TOURISTS AND METEOROLOGISTS IN THE ITALIAN RIVIERA: THE *JOURNAL DE BORDIGHERA* (1883–1935) AS A SOURCE FOR THE STUDY OF THE LOCAL CLIMATE

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Abstract. The Italian Riviera was, from the second half of the nineteenth century to the Second World War, one of the most famous, elitist, climatic, winter, international tourist destinations. In Bordighera, in particular, the British community was so important that a typical English 'environmental bubble' was created, and still today there is not only physical, but also cultural evidence of it. Among the latter, the polyglot *Journal de Bordighera* (1883-1935), a large number of issues of which are still held at the local Museum Bicknell, is the privileged witness of the carefree life of the tourists spending their winter on the Riviera in that period. One of its weekly columns, the 'Bulletin Météorologique', contains precise data, collected by the tourists themselves, about the temperatures of the resort, while comments on the special climate of the region are scattered across different issues. That information is unique for Bordighera because, even if the location has always been appreciated for its mild climate, surprisingly no other meteorological data have ever been recorded for such a long period. The aim of this paper is twofold: to reconstruct this historical climatological series, which appears to have reasonable historical reliability, if verified with the series of other weather stations of the Riviera, and to consider the observations about the climate published by the tourist meteorologists on the *Journal de Bordighera* as a positioned way to observe and to narrate the climate of the Riviera.

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Keywords. Tourism, meteorology, Italian Riviera, *Journal de Bordighera*, climatological series.

The ecological emergency of the last decades, due to climate change, has increased the importance of historical climatological series.[1] To assess long-term changes, climatologists usually resort to the data stored in the archives of official meteorological agencies, most of which are now available in digital format. However, there are locations, some with unique climatic conditions, which in the past lacked a professional weather station, making it impossible to study climate evolution through official statistics. Thus, data from other sources become extremely valuable.[2] Among these sources, there are diaries, books, guides, journals, magazines, sometimes also grey literature, written by experts and others, and with varying degrees of continuity, completeness, and reliability.[3]

The aim of the current study is to consider the meteorological data of the tourist resort of Bordighera, in the Italian Western Riviera, as reported in the local *Journal de Bordighera* published from 1883 to 1935. Even if this periodical was never a meteorological bulletin, its amateur data provides the only information available for that period, since Bordighera lacked an official weather station. These observations therefore assume a singular importance for two reasons. First, collecting, saving and verifying these data can provide future researchers with a hitherto unused resource.[4] Although the *Journal de Bordighera* is today one of the most heavily used sources in research on the local and tourist life of the Riviera during the *Belle Epoque* and the interwar period, its meteorological section – the 'Bulletin Météorologique' – continues to be neglected by scholars. Second, the link between meteorological data and the tourist vocation of Bordighera allows the study of the relationships between weather and tourism from an original perspective.[5] Whereas tourism studies tend to stress either the importance of climate conditions for the development of tourism or the impact

[1] E. Le Roy Ladurie, *Histoire du climat depuis l'An Mil*, Paris, 1967; M. Pinna, *La storia del clima. Variazioni climatiche e rapporto clima–uomo in età post–glaciale*, Rome, 1984; P. Moore, *The weather experiment: the pioneers who sought to see the future*, London, 2015.

[2] D. Camuffo and E. Jones Phil (Eds), *Improved Understanding of Past Climatic Variability from Early Daily European Instrumental Sources*, Dordrecht/Boston/London, 2002.

[3] J. Bernhardt, Determining regional weather patterns from a historical diary, *Weather, Climate and Society* 7 (2015) 295–308.

[4] C. Delvaux, R. Ingels, V. Vrábeĺ, M. Journée and C. Bertrand, Quality control and homogenization of the Belgian historical temperature data, *International Journal of Climatology* 39 (2019) 157–171; M. Brunetti, M. Maugeri, F. Monti and Y. Nanni, Temperature and precipitation variability in Italy in the last two centuries from homogenised instrumental time series, *International Journal of Climatology* 39 (2006) 157–171.

[5] S. Strauss and B. Orlove (Eds), *Weather, Climate, Culture*, London, 2003.

of tourist activities on the local or global climate,[6] the present article throws light on how tourists themselves could be both the producers and the beneficiaries of climate data. The tourists' interest in meteorology was genuine, and if it had not been for them, Bordighera would not have such a valuable record of historical climatic data.[7] Moreover, as shall be demonstrated, bringing together the two, usually distinct, roles of meteorologist and tourist did not invalidate the reliability of the observations.[8] Finally, nowadays it is normally accepted that modern amateurism is a meaningful social practice, therefore, the data collected by the tourist meteorologists in Bordighera, while scientifically reliable, can rightly be framed as positioned observations from a particular social group.[9]

The paper is composed of three parts. The first focuses on the origin of tourism in the Italian Riviera, pivoting mainly on climatotherapic reasons, with a specific in–depth analysis of the British presence in Bordighera, which resulted in a typical 'environmental bubble',[10] still evident today in its physical and cultural aspects. The second part sketches a brief history of the meteorological observations on the Riviera, where historical climatic data are usually scarce, with the commendable exception of those provided by the Osservatorio Meteorologico e Sismico di Imperia, a government agency. Finally, in the third part, after assessing the quantitative meteorological data in the *Journal de Bordighera* (their reliability being verified through a comparison with the ones in the Observatory),[11] I analyse the qualitative remarks about the climate that are also available in the source. Mainly the exceptional winter events and the summer weather are reported and considered in connection with the peculiar point of view of the observers.

THE ORIGIN OF TOURISM IN THE ITALIAN RIVIERA

Part of the tourist appeal of the westernmost reach of the Italian Riviera among the Northern and Eastern European upper and middle classes around the mid-nineteenth century was certainly its mild, sunny climate, especially when compared with other regions at the same latitude (44°N). According to the data provided by the Osservatorio di Imperia, the annual average temperatures of the Riviera are 16.1°C (winter: 9.8°C) mean, 13.0°C (winter: 7.0°C) minimum, and 19.1°C (winter: 12.7°C) maximum. These data correspond approximately to those in Naples, which is four degrees of latitude further south. Precipitation amounts to 758 mm/year, slightly below the British average (around 850 mm/year), but sunshine duration (2,622 hours/year) and sunny days per year (302) far exceed the British records (1,350 hours and 230 days respectively). Finally, snow, frost and fog are very rare, with snow occurring on average approximately every 15 years. This favourable microclimate is largely due to two factors: the mountains and the sea. The Maritime Alps, rising to 2,200m at Mount Saccarello in the north, block the cold winds, causing a Föhn effect. The Ligurian Sea, small but deep (2,850 m at its nethermost depth, northwest of Corsica) cools the air with its mild mean surface temperatures – ranging from an average minimum of 13.2°C in February to an average maximum 25.3°C in August – causing a very limited seasonal temperature spectrum.

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[6] A. Matzarakis, C. De Freitas and D. Scott (Eds), *Development in Tourism Climatology*, Freiburg, 2007.

[7] G.H. Endfield and L. Veale (Eds), *Cultural Histories, Memories and Extreme Weather: A Historical Geography Perspective*, Abingdon, 2018.

[8] S. Daniels and G.H. Endfield, Narratives of climate change: Introduction, *Journal of Historical Geography* 35 (2009) 215–222.

[9] C. Morris and G.H. Endfield, Exploring contemporary amateur meteorologists through an historical lens, *Weather*, 67 (2012) 4–8.

[10] E. Cohen, Towards a Sociology of International Tourism, *Social Research*, 39 (1972), 64-82.

[11] To do that it was necessary to visit the libraries where the journal is stored – mainly the Museum Bicknell of the *Istituto Internazionale di Studi Liguri*, in Bordighera – because the (incomplete) digital copy of the collection, now available on the internet, is very recent. The following step involved getting the data from the *Osservatorio Meteorologico e Sismico di Imperia* in order to make the comparisons with those of the *Journal de Bordighera*. That comparison was made using a special programme available at the *Società Meteorologica Italiana*.

In consequence of this exceptional climate, the vegetation of the Riviera assumes original Southern Mediterranean features: as well as the spontaneous maquis shrubland, there are palms, mainly *Phoenix dactilifera*, *Phoenix canariensis*, and *Washingtonia*,[12] citrus trees, such as lemon, orange, tangerine, and cedar trees,[13] vines,[14] olive trees,[15] and fig trees,[16] all of these species native to the region. This almost subtropical vegetation, which on the Riviera reaches its northernmost limit, weighed in on the region's socioeconomic makeup from ancient times, and would also play a role in shaping the local tourist attractions. In fact, it is likely that the Riviera attracted tourists from the main imperial powers of Northern and Central Europe because of the landscape similarities to those countries' colonial dominions further south.[17] These colonial regions were well known by many who had lived there, a residency which brought prosperity and social ascension.[18] Without the need of undertaking a long sea voyage, tourists could reach a region with very similar and much appreciated geographical conditions in a few days by carriage, and eventually one day by train.[19]

Nonetheless, the climate could not have been sufficient to transform the Riviera into one of the most important European tourist regions of the *Belle Epoque* without a broader set of circumstances.[20] Among the principal causes, it is necessary to mention the political ones, such as the unification of Italy (1861), which ended a long period of riots and gave the country a single currency, and the cession of the County of Nice to France in the same year, which caused a tourist flow towards the Italian part of the Riviera, believed by the foreign tourists to be more authentic than the French part. There was also an improvement in accessibility, thanks to the connection in Ventimiglia of the railways from Nice and from Genoa (1872), which gave access to the Riviera from Paris and London in about twenty-four hours.[21] Finally, the Riviera was the object of a shrewdly designed *ante litteram* operation of tourist marketing, as the local climate was advertised as suitable for therapeutic reasons.[22]

In that period, therapeutic tourism was popular because of the challenging environmental health issues, especially the frequent outbreaks of tuberculosis and respiratory illnesses. In the absence of antibiotics and modern healthcare, the most recommended treatments were climatotherapy, heliotherapy, and possibly including thalassotherapy, usually in sanatoriums located in mountainous

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[12] C. Littardi, *Palme di Liguria: economia, paesaggio e significato simbolico nell'estrema Riviera di Ponente (secoli XIII–XX)*, Rome, 2015.

[13] A Carassale, L. Lo Basso and P. Vernassa, *Sanremo, giardino di limoni: produzione e commercio degli agrumi dell'estremo Ponente ligure (secoli XII–XIX)*, Rome, 2008.

[14] A. Carassale and L. Lo Basso, *In terra vineata: la vite e il vino in Liguria e nelle Alpi marittime dal Medioevo ai nostri giorni*, Ventimiglia, 2014.

[15] I. Naso (Ed.), *Ars olearia*, Guarene, 2018.

[16] A. Carassale, C. Littardi and I. Naso (Eds), *Fichi: storia, economia, tradizioni*, Ventimiglia, 2016.

[17] T. Schiva, *L'età di Bicknell e degli inglesi a Bordighera e l'introduzione di piante esotiche nei giardini della Riviera*, *Rivista Ingauna e Intemelia*, 44 (1989), 26–28.

[18] G.C.D. Adamson, 'The languor of the hot weather': everyday perspectives on weather and climate in colonial Bombay, 1819–1828, *Journal of Historical Geography*, 38 (2012) 143–154.

[19] There is also another interesting floristic element witnessed in the mild climate of the Riviera: the open–air intensive cultivation of flowers – mainly carnations and roses, but also strelitzia, buttercups, or orchids – or those with ornamental foliage. This primary economic activity dates back only to the second half of the nineteenth century, but then it was very important for the entire region until a few decades ago. It is commonly thought that the Ligurians discovered floriculture and its economic opportunities, observing the passion for gardening expressed by the communities of tourists coming from the north of Europe, who sometimes established worldwide esteemed botanical gardens – first among others was the Hortus Mortulensis of the English Thomas Hanbury (1832–1907) at La Mortola, next to Ventimiglia. This was likely, considering the synchronic coincidence of the growth of tourism and the development of an intensive floriculture on the Riviera (P. Profumo (Ed.), I pionieri della floricoltura in Liguria, *Rivista Ingauna e Intemelia*, 52–53 (1997–1998); M. Muratorio and N. Kiernan, *Thomas Hambury e il suo giardino – Thomas Hanbury and his garden*, Arma di Taggia, 1992).
20 J.P. Lozato–Giotart, *Méditerranée et tourisme*, Paris/Milan/Barcelona/Mexico, 1990.

[21] F. Dell'Amico and F. Rebagliati, *Il treno in Liguria 1853–1977*, Savona, [1986].

[22] L. Bagnoli, Un esperimento di 'marketing turistico' ante litteram: il Doctor Antonio di Giovanni Ruffini, in: E. dell'Agnese and L. Bagnoli, *Modi e mode del turismo in Liguria. Da Giovanni Ruffini a Rick Steves*, Milan, 2004, 201–222.

or seaside regions.[23] The Riviera was suitable for therapeutic tourism because of its climate, and it soon began to be dotted with hospitals for adults and eventually summer camps for children. They gradually increased in number and size until the 1960s, when a general improvement in health conditions caused its decline and eventually its virtual end.[24] Another reason for the growing success of therapeutic tourism during the nineteenth century was that middle-class people increasingly visited climatic or thermal resorts to emulate the elite.[25] Even if not seriously ill, tourists justified their wish to attend trendy destinations on therapeutic grounds; while getting away from their industrial hometowns did genuinely improve their health (even if temporarily), their most important driver in visiting the Riviera was the pursuit of a bourgeois symbol of status.

The advertisement of all the principal towns of the Riviera (Bordighera, Sanremo, Ospedaletti, Alassio) was made through the publication of medical tourist books or guidebooks written by influential and authoritative physicians. In such publications, the climate was always presented as enjoyable and advisable not only for serious health conditions, but also and most notably for the promotion of general wellbeing. The most memorable titles in this genre include *Les stations hivernales de Bordighera et Sanremo: guide historique, artistique, économique, hygiénique, medical, climatologique*;[26] *San Remo and the Western Riviera climatically and medically considered*,[27] *Ospedaletti près San Remo (Riviera di Ponente) avec observations climatologiques et medicales*,[28] and *Alassio: Riviera Ponente (Italy). A new Station for Invalids in Winter and for Sea Bathing in Summer*.[29] The fact that these volumes were written – or possibly translated after being first published in Italian – in a foreign language suggests they were supposed to address a European audience. They seem to have met their advertisement goals as by the end of the nineteenth century, tourism on the Riviera was definitely perceived as an international, elitist pursuit of climate amenities, especially in the wintertime.[30]

BORDIGHERA AND ITS BRITISH 'ENVIRONMENTAL BUBBLE'

Bordighera, a small town of fishermen and farmers at the heart of the Riviera, during the second half of the nineteenth century succeeded in becoming, in a few decades, a tourist destination of the first order for all Europe. This extraordinary success was initially due to the promotion provided by the novel *Doctor Antonio* (another medical doctor!) written in English by the Italian Giovanni Ruffini, and published in Edinburgh in 1855, which was widely distributed in Britain and motivated lot of tourists to spend their winter in Bordighera.[31] To quantify this evolution, it is useful to remember that at the end of the century, the number of guests (about three thousand at the time) exceeded the number of residents (about two and a half thousand), so that Bordighera was in the situation of having a Defert's activity tourist function index greater than the unit itself, which was quite rare for that time. In 1861 there was only one inn, in 1883 there were seven and by 1914, 33.[32] Nonetheless, what characterised the landscape of Bordighera was not the hotels, rather the great numbers of luxurious

[23] G. Galliano, Il turismo sociale in Liguria, in: A. Vallega (Ed.), *La Liguria e il mare*, Genoa, 1991, 173–198.
[24] L. Bagnoli, Ospedali elioterapici e colonie marine nella Riviera di Ponente. Tutela, recupero e sviluppo territoriale, in: P. Persi (Ed.), *Recondita armonia. Il Paesaggio tra progetto e governo del territorio. Segni, sogni e bisogni delle popolazioni locali*, Urbino, 2007, 431–441.
[25] M. Pallante, *La decrescita felice. La qualità della vita non dipende dal PIL*, Rome, 2005.
[26] J. Cappy, *Les stations hivernales de Bordighera et Sanremo: guide historique, artistique, économique, hygiénique, medical, climatologique*, Paris, 1879.
[27] A.H. Hassal, *San Remo and the Western Riviera climatically and medically considered*, London, 1879.
[28] R. Adler, *Ospedaletti près San Remo (Riviera di Ponente); avec les observations climatologiques et medicales de M. Enderlin*, Zurich, [1892].
[29] J. Schneer, *Alassio: Riviera Ponente (Italy). A New Station for Invalids in Winter and for Sea Bathing in Summer*, Albenga, 1879.
[30] E. Dell'Agnese and L. Bagnoli, *Modi e mode del turismo in Liguria*, 79–80.
[31] D. Astengo, E. Duretto and M. Quaini, *La scoperta della Riviera. Viaggiatori, immagini, paesaggio*, Genova, 1982.
[32] G. Merello, *L'immagine turistica di Bordighera attraverso le cartoline illustrate e la letteratura*, Bordighera, 1995.

villas,[33] which reached the extraordinary number of 130 in 1918 – property of affluent French, Prussians, Russians, Swiss, and mainly British tourists.

As the British were the most numerous, and long staying tourist community, a very strong physical and cultural English 'environmental bubble' was soon created, and this is still evident today.[34] Apart from the villas, many of which were built in pure British or eclectic Anglo–Ligurian styles, the tourists coming from the British Isles constructed a great number of buildings and services physically and culturally belonging more to their homeland than to the host region. For example, an English Church was built in 1873 (enlarged in 1883 and in 1900) in order to host Anglican services, very foreign for the locals. Moreover, a lawn tennis court was opened in 1878, the first in Italy and, for use by the guest community in their free time, an English Library and a hall dedicated to Queen Victoria were inaugurated respectively in 1883 and in 1887 for her Golden Jubilee. In addition, commercial activities were opened, such as a Thomas Cook Agency in 1891, and an English Bank in 1892. Finally, before the end of the century, a British store, a bridge club, a Union Club and the Museum Bicknell[35] (Fig. 1) were documented as present in Bordighera.[36]

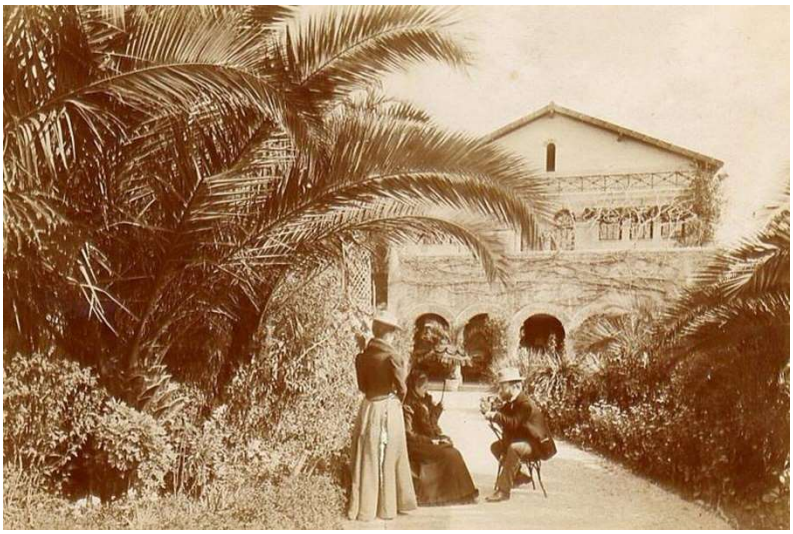

Fig. 1. The Museum Bicknell, in the times of its founder, sitting and talking with two tourists (Archive *Istituto Internazionale di Studi Liguri*, Bordighera).

[33] P. Persi (Ed.), *Mia diletta Quiete. Ville e grandi residenze gentilizie di campagna tra sviluppo regionale e identità locale*, Treia, 2003.

[34] L. Bagnoli and R. Capurro, Il riuso delle chiese anglicane in Riviera e Costa Azzurra, *IN_BO – Ricerche e progetti per il territorio, la città e l'architettura* 8 (2017) 335–345.

[35] Clarence Bicknell (1842–1918), the Anglican pastor who arrived in Bordighera in 1878 in order to officiate in the recently built church, created the first between 1886 and 1888. Very cultivated, he had interests not only in theology, but also in different subjects, such as history, archaeology, arts, botany, entomology, Esperanto, etc. (among his principal publications: *Flowering Plants and Ferns of the Riviera and Neighbouring Mountains*, London, 1885; *A Guide to the Prehistoric Rock Engravings in the Italian Maritime Alps*, Bordighera, 1913). He left the Church of England after a few years, so he could concentrate his efforts on cultural activities, and he published very important works about the local flora and archaeology, while continuing his very intensive philanthropic action. In order to gather all his collections and books he built a museum, in a style recalling Anglican churches, as it is possible to see in Fig. 1, to which he gave free access to everybody, and where he organized meetings, conferences and concerts with topics ranging from the local to the international. At his death, his nephew and niece firstly inherited his goods, but eventually, during the Second World War, the Museum passed to the renowned *Istituto Internazionale di Studi Liguri*, which still today continues the important and free mission of disseminating the regional culture at an international level according to the will of the founder (M. Marcenaro, *Bordighera e il Museo–Biblioteca dell'Istituto Internazionale di Studi Liguri da Clarence Bicknell al rinnovamento attuale*, Bordighera, 1998).

[36] M.C. Giuliani–Balestrino, Gli inglesi alla scoperta della Riviera ligure di Ponente, in M. Mautone (Ed.), *Giornata di studio in onore di Mario Fondi*, Napoli, 1997, 123–145.

Among the important publications still jealously guarded at the Museum Bicknell is the, unfortunately incomplete, collection of the *Journal de Bordighera*, a polyglot, but mainly in English, *journal mondain* published in the Ligurian town from 1883 to 1935 (Fig. 2).[37] Like other similar *journaux mondains*, usually published in their native languages by tourist communities living abroad for many months,[38] the *Journal de Bordighera* quickly became the principal forum whereby the news and the events of interest for the tourists themselves were shared. It was weekly published only during the tourist season – that is, through the year, from the end of October or the beginning of November to the end of April, and only missed issues during the First World War and in the thirties. In the latter case, the diplomatic relationship between the United Kingdom and the Kingdom of Italy was very problematic because of the approaching Abyssinian War, and the British communities in Italy suffered a lot from that, as Franco Zeffirelli splendidly told it in his famous film *Tea with Mussolini,* shot in 1999.[39] Otherwise, for more than fifty years, the *Journal de Bordighera* punctually related the principal local events to the resident tourist community: it reported the list of the guests dividing them hotel by hotel or villa by villa; communicated the timetables of the principal services, such as the post office, the doctors or the trains; described the itineraries of pleasant excursions in the surroundings; and recorded some interesting climatic observations, the object of the present study.


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LISTE DES ÉTRANGERS DE BORDIGHERA

JOURNAL HEBDOMADAIRE

CHRONIQUE LOCALE DONNANT TOUS LES RENSEIGNEMENTS NÉCESSAIRES A LA COLONIE ÉTRANGÈRE

On le trouve au Bureau du Journal et au Kiosque. Prix 10 Cent. le N°. — Insertions 25 Cent. la ligne

Bureau, Rue Victor Emmanuel, Agence des Etrangers, BORDIGHERA. PARAIT TOUS LES SAMEDIS.

Fig. 2. The masthead of the commonly called *Journal de Bordighera* on its issue of December 20th, 1884 (Collection *Museo del Risorgimento*, Milan).

[37] To be precise, it has assumed different titles in the decades during which it was published. Created in 1883 as *Liste des étrangers de Bordighera. Journal hebdomadaire*, in 1890 it changed its name to *Journal et liste des étrangers de Bordighera*, and in 1900 to *Journal de Bordighera. Liste des Etrangers*. Finally, when the fascist laws banned the use of foreign names, in 1929 it assumed the title of *Giornale di Bordighera*, but this one lasted only a few years because in 1935 it definitely closed for the reasons already mentioned. In spite of all these changes, the periodical is usually called *Journal de Bordighera*, without risk of confusion because for more than half a century its issues were numbered continuously. Consequently, the masthead of the weekly publication has slightly changed with the new names, but always shows a picturesque general view of the village. The most meaningful of them is the one where the two principal houses, Villa Bischoffsheim (painted by Monet in a very famous painting) (G. Merello, *L'immagine turistica di Bordighera*, 111) and Villa Garnier (A. Folli, G. Merello, *Charles Garnier e la Riviera*, Genova, 2000), appear as unmistakable landmarks, as can be seen in Fig. 2.

[38] On the Riviera, the most important are the *Alassio Gazette and Visitors' List* (created in 1901) and *Alassio News* (created in 1924), but they did not have the duration and regularity of their corresponding of *Journal de Bordighera* (A. Zanini, Alle origini della promozione turistica. L'esperienza ligure, in: P. Avallone and D. Strangio (Eds), *Turismi e turisti. Politica, innovazione, economia in Italia in età contemporanea*, Milan, 2015, 45–68). The presence of *journaux mondains* is recorded as well in the Eastern Riviera, such as *Pro Nervi* (1893), *Rapallo Revue* (1901) and *Portofino Kulm Magazine* (1907) (A. Zanini, Tourist Promotion during the Belle Époque: the case of the Riviera Ligure, *Munich Personal RePEc Archive*, 80293 (2012) 1-16).

[39] P. Antonello, *Un tè con Mussolini. Un film di Franco Zeffirelli*, Milano, 1999.

The turn of the century marked the height of the tourist success of Bordighera. In 1900 even Queen Victoria decided to spend her holiday in the local Hotel Angst, totally restored to welcome the sovereign, but at the last moment the Anglo–Boer War broke out, causing the cancellation of her vacation and an enormous consternation among Bordighera's inhabitants for the missed opportunity of tourist promotion.[40] The golden age of tourism in the entire Riviera eventually stopped during the First World War and definitely ended after the Second. This elitist, climatic, winter, and international tourism changed for good into mass, balneo–tropic,[41] summer and domestic tourism, and the foreign communities, who returned to their homelands during the conflict, never returned to Bordighera.

THE HISTORICAL WEATHER STATIONS OF THE RIVIERA

The middle of the nineteenth century was a very active period for the atmospheric sciences in the entire world, likewise in Italy, both scientists and politicians demonstrated a very strong interest in this promising discipline.[42] Similarly, in the small and peripheral Riviera, the same period sees the creation of some interesting scientific or amateur weather stations and the publication of their data.

The first data of the Riviera published in an official meteorological bulletin concern Sanremo, printed from March 1865 in *Meteorologia Italiana*, the journal of the Direction of Statistics of the Italian Ministry of Agriculture, Industry and Commerce. Interestingly, the location of what is believed to be the first modern meteorological observatory in Sanremo is now unknown. It is recorded that a new station was on the western harbour between 1880 and 1891[43] (presumably on the Genoese fortress of Santa Tecla), but nothing has yet been found in the archives about the previous one. Unfortunately, the station of Sanremo soon lost its official status, so that its data could no longer be published in *Meteorologia Italiana*, even if they can be still found in the *Annali della Meteorologia Italiana*. Until the Great War, in fact, the meteorological data of Sanremo appeared there alongside data taken by the official stations of the Ligurian county seats: Genova, La Spezia (Eastern Liguria), and Porto Maurizio (Western Liguria).

Despite having fewer inhabitants than Sanremo, Porto Maurizio (since 1923: Imperia) has been, since the Unification of Italy, the seat of the province of the extreme part of Western Liguria, with the majority of the public administrative offices and services being located there. However, the lack of a local official weather station was lamented by the authorities. In 1875 some passionate volunteers, coordinated by Natale Felice Vassallo, decided to create an observatory in their town in order to bridge this gap, which was making it difficult to study the climate of the Riviera scientifically. Immediately supported by the Municipality, the weather station started collecting data on December 1st, 1875, which were published in the *Bulletin of International Meteorology* from the following

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[40] E. Bernardini and G.E. Bessone (Eds), *Bordighera ieri*, Bordighera, 1971.

[41] J.P. Lozato–Giotart coined the adjectives 'balneo-tropic' and 'helio-tropic' in order to indicate the present tourist trend aimed to reach locations with sea and sun (J.P. Lozato–Giotart, *Géographie du tourisme. De l'espace regardé à l'espace consommé*, Paris, 1993).

[42] The foundation of modern Italian meteorology must be dated back to the Barnabite Father Francesco Denza (Naples 1834 – Rome 1894), who was among the first to study using national and even European scales and perspectives. Starting from Moncalieri, in the province of Turin, in 1859, he managed to establish, or at least to coordinate, the weather stations, initially of the Alpine arch, and eventually, with the progression of the unification of the country, the entire Italian boot. In 1866, in order to disseminate his observations, he created the *Bullettino meteorologico dell'Osservatorio del R. Collegio Carlo Alberto in Moncalieri*, that in 1881 became the official journal of the *Società Meteorologica Italiana*, established by himself in 1865 (G. Di Napoli and L. Mercalli, *Moncalieri, 130 anni di meteorologia (1865–1994)*, Torino, 1996). The Government of the newborn Kingdom of Italy demonstrated a very strong commitment to helping the development of the research about the Italian climate, and in supporting the several local meteorological services. Among the most important public measures, in 1876 the Italian Government, finally set up in Rome, the *Consiglio Direttivo della Meteorologia* with the task of co-ordinating the entire national meteorological service, and Father Denza was called on to be its general manager (V. Cantù, Meteorologia, climatologia, cambiamenti di clima. Storia della meteorologia nel sec. XX in tre saggi, *Quaderni di Geofisica* 37 (2004)).

[43] A. Gandolfi A*., Storia di Sanremo*, Sanremo, 2000, 218.

month, January 1876. Thereafter, the instruments of the Osservatorio Meteorologico di Porto Maurizio (since 1887: Meteorologico e Sismico; 1923: di Imperia) recorded the longest climatological series of the Riviera from the same turret of the former convent of the Annunziata (today seat of the Nautical Technical Institute 'Andrea Doria').[44] In 1878, after an inspection during which he could ascertain the high regularity and precision of the observations, Father Denza recognized the weather station as official, and since then it has never lost this status.[45]

Besides the stations of Sanremo and Imperia, there are two other examples of weather stations of historical interest that collected meteorological data: Alassio and Ospedaletti. In Alassio, in 1881, the Salesians of Don Bosco, who had opened a school in 1870, placed a weather station on the top of the bell tower annexed to the church of Santa Maria degli Angeli. From the start, the data collected by this station, still in use, were sent to different official meteorological offices, and so can be found recorded in several meteorological journals.[46] The longest uninterrupted series can be found in the journal *L'Alassino*, the monthly publication of the local cultural association Vecchia Alassio. The person in charge of the weather station today, the Salesian priest, Father Natale Todoldi, still provides this journal with the meteorological data and their interpretation, but because the publication of *L'Alassino* only started in 1962, the series does not have a strictly historical interest.[47]

In Ospedaletti, some interesting meteorological data were published from 1903 to 1912 in the local journal *Ospedaletti Hivernal, revue climatologique paraissant en hiver le 1er et le 16 de chaque mois*, edited by the doctor, Bartolomeo Altichieri, in collaboration with his colleague Cristiano Enderlin. From its subtitle, it is clear that its aim was not, like many other examples in the tourist resorts of the Riviera and elsewhere, to be a *journal mondain*, but specifically a scientific medical and climatological periodical.[48] Unfortunately, the very short life of the journal gives its data limited historical interest. Thus, it seems the *Journal de Bordighera* is one of the most important sources for unofficial meteorological data on the Riviera and worthy of further analysis.

THE QUANTITATIVE DATA ABOUT THE WEATHER REPORTED IN THE *JOURNAL DE BORDIGHERA*

The Museum Bicknell of Bordighera does not have the entire collection of the *Journal de Bordighera*, but only the issues indicated in Table 1, with very limited gaps. Some single, scattered issues are at the Biblioteca delle Civiche Raccolte Storiche in Milan, and some others at the Fonds de la Société de Géographie housed at the new Bibliothèque Nationale de France in Paris. The only entire collection is held at the Biblioteca Nazionale Centrale in Florence, but unfortunately, it cannot be consulted because of the dangerous condition of the building, and no date has been given for when the collection will be available to scholars again. The present study has therefore been conducted mainly using the issues available at the Museum Bicknell, with some reference to the other small collections. While this sample is adequate for this study, a more complete analysis would be possible once the missing copies in the Florentine library are available.

TOURIST SEASON	YEAR OF PUBLICATION	FIRST ISSUE OF THE YEAR	LAST ISSUE OF THE YEAR	TOTAL WEEKS
1898–1899	XVII	3rd November 1898	27th April 1999	26
1899 –1900	XVIII	2nd November 1899	19th April 1900	26
1900 –1901	XIX	8th November 1900	25th April 1901	25

[44] G. Garibaldi, *Il Nautico di Imperia: una scuola a cavallo di tre secoli (1864–2002)*, Arma di Taggia, 2003.
[45] N. Podestà, *Clima e variazioni climatiche nella Riviera dei Fiori. 125 anni di meteorologia ad Imperia (1876–2000)*, Imperia, 2003.
[46] E. Baudo, *Il clima della città di Alassio: contributo alla sua determinazione ossia riassunto delle osservazioni meteorologiche eseguite nel ventennio*, Firenze, 1902.
[47] Associazione Vecchia Alassio, *Alassio, Alassio: 44° parallelo: cenni storico–artistici, flora, geomorfologia, meteorologia e cartografia*, Albenga, 1992.
[48] A. Politi, *Ospedaletti: un po' di storia*, Pinerolo, 1995.

1901–1902	XX	7th November 1901	24th April 1902	25
1908–1909	XXVIII	5th November 1908	29th April 1909	26
1909–1910	XXIX	11th November 1909	21th April 1910	24
1910–1911	XXX	10th November 1910	27th April 1911	25
1911–1912	XXXI	16th November 1911	25th April 1912	25
1912–1913	XXXII	14th November 1912	1st May 1913	25
1913–1914	XXXIII	6th November 1913	23rd April 1914	25
1920–1921	XXXVIII	2nd December 1920	21st April 1921	21
1921–1922	XXXIX	3rd November 1921	27th April 1922	26
1922–1923	XL	9th November 1922	3rd May 1923	26
1923–1924	XLI	1st November 1923	24th April 1924	26
1925–1926	XLIII	29th October 1925	22nd April 1926	25
1927–1928	XLV	3rd November 1927	19th April 1928	25
1929–1930	XLVII	7th November 1929	24th April 1930	25
1930–1931	XLVIII	6th November 1930	23rd April 1931	25
1931–1932	XLIX	5th November 1931	21st April 1932	25
1933–1934	LI	16th November 1933	26th April 1934	24

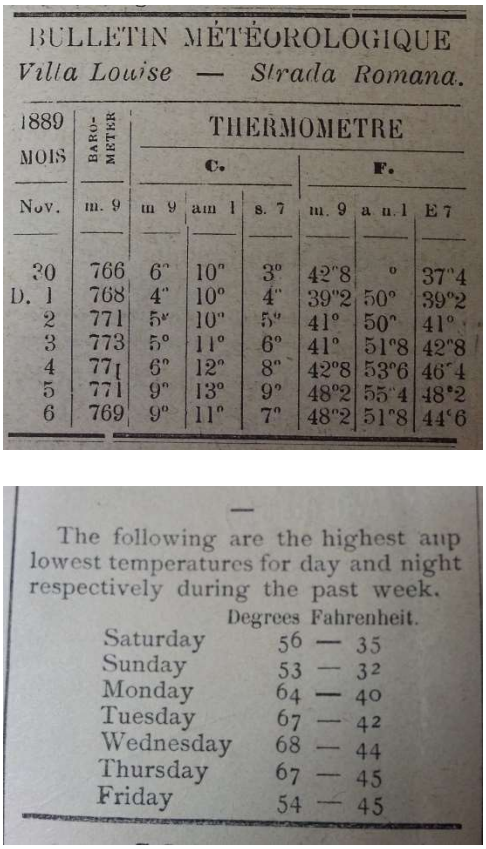
Tab. 1. The year's issues of the weekly *Journal de Bordighera* shielded by the Museum Bicknell of Bordighera.

As the footnote about the changing title illustrates, the general frame of the *Journal de Bordighera* has changed over the years, as did the section 'Bulletin Météorologique'. Figure 3 shows examples of the changing organisation. In (a) it consists of a table with different columns, the first gives the dates of the previous week followed by columns of corresponding meteorological data. The first of these is the atmospheric pressure expressed in hectopascal and taken every day at 9 m (m[orning] or *m[atin]).* Then, the temperatures expressed in Celsius degrees taken at 9 *m[atin],* 1 *a[près] m[idi]* and 7 *s[oir],* and in Fahrenheit degrees taken at 9 m[orning], 1 a[fter] n[oon] and 7 e[vening], recorded in French and English, the two main foreign languages spoken by the tourists in Bordighera. Visitors from the continent would be more familiar with French and °C and those from Anglo-Saxon countries, with English and °F. This section indicates the temperatures were taken with a Celsius thermometer and translated into °F to make them easier to understand for the British. In (b), however, the temperatures are reported only as minimum and maximum and expressed in °F, probably indicating that whoever took these values was not using the previous thermometer. Finally, in (c) the temperatures are indicated, both in °C and in °F, taken at 9 a.m. and 6 p.m., and as minimum and maximum; some interesting values about the precipitation and the heliophany are reported as well.

In a very few cases, there are issues where the daily data are evidently wrong, or missing, or substituted with weekly averages or extremes, but in some others, it is possible to find supplementary data about the humidity or the ozone in the air. Since this happens only occasionally, it is not possible to create a series of them, so the values of the minimum and maximum temperatures remain the most plentiful and continuous, and the present study will be limited to them. Regarding the issues examined, the majority of the data were reported with minimum and maximum temperatures, expressed in both °C and °F until the spring of 1900, and only in °F after the autumn of the same year. The last issue of the 'Bulletin Météorologique' was published on January 3rd, 1924 – so that they cover about a thirty-year period – but after this date it suddenly stopped with no explanation.

Immediately under the headings of the section, the name of the location where the temperatures were taken is sometimes indicated, usually with the name of a villa in Bordighera. In the case of Fig. 3 (a) and (c), they were Villa Louise and Villa Pozzoforte, both still existing on the Strada Romana, an elegant street built on the layout of the ancient Via Julia Augusta, on the borders of which the most luxurious villas and gardens were constructed during the golden age of tourism in Bordighera. Among the principal villas where temperatures were collected there was also Villa Pendice, next to the Strada Romana as well, but sometimes the location where the temperatures were taken was indicated with the less specific place name of *Borgo Marina*, the new seaside quarter of Bordighera. A particularity is the period between November 6th and December 31st, 1898, during which the data were collected both at Villa Pozzoforte and the Farmacia Tessarotti. This pharmacy was located at the Borgo Marina,

but the temperatures taken here were not significantly different from the ones taken at Villa Pozzoforte. In the data examined in this study, the temperatures were measured at Villa Pozzoforte until spring 1900 and at Villa Pendice from 1901–1902 and 1908–1909, while in later years the location was no longer indicated.



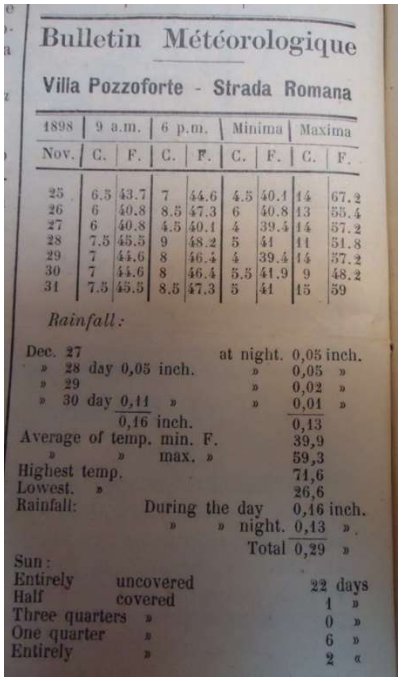
BULLETIN MÉTÉOROLOGIQUE
Villa Louise — Strada Romana.

1889 MOIS	BARO-METER	THERMOMETRE C.			THERMOMETRE F.		
Nov.	m. 9	m 9	am 1	s. 7	m. 9	a m. 1	E 7
30	766	6°	10°	3°	42°8	°	37°4
D. 1	768	4°	10°	4°	39°2	50°	39°2
2	771	5°	10°	5°	41°	50°	41°
3	773	5°	11°	6°	41°	51°8	42°8
4	77[illegible]	6°	12°	8°	42°8	53°6	46°4
5	771	9°	13°	9°	48°2	55°4	48°2
6	769	9°	11°	7°	48°2	51°8	44°6

—

The following are the highest and lowest temperatures for day and night respectively during the past week.

	Degrees Fahrenheit.
Saturday	56 — 35
Sunday	53 — 32
Monday	64 — 40
Tuesday	67 — 42
Wednesday	68 — 44
Thursday	67 — 45
Friday	54 — 45



Bulletin Météorologique

Villa Pozzoforte - Strada Romana

1898	9 a.m.		6 p.m.		Minima		Maxima	
Nov.	C.	F.	C.	F.	C.	F.	C.	F.
25	6.5	43.7	7	44.6	4.5	40.1	14	57.2
26	6	40.8	8.5	47.3	6	40.8	13	55.4
27	6	40.8	4.5	40.1	4	39.4	14	57.2
28	7.5	45.5	9	48.2	5	41	11	51.8
29	7	44.6	8	46.4	4	39.4	14	57.2
30	7	44.6	8	46.4	5.5	41.9	9	48.2
31	7.5	45.5	8.5	47.3	5	41	15	59

Rainfall:

Dec. 27		at night.	0,05 inch.
» 28	day 0,05 inch.	»	0,05 »
» 29		»	0,02 »
» 30	day 0,11 »	»	0,01 »
	0,16 inch.		0,13
Average of temp.	min. F.		39,9
»	max. »		59,3
Highest temp.			71,6
Lowest. »			26,6
Rainfall:	During the day		0,16 inch.
	»	night.	0,13 »
		Total	0,29 »

Sun:		
Entirely	uncovered	22 days
Half	covered	1 »
Three quarters	»	0 »
One quarter	»	6 »
Entirely	»	2 «

Fig. 3. The column *Bulletin Météorologique* of the *Journal de Bordighera* on their issues of December 8th, 1889 (a), February 6th, 1897 (b), and January 2nd, 1898 (c). In the last, the indicated month is wrong, being December and not November (Collection *Museo del Risorgimento*, Milano).

The authors of the collections of meteorological data are not usually mentioned in the meteorological column of the *Journal de Bordighera*. In only two cases, on January 18th, 1893, and on January 26th, 1895, among the issues that it was possible to consult, the names of A. Christeller and F.F. Hamilton appear. The first was a Swiss German medical doctor who used to stay in Bordighera during the winter and who wrote a pamphlet *Bordighera als Winterkurort: eine klimatologische Skizze*,[49] the title suggests something about his interest in the local climate. The second was an Irish botanist, who wrote important books about his discipline, but also the volume *Bordighera and the Western Riviera*.[50] In it, after having recognised the medical climatology as a very promising branch of the science, but still in its infancy, he writes:

'To appreciate the meteorological character and the medical effects of any one of these places [of the Riviera], in so far as its climate differs from those of its neighbours, it is necessary to have before us the observations of a considerable number of years and to examine the results obtained by the resident physicians, in their treatment of the principal forms of illness, during many winter seasons. But we are far off as yet, as regards meteorology, at least in the greater number of our winter stations, from possessing the necessary elements to enable us to apply the test with any satisfactory result. And this applies to Bordighera especially, for the daily variations of the thermometer have only been registered there for the last *seven* years [1876–1882], neither did a rain–gauge exist prior to January 1st, 1879. […] The [temperatures] which I

[49] A. Christeller, *Bordighera als Winterkurort: eine klimatologische Skizze*, Basel, 1877.
[50] F.F. Hamilton, *Bordighera and the Western Riviera. Translated from the French, with additional matter and notes by A.C. Dowson*, London, 1883.

register are marked by a thermometer placed under the roof of a Belvedere about fifty feet from the ground, but open to the north and exposed to winds from every quarter'.[51]

This passage clearly confirms that the interest in the climate of Bordighera during the last quarter of the nineteenth century was definitely connected with the medical science which was discovering the scientific basis of the climatotherapy; very recent, dating back only to the 1870s; cultivated by foreign scientists, distinguished within their discipline, yet only amateur meteorologists; and strictly linked with the new tourist function of the town.

Moreover, it is worth of note that the Belvedere, from which Doctor Hamilton was taking his collection of data, was located in the already mentioned Villa Pozzoforte, also known as Villa Hamilton. The house belonged to him and was where he stayed when visiting Bordighera, and it has indeed a tower of about fifteen metres, corresponding to the description provided (Fig. 4).

Fig. 4. Villa Pozzoforte (or Hamilton), on the *Strada Romana* of Bordighera (picture of the author).

To sum up, all the data of the minimum and maximum temperatures collected from the 'Bulletin Météorologique' are reported in Table 2 after being transcribed from the different issues of the *Journal de Bordighera* held at the Museum Bicknell. Despite their shortcomings: gaps, variations in instrument, location, and being collected by amateur meteorologists, they provide the only data available about Bordighera's climate for the period. This justifies verification of their reliability and their further study.

THE RELIABILITY OF THE METEOROLOGICAL DATA IN THE *JOURNAL DE BORDIGHERA*

The meteorological data sets contain interesting information that allow, on the one hand, the recognition of climatic variations in a given region and, on the other hand, the improvement of the understanding on the functioning of the climate and of the weather forecasts. To this end, however, it is important that the collected data have a high level of metro-meteorological,[52] and historical reliability.

Regarding the former, it is necessary that 'a homogenous data set should be available, [since] not only the quantity, but also the quality of the original data is able to influence analyses to a remarkable

[51] F.F. Hamilton, *Bordighera and the Western Riviera*, 240 and 245.

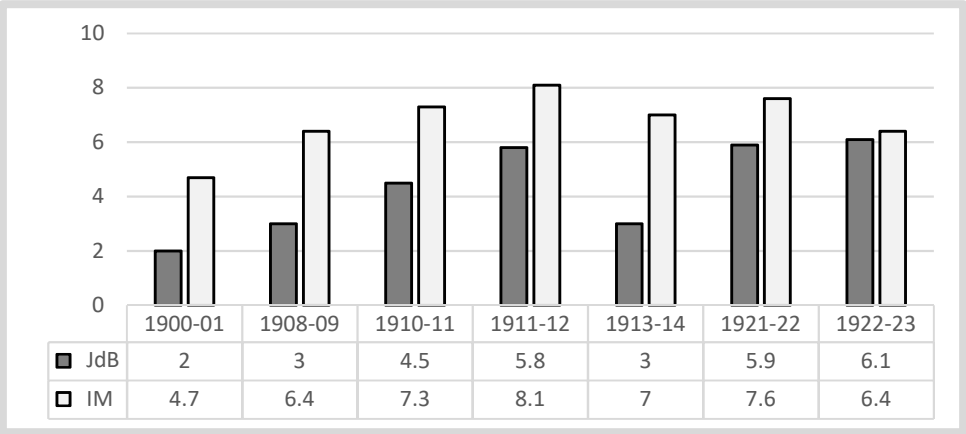
[52] A. Merlone *et alii*, The MeteoMet project – metrology for meteorology: challenges and results, *Meteorological Applications*, 22 (2015) 820-829; G. Roggero, A. Merlone, F. Bertiglia, G. Lopardo, D. Cat Berro, L. Mercalli and A. Gilabert, Riferibilità metrologica per le misure dell'osservatorio meteorologico di Moncalieri, *Nimbus*, 74 (2015), 55-61.

extent'.[53] Unfortunately, as has been already observed, little is known about the way in which the meteorological data were obtained in Bordighera. The position of the station(s),[54] the typology of the instrument(s),[55] the surrounding anthropic factors[56] are, at the current stage of the research, nearly unknown. Moreover, the anonymity of the collectors does not give any supplementary information about their possible professional training, or about whether the data they collected were measured according to the international norms of that time or not.[57] The judgement about the metrological and meteorological reliability of the series of Bordighera itself, and in comparison with other data set, must be therefore suspended.

Besides, it is necessary that 'the data be subjected to an accurate quality control before the values are regarded as satisfactory for current use and permanent storage'.[58] Even if it is hard to prove the historical reliability of not-necessarily homogeneous data, I will proceed here below in verifying it in order to check if they can be valuable for more specific comparative purposes, such as establishing changes and trends over time and space.

To verify the dependability of the meteorological data reported in the *Journal de Bordighera*, comparable and reliable data were needed and the choice was taken to use the official data from the Osservatorio Meteorologico e Sismico di Imperia, the nearest possible location – about 40 km / 25 miles away – available for the entire period. Although the two towns have a similar climate, their data cannot absolutely correspond, but their comparison can be meaningful if a general rule can be found.

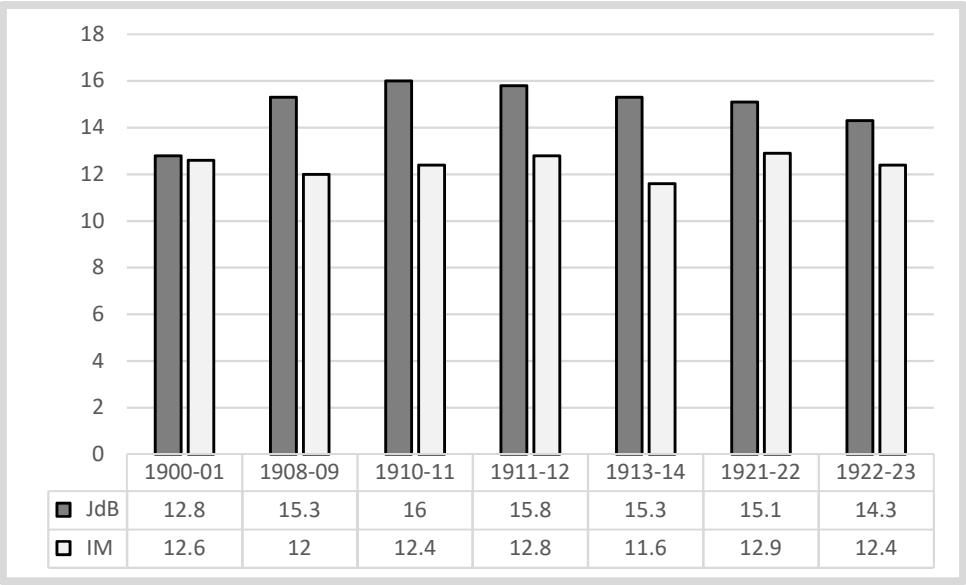
Thanks to the kindness of employees, who gave me access to them, data from the Osservatorio have allowed two types of comparison. The first is between the average of the temperatures taken during the meteorological winter (that is the period between December 1st and February 28th/29th) taken in Bordighera and in Imperia. Among the different years reported by the *Journal de Bordighera* (see Table 2), seven present uninterrupted data for the entire meteorological winter (1900–1901, 1908–1909, 1910–1911, 1911–1912, 1913–1914, 1921–1922, and 1922–1923), so those were chosen to compare with data provided by the Observatory of Imperia. The results are showed as histograms in Figures 5, 6, and 7.



	1900-01	1908-09	1910-11	1911-12	1913-14	1921-22	1922-23
JdB	2	3	4.5	5.8	3	5.9	6.1
IM	4.7	6.4	7.3	8.1	7	7.6	6.4

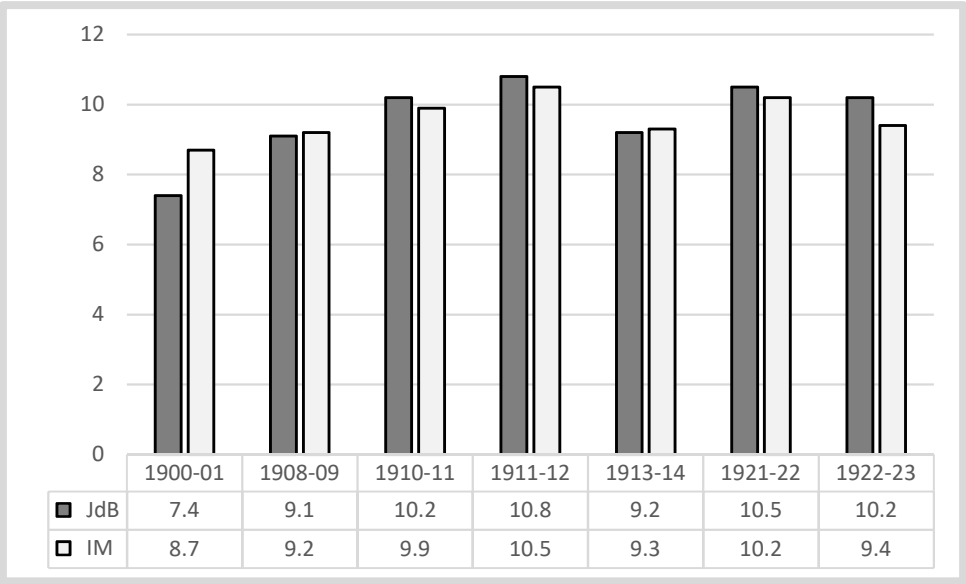
Fig. 5. The averages of the winter minimum temperatures (Tmin °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

[53] F. Acquaotta and S. Fratianni, The importance of the quality and reliability of the historical time series for the study of climate change, *Revista Brasileira de Climatologia*, 10 (2014) 22.
[54] Y. Lai and D.A. Dzombak, Use of Historical Data to Assess Regional Climate Change, *Journal of Climate*, 32 (2019) 4299-4320.
[55] F. Acquaotta, S. Fratianni, E. Aguilar and G. Fortin, Influence of instrumentation on long temperature time series, *Climatic Change*, 156 (2019) 385-404.
[56] D. Guenzi, F. Acquaotta, D. Garzena, A. Baronetti and S. Fratianni, An algorithm for daily temperature comparison: Co.Temp. – comparing series of temperature, *Earth Science Informatics*, 1 (2019) 205-210.
[57] L.C. Slivinski *et alii*, Towards a more reliable historical reanalysis: Improvements for version 3 of the Twentieth Century Reanalysis system, *Quarterly Journal of the Royal Meteorological Society*, 724 (2019) 2876-2908.
[58] F. Acquaotta and S. Fratianni, The importance of the quality and reliability, 25.



	1900-01	1908-09	1910-11	1911-12	1913-14	1921-22	1922-23
JdB	12.8	15.3	16	15.8	15.3	15.1	14.3
IM	12.6	12	12.4	12.8	11.6	12.9	12.4

Fig. 6. The averages of the winter maximum temperatures (Tmax °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.



	1900-01	1908-09	1910-11	1911-12	1913-14	1921-22	1922-23
JdB	7.4	9.1	10.2	10.8	9.2	10.5	10.2
IM	8.7	9.2	9.9	10.5	9.3	10.2	9.4

Fig. 7. The averages of the winter mean temperatures (Tmed2 °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

As can be seen, the winter mean minimum temperatures (Tmin) taken in Bordighera are on average 2.5 °C lower than those taken in Imperia, with a minimum value of 0.3 °C in the winter of 1922–1923, and a maximum of 4 °C in 1913–1914. If these extreme values are not taken into consideration, the average is 2.6 °C. Regarding the winter mean maximum temperatures (Tmax), the temperatures recorded in Bordighera are on average 2.6 °C higher than those taken in Imperia, with a minimum of difference of 0.2 °C in 1900–1901, and a maximum of 3.7 °C in 1913–1914. If these extreme values are not taken into consideration, the average difference is 2.8 °C. According to these data, the winter mean temperatures (Tmed2) of the two locations differ by only 0.5 °C, with differences ranging between 0.1°C in 1908–1909 and 1913–1914 and 1.3 °C in 1900–1901.

As a general rule, therefore, it is possible to confirm that during the meteorological winter, the minimum temperatures taken in Bordighera by the amateurs were always cooler and the maximum

warmer than the ones taken in Imperia by the official meteorologists, and this by a couple of degrees. Not only does this occur for all seven winters analysed, but it is also true today. Even if it is not possible to verify this directly with the data of Bordighera itself – a weather station is still missing – it is possible to make the comparison with the data of Ventimiglia, only 6 km west of Bordighera, and with a very similar climate. In Ventimiglia the average of the temperatures taken by ARPAL-Agenzia Regionale per la Protezione dell'Ambiente Ligure (the Regional Agency for the Protection of the Ligurian Environment) in the last three winters (2017–2018, 2018–2019, and 2019–2020) are confirmed to be, similarly, the minimum lower by 1°C and the maximum higher by 2°C than the ones of Imperia. The fact that those values do not exactly correspond to the ones calculated from the data of the *Journal de Bordighera* (which were both different by about 2.5 degrees) can be due either to a real difference of climates between the two locations, or to the non-professional way in collecting the data at the beginning of the twentieth century. However, the trend is definitely comparable, confirming the consistency of the data.

The second check made in order to evaluate the reliability of the temperatures taken in Bordighera has been made through the comparison of the daily temperatures recorded in the *Journal de Bordighera* during the meteorological winter, and the corresponding readings taken at the Observatory of Imperia for the same period. In that case, from Table 2 only three years have been extracted, again among the more complete, but distanced by exactly ten years (1901–1902, 1911–1912, and 1921–1922). The results are shown as graphs in Figures 8-13.

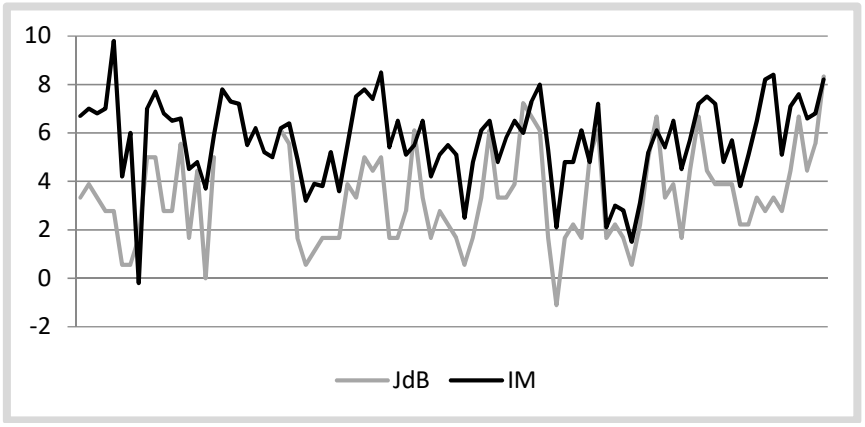


Fig. 8. Winter 1901–1902: the minimum temperatures (Tmin °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

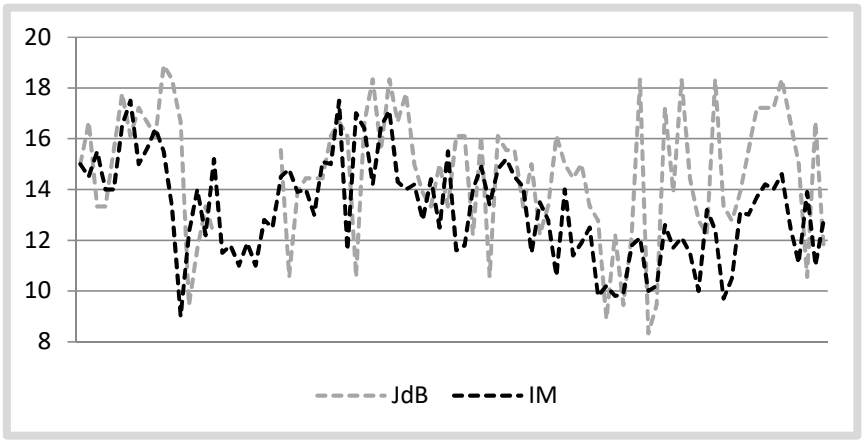


Fig. 9. Winter 1901–1902: the maximum temperatures (Tmax °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

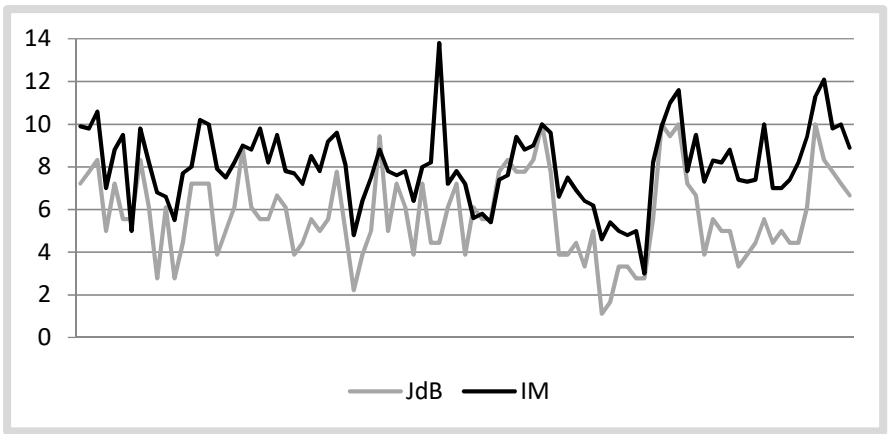


Fig. 10. Winter 1911–1912: the minimum temperatures (Tmin °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

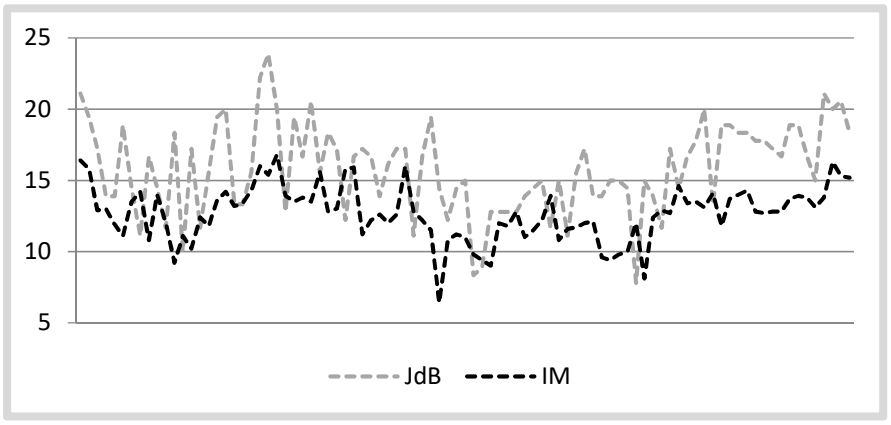


Fig. 11: Winter 1911–1912: the maximum temperatures (Tmax °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

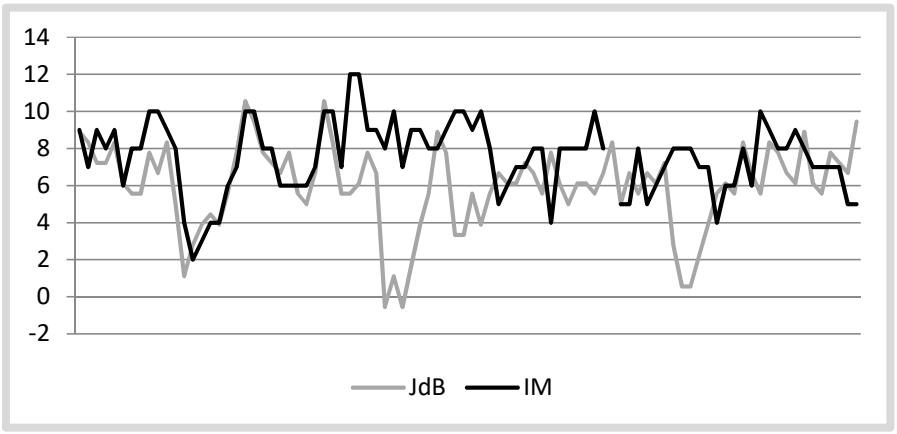


Fig. 12: Winter 1921–1922: the minimum temperatures (Tmin °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

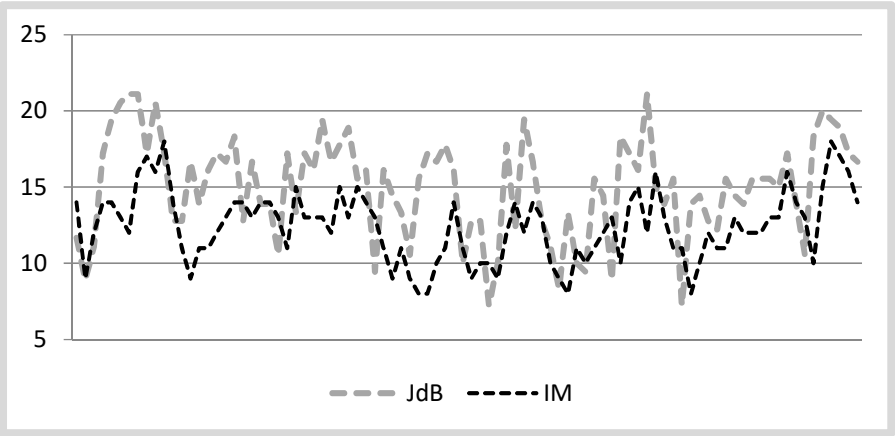


Fig. 13: Winter 1921–1922: the maximum temperatures (Tmax °C), taken from the *Journal de Bordighera* and the *Osservatorio di Imperia*.

Even without going into the details, the same trends observed for the average winter temperatures can be generally seen for the daily ones. In all six graphs, it is evident how the trends of the curves show, with few exceptions, corresponding fluctuations for the two series, and the daily minimum temperatures recorded in Bordighera are consistently lower, and the maximum higher, by more or less a couple of degrees than the ones taken in Imperia. Therefore, it is possible to conclude that the average winter temperatures and the daily readings reported in the *Journal de Bordighera* are reliable, naturally *cum grano salis.* When the collection in Biblioteca Nazionale Centrale is accessible again, it will be possible to re-check whether the entire reconstructed series of meteorological data provided by the *Journal de Bordighera* is reliable. Even with all the flaws already mentioned, the data taken by the tourist meteorologists in Bordighera could reasonably be used by climatologists in order to inform their studies of the weather on the Riviera.

SOME QUALITATIVE REMARKS ABOUT THE WEATHER FROM THE *JOURNAL DE BORDIGHERA*

The *Journal de Bordighera* is not only a rich source of quantitative data about the temperatures of the Riviera, but it also contains some interesting qualitative comments about the meteorological conditions. Interestingly, the majority of them were published after 1924, the year when the daily data were no longer reported in the journal. Around that date there appears to be a considerable, clear and sudden move of interest away from the objective numerical data towards subjective evaluative remarks about the weather. In the following paragraphs, some of these comments will be reported. They fall mainly into two principal groups: the exceptional winter events and the emerging interest in the summer climate, highlighting their tourist positioned perspective.

Among the exceptional atmospheric events recorded on the pages of the *Journal de Bordighera*, is certainly the clearness of the air permitting the rare view of Corsica. The island is in fact about 200 km / 124 mi S.E. from Bordighera, and according to the law of optics, the terrestrial curvature would prevent this. However, when the atmosphere is particularly clear, clean, and dry, a phenomenon of refraction happens, so that, mainly during the late autumn or early winter mornings and evenings, Corsica is sometimes visible from the Riviera.[59] Here is how the *Journal de Bordighera* recorded this event at the end of November 1929:

'On Monday night last there was a drop of 20 Fahr. [11 °C] in the temperature from the maximum shade temperature of the day – from 62 [16.5 °C] to 42 [5.5 °C]. The visibility on Tuesday morning (and probably on Wednesday but no one has yet reported it) was so good that the summits of the mountains in Corsica could be seen from here' (*Journal de Bordighera*, November 21st, 1929, p. 1).

[59] N. Podestà, *Clima e variazioni climatiche nella Riviera dei Fiori*.

The cold north wind, which causes the drop of the temperature, brought a special clearness to the air, but that time it must have been very exceptional, because on the following week a tourist witness of this phenomenon was added:

'We mentioned last week that Corsica was probably visible during the early part of the week. We know here that this was so and that on Wednesday 20th the snow–capped summits of the Appenines were easily seen by people climbing M. Bignone [1,299 m / 4,262 ft]' (*Journal de Bordighera*, November 28th, 1929, p. 1).

A second very rare climatic event on the Riviera is the snow. Only two snowfalls are recorded, in the issues of the *Journal de Bordighera,* in 1925 and 1927. The former prompted a short comment, notable because it was the first since the Great War, and it definitely reflects a tourist's point of view:

'Although we are apt to grumble and say this is not what we left our English homes for, it must be admitted that the cloudless sky and brilliant sunshine are a compensation we should probably not have at home' (*Journal de Bordighera*, December 3rd, 1925, p. 4).

The second snowfall was truly exceptional, probably the most extreme since the one recorded thirty years earlier (January 28th, 1895) when the snow depth reached 8 cm / 3 in and the air temperature fell to -3 °C / 26 °F. The anonymous Anglophone author provides a more original comment, juxtaposing the joy expressed by the tourists for the beauty of the coastal landscape under the snow that had come from the sea, with the worry felt by the floriculturists:

'A snow-laden country is always beautiful, but how strange and lovely, when sparkling in snow and sunshine, is that country where the trees do not shed their leaves and midwinter gardens are full of flowers! […]. The loss to the floriculturists was immense, and cannot be reckoned until it is known whether the damage reached the roots of the plants. […] The growers spent all Sunday rattling sticks through the plants to shake off the snow […] and on Sunday night open–air–fires were lighted wherever possible in hopes of breaking the frost' (*Journal de Bordighera*, December 22nd, 1927, p. 4).

A third mention of the snow does not directly concern the Riviera but the hinterland. Unlike the snowfall of December 1927, in October 1933 a meteorological disturbance affected the region, whitening only the Alps. The fact was not *per se* particularly outstanding from a climatic point of view, but it assumed a tourist interest because of the new trend of snow sports:

'The first heavy snow on the mountains fell this year on Oct. 21st, most unusually early, and ski–ers appeared immediately on the heights round the Col di Tenda. Few realize how easy it is to have winter–sports while staying on the Riviera and the Italian State Railways now give reductions, from 15 November to mid–April to ski–ers. We hope to give further particulars about ski–ing possibilities in a future number' (*Journal de Bordighera*, November 16th, 1933, p. 1).[60]

It must be recalled that until the late 1920s and 1930s, in Europe, the tourist maritime season was limited to the winter and the alpine season to the summer. For this reason at the end of April, when the tourists were leaving the Riviera, the *Journal de Bordighera* used to stop its publications, which would start again next autumn, at the beginning of the new season. Therefore, for a long time, the journal only reported temperatures and observations in the winter, the local tourist season, as tourists were not there to take summer readings.

Around 1930, however, the first issue of *Journal de Bordighera* in the autumn included the extreme values of the previous summer. It is possible to learn from the issues of December 12th, 1929,

[60] In the interwar period, in fact, ski-ing began to be practiced in the Maritime Alps, and mainly in Limone Piemonte, a resort at an altitude of 1,009 m / 3,310 ft, just across the Col di Tenda. It was the opening in 1928 of a railway connecting Ventimiglia to Cuneo, passing under the Col di Tenda in an enterprising tunnel of 8.1 km / 5 mi 58 yd, that made possible a fortunate connection between the alpine resort and the Riviera, already well known and highly frequented by the tourists during the winter season (G. Schiavazzi, *Ferrovia Cuneo–Ventimiglia. Una storia di prodezze tecniche, battaglie politiche, fatti di guerra, tenacia*, Ventimiglia, 1979).

November 6th, 1930, and November 5th, 1931, that during those summers the maximum temperatures were respectively of 102 °F / 39 °C, 88.4 °F / 31 °C, and 88.2 °F / 31 °C, and the minimum of 60 °F / 15.5 °C, 54 °F / 12 °C, and 52.5 °F / 11 °C. These data 'were obtained from self–recording instruments, but it must be remembered that these records were not touched on many, or possibly on more than one or two days' (*Journal de Bordighera*, November 5th, 1931, p. 4). These 'self-recording instruments' are likely to have been a maxi-min thermometer left in Bordighera during the summertime and read by the tourist meteorologists on their return to the Riviera.

During these years, maritime tourism began to move from being a winter practice to a summer one. This change is well illustrated by F.S. Fitzgerald in the famous first page of his novel *Tender Is the Night* (1934): '*a decade ago* [the Riviera] was almost deserted after its English clientele went north in April'[61] (emphasis added). Accordingly, in this seasonal pattern of tourism, travellers began to pay attention to the summer temperatures, which must account for the sudden appearance in 1929, in the *Journal de Bordighera* of the minimum and the maximum temperatures for the entire summer. However, in 1933 a new interesting detail appears:

'Those who were in London this summer would have had a pleasanter temperature in Bordighera, as the maximum, not often reached, was 87° [30,5 °C] and the minimum 55° [12,5 °C]. The pleasant breeze which blows off the sea about midday during the summer keeps the place from ever feeling stuffy, as our bathing colony will testify' (*Journal de Bordighera*, December 7th, 1933, p. 1).

Apparently, the reference to a 'bathing colony' gives proof that in 1933, there was a not small number of British tourists in Bordighera during the summer. Meteorological records would no longer necessarily be reliant on 'self–recording instruments'. Nevertheless, the arrival of summer tourists did not cause the return to publishing the meteorological measurements either during the winter or the summer seasons, so that the series of the temperatures recorded in the *Journal de Bordighera* ended in January 1924.

CONCLUSIONS

In this paper, the reconstruction of a historic climatological series, even if incomplete, has, on the one hand, offered an unpublished amount of data which may prove useful for new research about the climate of Bordighera on the Italian Riviera. On the other hand, the rediscovery of these data has enlightened an original aspect of the social relationship between meteorologist and tourist activities, whereby the tourists are both collectors and beneficiaries of the climatic data, so that they always assume a peculiarly positioned perspective. In conclusion, from the quantitative and qualitative comments reported in the *Journal de Bordighera,* it is possible to add some thoughts about their political importance.

The relationship between meteorology and power has already been studied in relation to imperialism, insisting on the fact that 'the powerful globalism of disciplines like meteorology lies not simply in their truth–production but in their ability to master space'.[62] In other words, meteorology has been considered as a tool able to confirm the power on an imperial space. It is nevertheless well known that not only imperialism, but also tourism can be considered as an instrument of space mastering, obviously less direct than the former,[63] but not necessarily weaker.[64] The question is now, whether it is also possible to consider meteorology as a tool, able to strengthen the influence of a foreign power in a nation where a strong tourist community is settled, as it was the case in Bordighera.

This recalls the cultural 'environmental bubble' described in the second paragraph. English cultural life had in fact a significant impact, not on the physical territory, but by creating a positioned

[61] F.S. Fitzgerald, *Tender Is the Night*, New York, 1934.
[62] M. Mahony, For an empire of 'all types of climate': meteorology as an imperial science, *Journal of Historical Geography* 51 (2016) 26–39.
[63] J.-C. Gay, Colonialism and tourism in a French territory at the southern end of the world: the case of New Caledonia, *Journal of Tourism History*, 12 (2020) 48-70.
[64] C. Minca, Touring, *Rivista Geografica Italiana*, 115 (2008) 125–44.

way of considering different aspects of the resort and to see, think about, and act on it. Also the meteorological observations reported in the *Journal de Bordighera* by the foreign tourists can be considered a positioned, and therefore perhaps powerful, way to watch at Bordighera. It is sufficient to recall the foreign languages used in the periodical in general and in its meteorological column in particular; the temperature expressed in °F, unknown to the local community; the omission of the summer semester, not attended to by the tourists for decades; the locations of the thermometers in a part of the town more frequented by the guests than by the hosts; the tourist perspective with which usually the extreme climatic events are perceived: all details witnessing a foreign perspective from which to narrate the local climate. Two comments taken from the *Journal de Bordighera* are finally particularly meaningful in this regard, being definitely tourist–centred:

'The average maximum temperature early last week was 59.5 deg. Fahr. [15 °C] but on Saturday 72 degrees [22 °C] was registered. As this would be considered a very good August temperature in England, newly arrived visitors were complaining of the excessive heat' (*Journal de Bordighera*, December 1st 1927, p. 5).

'It is supposed to be *banale* to write on the weather, but, considering the amount it affects our doings, amusements, happiness and even our tempers, a season's record ignoring it would surely not be complete' (*Journal de Bordighera*, April 24th, 1930, p. 1).

The hope is that one day, access to the whole collection of the *Journal de Bordighera* will be authorised, allowing deeper research into this aspect.

TABLE 2

	1898-1899		1899-1900		1900-1901		1901-1902		1908-1909		1909-1910		1910-1911		1911-1912		1912-1913		1913-1914		1920-1921		1921-1922		1922-1923		1923-1924	
	°C		°C		°C		°F		°F		°F		°F		°F		°F		°F		°F		°F		°F		°F	
MONTH.DAY	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX
10.01							59	83																				
10.02							58	74																				
10.03							58	69																				
10.04							53	73																				
10.05							48	71																				
10.06							49	74																				
10.07							49	75																				
10.08							49	78																				
10.09							46	74																				
10.10							50	70																				
10.11							46	77																				
10.12							46	76																				
10.13							51	74																				
10.14							46	75																				
10.15							53	74																				
10.16							51	66																				

10.17							52	72																						
10.18							54	67																						
10.19							49	75																						
10.20							56	75																						
10.21							48	64																						
10.22							48	68																						
10.23							46	62																						
10.24							50	71																					62	71
10.25							46	74																					55	73
10.26							46	74																	61	76			60	73
10.27							46	70																	61	74			61	71
10.28							43	70																	58	78			61	69
10.29							50	74																	55	73			58	72
10.30							51	74	50	63															54	73			57	73
10.31							51	64	48	71															55	71			55	73
11.01					51	75	48	63	50	72											50	75		54	65	49	66	55	74
11.02					54	74	48	61	47	67			58	70							50	76		55	73	52	63	63	70
11.03					51	69	40	76	51	62	53	63	50	66							55	76		54	74	52	59	58	75
11.04					47	74	40	56	47	67	50	76	55	66							52	75		56	71	53	72	56	71
11.05					47	75	40	65	48	72	49	74	49	59							55	70		59	76	47	64	56	71
11.06	15	23,5			50	67	37	66	43	72	45	75	45	71			44	68	52	76		57	76	49	62	52	65
11.07	10,5	23,5			50	69	38	65	47	62	47	73	42	69			43	61	44	64		55	66	52	66	54	62
11.08	11,5	20,5			48	66	39	64	48	55	45	69	47	68	47	61	38	63	40	71		54	59	47	69	45	57
11.09	9,5	19,5			51	68	43	66	48	65	45	75	47	64	49	62	41	68	47	68		43	49	48	69	43	60
11.10	12,5	20			53	74	40	69	49	71	50	65	50	69	52	59	44	65	53	65		42	56	47	69	47	62
11.11	12	21			48	66	45	68	45	69	44	70	37	66	45	67	49	62	50	70		44	52	48	69	50	50
11.12	10	21,5	13	22	44	67	40	67	41	75	43	62	43	67	46	69	36	64	53	70		43	56	49	56	56	79
11.13	10,5	20	13,5	21,5	43	70	42	65	43	71	43	71	41	68	49	63	38	59	57	63		47	55	45	65	55	65
11.14	14,5	21	10	20,5	44	70	47	68	43	71	45	69	50	57	45	75	34	60	45	69		49	64	47	70	54	66
11.15	7	22	10	20,5	44	70	47	65	50	61	48	60	45	60	48	75	43	51	46	70		49	72	48	69	49	71
11.16	7	19,5	6	19	45	66	50	61	51	65	53	65	38	65	50	65	44	58	43	71		M	M	47	69	50	65
11.17	9	18	4	17	46	66	41	68	47	65	45	60	40	63	46	70	42	54	43	70		M	M	46	69	52	70
11.18	12	20	4	12	43	66	45	66	49	70	50	60	45	52	52	63	39	64	44	71		M	M	46	60	52	71
11.19	12	20	6	17	41	66	42	65	45	65	52	59	33	64	50	65	40	58	50	71		M	M	43	68	40	66
11.20	12	14,5	6	21	43	65	40	66	45	66	49	66	35	65	46	65	39	62	43	72		M	M	46	64	45	63
11.21	9	18	7	19	50	66	41	65	39	62	53	67	38	56	43	69	39	61	44	71		M	M	48	63	43	53
11.22	9	18	6	18	46	65	46	65	38	65	49	59	36	65	50	64	39	65	49	56		M	M	46	69	44	54
11.23	10	12,5	7	18	43	66	44	63	40	73	37	47	35	63	55	67	35	64	50	55		46	66	43	64	39	57

11.24	10	15,5	9	17	40	65	43	64	41	66	28	59	40	62	54	68	37	62	43	55	44	53	43	68	44	64	46	52
11.25	10	11	7	17	39	66	34	62	38	67	32	60	39	49	45	61	37	65	40	63	40	55	46	64	45	64	48	55
11.26	10,5	15	7,5	18	40	65	33	62	42	67	35	64	45	51	45	68	37	65	41	65	41	58	42	54	43	60	52	59
11.27	10,5	16	8,5	17	39	75	34	61	42	69	34	64	38	63	49	59	41	61	40	58	46	60	47	56	44	54	54	60
11.28	9	12,5	8	17,5	41	67	31	60	45	69	36	64	43	52	51	65	40	60	40	66	52	59	45	70	34	54	55	60
11.29	9	13	8	17	43	75	33	59	44	68	39	64	47	60	53	67	35	53	42	69	47	56	45	66	38	60	53	57
11.30	5	14,5	8	17,5	44	49	34	61	42	67	41	65	47	63	49	70	39	50	43	69	42	58	43	66	40	67	45	52
12.01	5,5	13	3	18	44	53	38	59	41	67	45	60	51	55	45	70	44	55	43	59	42	55	48	53	44	60	47	58
12.02	4,5	16	5,5	17	43	65	39	62	41	69	45	65	45	61	46	67	38	62	42	60	40	56	47	48	47	55	45	63
12.03	7	17,5	3	18	44	66	38	56	42	69	44	64	46	55	47	63	36	63	43	69	41	57	45	52	45	64	45	64
12.04	4,5	22	4,5	16	42	65	37	56	41	67	40	62	48	64	41	57	36	63	49	62	41	57	45	63	46	69	41	62
12.05	9	22	5	16	43	66	37	60	39	69	45	62	50	56	45	57	34	64	41	62	41	51	47	67	45	63	45	50
12.06	7	20	8	17,5	46	65	33	64	39	65	38	60	50	59	42	66	33	62	37	53	39	52	43	69	44	58	46	57
12.07	6	18,5	10	18	44	67	33	61	38	62	43	60	56	59	42	58	34	61	41	67	37	52	42	70	43	67	42	65
12.08	7	17	8	15	41	66	35	63	39	60	M	M	46	57	47	52	33	62	41	56			42	70	43	62	44	64
12.09	7	17	8,5	10,5	39	66	41	62	38	59	M	M	48	60	43	62	35	62	35	60			46	63	40	53	48	53
12.10	7	17	M	M	39	67	41	61	39	58	M	M	46	56	37	58	36	61	39	63			44	69	35	55	47	60
12.11	7	17,5	3,5	7,5	40	65	37	66	45	63	M	M	49	56	43	53	37	58	39	65			47	63	34	59	50	61
12.12	3	18	0,5	5	38	66	37	65	39	68	M	M	47	64	37	65	38	60	41	66			41	55	39	61	53	60
12.13	7	16	3,5	8	40	66	42	62	36	71	M	M	40	63	40	50	37	63	42	57			34	55	42	61	49	66
12.14	9	17	3,5	7	43	64	35	49	38	62	M	M	45	59	45	63	36	63	40	67			37	62	42	61	47	65
12.15	6,5	17	5	14	41	65	40	53	44	56	M	M	43	61	45	53	39	62	39	67			39	57	42	59	45	63
12.16	9,5	17	7,5	14	39	64	32	56	44	50	M	M	41	61	45	60	40	54	39	65			40	61	44	59	46	62
12.17	7,5	16,5	7	15	40	62	41	54	45	57	M	M	47	55	39	67	39	58	42	65			39	63	45	54	44	62
12.18	5,5	16,5	5	13	40	63	M	M	41	61	M	M	44	62	41	68	37	60	38	62			42	62	43	60	47	56
12.19	8	16	7,5	14	38	38	M	M	39	65	M	M	40	66	43	56	39	60	40	53			46	65	50	61	47	63
12.20	5,5	17	2,5	16	40	40	M	M	37	61	M	M	39	66	48	56	38	64	44	53			51	55	47	54	44	47
12.21	4	13	5	15	38	38	M	M	40	67	M	M	36	62	43	60	38	57	39	53			49	62	48	54	32	53
12.22	-2	10	1,5	15	39	39	M	M	42	67	M	M	37	64	42	72	48	58	35	63			46	57	47	55	31	51
12.23	-3	13	0,5	6	41	41	M	M	44	52	M	M	38	60	42	75	47	52	34	61			45	57	48	55	37	59
12.24	3	13	4	12	41	41	M	M	43	60	M	M	39	61	44	68	40	63	33	62			44	51	44	58	43	64
12.25	4,5	14	5	10	40	40	43	60	42	52	M	M	41	54	43	55	39	62	39	60			46	63	43	54	39	61
12.26	6	13	5	13	40	40	42	51	43	59	M	M	38	66	39	67	43	59	34	61			42	56	41	58	43	51
12.27	4	14	5,5	10	40	40	35	57	41	58	M	M	38	66	40	62	44	64	35	58			41	63	42	56	40	58
12.28	5	11	6,5	12	43	43	33	58	43	46	M	M	40	51	42	69	45	66	36	54			44	61	43	54	45	58
12.29	4	14	7	15	37	37	34	58	33	61	45	66	41	61	41	60	44	61	35	45			51	67	39	53	46	50
12.30	5,5	9	7,5	16	37	37	35	58	37	55	40	67	38	67	42	65	44	64	30	50			47	62	42	55	37	52
12.31	5	15	10	16	39	39	35	61	33	63	38	65	35	63	46	63	39	64	28	50			42	64	49	59	39	56

01.01	5	13,5	13,5	16	41	41	35	62	35	64	39	59	32	62	41	54	41	57	27	51			42	66	41	56	40	47
01.02	5	15,5	13	16	39	62	39	61	37	52	43	68	35	49	36	62	50	55	26	53			43	60	40	63		
01.03	2,5	14	11,5	15	41	63	38	51	37	62	37	66	30	52	39	63	44	58	29	56			46	61	41	58		
01.04	2,5	16	10	13	28	54	41	62	36	65	40	66	34	56	41	62	39	61	32	64			44	49	43	59		
01.05	1,5	17	8	13,5	24	49	40	65	36	62	40	70	32	51	49	57	40	62	34	63			31	61	43	56		
01.06	4	17	4	10	21	43	41	60	36	64	40	63	34	59	41	61	45	56	34	55			34	58	43	54		
01.07	7	16,5	8	13	25	41	35	65	37	68	41	64	35	59	45	63	43	58	31	58			31	56	39	62		
01.08	7,5	12,5	8	16,5	26	50	35	62	37	60	39	63	32	62	43	63	40	64	30	60			35	51	42	57		
01.09	7	16,5	5	16	41	45	37	64	36	46	38	61	35	64	39	52	36	58	33	58			39	60	46	55		
01.10	10	16	3,5	15	41	49	43	59	40	51	40	57	36	53	45	62	35	53	36	64			42	63	42	59		
01.11	8,5	11	0,5	13,5	37	49	38	57	35	62	45	58	35	59	40	67	44	57	41	57			48	62	40	50		
01.12	6,5	15	3	11	34	60	35	56	38	62	40	58	30	57	40	58	43	62	43	47			46	64	43	48		
01.13	5	16	3	11	35	62	37	59	42	58	37	65	37	49	43	54	37	62	35	48			38	61	41	55		
01.14	4	16,5	1,5	12,5	34	63	36	56	42	64	34	66	41	53	45	58	36	54	35	45			38	50	39	59		
01.15	5	17	5,5	10,5	34	60	35	61	42	60	36	67	46	63	39	59	41	53	29	46			42	55	40	60		
01.16	4,5	17	2	12	34	61	33	61	42	65	37	66	53	67	43	47	41	60	34	50			39	55	38	61		
01.17	7	19	9,5	13,5	31	60	35	54	40	62	43	63	37	68	42	48	39	60	38	55			42	45	43	58		
01.18	3	16	4	15	33	59	38	61	32	61	36	60	37	65	42	55	41	60	40	61			44	50	35	60		
01.19	5	16,5	4	13	35	61	43	51	35	64			38	67	46	55	35	61	37	57			43	64	32	58		
01.20	10	13,5	2	15	36	61	38	61	35	62			42	68	47	55	41	60	39	57			43	54	35	50		
01.21	9,5	14	M	M	37	59	38	60	36	69			45	72	46	55	37	62	34	58			45	67	40	52		
01.22	6	15	M	M	38	61	39	60	35	62			40	67	46	57	34	65	31	59			44	62	40	63		
01.23	7	16	M	M	39	64	45	56	34	52			40	63	47	58	37	64	33	62			42	55	38	57		
01.24	7	13,5	M	M	41	61	44	59	35	62			39	65	50	59	37	63	32	60			46	52	41	64		
01.25	6	15	M	M	40	62	43	54	33	56			39	62	46	53	42	62	33	62			43	47	38	62		
01.26	4	12	M	M	42	61	35	56	27	52			37	63	39	59	38	63	34	61			41	56	41	67		
01.27	3	14,5	M	M	37	61	30	61	27	58			39	65	39	52	43	65	34	57			43	50	42	67		
01.28	7	14	M	M	37	62	35	59	37	64			42	64	40	60	44	57	35	62			43	49	42	62		
01.29	M	M	6	10,5	40	67	36	58	35	63			40	66	38	63			33	64			42	60	47	62		
01.30	M	M	1,5	11,5	35	75	35	59	38	58			40	56	41	57			34	62			44	58	45	62		
01.31	M	M	3	12	31	59	41	56	33	59			36	52	34	57			34	63			47	48	42	65		
02.01	M	M	3	13	33	58	43	55	32	59			29	53	35	59			34	62			41	65	45	60		
02.02	M	M	8	14	37	44	35	48	36	60	37	59	30	59	38	59			33	66			44	63	47	57		
02.03	M	M	3	15	34	54	36	54	37	58	36	56	32	63	38	58			34	65			42	61	52	55		
02.04	M	M	7,5	14	37	55	35	49	39	61	35	61	41	64	37	46			33	64			44	70	52	54		
02.05	5	13	8	11,5	39	52	33	54	43	59	34	65	35	64	37	59			35	65			43	59	49	55		
02.06	4	12	7	15	31	56	36	65	40	70	36	70	36	65	42	57			35	65			45	57	45	64		
02.07	9	15	2	15	32	55	41	47	40	65	39	61	37	60	50	53			37	64			37	60	48	51		

02.08	7,5	16	4	14	34	53	44	49	39	59	43	66	38	62	49	63			38	66		33	45	47	50
02.09	7	16,5	6	9,5	31	55	38	63	37	59	38	61	34	54	50	58			45	59		33	57	44	52
02.10	6,5	17	5	14	31	55	39	57	35	44	38	69	40	47	45	62			46	62		36	58	43	55
02.11	6,5	16,5	6	11,5	35	59	35	65	36	47	33	66	40	52	44	64			43	64		39	55	46	50
02.12	6,5	15	5,5	11	34	57	40	58	37	57	42	61	43	53	39	68	41	66	45	54		42	54	43	55
02.13	5	18	7	17,5	30	52	44	55	40	53	36	61	43	50	42	56	42	63	41	63		43	60	43	60
02.14	7	16,5	7	17	24	51	40	54	36	60	33	62	42	63	41	66	37	64	39	69		42	58	42	58
02.15	7	17,5	6	17,5	26	47	39	65	31	60	37	58	38	58	41	66	37	54	40	66		47	57	47	54
02.16	8	18	4	14	21	41	39	56	34	62	36	58	38	62	38	65	31	56	41	66		44	60	47	54
02.17	6,5	16	3,5	18,5	26	53	39	55	31	59	36	67	45	56	39	65	38	44	39	66		42	60	48	55
02.18	5	19	5	17	30	55	36	57	34	57	38	61	38	66	40	64	29	55	42	55		47	60	43	60
02.19	4	19	4	17	29	54	36	60	42	55	44	63	45	65	42	64	37	47	41	59		46	59	45	57
02.20	3,5	18	10	15	31	51	38	63	32	58	48	53	42	62	40	63	31	57	39	65		44	63	42	59
02.21	6	17	6	17,5	25	49	37	63	34	61	42	65	38	68	41	62	41	55	40	55		43	57	42	58
02.22	6	17	4	15	24	51	38	63	35	62	45	63	40	67	40	66	38	66	48	55		48	51	42	59
02.23	6,5	17,5	2	18	29	54	37	65	35	57	45	45	44	62	40	66	36	67	40	62		43	65	46	55
02.24	6	17	5	19,5	30	52	40	62	35	46	44	44	43	73	43	62	34	63	36	55		42	68	44	50
02.25	6,5	8	5	18	32	57	44	59	31	43	41	41	42	69	50	59	31	61	41	58		46	67	40	56
02.26	2	12,5	6	17,5	35	62	40	51	30	49	41	41	40	71	47	70			44	56		45	66	40	57
02.27	0	13	6	18,5	34	61	42	62	33	55	40	40	42	62	46	68			44	64		44	63	49	57
02.28	1	12,5	5	17,5	38	61	47	53	38	56	34	34	38	66	45	69			45	68		49	62	42	59
02.29															44	65									
03.01	0	18	6,5	18	43	60	48	56	40	54	36	36	42	62	48	62			42	70		54	62	43	61
03.02	3	18	5	7	43	55	40	63	32	61	39	65	40	69	51	70			42	66		49	67	44	60
03.03	9	17	2	11	46	57	41	64	30	60	38	68	41	72	52	57			42	52		44	64	49	63
03.04	7,5	17	2	14	36	58	41	64	38	58	39	68	43	70	43	68			35	64		44	62	42	62
03.05	6,5	18,5	2	12	38	68	40	65	37	59	39	63	43	68	42	70	40	59	37	67		49	64	45	65
03.06	1,5	13,5	-2	15	38	66	40	64	31	60	37	65	40	69	50	70	40	66	41	68		52	63	45	65
03.07	-1	14	2	15	41	65	41	66	40	50	36	67	41	65	45	65	43	66	43	70		47	61	44	59
03.08	7	10	2,5	17	35	62	37	56	36	54	36	68	40	64	39	69	51	62	46	71		43	62	44	61
03.09	7	10	4	12	40	62	39	64	35	63	37	68	39	65	41	66	42	61	48	66		49	57	44	57
03.10	8,5	16,5	3,5	17	38	60	41	64	41	51	38	66	38	67	49	65	35	66	51	57		53	58	41	59
03.11	11,5	20,5	4,5	16	43	57	40	67	40	57	40	64	39	67	42	65	38	66	51	65		50	64	41	56
03.12	7	21	6	18	34	60	37	63	36	62	47	61	39	67	42	65	43	66	42	67		53	66	39	62
03.13	7	23,5	6,5	19,5	38	61	40	64	32	63	41	65	38	55	38	67	42	65	41	67		61	69	40	62
03.14	16	23	5	19,5	40	52	40	65	32	61	53	58	41	60	41	69	44	66	44	70		62	68	43	59
03.15	7,5	22,5	5	16	41	51	43	64	35	58	47	64	33	63	40	67	43	68	46	67		57	63	45	57
03.16	5	21,5	6,5	17	41	65	42	61	31	58	44	58	33	60	44	67	49	68	43	62		55	66	41	60

03.17	5	23,5	6	12	44	63	37	65	35	58	38	67	35	63	43	65	46	65	46	70		53	63	42	62
03.18	5	20,5	6	17	46	61	39	66	35	62	42	67	40	56	45	62	49	60	39	69		55	65	44	58
03.19	6	18	6	14	46	62	40	66	45	55	45	61	42	60	43	72	38	65	40	61		49	61	41	58
03.20	5,5	18	6,5	8	45	55	40	66	45	57	45	64	46	61	43	62	42	69	40	56		54	66	42	57
03.21	4	16	6,5	12	40	60	46	64	44	70	45	75	43	68	37	62	54	64	45	68		48	61	54	58
03.22	6	15	7	14	40	65	47	64	42	67	45	75	43	65	48	66	50	66	37	50		53	63	46	62
03.23	5,5	11	2,5	17	46	65	44	58	43	66	45	72	47	62	40	72	53	57	37	66		50	56	48	62
03.24	4	15	4	18	41	65	38	56	42	73	44	74	45	70	43	71	50	69	40	60		45	56	54	64
03.25	4	14	3	16	40	52	39	62	42	66	43	70	43	65	46	79	40	69	46	68		46	56	52	66
03.26	2	14	3,5	17	38	51	42	65	42	71	44	64	41	57	47	75	48	57	45	69		46	61	49	66
03.27	6	18	4	13	36	57	43	65	40	70	42	65	39	65	46	63	44	67	40	72		41	57	47	63
03.28	5,5	19	6	13	33	60	40	67	41	70	42	69	44	72	50	61	44	70	41	72		42	56	45	63
03.29	6	17	5,5	17	31	60	45	68	47	67	41	70	62	75	53	63	44	73	41	70		41	61	50	62
03.30	7,5	19	3,5	17,5	32	61	44	68	47	62	44	67	51	71	48	72	54	76	43	70		41	60	44	65
03.31	8	19	3,5	15	40	52	45	68	44	69	43	52	45	70	46	71	54	66	45	73		42	55	47	63
04.01	9	20	M	M	46	54	45	75	50	68	37	55	45	69	50	64	51	68	44	75		40	56	51	64
04.02	7	21,5	M	M	49	59	48	70	47	70	47	70	49	60	44	70			44	73		45	63	50	63
04.03	8	16	M	M	48	64	53	68	42	71	46	53	49	65	39	67			45	63		47	62	48	63
04.04	12	18,5	M	M	44	64	54	70	35	70	39	60	47	58	38	67			46	71		53	63	50	61
04.05	8	23	M	M	46	65	53	64	42	68	41	60	45	50	39	69			42	78		47	64	49	60
04.06	8	22	M	M	49	66	47	67	43	72	41	55	36	59	45	71			44	74		46	64	49	56
04.07	8	20	M	M	48	68	52	69	42	70	36	67	36	60	49	62			46	73		45	62	46	60
04.08	8	23	3,5	20	52	65	43	72	43	71	39	68	38	65	49	60			49	74		49	63	45	59
04.09	9	22	6	16	49	65	43	68	43	74	44	58	38	65	52	64	41	70	43	77		49	72	47	60
04.10	7	20,5	6	18	52	67	46	70	43	70	40	72	39	65	42	66	42	65	43	73		49	63	47	62
04.11	5	20	4	20,5	42	63	47	62	44	71	42	71	38	68	40	70	44	69	43	73		53	64	48	62
04.12	7	18,5	6	19,5	44	69	48	56	53	72	41	70	40	69	43	68	44	70	47	71		49	66	53	64
04.13	2,5	19,5	8	19,5	41	65	52	66	46	71	44	69	40	69	48	65	45	65	49	75		53	67	57	61
04.14	9,5	17,5	5,5	23	42	65	48	68	46	73	44	69	40	71	41	68	32	63	53	82		50	62	52	61
04.15	9,5	17	6	20	42	67	52	72	50	74	49	74	39	71	48	69	33	64	54	78		53	69	45	60
04.16	5	19	6	22	48	68	55	75	49	73	48	71	41	72	41	70	41	68	54	71		56	66	45	63
04.17	8	19	9	21	43	70	51	74	50	75	42	69	42	69	40	66	44	65	45	70		44	55	45	65
04.18	11	16	6	21	38	68	53	70	50	71	43	77	43	72	47	66	46	74	50	70		45	59	48	63
04.19	14	16	6,5	20,5	41	68	53	73	49	70	50	83	44	70	43	70	44	72	43	74		45	59	49	65
04.20	14	19,5	7,5	18	40	68	52	90	49	65			48	72	43	72	47	73	50	76		45	59	50	62
04.21	7	20	7	21,5	41	68	51	72	49	78			49	82	48	70	49	70	52	80		47	62	52	61
04.22	10	23			47	70	58	70	48	73			54	86	49	76	50	63				51	60	52	62
04.23					52	69			50	75			54	80	45	74	51	65				46	63	53	65

04. 24			56	73			55	82			54	68		
04. 25			49	69			51	78			52	61		
04. 26			54	75							55	65		
04. 27			51	77							54	76		
04. 28											50	73		
04. 29											50	77		
04. 30														
05. 01														

04. 24	47	63	50	65										
04. 25	49	64	49	63										
04. 26			50	65										
04. 27			55	57										
04. 28			48	66										
04. 29			53	65										
04. 30			49	68										
05. 01			51	70										

Tab. 2. The series of the minimum and maximum temperatures of Bordighera reported on the year's issues of the *Journal de Bordighera* shielded at the Museum Bicknell (*Istituto Internazionale di Studi Liguri*, Bordighera).
M: datum missing on the correspondent issue of the *Journal de Bordighera*;
Blank box: issue of the *Journal de Bordighera* missing at the Museum Bicknell.