016). Brief analysis the relationship between climate and ancient architecture characteristics. *Doors & Windows*, (3), 240-241.
- Hu, H. & Zhou, Z. (2018). The start of spring sacrifice in Jiuhua county of Kecheng district of Quzhou city change Miaoyuan village. Retrieved from: [http://zjnews.zjol.com.cn/zjnews/qznews/201802/t20180208\\_6551681.shtml](http://zjnews.zjol.com.cn/zjnews/qznews/201802/t20180208_6551681.shtml)
- Hu, H.J. (2007). The essence of China ancient agriculture thoughts: Harmonious between human and nature. *Agricultural Archaeology*, (1), 104-109.
- Hu, H.J. (2012). The time and phenology model of climatology and ancient agriculture. *Journal of Dialectics of Nature*, 34(2), 42-47+126.
- Huang, M.F. (2017). Establishing farming Lishui oriented toward 24 Jieqi. *Lishui Daily*.
- Huang, Q.C. (2004). The advising farming institution of ancient China. *Root Exploration*, 11(5), 29-34.
- Jiang, C.X. (2015). Lu Mountain Rime. *Forestry and Ecology*, 63(3), 31 (in Chinese).
- Jin, M. (2017). Visual design of 24 solar terms in the perspective of Jiangnan agricultural culture. *Master, Suzhou University of Science and Technology*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1018032075.nh&DbName=CMFD2018> Available from: CNKI: Master (in Chinese).
- Jin, P. (2015). Study on new normal situation of China economy development. *China Industrial Economics*, (1), 5-18.
- KCHANCE. (2011). Theme research on flower tourism. Retrieved from: <http://www.kchance.com/LandingPage/flower/flower1.asp#plant1> (in Chinese).
- Li, H.Z. & Chen, Z.Q. (2010). Lv Shi Chun Qiu and China ancient astronomical colander laws. *Theory Monthly*, (8), 67-69.

- Li, T.G. (2010). Brief discussion the production culture of Miao Minority. *Journal of Guizhou University for Nationalities (Philosophy and Social Sciences)*, (4), 53-55.
- Li, W.P. & Zhang, Y.W. (2017). The 24 Jieqi festival activities are the mental lifeblood of continuing China traditional culture. *People's Education*, 68(1), 64-67.
- Li, W.Y. & Xiang, G. (2017). Study on the application of characteristic pictures of she minority clothes in cultural creative clothes products design of She minority tourism region of WenZhou. *Textile Reports*, 2017(7), 83-85.
- Li, X. (2013). Research on the integration and development of cultural and creative industries and rural tourism industries. *Master, Henan University*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1013349647.nh&DbName=CMFD2014> Available from: CNKI: Master (in Chinese).
- Li, X.B. & Zhang, S.M. (2018). Analysis of China rural tourism and development models. *Journal of Qingdao University of Science and Technology (Social Sciences)*, (1), 49-54+64. Retrieved from: <https://doi.org/10.16800/j.cnki.jqstss.2018.01.009>
- Li, X.Y. (2016). Strategies study on flower tourism development in Kunming city under tourism experiences. *Yunnan University of Finance and Economics. Unpublished Master's Thesis*.
- Li, Y. (2013). Brief analysis of current situation and development strategies of bird seeing tourism in Beidai River. *China Business & Trade*, (4), 136-138.
- Li, Y.Q. & Zhang, S.H. (2017). The industrial development, difficult and paths of Li minority clothes culture resources in Guizhou-case of Yuni Yi minority village in Pan county. *Journal of Guizhou Education University*, 33(10), 54-58.
- Li, Y.W. (2005). Study on the dissolving and changing of China national material production culture under globalization background. *Tribune of Study*, (11), 58-60.
- Li, Z.M. (2010). All-round knowledge book of 24 Jieqi. *China Textile Press* (in Chinese).
- Liang, Q. & Wu, X. (2018). Analysis of 24 solar terms temperature and precipitation in Zhaoqing city from 1981 to 2010. *Modern Agricultural Science and Technology*, (8), 182-183 (in Chinese).
- Liao, J.H. & Li, Y.Y. (2016). The supply-side revolution promoting rural tourism upgrading. *World Agriculture*, (10), 71-76.
- Liao, K. & Zhao, X.C. (2017). Distribution maps of rare birds in China. Retrieved from: [http://www.kepu.net.cn/gb/earth/geography/zrys/zrys05\\_02\\_t3.html](http://www.kepu.net.cn/gb/earth/geography/zrys/zrys05_02_t3.html) (in Chinese).
- Lin, C. (2017). Analysis of China bird seeing tourism. *Ecological Economy*, (4), 71-72.
- Lin, J.P. & Guo, L.X. (2003). The climate resources assessment of ten famous winter resort cities in south region of China. *Human Geography*, 18(6), 26-30 (in Chinese).
- Lin, J.P. (2013). Development opportunity analysis of particular region driven by consumption demand-the market potential of winter resort tourism in Xishuangbanna. *Yunnan Geographic Environment Research*, (1), 59-64.
- Liu, D.Q. (2006). Differentiating and analyzing rural tourism, agritourism and folk-customs tourism. *Tourism Tribune*, (3), 12-19.
- Liu, G.Z. (2017). New experience and new starting point-success of 24 Jieqi applying world cultural intangible heritage and culture communication and spreading of excellent traditional culture of China. *Research on Heritages and Preservation*, 2(4), 47-53.
- Liu, J.J. & Chen, X. (2017). Study on the Hong Yao clothes protection after listed into intangible heritage of the world-case of clothes basking festival. *Journal of Chongqing University of Arts and Sciences (Social Sciences Edition)*, 36(6), 31-37.
- Liu, X. (2017). Formation of 24 solar terms. *Cultural Heritage*, (2), 1-7 (in Chinese).
- Liu, Y. (2013). Study on winter tourism industry development of Hulunbeier city. *Central University for Nationalities. Unpublished Master's Thesis*.
- Liu, Z. (2017). The service capacities constant increasing of China meteorological information platform. *China Weather Newspaper*.
- Liu, Z.D. (2017). The history and modern inheritance of 24 Jieqi institutions. *Cultural Heritage*, (2), 12-14+157-158.
- Long, X.T. (2017). Diverse Fengtu (local environment) and sharing time sequence: 24 Jieqi Culture in Guangxi. *Folk Culture Forum*, (1), 13-20.
- Lu, L. (2015). Wuyuan rural tourism promotion research based on intelligent tourism platform. *Master, Jiangxi Normal University*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1015624245.nh&DbName=CMFD2016> Available from: CNKI: Master (in Chinese).
- Lu, Z. (2018). Path and countermeasures for sustainable development of rural tourism in the era of "Internet plus". *Cooperative economy and Technology*, (16), 52-53 (in Chinese).
- Luo, C.Y. (2018). The agriculture tourism economy transformation development under tourism enriching Chinese strategies. *Jiangsu Agricultural Sciences*, 45(21), 333-336.

## Yang & Li

- Luo, Y. (2007). The Jitian ceremony and the Jitian Fu of ancient China. *Yindu Journal*, 28(1), 89-89.
- Luo, Y. (2010). Study on brand strategies of Guizhou summer resort tourism. *Jinan University. Unpublished Master's Thesis*.
- Lv, Y.C. & Jiang, X.N. (2015). The influence of red leaves tourism festival of Jiao River on local tourism industry. *Tourism Overview*, (3), 124-125.
- Ma, D. (2009). Study on the spreading and influence of China ancient agriculture culture in Vietnam. *Journal of North China Institute of Water Conservancy and Hydroelectric Power (Social Sciences Edition)*, 25(1), 79-82.
- Ma, F. (2018). Brief analysis of the intangible cultural heritage protection in new normal situation. *Education Teaching Forum*, (2), 1-3.
- Ma, L. (2013). Discussions on moxibustion of prescriptions and points for solution of Qi. *Sichuan Traditional Chinese Medicine*, 31(7), 22-26 (in Chinese).
- Ma, S. & Wang, B. (2018). Study on sustainable development of regional culture and rural tourism. *Rural Science and Technology*, (2), 32-33 (in Chinese).
- Ma, X.Y. (2015). The Chun Guan culture and function analysis of Xihe from the perspective of cultural anthropology. *Journal of Xichang College (Social Science Edition)*, 27(1), 95-99.
- Mahamuti, K. (2017). 24 Jieqi of Kazak Nationality. *Agriculture of Henan*, (14), 63-64.
- Mao, K. (2017). China cool city - Liupanshui - Climate, health preserving, tourism forum. *Liupanshui Daily*.
- Matzarakis, A. (2006). Weather- and climate-related information for tourism. *Tourism & Hospitality Planning & Development*, 3(2), 99-115.
- Mei, J. (2011). The evolution of solar term words and the formation of the names of 24 Jieqi in ancient time. *Journal of Huaihua University*, 30(3), 9-11.
- Na, C.Y. (2014). Study on clothes in Sui and Tang dynasties. *Unpublished Master's Thesis*.
- Peng Y. & Bai X. (2018). Review on the sustainable development of leisure agriculture and rural tourism in China. *Tianjin Agricultural Science*, 24(2), 13-17 (in Chinese).
- Qian, C. (2011). Climate change of 24 solar terms in China from 1960 to 2008. *Scientific Bulletin*, 56(35), 3011-3020 (in Chinese).
- Qian, C. (2018). Climate change based on 24 solar terms measured by instruments since 1873. *Climate and Environment Studies*, 23(6), 670-682 (in Chinese).
- Qian, C., Yan, Z.W. & Fu, Z.B. (2011). The climate change of the 24 Jieqi from 1960 to 2008. *Chinese Science Bulletin*, 62(35), 3011-3020.
- Qu, S. (2012). Discussion on the phases and aims conversion of China economy transformation. *Researches in Chinese Economic History*, (1), 19-26.
- Ren, J. (2017). Aesthetic culture research of 24 solar terms. *Master, Northwest University for Nationalities*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1017188251.nh&DbName=CMFD2017> Available from: CNKI: Master (in Chinese).
- Reng, J.J. (2017). Study on the 24 Jieqi aesthetic culture-case of traditional Chinese poetry. *Northwest University for Nationalities. Unpublished Master's Thesis*.
- Ruan, C.S. (2014). Fame following merits of climate health preserving hometown, establishing famous health preserving city of Lijiang City. *Lishui Daily*.
- Rutty, M. (2014). Weather and climate for coastal tourism.
- Shang C. & Zhou H. (2015). On the cultural connotation and cultural inheritance of the twenty-four solar terms. *Popular Literature and Art*, (7), 269 (in Chinese).
- Shao, S.J. (2006). Wellness recipes of 24 Jieqi. *China Light Industry Press* (in Chinese).
- Shao, S.X. (2017). Interpretation the climate cipher code in clothes culture. *Education Modernization*, 4(52), 365-366.
- Shen, W.H. (2014). Brief analysis big data application of meteorological data – Big data era. *China Informatization*, (11), 20-31.
- Shen, W.H. (2016). Re-analyzing meteorological big data and its application. *China Informatization*, (1), 85-96.
- Shen, Z. (2001). Textual research on the formation age of 24 solar terms. *Southeast Culture*, (1), 53-56 (in Chinese).
- Shi, G. (2011). On the relationship between 24 solar terms and traditional Chinese medicine. *Introduction to Traditional Chinese Medicine*, 17(3), 17-18 (in Chinese).
- Shi, J.X. & Zhang, Y. (2015). The trend analysis and strategies choosing of the new normal situation of China economy. *Journal of Xinjiang Normal University (Edition of Philosophy and Social Sciences)*, 36(4), 1-7+9.

- Song, W.H. (2006). Study on the law institutions of China ancient agriculture. *Northwest Agriculture and Forestry University. Unpublished Master's Degree.*
- Taiwan Health Culture Research Center of China. (2010). 24 Jieqi wellness prescription of traditional Chinese medicine. *Jiangsu Literature and Art Publishing House* (in Chinese).
- Tang, Z. (2007). Discussing flower tourism development and its influence on rural tourism. *Flower Culture of China Flower Association* (Specialized Committee).
- Tie, F. (1506). *Bao Sheng Xin Jian* (in Chinese).
- Wang, H.L. (2008). Bird seeing tourism - Walking toward green tourism trend. *Ecological Economy*, (1), 329-331.
- Wang, J. (2017). Node and living: 24 solar terms as a folklore system. *Cultural Heritage*, (2), 15-21 (in Chinese).
- Wang, J.H. (2017). Node and life tendency: 24 Jieqi as folk-custom system. *Cultural Heritage*, (2), 15-21.
- Wang, L. & Zhang, J. (2006). Study on the current situations and problems of summer tourism development in Heilongjiang province. *Science & Technology Economy Marke*, (12), 224-225.
- Wang, R. (2011). Action research on integrating 24 solar terms into kindergarten curriculum. *Master, Southwest University*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1011113733.nh&DbName=CMFD2011> Available from: CNKI: Master (in Chinese).
- Wang, R. (2017). Study on the Ji Tian etiquette within the book of songs. *Modern Chinese*, 15(1), 4-6.
- Wang, S. (2018). Research on color image design of 24 solar terms in Beijing. *Master, Beijing University of Posts and Telecommunications*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1018097579.nh&DbName=CMFD2018> Available from: CNKI: Master (in Chinese).
- Wang, T.D. (1891). *Hua Xin Ping Zhang, Zi Wei Hua Guan Ji. Last Volume* (in Chinese).
- Wang, X. (2009). Study on winter tourism marketing strategies of Haerbin city. *Northeast Forestry University. Unpublished Master's Thesis.*
- Wang, X. (2017). An overview of the status quo of inheritance and protection of the 24 solar terms in China. *Ancient and Modern Agriculture*, (2), 114-119 (in Chinese).
- Wang, X.J. (2017). Brief analysis the future application and service tendency of meteorological big-data. *Information & Communications*, (4), 290-291.
- Wang, Y. & Li, Y. (2018). Artistic conception construction of 24 solar terms in interior soft-wear design. *Furniture and Interior Decoration*, (6), 108-109 (in Chinese).
- Wang, Y. (2013). Community participation in modern agricultural festivals. *Master, Shandong University*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1013219717.nh&DbName=CMFD2013> Available from: CNKI: Master (in Chinese).
- Wang, Y.C. (2012). The relationship between 24 Jieqi and agriculture production. *Modern Agriculture*, (5), 211.
- Wei, X. (2017). Improving holiday institution and promoting tourism consummation. *Chinese Tourism Newspaper*.
- Wo, D.T. (2017). Historical maps of China from Xia dynasty to the People's Republic of China. Retrieved from: <http://www.onegreen.net/Maps/search.asp>
- Wu, P. (2010). Strengthening recognition of climate tourism resource and promoting summer resort and winter resort tourism development. *China Tourism News*.
- Wu, Y. (2018). Education infiltration of "24 solar terms" in primary school science curriculum. *Science Popular (Science Education)*, (8), 26 (in Chinese).
- Wu, Y.J. (2017). How the holiday tourism developing in economy. *Chinese & Foreign Entrepreneurs*, (20), 40+44.
- Xiao, F. (2013). Bird totems culture of china from ancient time. *Life World*, 40(4), 8-11 (in Chinese).
- Xiao, F. (2015). 24 Jieqi and folk-custom. *Art & Design*, (4), 12-17.
- Xiao, F. (2015). Twenty-four solar terms and folklore. *Decoration*, (4), 12-17 (in Chinese).
- Xiao, Y. (2017). Study on 24 Jieqi visual conversion home drama. (12), 272.
- Xing, H.Y. (2017). Technology development and prospect of ground auto meteorological observation. *Journal of Electronic Measurement and Instrumentation*, 31(10), 1534-1542+1533.
- Xu, J.B. & Hu, Y. (2016). Competitive product analysis and future development of instrumental weather app. *Design Research*, 6(1), 36-40.
- Xu, J.B. (2017). A preliminary study on "24 solar terms" and their landscape expressions. *Architecture and Culture*, (11), 134-135 (in Chinese).

## Yang & Li

- Xu, J.Z. & Chen, J. (2015). Digging for gold from stock economy. *China Securities newspaper*.
- Xu, N.J. (2017). Study on the meteorological information collection, processing and issuing system based on mobile communication system. *University of Electronic Science and Technology. Unpublished Master's Thesis*.
- Xu, Q. (2017). Exploration of 24 Jieqi and its landscapes expression. *Architecture & Culture*, (11), 134-135.
- Xu, R.D. (2010). Study on the agriculture production culture changes of China county and town society since establish of New China. *Hebei Normal University. Unpublished Master's Thesis*.
- Xu, X.F. & Zhang, M. (2014). Some reviews and eliminations of meteorology science and technology development process. *Advances in Meteorological Science and Technology*, 4(6), 6-12.
- Yan, L. (2016). Nostalgia culture and sustainable development of aged Ginkgo tourism in Anlu. *Press Outpost*, (4), 87-89.
- Yan, M. (2014). Vigorous demand of summer resort tourism market. *International Business*.
- Yang, D.X. (1988). The eight agriculture information dissemination channels of ancient China. *Agricultural Archaeology*, 8(2), 105-106+80.
- Yang, J. (2017). Research on the integration and development of rural tourism and cultural creative industries. *Master, Yunnan Normal University*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1017730591.nh&DbName=CMFD2018> Available from: CNKI: Master (in Chinese).
- Yang, J.F. (2016). The world cultural intangible heritage applying process of China fifth invention-24 Jieqi. *People's Daily, Overseas Edition*.
- Yang, L. (2010). About wellness environment. *Volumes Publishing Company* (in Chinese).
- Yang, R. & Jiang, X. (2018). Research on graphical design of "24 solar terms" culture. *Scenic Spots*, (11), 246-247 (in Chinese).
- Yang, S.S. (2017). Marketing strategies analysis of winter tourism in Zhang Jia Jie. *Tourism Overview*, (1), 146-147.
- Yang, X. (2018). Chinese traditional perceptions of the calendar year: Implications of Jieqi for contemporary product development and sustainability. *Tourism Management*, 64(Supplement C), 202-217.
- Yangji, C. (2014). Analysis of the adaptability of S3 24 solar terms to Tibetan climate. Paper presented at the 31<sup>st</sup> Annual Meeting of the Chinese Meteorological Society, Beijing, China. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=ZGQX201411003062&DbName=CPF D2014> (in Chinese).
- Ye, S.C. (1987). The management function of economy by state in ancient China. *Jiang Huai Tribune*, 30(3), 83-87.
- You, Y.Q. (2017). Letting migratory bird flying. Retrieved from <http://www.17u.com/special/houniao/> (in Chinese).
- Yu, J. & Zhang, J. (2013). Study on the Han clothes tourism resources values and development strategies-case of Xuzhou. *Market Modernization*, 2013(26), 135-136.
- Yu, L.F. (2017). Hot spring summit forum of 24 Jieqi wellness of Yunlan Bay: Hot spring for Chinese. *Jiaxin Daily*. Retrieved from: <http://www.jsb.jsxww.cn/Html/JsB/20170105/JsB79509.Html> (in Chinese).
- Yu, M. (2017). The wisdom of ancient Chinese asking Tian: The 24 Jieqi. *Chinese Literature and History*, 37(5), 3-11.
- Yuan, Z. (2015). 24 Jieqi Chinese painting of Tian Gexiang. Retrieved from: <http://baijiahao.baidu.com/s?id=1581652731823620531&wfr=spider&for=pc>
- Zeng, S. (2012). Study on the values and development of Miao minority clothes culture tourism resources in Guizhou. *Chongqing Normal University. Unpublished Master's Thesis*.
- Zhan, R.X. (2017). Picture books for children and traditional culture education - Case of 24 Jieqi. *Basic Education Research*, (7), 47-49.
- Zhang, H.F. & Deng, Q. (2017). Preserving excellent traditional culture for enhancing culture confidence-24 Jieqi theme at exhibition held by Chinese National Academy of Arts. *Art Observation*, (9), 36.
- Zhang, J. (2009). Research on sustainable development of rural tourism in China. *Doctor, Tianjin University*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=2010090017.nh&DbName=CDFD2010> Available from: CNKI: Doctor (in Chinese).



- Zhang, J.F. (2011). A study on the development of Han clothing culture in emperor's mausoleum of Xihan dynasty. *Value Engineering*, 30(11), 218-219.
- Zhang, J.J. (2008). Road of China economy transformation: Process and features. *Contemporary Economic Research*, (5), 17-21.
- Zhang, L. (2010). Study on the traditional agriculture culture transformation in China. *Northwest Agriculture and Forestry University. Unpublished Master's Thesis*.
- Zhang, L.S. (2016). The Han clothes development and application in scenic spot-case of Sankong scenic spot of Qufu. *Technology and Economic Guide*, 2016(34), 105-106+16.
- Zhang, M.L. (2013). Guiding method of wellness in 24 Jieqi: Time wisdom of traditional Chinese medicine. *People's Medical Publishing House* (in Chinese).
- Zhang, Q. (2015). The Climate adaptation exploration of ancient large space architecture in north region of China. *New Architecture*, (3), 110-115.
- Zhang, Q. (2015). The problem existed in China holiday tourism and suggestion analysis. *Economic & Trade*, (14), 66.
- Zhang, S. & Cao, X.H. (2015). Jieqi and agriculture: Not knowing four seasons losing the whole country. *Country Agriculture Farmers (A)*, (09), 59-60.
- Zhang, W.L. (2015). Discussion on flower landscape and flower tourism products planning of hundred miles azalea flower scenic spot. *Guizhou University. Unpublished Master's Thesis*.
- Zhang, W.O. (2018). The QihouTong (Climate) - The first climate service information platform issuing. *China Weather Newspaper*.
- Zhang, X. (2015). Ecotourism village development path and protection strategy research. *Master, Anhui University of Architecture*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1015420408.nh&DbName=CMFD2016> Available from: CNKI: Master (in Chinese).
- Zhang, X.F. (2015). The influence and suggestion analysis of holiday institution on China tourism industry. *Statistics and Management*, (9), 101-102.
- Zhang, Y. (2014). The influence study of holiday institution on residents tourism consumptions behavior-case of Jiangsu province holiday tourism consumption under holiday institution. *China Business & Trade*, (11), 106-107.
- Zhang, W.Y. (2008). Lectures on ancient astronomical calendars. *Unpublished master's thesis, Guangxi Normal University Press, Guangxi, China*.
- Zhao, H.B. (2017). Why summer tourism increasing in advance this year? *Yichun Daily*.
- Zhao, J.X. (2013). Graphical analysis: Wellness method of meridian point in human being. *Shanxi Science and Technology Press* (in Chinese).
- Zhao, X.L. & Zhang, Z.J. (2004). Study on the generation and development of China ancient agriculture. *Gansu Agriculture*, (4), 26.
- Zhao, Z.H. (2015). State regime and ancient agriculture development of China. *Journal of Chongqing Radio & Tv University*, 27(4), 69-73.
- Zheng X. & Zhao R. (2016). "Timely Balance" - Application of TCM "Preventive Treatment of Diseases" in solar term culture. *Global Traditional Chinese Medicine*, 9(8), 963-965 (in Chinese).
- Zhou, H. (2015). Study on the actual significance of 24 Jieqi and its modern civilization inheritance. *Journal of Jilin Institute of Chemical Technology*, 32(3), 90-92+96.
- Zhou, H. (2015b). The folk-custom features of the 24 Jieqi. *Journal of Shenyang Normal University (Social Science Edition)*, 39(3), 145-147.
- Zhou, X. & Liu, G.P. (1999). The idea of harmonious between human and nature and the development idea of China ancient architecture. *Architectural Journal*, (11), 50-51.
- Zhou, X.Y. (2005). Development strategies study of china meteorology technology. *Advance in Earth Sciences*, (3), 261-267.
- Zhou, Y. (2018). Study on the symbiotic development mechanism and path of rural tourism community. *Master, Xi'an Foreign Studies University*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1018850297.nh&DbName=CMFD2018> Available from: CNKI: Master (in Chinese).
- Zhu, W. (2017). Discussing the application of 24 solar elements in pattern design. *Master, China Academy of Fine Arts*. Retrieved from: <http://kns.cnki.net/KCMS/detail/detail.aspx?FileName=1017243689.nh&DbName=CMFD2018> Available from: CNKI: Master (in Chinese).