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# Chinese traditional perceptions of the calendar year: Implications of Jieqi for contemporary product development and sustainability

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## HIGHLIGHTS

- Exploring climate tourism in China context.
- Proposing 24 Jieqi in China as important tourists attractions of climate tourism.
- New tourists influenced by permeation of 24 Jieqi in China society.
- Constructing climate tourism knowledge system and analyzing new development of 24 Jieqi in climate tourism.

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## ABSTRACT

This paper explores the implications for climate tourism development that follows the 2016 decision by UNESCO to add a traditional cultural understanding of the annual seasonal changes in Chinese "intangible culture." The calendar year was divided into 24 equal parts (Jieqi) to aid agricultural practices. Thus, each Jieqi was associated with farming, social, and cultural practices. Given a growing concern with the climate in general and a need to adopt environment friendly practices, this paper describes the nature of this traditional pattern of thought. The paper then proceeds to argue that climate tourism products that can create better awareness of man's influences on the environment can be developed based on Chinese heritage and practice. For sustainable development, the knowledge system of 24 Jieqi climate tourism product that promote multidisciplinary, interdisciplinary, and *trans*-disciplinary communication has been emphasized in this paper.



## 1. Introduction

Climate is a crucial factor that has influenced the tourism industry as observed by numerous previous studies (Flach, 1969; Perry, 1972; Pearce, 1981; Mieczkowski, 1985; De Freitas, 1990; Boniface & Cooper, 1994; Martín & Belén, 2005; Amelung & Viner, 2006; Scott, Gossling, & de Freitas, 2008). Climate is also an asset that determines the comparative advantages (Ritchie & Crouch, 2003) and affects the attractiveness (Hu & Ritchie, 1993) of particular destinations. It also impacts the destination image perception (Baloglu & Mangaloglu, 2001; Echtner & Ritchie, 1991; Gallarza, Saura, & Garcia, 2002; Hanlan & Kelly, 2005; Pike, 2002), the preferences and demands (Lise & Tol, 2002; Bigano, Hamilton, & Tol, 2006; Carey, 2012; Jonathon, Natalie, Sandra, & Keith, 2013), and the decision choices (Gossling, Bredberg, Randow, Svensson, & Swedlin, 2006; Hamilton & Lau, 2005; Lohmann & Kaim, 1999) among tourists. However, climate has notably been studied as an external or additional element of destinations or tourist attractions rather than as an active input of tourism activity from natural and cultural climate resource perspectives in product development.

Under the macro-environment of climate change, various studies on climate in the tourism industry have mostly focused on describing the extent of climate change in some destinations (Hamilton & Tol, 2006; Dawson & Scott, 2007; Amir & Boaz, 2014; Liu, 2016; Hojjatollah, Hamid, & Arezoo, 2016), the influences on tourist demands (Scott, McBoyle, Minogue, & Mills, 2006), the spatial changes of tourist flows (Amelung, Nicholls, & Viner, 2007), and the adaptation and sustainable development of certain destinations (Perry, 2006; Scott & Becken, 2010; Angel, Antoni, & Catalina, 2015; Johanna & Janet, 2017). The use of micro-perspective level in climate change studies is a dominant research trend on the climate aspect of the tourism industry,

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whereas from a macro-perspective level of climate tourism, it remains unexplored.

Additionally, considering climate characteristics, various studies have paid close attention to seasonal tourism (Zhao & Zhu, 2017), summer resort tourism (Liu & Jin, 2010; Wu, 2015), winter resort tourism (Lin, Chen, & Xu, 2013), migrant bird style tourism (Dong & Wang, 2006; Meng, Zhang, Wang, & Xue, 2017), and off-season tourism/anti-seasonal tourism (Cai, 2016; Li & Wang, 2007; Li & Zhang, 2017; Paolo & Laura, 2012) in China or other regions of the world.

However, note that current papers have particularly discussed the seasonal activities in tourism and the spatial flow of seasonal tourists, as well as the design and marketing of seasonal destinations; the latter focused only on the seasonality characteristic of climate in different seasons rather than the use of a broad climate tourism perspective that embraces the aforementioned tourism activities. Therefore, this paper represents an initial attempt to reveal and further explore climate tourism as an independent tourism activity in China based on 24 Jieqi.

In China, 24 Jieqi is a knowledge system created by Chinese ancestors to guide the agriculture production and daily life in an agricultural civilization society by observing the sun, nature, and climate (Tao, 2016). From astronomy, 24 Jieqi refers to the changes in the sun's position in the zodiac throughout the year, causing the evolution order of the climate on earth, which then divides an entire year into 24 equal parts (Cui, 2009).

Each part represents a solar term called Jieqi in Chinese. Furthermore, the wisdom of 24 Jieqi in all aspects of life is not only a knowledge system of climate but also an important culture gene embedded with life philosophy, folk customs, arts, literature, and even religion, which are the focuses of current studies on 24 Jieqi in China.

However, the present study specifically overlooks the values of 24 Jieqi through the promotion and organization of climate tourism activities in the tourism market. This study recognizes the values of 24 Jieqi in climate tourism as natural and cultural tourist attractions of natural climate landscapes in different solar terms and as special climate adaptive landscapes of China in particular regions.

This study considers the social reactions of the government, education system, media, and other social organizations in China when 24 Jieqi was listed by UNESCO into the Intangible Cultural Heritage Representative List. The study considers tourists who are and will be affected by the social influence of China, which will impact their recognition and deepen their understanding of 24 Jieqi, as well as advance their climate tourism preferences and demands.

Despite the increasing publications on 24 Jieqi from various disciplines, such as anthropology, economy, and meteorology, the knowledge gaps on 24 Jieqi utilized in tourism or even climate tourism have long existed. Thus, this paper proposes to promote the novel development of 24 Jieqi based on the climate tourism in China; this development meets the needs of new tourists influenced by 24 Jieqi information.

For climate tourism, this paper proposes a knowledge system of climate tourism inspired by the knowledge in the tourism discipline, and the relationships of each discipline are discussed in the literature. This paper aims to root climate tourism into a discipline boundary with multi-disciplinary, inter-disciplinary, and *trans*-disciplinary characteristics and to guide future climate tourism studies with an emphasis on 24 Jieqi in China's context.

## 2. Origin of 24 Jieqi

Based on oracle-bone inscriptions, ancient documents, and data from archaeology discoveries, Zhang, (2008) found that 24 Jieqi was formed in the embryonic stage of the Xia and Shang periods with its principal parts during the Warring States period and finalized in Qin-Han periods.

Furthermore, 24 Jieqi was established in the early Western Han Dynasty in China, as recorded in Huai Nan Zi by Chinese ancestors. Mei, (2011) indicated that the order and names of 24 Jieqi that Huai Nan Zi and Tian Wen Xun recorded were identical to the one used in today (Fig. 1).

The 24 Jieqi reflects the climate features of four season alternation, including the symbolic significance of the seasonal sequence, phenological changes, and growth conditions of crops that closely relate to agricultural production activities (Qian, Yan, & Fu, 2011). Moreover, 24 Jieqi profoundly affects the philosophical ideas on the harmonious relationship between human and nature in China, which generates the yin and yang theory for life, history, and social values.

A total of 72 phenological changes are included in 24 Jieqi, as recorded in the Book of Songs and the Xia Xiao Zheng (pre-Qin Dynasty) and in the Yi Zhou Shu and Shi Xun Jie at 2 BC. For instance, in Start of Spring, the east wind thaws and the dormant insect starts to vibrate its wings five days later. After another five days, the fish hops on the surface of the ice. Three phenological changes along with other natural phenomena are found in each Jieqi (Fig. 2).

## 3. Twenty four Jieqi as tourist attraction of climate tourism in China

### 3.1. Climate tourism

Liupanshui is a cool city in Guizhou province, China proposed climate tourism in the summer as its tourism marketing strategy early (Liu, 2005). Huang, (2012) then suggested the development of climate tourism in Guizhou from an economic perspective. However, climate tourism was only mentioned as an idea or perspective in a particular region of China rather than as a comprehensive concept with its own connotation and extension in the tourism industry explaining diverse climate tourism phenomena and guiding climate tourism practices. Therefore, proposing a climate tourism concept and rooting it into the tourism discipline is vital to further explore discipline foundation, which supports climate tourism studies and practices in the future.

In this paper, 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.

### 3.2. Twenty four Jieqi as tourist attraction of climate tourism

As for the traditional classification of tourism resources, climate resource as a tourist attraction in the tourism industry focused mostly on natural climate resources in terms of meteorological phenomena and climate landscape, such as climate (summer and winter tourism climate regions, as well as regions where the cloud and mist occurred frequently, places with extreme and special climate phenomena, and phenological landscapes) and light phenomena (observation places for the sun, moon, and stars, regions where mirage occurred frequently, observation places of aura and rainbow phenomena) (China National Tourism Administration, 2003).