

in the name of God

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Passive Strategies of Vernacular Architecture of Gilan, Iran



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Passive Strategies of Vernacular Architecture of Gilan, Iran



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Location , Historic Traditional context and Climate of Gilan Province

1 Chapter



Abstract

Gilan Territory is situation at the north of Iran and the southwest of the Caspian Sea. It has a surface area of 14711 square km, and is located between $36^{\circ}36'$ and $38^{\circ}27'$ of the northern latitude and from $48^{\circ}43'$ to $50^{\circ}34'$ in geographical eastern longitude. The talesh mounts and the western Alborz range are located between this territory and Iran inland, as a gigantic barrier [1]. In this section, we will attempt to study about Gilan province location, Climate and traditional context. In following Parts, we will study the relation between this features and the influence of each criteria on others.

Keywords: Location, Climate, Traditional Context, Gilan Province.

1.1 . Location of Gilan

Gilan Territory is situation at the north of Iran and the southwest of the Caspian sea. It has a surface area of 14711 square km, and is located between $36^{\circ}36'$ and $38^{\circ}27'$ of the northern latitude and from $48^{\circ}43'$ to $50^{\circ}34'$ in geographical eastern longitude (Fig. 1). The Talesh mounts and the western Alborz range are located between this territory and Iran inland, as a gigantic barrier. This is the only natural connection of

the Gilan territory with Iran inside plateau, and is through the Sefidrud valley. Gilan territory is composed by two following regions: The lowlands, adjacent to Caspian Sea and the mountainous region. The coastal lowland places comprise a small portion of Iran surface area and its width, at some points, would reach not even one kilometer[1].

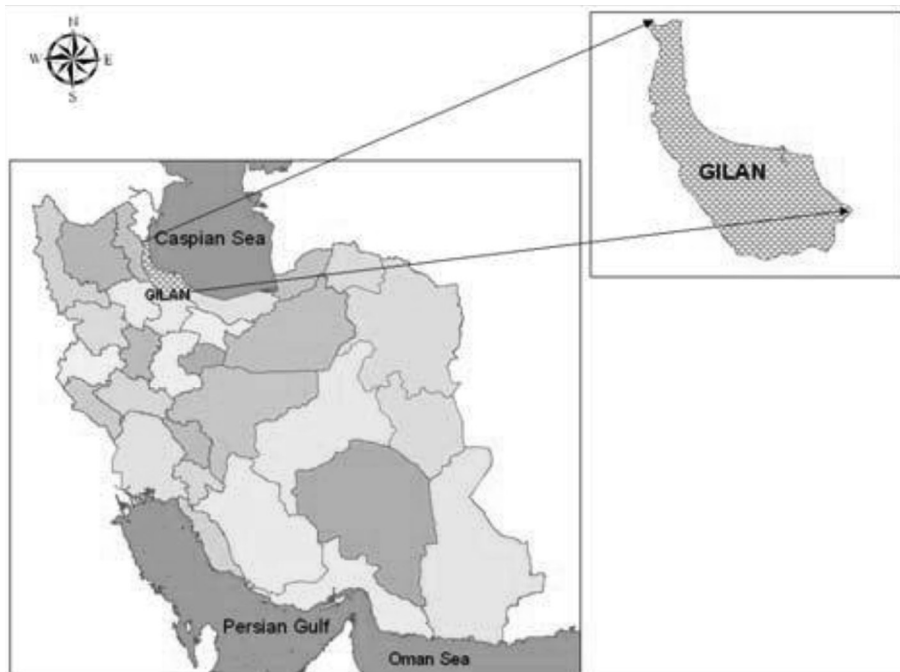


Figure1. Location of the Gilan Territory in Iran

The agricultural geography of Gilan can be divided into Coastal Lowlands; plain areas with rice, tea and tobacco cultivation; foothill lands with tea cultivation and fruit trees and mountainous lands with grains as well as forage plants; based on the altitude parameter. However, the most important agricultural activity centers are the coastal lowlands, lands and plain areas situated at less than 100 m elevation at open sea level (Fig. 2).

Forests of the Gilan region comprise an important part of massive and humid woods of the Caspian Sea water drainage area. Many previous researchers relate the origin of these forests to the Cenozoic age [2]. The thinnest forest region is located at Astara with a width of 6 to 10 km, and the width of forest belt amounts 30 to 40 km at Asalem and Rezuanshahr.



Figure2. Altitude based agricultural geography of the Gilan region

1.2. History

1.2.1 Old History

In antiquity, this area was a province of Persia known as Daylam (sometimes Daylaman, Dailam or Delam). The Daylam region corresponds to the modern region of Gilan[3].

1.2.2 Early and Modern History

In the late 1910s, many Gilanis gathered under the leadership of Mirza Kuchik Khan, who became the most prominent revolutionary leader in northern Iran in this period. Khan's movement, known as the Jangal movement of Gilan, had sent an armed brigade to Tehran that helped depose the Qajar ruler Mohammad Ali Shah. However, the revolution did not progress the way the constitutionalists had strived for, and Iran came to face much internal unrest and foreign intervention, particularly from the British and Russian empires (Fig. 3).

During and several years after the Bolshevik Revolution, the region saw another massive influx of Russian settlers (the so-called *White émigrés*). Many of the descendants of these refugees are in the region. During the same period, Anzali served as the main trading port between Iran and Europe (Fig. 4). The Jangalis are glorified in Iranian history and effectively secured Gilan and Mazandaran against foreign invasions. However, in 1920 British forces invaded Bandar-e Anzali, while being pursued by the Bolsheviks. In the midst of this conflict, the Jangalis entered into an alliance with the Bolsheviks against the British. This culminated in the establishment of the Persian Socialist Soviet Republic (commonly known as the Socialist Republic of Gilan), which lasted from June 1920 until September 1921.

In February 1921 the Soviets withdrew their support for the Jangali government of Gilan and signed the Russo-Persian Treaty of Friendship (1921) with the central government of Tehran. The Jangalis continued to struggle against the central government until their final defeat in September 1921 when control of Gilan returned to Tehran[4].



Figure3 . Mirza Kuchak khan and his Colleagues



Figure4. Bandar E Anzali

1.3. Province repartition

At the center of the province is the main city of Rasht. Other towns in the province include Astara, AstanehAshrafiyyeh, Fuman, Lahijan, Langrud, Masouleh, Manjil, Rudbar, Rudsar, Shaft, Hashtpar(city), and Sowme'ehSara .The main harbor port is Bandar –e Anzali (previously Bandar –e Pahlavi) (Fig. 5).

Map	Abbreviation in map	County (Shahrestan)
	AS	Astara
	AA	Astaneh Ashrafiyeh
	BA	Bandar-e Anzali
	FM	Fuman
	RZ	Rezvanshahr
	LH	Lahijan
	LR	Langarud
	RT	Rasht
	RS	Rudsar
	RB	Rudbar
	SS	Sowme'eh Sara
	SH	Shaft
	MS	Masal
	TL	Talesh/hashtpar
	SK	Siahkal

Figure5. Gilan Province repartition of Counties

1.4. Population

Gilan is overwhelmingly Gilak and Talesh, with a significant minority of Azerbaijanis and smaller groups of Georgians, Armenians, Circassians and others .

Table1. Gilan Population from www.Citypopulation.de

Year	1996	2006	2014
Approximate population	2,241,896	2,404,861	2,530,696

1.5. Traditional Context

Due to the Humid Subtropical Climate of Gilan province, the traditional Context of Territory is Wide-spreading and disjointed. The Distribution of Buildings is dispersal owing to the fact that they require to have potent ventilation to decrease the effect of humid on life comfort. This is a sustainable context which is chain the environment with social life. It has Green architecture forms that had taken from nature and linked to the life pattern. (Fig. 6)



Figure6. Relation of form and life with nature

A. Rural Fabric

The high percentage of humidity in Gilan region is one of the most important problems for the residents. The higher density of the humid air places it beneath the arid layers and the air movement becomes a very important factor through the urban and rural texture. Consequently, in this region, the buildings are separated from one another, and they are mostly located in vast yards or lands surrounded by short wooden fences. The short length of the fences serves three major purposes: ventilation as it facilitates the humid air to move through the site faster; Visual connection as it augments the relationship between the residents and the green and fresh environment; and social as it extends an invitation to outsiders[5] (Fig. 7).

A borderless front yard is a character is an outstanding architectural feature of Gilan province. Neighbors can freely move across one another's yards. The only boundary to prevent the invasion of wild animals through the extroverted yard is a combination of harsh wood and thorny plants acting as a fence. Lewis Henry Morgan, in his study of the Gilan people, calls it the "longhouse" in regard to this communal life, and particularly the capacity to invite outsiders and to offer them hospitality[6] (Fig .8).

B. Formation of the Typical Rural Houses

Extroverted architecture is referred to buildings which have direct contact with the outer spaces, including urban elements and paths. This relation can also be seen between inner and outer spaces. Gilan's architecture is a green and extroverted kind, in direct contact with outdoors and with sloping roofs, light, open spaces in the fourth round of buildings (or sometimes two rounded roofs), vertical buildings (usually in two floors), and orientation to gain a great deal of sunlight and to avoid rainy winds. Moreover, there is no subterranean floor in this region. Over the years, high humidity, wet soil, and overwhelming rivers have prompted the local master builders to keep the floor high above the ground[5] (Fig .9).

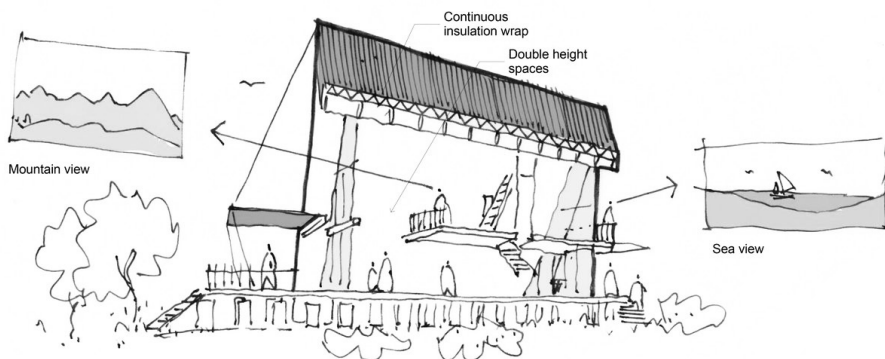


Figure7.extroverted Architecture and views



Figure8 .borderless front yard at the rural house of Gilan traditional context



Figure9. Gilan's Architecture is in harmony with nature

1.6. Urban Formation

Rasht was the first created city in Gilan which was formed on Swampy Grounds between two powerful Local kingdoms, Lahijan and Fouman, Eastern and Western parts of the Region. There were some ways between those local kingdoms and some ways between Caspian Sea and the Center of Iran. Thus, this place has been used for laager and rest by passengers and tradespeople.

Due to "Significant History" Book, Hamdolla Mostoufi had spoken about Rasht for the first time at 1327 A.D. The First Base of the city was formed in Qajar era in two main axes. Houses were arranged in 45 degree of southeast till 20 degree of southwest and they were Elongate in west to east axis in width-length proportion of 1 to 1.2 till 1 to 2. Most of the parcels were approximately square[7] (Fig. 10.11.12.13)



Figure10. First Rasht formation in Qajar era

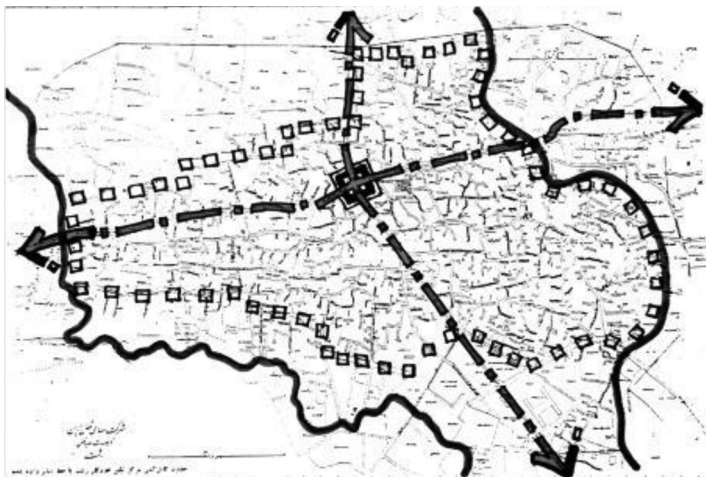


Figure11 . Rasht Main axis From Creation till now

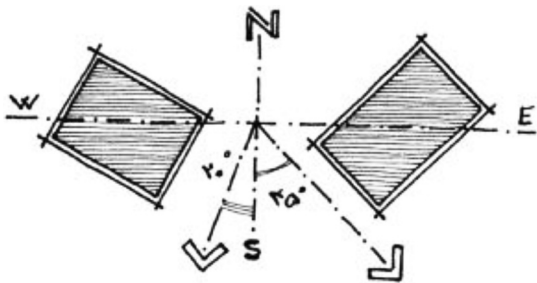


Figure12. City Elongation in Gilan province



Figure13. Urban Houses elevation retrieved from rural houses

1.7. Modern Context

The old tissues of the cities have been faced to rapid changes and turned to destructive process during the last decades, because of the huge rush of technology and consequently the social revolutions and changes as a conceivable result of such technological attacks. As a general argument, in one hand, such changes and technological flourishing provided urban modern services and let the modern equipment to enter in lives, but unfortunately, on other hand, the increasing slam of the changes invited us to the battle of rapid compatibility, which inherently could not lead to wisdom decisions about the living patterns, and even the conservation of cultural characters which as a result leads to an unknown urban patterns and meanwhile urban instabilities[7](Fig. 14,15).



Figure14. Rasht, Mayoralty Building and Plaza, 2014



Figure15. Lahijan, Modern Residential Quarter

1.8. Climate

1.8.1. Humid Subtropical Climate

A humid subtropical climate is a zone of climate characterized by hot and humid summers, and mild to chilly winters. These climates normally lie on the southeast side of all continents, generally between latitudes 25° and 35° and are located pole ward from adjacent tropical climates. While many subtropical climates tend to be located at or near coastal locations, in some cases they extend inland, most notably in China and the United States[8].

Under the Köppen climate classification, CFA and CWA climates are either described as A Humid subtropical climates or mild temperate climates. This climate features mean temperatures in the coldest month between 0 °C (32 °F) (or −3 °C (27 °F)) and 18 °C (64 °F) and mean temperatures in the warmest month 22 °C (72 °F) or higher. While, some climatologists have opted to describe this climate type as a “humid subtropical climate”, Köppen himself never used this term. The humid subtropical climate classification was officially created under the Trewartha Climate classification[8] (Fig. 16).

The Trewartha system was a 1966 update of the Köppen climate classification, and sought to redefine middle latitude climates into smaller zones (the original Köppen system grouped all middle latitude climates into a single zone). Under the Trewartha climate classification, climates are termed humid subtropical when they have monthly mean air temperatures higher than 10 °C (50 °F) for eight or more months a year and at least one month with mean temperature below 18 °C (64.4 °F). Under the Trewartha system, humid subtropical climates typically occupy the southernmost portions of the temperate zone from 23.5 to 35.0 north and south latitude[9].

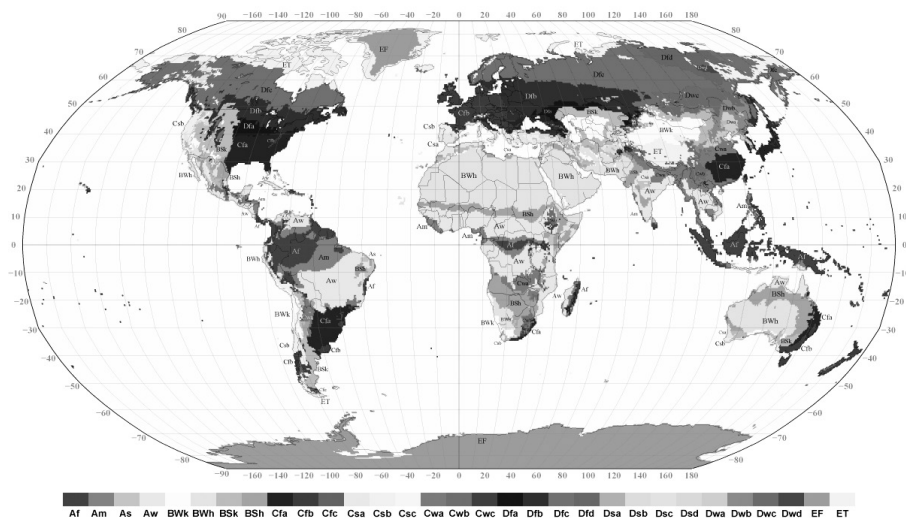


Figure16. Köppen Climate Classification, 2006

Although humid subtropical climates in Asia are mostly confined to the southeastern quarter of the continent, there are two narrow areas along the coast of the Caspian Sea and Black Sea with humid subtropical climates. Summers in these locations are cooler than typical humid subtropical climates and snowfall in winter is relatively common, but is usually of a short duration[10].

In Western Asia, the climate is prevalent in the Gilan and Mazand Provinces of Iran, in parts of the Caucasus, in Azarbaijan and in Georgia wedged between the Caspian and Black seas and coastal (Black Sea) Turkey, albeit having more oceanic influence

Annual rainfall ranges from around 740 mm (29 inches) at Sari to over 2,000 mm (78 inches) at Bandar-e Anzali, and is heavy throughout the year, with a maximum in October or November when Bandar-e Anzali can average 400 millimetres (16 inches). Temperatures are generally moderate in comparison with other parts of Western Asia. During winter, the coastal areas can receive snowfall, which is usually of a short duration. In Rasht, the average maximum in July is around 28 °C (82 °F) but with near-saturation humidity, whilst in January it is around 9 °C (48 °F)[11].

1.8.2. The Climate of Gilan Region

Like other regions of Iran, the Gilan Territory is exposed to continental masses and currents. External factors influencing the weather in the Gilan region include the Siberian anticyclone, polar masses and the Mediterranean cyclones in the cold season and, southwestern Asian cores in the hot season. These are more influencing to the Gilan weather than any other atmospheric phenomenon. Due to the neighborhood of sea and land on one side and the vicinity of coastal plains and mountains on the other side, and with the presence of extensive farms, there are always many possibilities for the air current movement and winds[1].

At the vast and leveled Gilan Plain, evaporation of an abundant quantity of water from rice farms, orchards and woods and its direct ascendancy has been an important factor for the creation and producing of accessional rain. The vicinity of Alborz and Talesh Mounts at the Gilan Plain, as well as extension of the mounts, which are exposed to the winds originated from Caspian Sea, result in ascending of humid masses and the formation of orographic rain. The rainfall of the southern regions of Caspian Sea is of unstable type and climatological stations indicate that the rainiest months of the year are from October to December and the last rainy month are from March to June. Table 2 gives the distribution of the seasonal precipitation in the Gilan coast, as recorded by the climatological stations[12].

Table2. Distribution of seasonal precipitation as recorded at some costal station of Gilan

station	Winter	Spring	Summer	Autumn	Annual mm
Bandar anzali	22.0%	11.2%	26.8%	40.0%	1761.2
Rasht	27.3%	15.4%	21.7%	35.6%	1260.2
Astara	26.7%	14.1%	29.1%	34.8%	1259.4

1.8.3. Climate charts

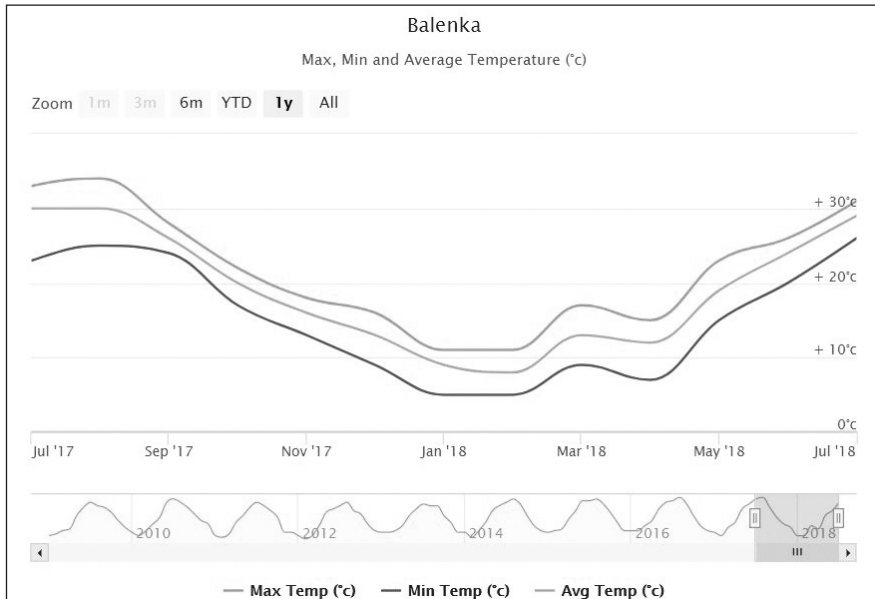


Figure17. Maximum, Minimum and Average temperature of Gilan Region in 1 year

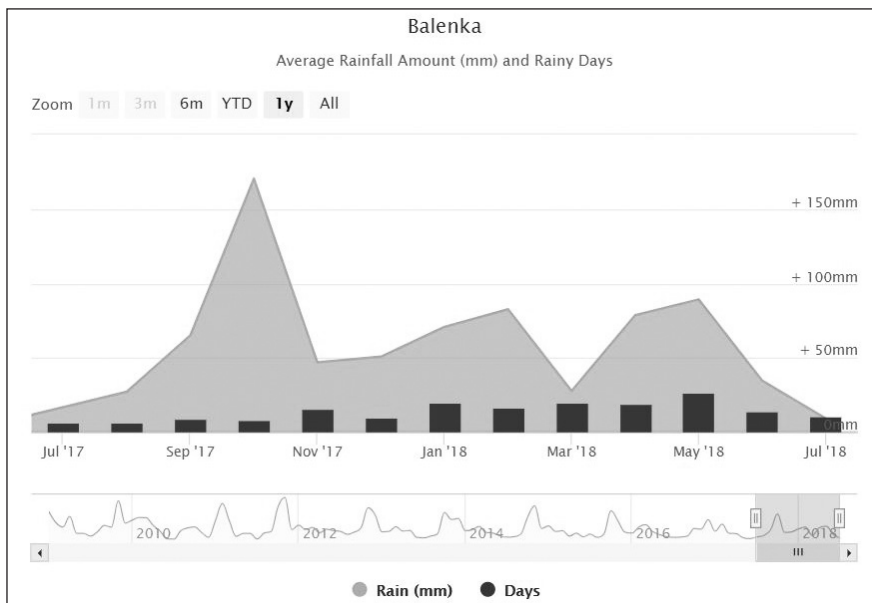


Figure18. Rainfall and Rain Days of Gilan Region in 1 Year

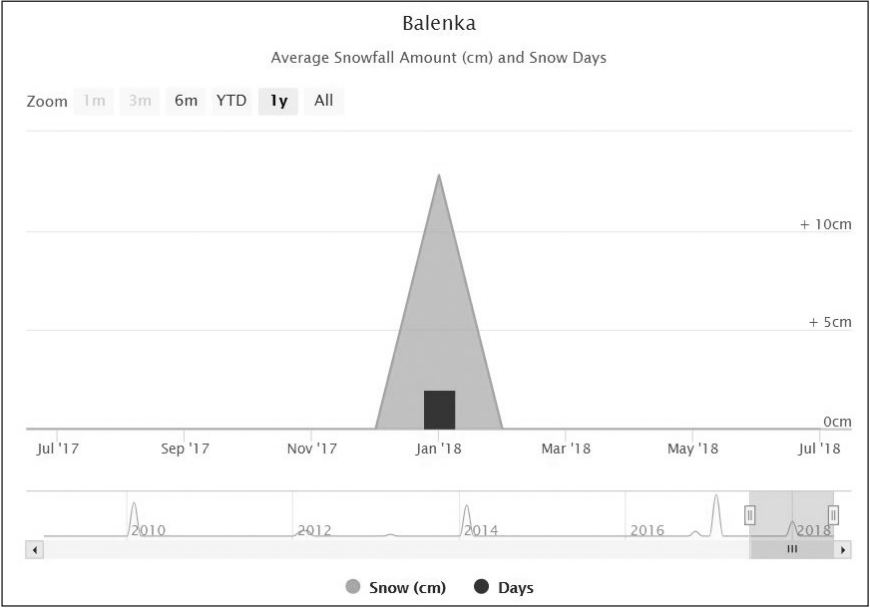


Figure19. Snowfall and Snow Days of Gilan Region in 1 Year

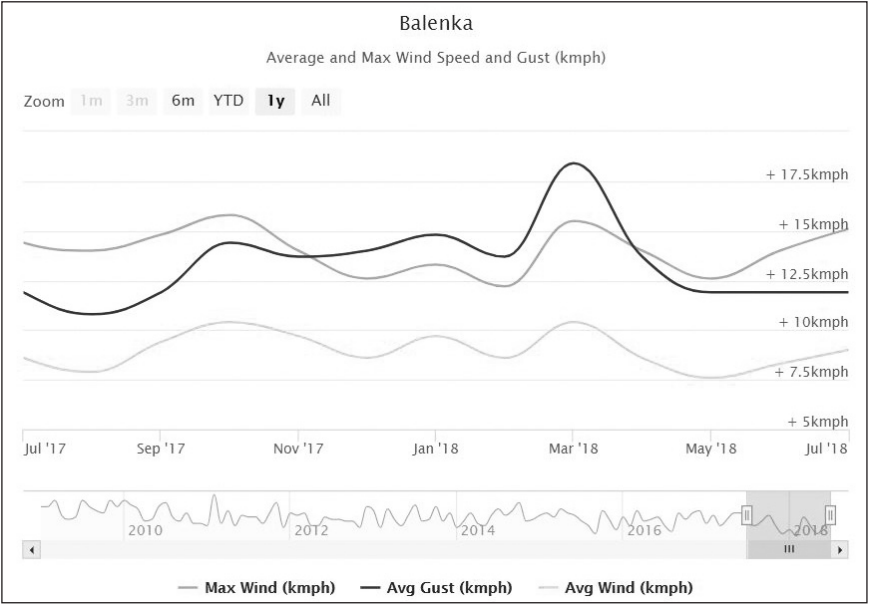


Figure20. Maximum and Average Wind Speed of Gilan Region in 1 Year

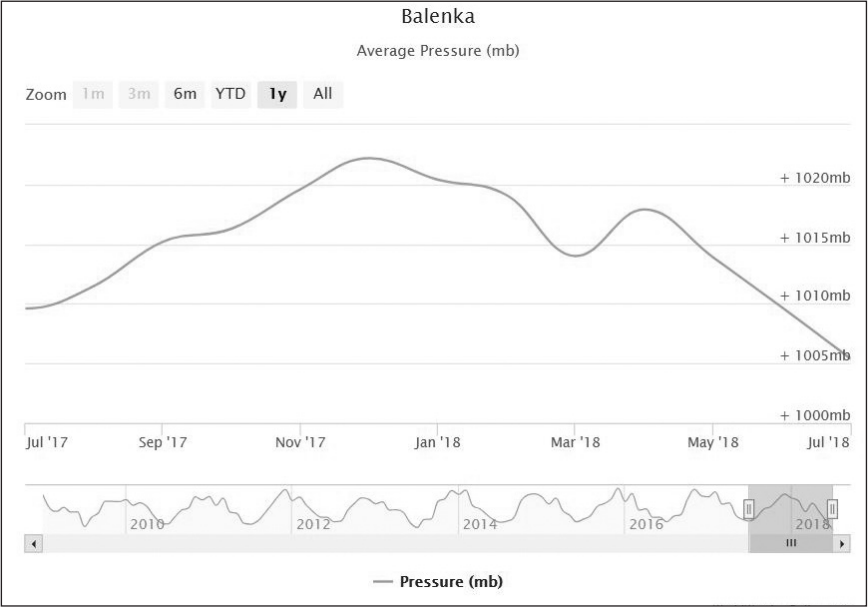


Figure21 . Air Pressure of Gilan Region in 1 Year

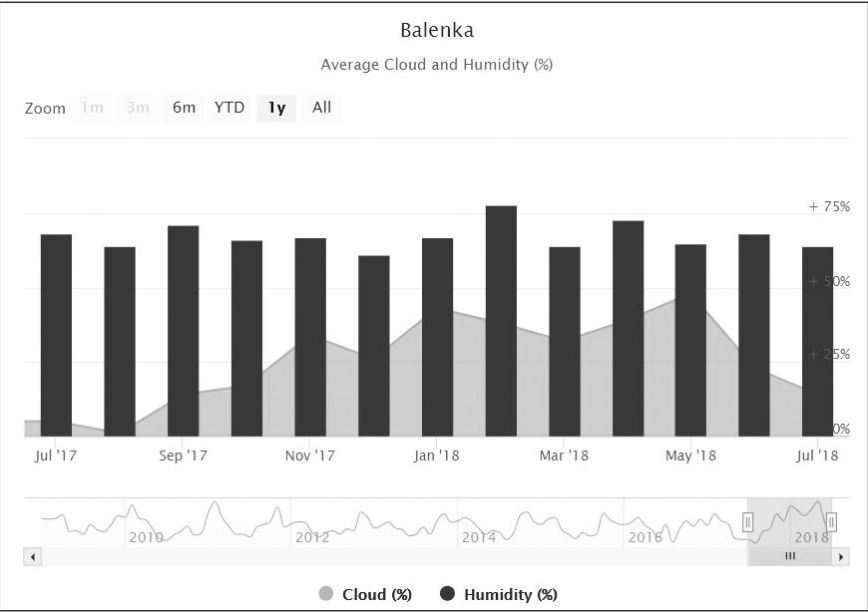


Figure22. Cloud and Humidity Average of Gilan Region in 1 Year

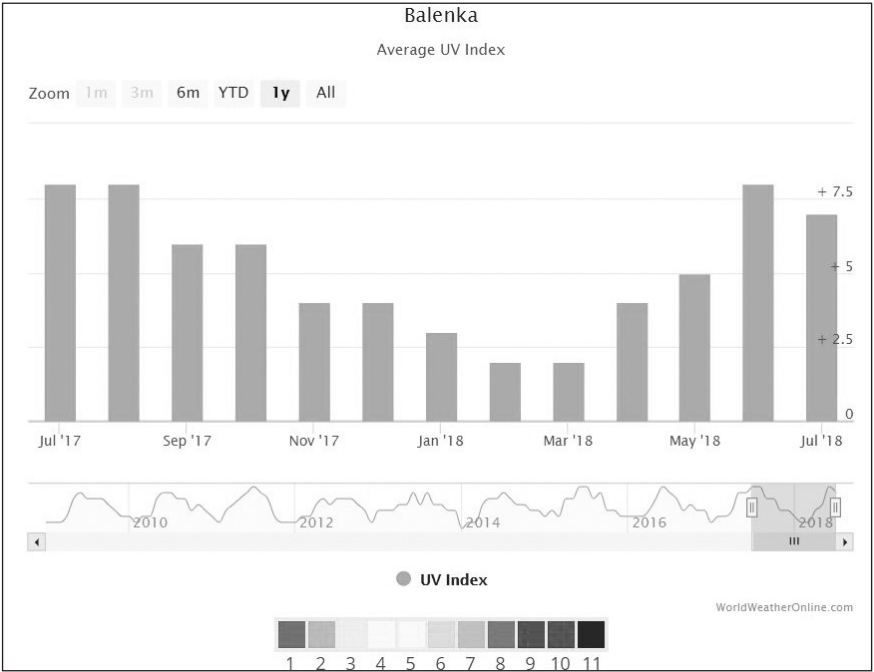


Figure23. UV index of Gilan Region in 1 Year

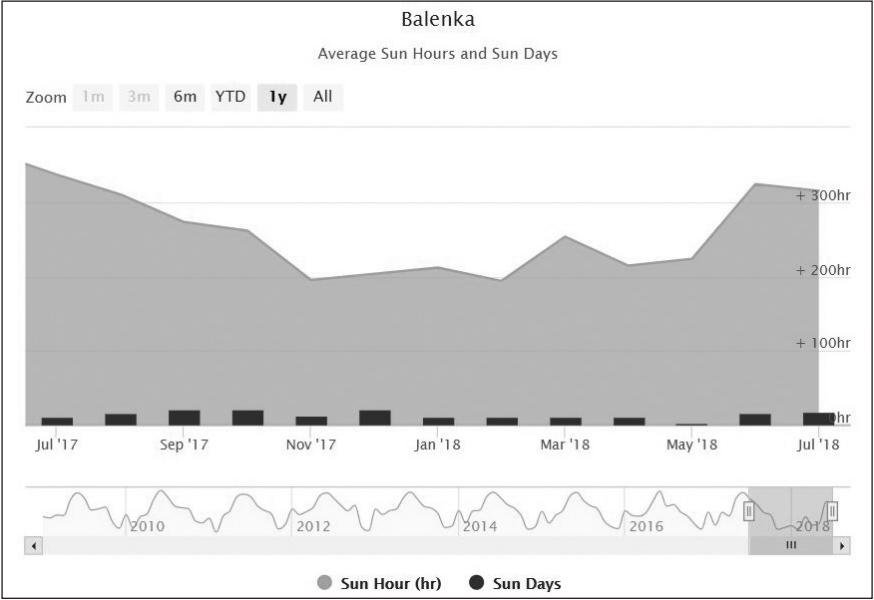


Figure24. Sun Hours and Sun Days of Gilan Region in 1 Year

