Views from the South
Environmental Stories from the Mediterranean World
(19th-20th centuries)

Views from the South: how is environmental history made in Southern Europe? Through the essays collected in this book, it is possible to travel through both the Mediterranean environments and their stories. All of the authors of this book highlight how closely the ecological and geographical conditions of the Mediterranean world are connected with the history of the people who have lived there. Rights of ownership and access to natural resources (woods and water), laws about deforestation of slopes, use of water, environmental crises (floods and landslides), agriculture and industries, settlement patterns and demographic regimes, national and urban policies and cultural attitudes, scientific and vernacular knowledge, ideas about human beings and nature - all these factors concurred in shaping Mediterranean landscapes. Dealing with some of the main issue of the Mediterranean environments, the essays collected in this book represent several ways of doing environmental history in the Southern European historiographies. Donald Worster opens the book explaining why we need environmental history; all the other essays try to explain why we need an environmental history from a Southern perspective. Or, in other words, why we need a book like this.
Views from the South.

Environmental Stories from the Mediterranean World (19th-20th centuries)

Edited by Marco Armiero

Consiglio Nazionale delle Ricerche
Istituto di Studi sulle Società del Mediterraneo
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Elaborazione ed impaginazione a cura di:
Aniello Barone e Paolo Pironti


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The history of landslides and floods in Southern Italy in the nineteenth century: research in progress

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‘There is no European society whose modern history has been more deeply marked by disaster than Italy’s’. According to a recent estimate, between 1918 and 1994 all the provinces of Italy, with no exception, experienced at least one landslide or flood. Of course, the costs, in terms of both human lives and money, were decidedly heavy. According to recent calculations, from 1945 to 1999 earthquakes, volcanic eruptions, floods and landslides claimed approximately 10,000 lives - an average of fourteen per month. More than 103 billion euros, an average of more than five million a day, were spent just for the removal of dangerous objects and damage repair, and not on prevention.

However, in spite of the regular occurrence of catastrophic landslides and floods down to the present day, research has usually remained limited to the geological and geographical domains. Historians, in particular, have rarely contributed to our knowl-

1 J. Dickie, J. Foot and F.M. Snowden (editors), Disaster! Disaster in Italy since 1860: culture, politics, society (New York: Palgrave, 2002), p. 3.
edge of this phenomenon. This is all the more surprising when one considers that it is not merely a matter of including an important factor like hydrogeological instability in the study of human evolution and the history of territories. The mere fact that these natural disasters have deeply influenced the lives, and the economic and social evolution, of whole populations would more than justify their historical investigation.

But, however important these considerations, I believe a historical reflection on these phenomena to be necessary for other reasons as well. The lack of significant historiographical studies on the subject is even more puzzling when one thinks that such studies could provide valuable information on the evolution of these phenomena over time, and hence working tools for present action. As geologists argue, knowledge of ‘historical landslides’ is a useful operational tool for those who are called upon to plan and manage policies of hydrogeological development and readjustment.  

On the basis of the foregoing considerations, I have undertaken a study on the history of landslides and floods in the continental Southern Italy. One of my objectives is to build up a database on landslides and floods in the 19th century. In the present article, I shall limit myself to providing guidelines for research and some preliminary answers to the many relevant questions about this subject.

First of all, for what reasons has this research been limited to just one area of Italy, albeit a large one? The answer is: because of the higher vulnerability of the Southern territory. Its orohydrographic conformation, physical characteristics, and geological instability make hydrogeological problems more serious and urgent here than elsewhere. Paradoxically, in spite of this, the causes of landslides and floods in Southern Italy have been even less investigated than in the rest of the country. The landslides and floods occurred here in the last few centuries are still just about unknown, even to geologists and geographers.

In sum, one could say that, while landslides, floods and natural catastrophes in other countries have drawn the interest of historians, in Italy this has happened very rarely, and even more rarely in the South. However, we should considerer at least two peculiarities of Italian situation. In the first place, interest in environmental history has been growing in Italy in the last few years. Probably under the impulse of recent emergencies, themes such as the reproducibility of natural resources and the environmental costs of economic growth have begun to surface, albeit timidly, in historical analysis. These new trends in historiography, although still in their infancy, have resulted in new studies on subject directly or indirectly related to the one I am discussing here.¹ Sec-


ondly, it would be wrong to argue that historians have completely ignored the phenomenon of Southern hydrogeological instability. It would be more correct to say that they have usually adopted a different perspective. Historians of the Italian South has mostly focused on ‘uphill’ aspects, potential causes of catastrophic events (mountain economies, deforestation, and tillage), and ‘downhill’ aspects connected with their results (marsh plains, land reclaiming works). What they have neglected is what happened in-between, the reaching of the environmental breaking point: in other words, the catastrophic event itself.

As it is well-known, the end of the 18th century was a watershed in the history of human beings’ relationship with their environment. Every historian agrees that, at about that time, Southern Italy began an irreversible demographic growth. This called for the cultivation of new land, which was obtained by deforesting inland hilly and mountain areas. A vast literature has dealt in various ways with themes such as the pressure of the population on natural resources, the destruction of woods and forests, and the appearance of forest legislation. Equally numerous are studies on the problem of the formation of marshlands and malarial plains, and their impact on settlement patterns, land reclaiming works,


etc.\textsuperscript{8} Strangely enough, however, an important element is missing in this picture, the element connecting deforestation to swamping, and tillage to geological instability. This element is the landslide, or the flood.

The reason for this lack of interest is not easy to pinpoint. One could argue that catastrophic events, by their very nature, have been regarded as lying mainly within the sphere of competence of the physical-geological sciences. However, this simple explanation is hardly convincing, because historians of Southern Italy have not always neglected catastrophic phenomena. For example, due to their important role in the history of Southern Italy, earthquakes have been the focus of many historical analyses which not only reconstruct individual events, but also shed light on their impact on economic, social and political life.\textsuperscript{9} The exceptional character of seismic events resulted - as it still does today - in a mobilization which often upset traditional political and social balances. Moreover, the emergency situations determined by catastrophes usually called for extensive reconstruction, and hence provided an ideal occasion to try out new formulas and solutions, such as special legislation or new institutions and organisms.

Historians’ interest in seismic phenomena is hence understandable. But I would like to stress that much the same consid-


erations can be made about landslides and floods. These catastrophes, too, have an impact not just on the areas where they bring death and destruction, but also on policies, institutions, the dynamics of social conflict, etc. Besides, while earthquakes and volcanic eruptions are unpredictable and occur independently of human agency, landslides and floods, instead, often are the direct result of anthropic impact on the environment, and can hence be studied with regard to their causes as well as their effects.

Since hydrogeological instability is rarely dealt with in historical studies, anyone who wants to approach the problem of the history of landslides and floods must necessarily turn to the investigations of geographers and geologists.

The most important contribution to this field is indubitably the geographer Roberto Almagià’s study on landslides in Italy. The results of his research were published about a century ago in two volumes, one dealing with the northern Apennines, the other with the central and Southern Apennines.\footnote{R. Almagià, \textit{Studi geografici sopra le frane in Italia}, 2 vols. (Roma: Società Geografica Italiana, 1907 and 1910).} This work, which provides an in-depth review of events around the turn of the 19th century, was for decades the most important source of information on landslides in Italy. Until recent times, instead, no comparable studies on floods existed.

Little was done, with a few exceptions, to carry Almagià’s work further. Of course, geologists - and, to a lesser extent, geographers - continued to investigate these phenomena, but no other major reviews of landslides and floods appeared until the publication of a study by the geologist Vincenzo Catenacci, which focuses, however, on hydrogeological instability in the second half of the 20th century.\footnote{V. Catenacci, ‘Il dissesto geologico e geoambientale in Italia dal dopoguerra al 1990’ in \textit{Membre descrittive della carta geologica d’Italia} (Roma: Istituto Poligrafico e Zecca dello Stato, 1992).}

The need for additional historical data on landslides and floods, however, was widely felt by the scientific community and public authorities, leading to the setting up, at the end of 1991, of
The AVI Project (AVI stands for ‘Aree Vulnerate Italiane’ - Damaged Italian Areas). Its purpose was to collect and catalog all available information on landslides and floods occurred in the national territory.\(^{12}\) The geologists involved in this project have been working incessantly, so that today we have an extraordinary database, indubitably ‘the most complete and up-to-date archive of information on landslides and floods in the 20\(^{th}\) century ever put together in Italy’.\(^{13}\)

However, while data about the 20\(^{th}\) century are abundant and exhaustive, the same cannot be said for the previous centuries. If we consider just Southern Italy, the data is even lower significant: landslides documented here until 1900 are less than 1% of the total. For floods, the percentage is still lower (see tab. 4).

Another research on landslides and floods called project Giano, started in 1987, produced a database of hydrogeological catastrophes in Italy in the 18\(^{th}\) and 19\(^{th}\) centuries. Unfortunately, the project was interrupted after just three years, and the data is hence far from representative (see tables 5 and 6).\(^{14}\)

In sum, even in the field of geography and geology, our knowledge of pre-20\(^{th}\) century landslides and floods in Italy, and especially in the South, is still scarce and inconsistent. This is, in my opinion, a direct consequence of a lack of interdisciplinary collaboration between historians and earth scientists. Information about the 20\(^{th}\) century is obtainable from a vast ‘technical’ literature and/or news published in Italy’s many national and local daily newspapers - which, indeed, are the main sources for the above-mentioned researches. Things become less straightforward,
Walter Palmieri

however, when we turn to the previous centuries, because in this case access to information requires familiarity with sources normally belonging within the sphere of competence of historians, such as archives or coeval literature.

This scarce knowledge of hydrogeological disasters in the South before 1900 can engender the false impression that landslides and floods are typical phenomena of the 20th century, i.e., an exclusive feature of the epochal transition from an agrarian to an industrial society. It is true that, in Southern Italy as elsewhere, the introduction of the capitalist economic model brought new and more intensive forms of exploitation of natural resources, and hence an exponential acceleration of processes leading to the disruption of environmental balances. But it would be wrong to suppose that an environmental problem did not exist previously. Obviously, landslides and floods have occurred at all times in history, particularly in the especially vulnerable Italian South, but that is not my point. What I intend to stress is that there exists another important caesura, predating that of the twentieth century.

Many authors have rightly stressed that the twentieth century marks a new phase in the history of environment. In all Italy, especially after the end of World War II, uncontrolled exploitation of natural resources had dramatic repercussions on environmental equilibriums. New landslide and flood triggering factors and causes appeared, such as modification of riverbeds, illegal building and landscape works. The Italian geologist Antonio Vallario listed some of the alterations occurred in the last decades:

excavations, overloading, modifications of slope topography, modifications of the circulation of surface and underground water, reduction of the flexibility of drainage systems, waterproofing, construction of works not compatible with local lithologic and morphological characteristics, alteration of vegetation covers, quarrying, creation of garbage dumps, improper use of the soil, the plowing of land along maximum gradients, forest fires, etc.

All this in a context where for decades there was ‘a lack of a real political will to solve the problem’. This is an alarming - and too often forgotten - situation, where the cause-and-effect relation between human agency, economy and environmental disasters is so manifest that, rather than natural disasters, we should speak of unnatural catastrophes.

However, while the economic boom of the mid 20th century is especially important, this does not mean that the previous period should be viewed as an indistinct past. It is the historian’s task to find the significant time ranges, to propose a valid chronological articulation of the evolution of a phenomenon over time. In the case of the problem of landslides and floods, which has existed in the South ever since antiquity, it is important to recognize that there were previous historical phases when natural causes were compounded by the effects of political and economic circumstances. A historical perspective clearly shows that there was at least another such phase before the twentieth century, viz., the demographic growth I mentioned above, which began in the second half of the 18th century and continued in the following century. The consequent increase in food requirements led to extensive deforestation to obtain new cultivable land. If we add to this the centuries-old trend of Southern population to gravitate towards the hilly and mountainous areas of the interior, it is hardly surprising that all this resulted in a dramatic alteration of environmental equilibriums and new landslide and flood triggering factors.

But if landslides and floods increased in the 19th century, too, what is the difference compared to today? In other words, what are the differences between the catastrophic events of the 19th century and those of the last few decades?

While it is undeniable that economic progress brought with it a growth of technical know-how and financial resources for land


management - it is sufficient to consider what the solution of the
centuries-old plague of marshy and malarial plains has meant for
the Italian South - it is also true that modernity spelt the end of
traditional forms of soil and landscape management through
which local populations had maintained a direct and immediate
relationship with their environment. Because of their prevalently
agricultural-pastoral economies, for local communities a constant
control of natural resources was a matter of survival. Ancient
practices and local know-how were regularly deployed against
landslides and floods. At Sarno, where in 1998 a catastrophic
landslide killed more than 160 people, in the early 19th century the
locals still used the method of the 'mena delle bufale', i.e., the
driving of bufale (the Italian descendants of the Indian water buf-
falo) down the bed of the Sarno river to clean it up and thus pre-
vent it from overflowing. The building of 'alveo-strade' (riverbed-
streets), i.e., streets doubling as drainage canals in cases of heavy
rainfall, is another typical example of environment protection in
the pre-industrial era. To prevent landslides, instead, cross-walls
and retaining walls were erected.

Of course, in the light of contemporary geological and engi-
neering knowledge, such techniques appear decidedly crude and
empirical. Nevertheless, whatever their effectiveness, they bear
witness to the local populations’ involvement in the management
of their territories. I do not intend to lapse into a rhetoric celebra-
tion of a hypothetical - and improbable - superiority of the past
compared to today; rather, I wish to stress that today, in spite of
the advancement of our knowledge and our higher technical and
economic capabilities, the cleavage between ourselves and our
environment has deepened.

One only needs to think of changes in energy sources. The wa-
tercourses in a given area were once used to drive hydraulic ma-
chines (grain, oil, and fulling mills, sawmills, etc.). Although there
were huge conflicts - illegal deviations, usurpation, violation of
communal norms, etc. - there indubitably was a common interest
in safeguarding and maintaining this primary source of energy.
With the coming of electricity, energy needs were no longer necess-
The history of landslides and floods in Southern Italy

sarily met by local rivers and torrents. As a consequence, interest in the balanced management of hydric resources waned. After watercourses were no longer needed as a source of energy, people lost interest in banking canals and riverbeds and, in general, in the ‘environmentally compatible’ use of hydraulic resources.

Sometimes it is the very progress of knowledge and technology that widens the gap between human beings and their environment. For example, from the second half of the 20th century onward, the water demands of an ever-increasing population have always been met by drawing more water directly from underground sources. Thus, the perfecting of perforating and pumping systems, like many other technological advancements, ends up by aggravating our loss of awareness of the importance of the environmental equilibrium. Rivers and superficial waters, formerly a visible asset, become an invisible resource. This contributes to pushing the issue of environmental protection and risk prevention into the background.

Finally, there is another central issue for our understanding of the changes intervened in the relation of human beings to their environment in Southern Italy, viz., the territorial distribution of population. Under this respect, there is an important difference between the two demographic watersheds identified above: one in the late 18th, the other in the second half of the 20th century. In the first case, the population increase was concentrated in the interior of Southern Italy, whereas in the second there was an unprecedented desertion of hilly and mountainous zones. Urbanism, emigration, and the abandonment of vast agricultural territories in the interior, upset environmental balances which Southern Italians had managed to create in centuries of patient and stubborn work. The consequences were dramatic.

However, it would be overhasty to reduce the complex dialectic between the past and the present only to modern human beings’ loss of contact with their environment. While this certainly accounts for much of today’s hydrogeological instability, it should

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be remembered that the roots of the whole process extend back into the late 18th century. In other words, although there are profound differences, both qualitative and quantitative, between landslides and floods before and after the modern age, the relationship, from a different visual angle, can also be viewed as one of continuity. In this perspective, the 19th century in Southern Italy, with its economic, political and social changes, appears, in a way, as a century of preparation.

The late 18th century population increase marks a beginning. Simultaneously with, and partially as a consequence of, that increase, a deep transformation of the countryside and economy of Southern Italy began. Especially in the 19th century, the reduction of forms of communal land use, emphasis on property rights, and the limitation of communal norms which for centuries had regulated people’s access to natural resources - especially in mountain and hill areas - all ultimately altered traditional forms of natural resource management.¹⁹

An urge to suppress customary law and the collective rights of local communities is expressed in many 19th century writings and testimonies. However, in spite of these sources’ strong ideological bias, some of the most illuminated participants in the 19th century debate appear acutely aware that early 19th century laws abolishing feudality and apportioning public land, insofar as they involved many wooded mountain areas, frequently resulted in deforestation and, as a consequence, environmental degradation. For example, writers such as Vincenzo Cuoco²⁰, Teodoro Monticelli²¹, Carlo Afan de Rivera²² - to mention only some of the most authoritative -

²² C. Afan de Rivera, Considerazione su i mezzi da restituire il valor proprio a doni che la natura ha largamente conceduto al Regno delle Due Sicilie, 2 vols. (Napoli: Stamperia del Fibreno, 1832); Id., Memoria in-
deplored the cutting down of forests and its tragic consequences, viz., landslides, floods and swamping.

While 19th century literature identifies deforestation as the main cause of landslides and floods, contemporary sources also point out other causes. The issue of the vulnerability of the Southern territory was felt especially strongly. Architect, engineers and forest administration officials were called upon to explain the dynamics of landslides and floods. It is these technicians who raised the question of other natural causes: lithological, morphological, positional, etc. Another element emerging from their reports is that a considerable number of these events were the consequence of two other typical natural phenomena of the Italian South, viz., earthquakes and volcanic eruptions. As to volcanoes, the problem of the high instability of pyroclastic covers was well-known to 19th century operators. For example, there was a flood in Sarno in 1834 caused by the accumulation of pyroclastic ash from a recent eruption of Vesuvius.23

Thus, the deforestation of the hills and mountains had an impact on a territory which was already highly vulnerable. Natural factors, in themselves independent of historical context, combined with economic activities which were, instead, a direct reflection of the times. The cutting down of forests and the tilling of slopes are the most tangible manifestations of a change in the relationship between man and nature which, as we have seen, was fully accomplished only in the 20th century, but was already taking shape in the 19th. The capitalist system was incorporating communities whose participation in the market, up to then, had been rather limited. Deforestation, while indubitably the most visible effect of this new behavior, was not the only cause for the increased frequency of landslides and floods; this was also determined by an unprecedented boost in economic activity often leading to a dissi-

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ative use of land, to a management of economic resources disregarding delicate ecosystemic equilibriums.

Aside from deforestation, the principal new threat to hydrogeological stability was the use of hydraulic resources. To irrigate their fields, many landowners altered the course of rivers and torrents, built artificial barriers, and used many other expedients to obtain exclusive use of water sources.

The analysis of causes, however important, is only one of several issues regarding the occurrence of landslides and floods in Southern Italy. I have left other important themes in the background, such as political measures taken to prevent catastrophic events, or to face emergencies; the perception and representation of catastrophic events; the social, political and economic repercussions of catastrophic events on local communities. All these research themes deserve further investigation, especially in the light of the currently increasing awareness that nature is not a mere collateral aspect, but a central factor in the study of human evolution.

PROJECT AVI
(Aree Vulnerate Italiane – Affected Italian Areas)

TAB. 1. Floods

<table>
<thead>
<tr>
<th></th>
<th>Italy: 8,055</th>
<th>Southern Italy (without Sicily): 1,657</th>
</tr>
</thead>
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TAB. 2. Floods with the year indicated (first recorded event: year 1009)

<table>
<thead>
<tr>
<th>Period</th>
<th>Events</th>
<th>%</th>
<th>Events</th>
<th>%</th>
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<tr>
<td>Until year 1800</td>
<td>274</td>
<td>3.5</td>
<td>4</td>
<td>0.05</td>
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<tr>
<td>19th century</td>
<td>436</td>
<td>5.6</td>
<td>8</td>
<td>0.1</td>
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<tr>
<td>First half of 20th Century</td>
<td>1,957</td>
<td>25.2</td>
<td>347</td>
<td>4.5</td>
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<tr>
<td>Second half of 20th Century</td>
<td>5,113</td>
<td>65.7</td>
<td>1,287</td>
<td>16.3</td>
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<tr>
<td>Total</td>
<td>7,780</td>
<td>100</td>
<td>1,646</td>
<td>21.1</td>
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TAB. 3. Landslides

<table>
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<tr>
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<th>Italy: 22,707</th>
<th>Southern Italy (without Sicily): 6,465</th>
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The history of landslides and floods in Southern Italy

Tab. 4. Landslides with the year indicated (first recorded event: year 1009)

<table>
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<th>Southern Italy (without Sicily)</th>
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<tbody>
<tr>
<td></td>
<td>Events</td>
<td>%</td>
<td>Events</td>
<td>%</td>
</tr>
<tr>
<td>Until year 1800</td>
<td>73</td>
<td>0.5</td>
<td>12</td>
<td>0.08</td>
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<tr>
<td>19th century</td>
<td>337</td>
<td>2.2</td>
<td>77</td>
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<tr>
<td>First half of 20th century</td>
<td>1,709</td>
<td>11.4</td>
<td>342</td>
<td>2.3</td>
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<tr>
<td>Second half of 20th century</td>
<td>12,882</td>
<td>85.9</td>
<td>2,882</td>
<td>19.2</td>
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<tr>
<td>Total</td>
<td>15,001</td>
<td>100</td>
<td>3,313</td>
<td>22.08</td>
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</table>

Source: http://sici.gndci.pg.cnr.it/ with additional calculation by author.

Project Giano: 18th-19th centuries

Tab. 5. Floods (first recorded event: year 1700)

<table>
<thead>
<tr>
<th>Period</th>
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<tr>
<td></td>
<td>Events</td>
<td>%</td>
<td>Events</td>
<td>%</td>
</tr>
<tr>
<td>18th century</td>
<td>389</td>
<td>49</td>
<td>15</td>
<td>1.9</td>
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<tr>
<td>19th century before ‘Unità’(1860)</td>
<td>246</td>
<td>31</td>
<td>5</td>
<td>0.6</td>
</tr>
<tr>
<td>19th century after ‘Unità’(1860)</td>
<td>159</td>
<td>20</td>
<td>10</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>794</td>
<td>100</td>
<td>30</td>
<td>3.8</td>
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Tab. 6. Landslides (first recorded event: year 1710)

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<tbody>
<tr>
<td></td>
<td>Events</td>
<td>%</td>
<td>Events</td>
<td>%</td>
</tr>
<tr>
<td>18th century</td>
<td>55</td>
<td>15.5</td>
<td>7</td>
<td>2</td>
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<tr>
<td>19th century before ‘Unità’(1860)</td>
<td>114</td>
<td>32.1</td>
<td>54</td>
<td>15.2</td>
</tr>
<tr>
<td>19th century after ‘Unità’(1860)</td>
<td>186</td>
<td>52.4</td>
<td>91</td>
<td>25.6</td>
</tr>
<tr>
<td>Total</td>
<td>355</td>
<td>100</td>
<td>152</td>
<td>42.8</td>
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Source: http://sici.gndct.pg.cnr.it/ with additional calculation by author.