Tourist mature destinations as complex spaces. Notes about the elaboration process of an atlas of Costa del Sol

Sergio J. Reyes Corredera
Universidad de Málaga, ETS Arquitectura, Málaga, España.
e-mail: sergioreyes@geografosdeandalucia.org

Nuria Nebot Gómez de Salazar
Universidad de Málaga, ETS Arquitectura, Málaga, España.
e-mail: nurianebot@uma.es

Mª Dolores Sierra Solís
Universidad de Málaga, ETS Arquitectura, Málaga, España.
e-mail: marilo.eam@uma.es

Abstract

This text wants to convey the experience of the process of developing a contemporary tourist atlas. The following will describe the regulations that affect the standardization of cartographic sources in nature, the process of liberation and free acquisition in Europe. On the other hand, describes the treatment processes and spatial information obtained indirectly, and the problems attached. All these spatial databases are treated or processed reinterpreted using GIS software. The study area analyzed is the region of the Costa del Sol, located in the province of Malaga in southern Spain.

Keywords: Architecture, GIS, Urbanism, Tourism.

1. Introduction

Atlas of the Costa del Sol was developed through the bet by the School of Architecture of Málaga in tourist materia and the excepctional support of Junta de Andalucía to put in work the research area of that young school. For the preparation of Atlas had a multidisciplinary team, which became, later, a research group: Al>tour (www.altour.uma.es). This group has their origin in the elaboration process of Liquid Tourism work, published on the before webside between parentheses and pending publication by the UPC (Polytechnic University of Catalonia) Editorial. This work marked the approach of the research, carried out by architects and planners, the tourist sector in Spain.

One of the pillars to form the project was to use the basic information sources that would provide the territorial basis of a developed tourist destination: the Costa del Sol. These sources can be differentiated into two types: Statistics (databases) and spatial (cartography). The Atlas, understood as a collection of graphic material was to show the magnitude that would measure the objects of study, which refer to the territorial dynamics, urban and, properly, tourism. Therefore, for the joint management of both statistical databases were used as cartography Geographic Information Systems, a tool that allowed linking the alphanumeric information (statistical magnitudes) with the spatial (cartography in the strict sense). Once this process combination, each element studied have associated information describing their basic characteristics and applying a number of algorithms to generate its adjacent relational information. The

purpose of this new information will generate spatial patterns that allow us to understand, the better measure the results of tourism development.

Although shown as an organized process, like any research generated a number of problems in the process of gathering information and statistical space. Such problems can be grouped into two thematic blocks:

1) The lack of standardization of corporate information. Despite the existence of a large amount of information liberalized, do not have a common code of registration of the same (geodesic reference systems, map projections ...)

2) The lack of disaggregation of information on an urban scale: There is little disaggregated spatial data infra-municipal level.

All these problems lead us to build a particular work pattern in which decisions were made based on the tasks of the collection process.

2. The incorporation of Geographic Information Systems to the search process and organization, management and exploitation of sources of statistical and spatial information

First, we show how, unlike programs Computer-Aided Design (CAD), Geographical Information Systems are shown as a resource manager open and dynamic spatial information. The dynamics presented is the continuous updating of spatial information, ie the associated databases. This Atlas aims to show not only the state of affairs in an instant of time, ie, the databases are open to continue to incorporate new statistical information with reference to spatial phenomena, therefore, can be updated whenever deemed appropriate.

However, the information sources discussed have been a number of problems that will lead to a slowdown in work. This requires understanding the regulatory framework associated with spatial information in Europe and Spain and integration at the same spatial information of cartographic nature.

At European level, spatial information is regulated by Directive 2007/2/EC of the European Parliament March 14, 2007, published in the Official Journal of the European Union (OJEU) on April 25, 2007. This directive determines whether to adapt the laws of member states in the spatial data to a common frame to build a Spatial Data Infrastructure in Europe. This European initiative is also known as INSPIRE (Infrastructure for Spatial Information in Europe).

Following the adoption of this Directive, the Parliament passed Law 14/2010 Spain, 5 July, on infrastructure and geographic information services in Spain. This new law provides for the incorporation into the common framework for all Spatial Data Infrastructure of Spain at all administrative levels, which all digital cartographic material would have to meet standards of reference.

However, the application of the rule is ineffective and requires a slow process of incorporation. This has meant a series of problems when working with information from different organisms, since few if they are incorporated into the standard and others are in it or not contemplate at the moment. See the example of the Virtual Office of Cadastre of the Ministry of Economy and Finance of Spain, is peculiar because the liberalization of public information has been recent, yet the information is referenced to the geodesic reference system European Datum 1950, when the rule states due in the new European system ETRS89 (European Terrestrial Reference System 1989). This means, the passage of a reference system used by the U.S. Army after the Second World War, now a modernized by the addition of satellite navigation systems

GPS, GLONASS and Galileo (Royal Decree 1071/2007 of 27 July, regulating the official geodetic reference system in Spain).

2.1. Spatial information sources used.

First, for the preparation of the Atlas project cartography of the Costa del Sol have been used in direct spatial information sources, from public agencies only, and indirect, made from photo-interpretation (conventional photographic images), orto-photo interpretation (interpretation of aerial images) and use of geographic information systems consulting as are those developed by Google (Google Earth, Google Maps, StreetView ...) or Microsoft (Bing Maps).

The direct sources of information are a fundamental basis both for the incorporation of statistical information processes developed to applied spatial analysis (calculation of densities of spatial phenomena, three-dimensional simulations, the incorporation of graphics linked to databases of spatial elements ...).

These sources come mainly from organizations associated with land management and socio-environmental matters at various scales: national and regional levels. At the state level include the fundamental role played by the cadastral map databases, these databases are used every information related to tax management of the plots (used in the identification of the resorts accommodation: hotels, apartments, campsites, etc.). On the other hand, developed a series of three-dimensional surveys of the municipalities, since each element mapped by this organism possessed the value of the heights of buildings. Regionally, it is worth mentioning that large they departed thematic bases, bases that were completed with information about the population in some cases or on the level land use planning. The two main agencies that provide background information were: the Cartographic Institute of Andalusia with Spatial Data Models developed for public dissemination and the Department of Environment of the Junta of Andalusia, which, provided a number of bases on the uses of territorial ground level that facilitated the interpretation of the evolution of tourism at local level.

The main indirect sources of spatial information are associated with processes of visual interpretation and direct spatial association sources, ie obtain information through photographs and orthophotos and assignment to the spatial databases offered by the bodies mentioned in the direct sources (figure. 1).

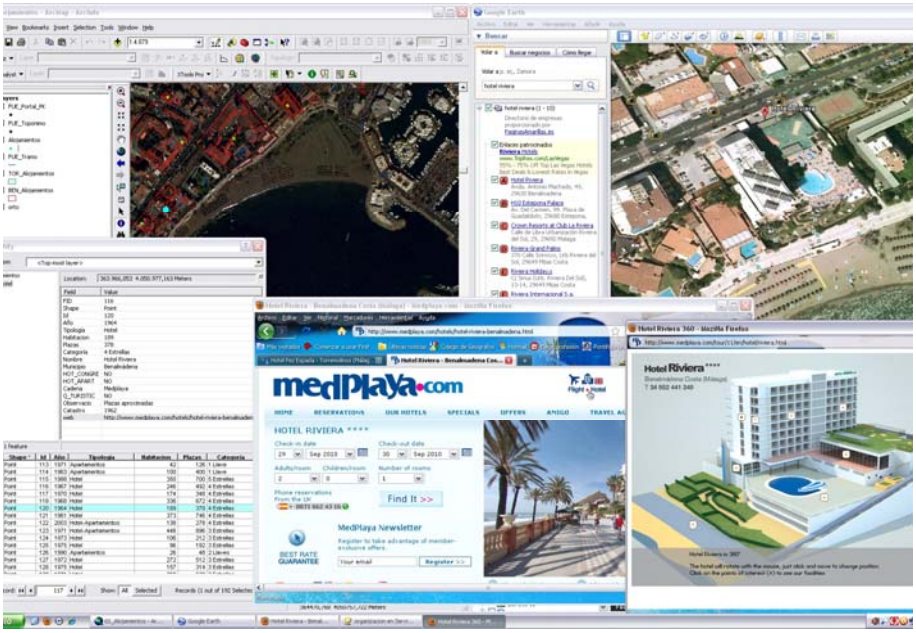

Figure 1. Capture screen that shows the process of association of the indirect information obtained from visual interpretation and aggregation to the cadastral database. Authors.

As shown in Figure 1, the whole process is different viewers navigate the space up to pinpoint exactly the coordinates of the object you are looking for and therefore identify it in our spatial database for deployment with the characteristics intrinsic to the object of study. In this screenshot, we see what the process for the case of tourist accommodation.

The main agencies and entities visual information providers were the National Geographic Information Center of Spain (CNIG) through the National Plan orthoimages Air Orthophotography (PNOA), Cartographic Institute of Andalusia and the Department of Environment on orthophotos and satellite images at various times in the history of the territory of the Costa del Sol and Málaga Diptuación through the use of Web Map Service IDEMAP (Spatial Data Infrastructure Malaga Province). For example, thanks to these visual sources have facilitated the generation of scanning and updating all the pools that did not include cadastral mapping and automatic calculation of the surface, therefore have generated spatial analysis based on the same (Figure 2).

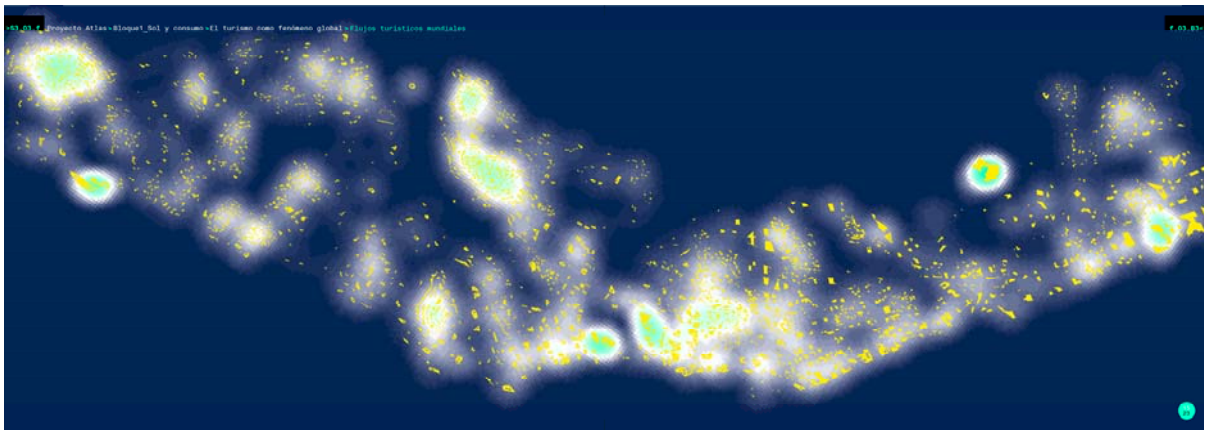

Figure 2. Sheet that shows the concentration of swimming pools in their area based on size in the municipalities of Torremolinos and Benalmádena (Málaga, Spain). Atlas of the Costa del Sol

2.2. Statistical information sources used

As noted above, statistical sources are added to the graphic elements for further analysis, ie the mapping feature which shows their spatial distribution.

The main organizations that have been stocked for information on Atlas were the WTO (World Tourism Organization) which maps were drawn on the great figures of world tourism (number of tourists, expenditure and revenue generated, temporal evolution the number of tourists by country, etc..) (see Figure 3). Another great resource was the National Statistics Institute (INE) from which information was obtained from social (nationality of visitors, hotel accommodation by town, nationality of residents by census tracts (see Figure 4) ... and housing (visa residential, housing census ...) (see Figure 5).

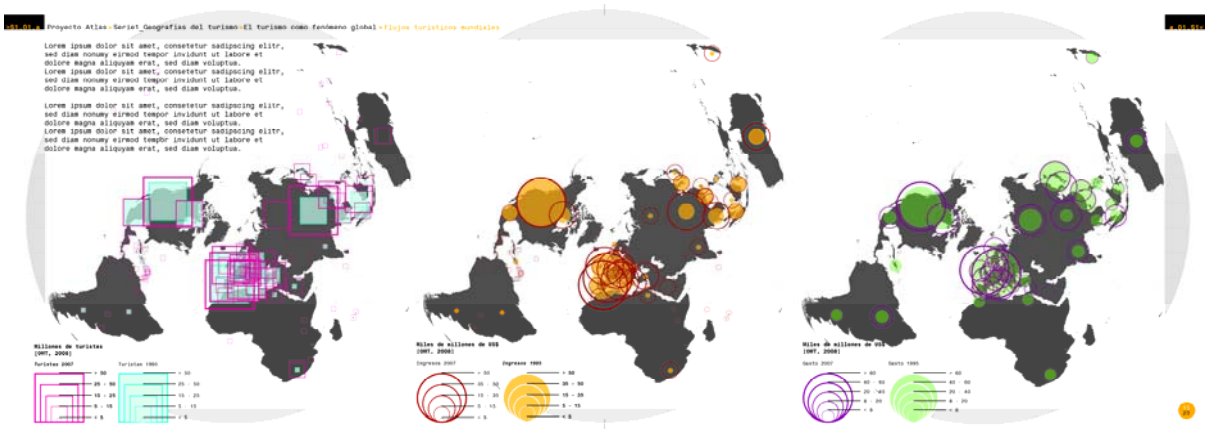

Figure 3. Sheet large magnitudes of tourism worldwide. Atlas of the Costa del Sol

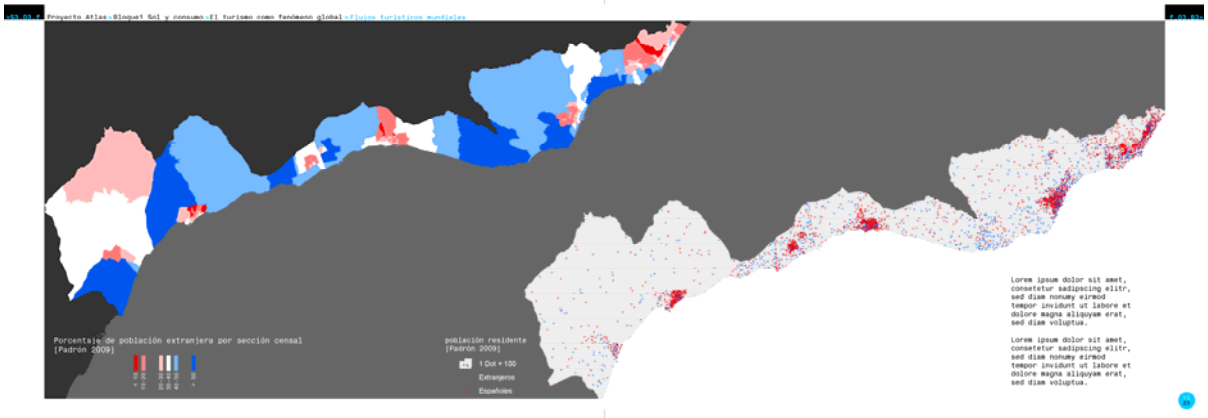

Figure 4. Sheet on the proportion of foreign residents on the number of nationals in the Costa del Sol. Atlas of the Costa del Sol

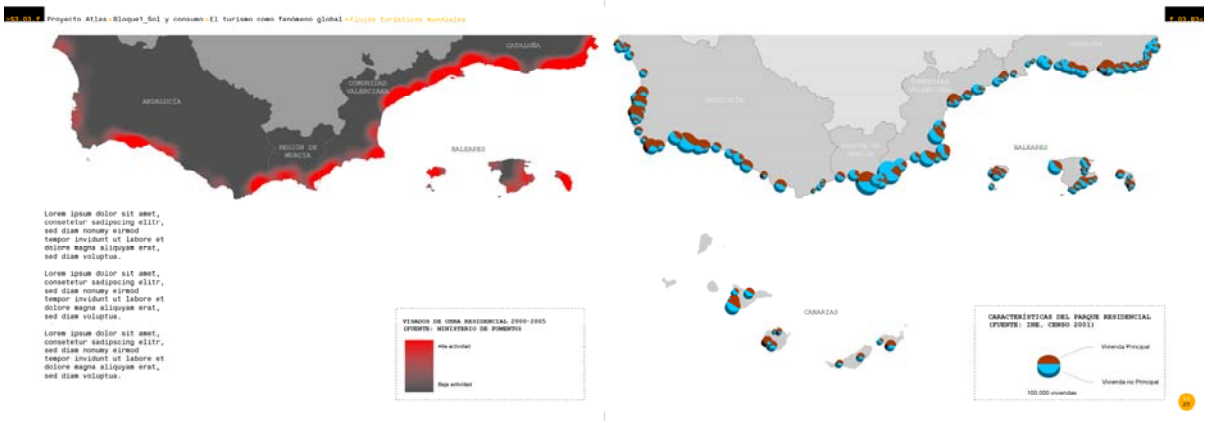

Figure 5. Sheet on work visas residential and park residential housing in the warm shores of Spain. Atlas of the Costa del Sol

As noted above, these statistics provide information that can be continuously updated in the database associated with elements that represent the complexity of the tourist areas as they become mature emitting periodically.

3. Results obtained and conclusions.

After developing the basic information, we have generated discussion of the complexity of a consolidated economic territory tourism. As results were able to detect and characterize: the evolution of urban land uses since 1956, the alteration of coastal areas (silting of the coast), patterns of occupation of the beach area and saturation of tourists staying empty, the temporal evolution of hotel supply, the space density of the number of places for accommodation and habitat characterization of climate residents (Figures 6-13).

These results invite us to think and develop the opening of new ways of interpreting non-physical mapping based on the territorial bases obtained (studies of mobility and interaction between communities of residents from areas frequented by detecting activities of daily living, social networks , etc.). On the other hand, highlights the need to apply this model to areas with similar characteristics to generate new comparative analysis, see the operation is similar mature areas (warm Mediterranean coast, tourism in tropical, island territories analysis...). Finally, the ultimate goal of this research is to provide a new way of analyzing the tourist territory, that is, to apply these tools to help decision-making processes and urban land management in areas bound by this activity. This is why the group Al> tour aims to be part of a network in which knowledge is exchanged and it tends to continue working on this line.

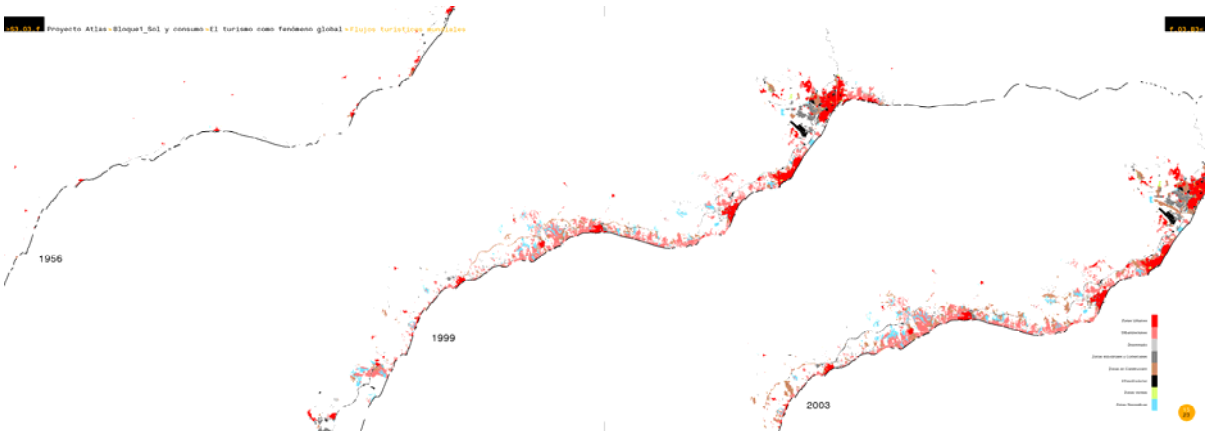

Figure 6. Changes in land use from 1956 to 2003 (from left to right). Atlas of the Costa del Sol

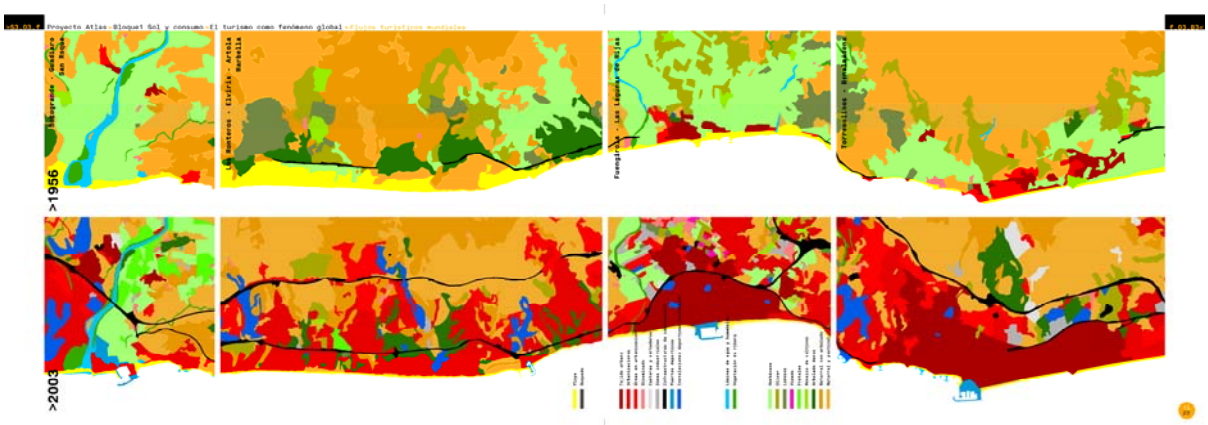

Figure 7. Massive silting of the coast in 2003 (below), traditional land use in 1956 (above). Atlas of the Costa del Sol

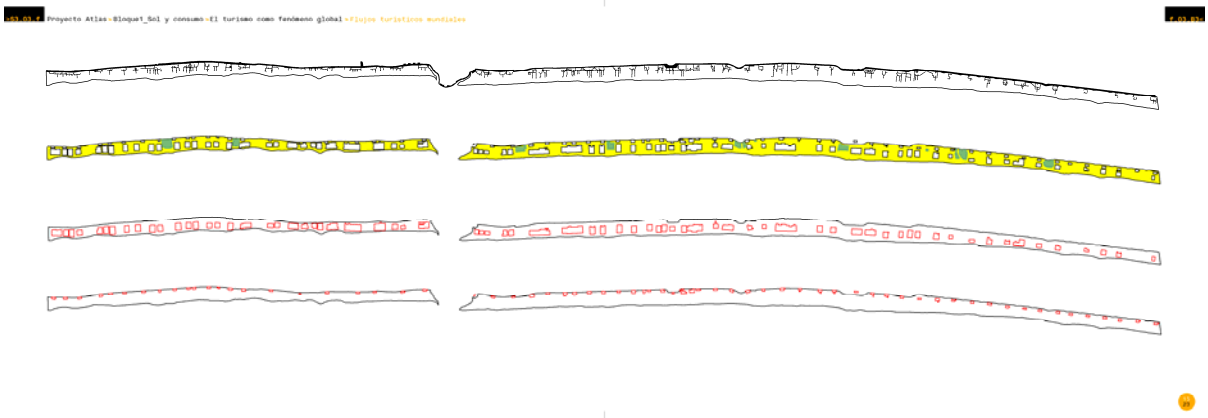

Figure 8. Patterns of use of the beach. Atlas of the Costa del Sol

Figure 9. Range of tourists from their place of accommodation by type: hotel, apartments, camping, lodge and cottages. Atlas of the Costa del Sol

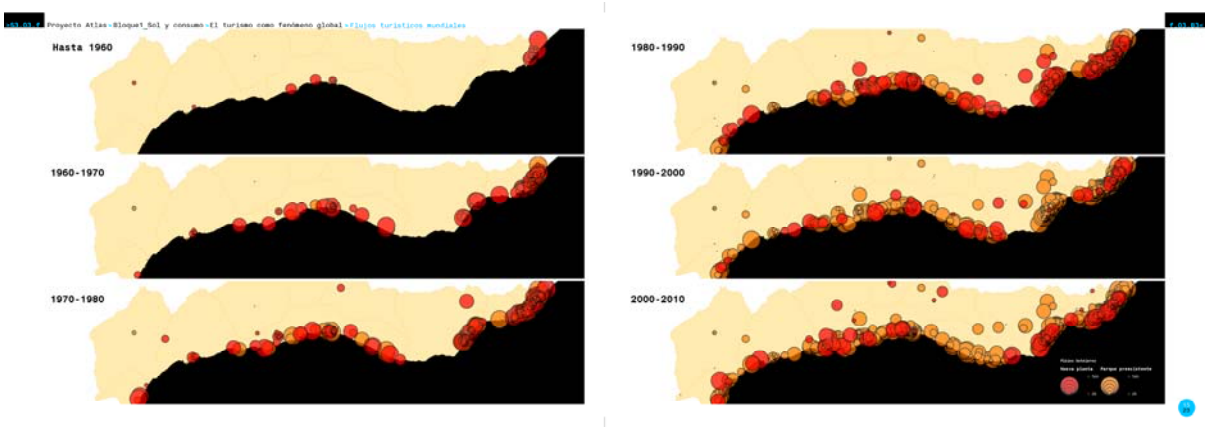

Figure 10. Evolution of the offer of accommodation in the Costa del Sol from 1960 to today. Atlas of the Costa del Sol

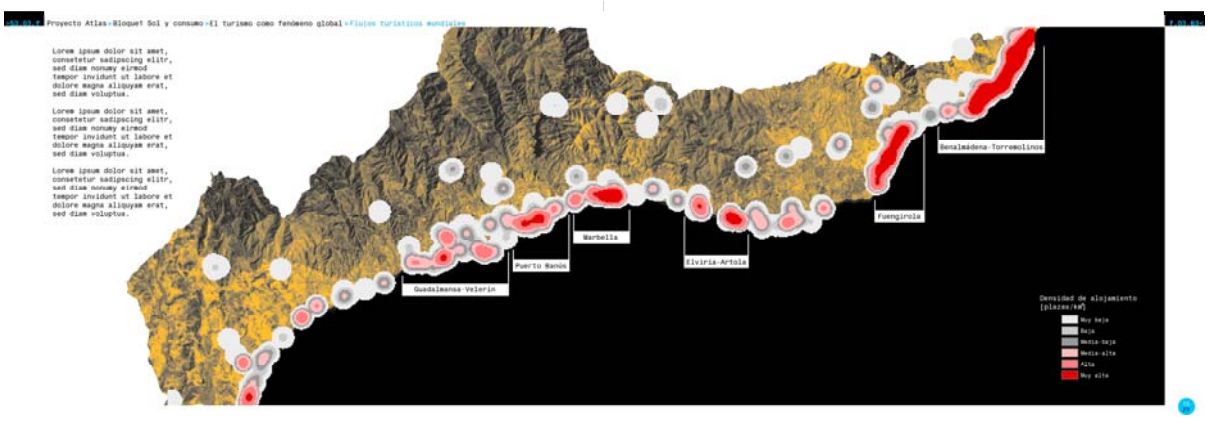

Figure 11. Density of hotel rooms per square kilometer. Atlas of the Costa del Sol

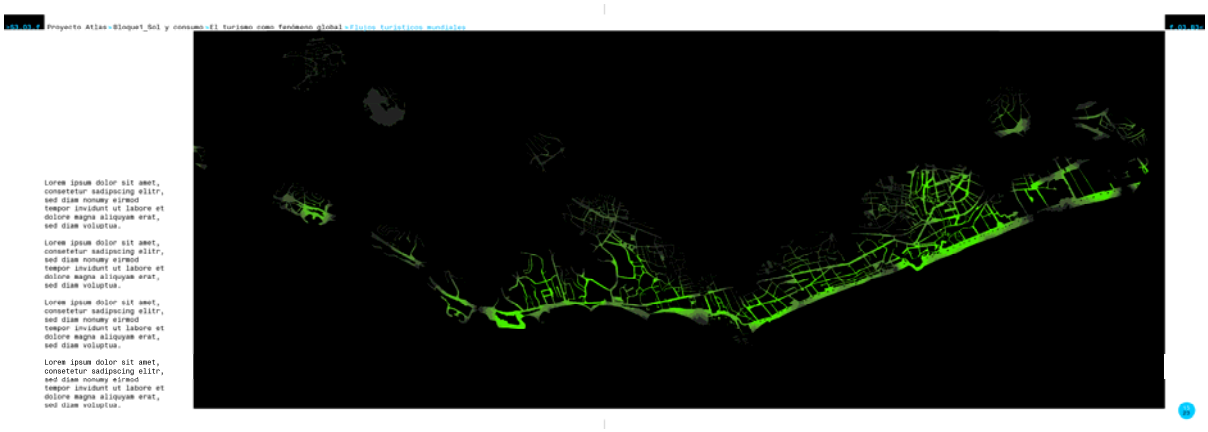

Figure 12. Distribution in the urban network of tourist areas. Atlas of the Costa del Sol

Figure 13. Characterization of climatic habitats residents. Atlas of the Costa del Sol

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