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# Rewinding the Tape: Documentary Heritage to (Re)discover "Lost" Natural Hazards—Evidence and Inferences from Southern Italy

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**Abstract:** The knowledge of natural hazards that occurred in the past is essential for implementing forecasting and prevention actions, for managing risk, and identifying proper land use. Floods do not escape this rule. This article sheds light on an unknown intense rainfall period, which affected the Campania region and the territory of the current Molise region (Southern Italy) on October–November 1961. The period culminated in floods, particularly involving the town of Benevento (Campania region), which had been affected by several inundations over centuries. The research made an extensive use of unpublished archival sources. The documents allowed us to both outline the pluviometric and hydrological picture of the period and catalogue seventeen physical and environmental effects suffered by over two hundred municipalities. Furthermore, we also disclosed the economic consequences in the wide territory involved. Special attention was paid to Benevento, for which we also drew up the scenario map related to the 19 October flood. For this town, historical data were effective for developing and testing the hydraulic model of the Sabato and Calore Rivers, which overflowed at the site. In this regard, we made some considerations on the current flood risk of the town. From a methodological point of view, we stress the importance of a historical approach in close relationship to other expertise for the knowledge of natural hazards, tracing also some future perspectives. The research complies with the *2030 Agenda for Sustainable Development* and its Goal 11 concerned with making cities and human settlements inclusive, safe, resilient, and sustainable. The research findings will be useful for scholars and practitioners for both improving flood hazard models and arranging archival research path. Finally, local authorities in charge of risk mitigation can also benefit from the research results.

**Keywords:** historical sources; natural hazards; cultural heritage; hydraulic models; 1961 floods



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## 1. Introduction

Floods are the natural hazards with the highest frequency and the widest geographical distribution worldwide, affecting more people than any other physical hazard [1–3]. Associated losses across all sectors accounted for approximately US $400 trillion causing damage to properties, crops, and livestock [4].

Floods especially occur in places affected by historical events [5]. Therefore, historical data are requested as they can substantially extend the time span of our knowledge [6]. What is more, the use of past information is also recommended by Directive 2007/60/EC of the European Parliament and Council for the preliminary assessment of flood risk [7]. According to the Directive, knowledge of floods that have occurred in the past is central for

those events that have had significant negative consequences on the environment, cultural heritage, and economic activities and which with high probability may still occur in the future. For these floods, it is important to seek past information on the extent of the flooded areas, the water flow routes, as well as the evaluation of the negative consequences they have caused, both in physical and economic terms.

Historical sources can be primary or secondary in nature. Primary sources should be preferred; they involve direct and coeval traces of human presence or activity related to the hazard. Conversely, secondary sources are writings in which one or more primary sources are described, discussed, interpreted, commented, analysed, and summarized, usually also based on the consultation of other secondary sources [8]. Documents can be found in many different forms, including descriptive and cartographic archival sources (produced by central and local authorities, both civil and ecclesiastical), newspapers, photographs, books, plaques, tombstones, and epigraphs.

Past sources are usually considered to investigate different natural hazards beyond floods, such as earthquakes and landslides [9–11] (Figure 1). Recorded data should be used in a complementary way to conduct a more refined and detailed flood analysis, thus getting qualitative and quantitative information on the floods (e.g., hydrometric data, casualties, flooded areas, damages, effects on buildings and infrastructures, institutional response for the rescue intervention) [12,13]. Historical information can also be useful to both improve flood risk management [14] and identify changes in flood frequencies over centuries [15].

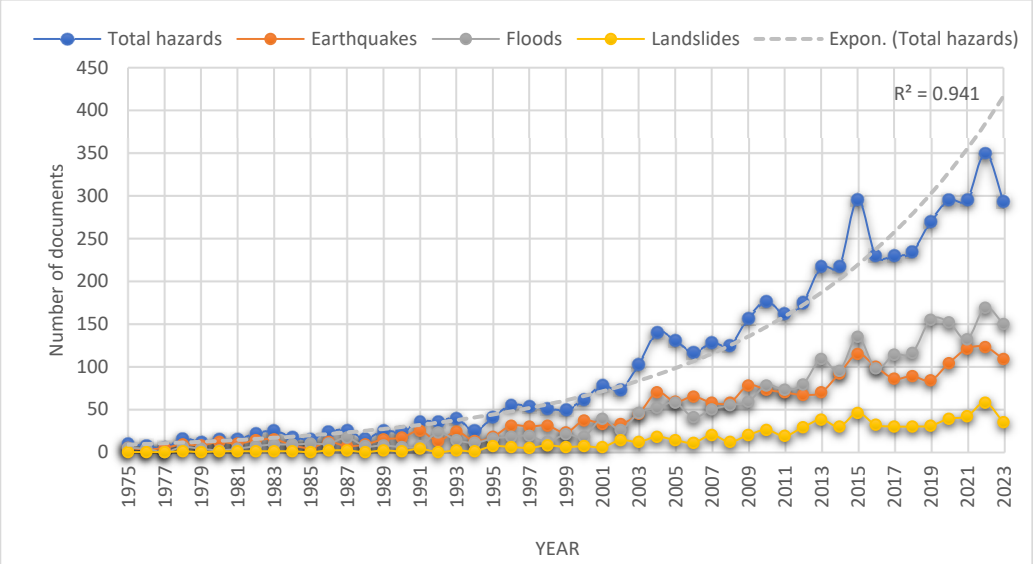


**Figure 1.** Yearly number of documents in which historical sources were considered by scholars to investigate natural hazards (earthquakes, floods, and landslides). A first significant changing point can be identified at the beginning of the 2000s when the number of documents suddenly increased. Elaboration (FTG) from Scopus data (data downloaded on 28 January 2024). The search was carried out considering all types of Scopus documents.

Since the beginning of the 21st century, past traces have been considered more and more to investigate flood events in different regions of the world such as Russia, Hungary, Czech Republic, Spain, France, and Brazil [16–22]. As for Italy, old data are the requirement of many studies due to the need for improving the knowledge of the flood hazard and reducing losses. Indeed, Italy was the country most affected by major disaster floods in Europe in the second half of the 20th century [23]. Furthermore, 5.4% of the Italian territory falls in high hazard/probability areas; this percentage, in the case of a medium hazard/probability scenario, extends up to 10.0% of the national territory, reaching 14.0% of the total surface area for low hazard/probability scenario [24].

In Italy, the development of a research sector for the historical analysis of geological and geomorphological phenomena has gradually gained vital force in the scientific community since the 1970s, as well a by research institutes with competences in applied historical research [13]. In 1987, the Italian Agency for New Technologies, Energy, and Environment (ENEA) published the Giano Project [25]. The plan was to catalogue hydrogeological instability events in Italy during the 18th and 19th centuries. Some years later, the Aree Vulnerate Italiane (Italian Affected Sites, AVI) project was developed. The aim of the project was to perform historical research to survey the Italian areas historically affected by landslides and floods since 1917. The database includes 22,000 records related to landslides related to over 18,500 affected localities, and over 7500 records concerning floods, covering 12,000 affected sites. Beyond national databases, many works have been published since the nineties covering specific time spans and specific geographic areas of Italy [26–32]. However, despite numerous studies, some recent natural extreme events are almost unknown to the scientific community as well as citizens. That is the case of the floods that occurred in Campania region and territory of the current Molise region (Southern Italy) in the autumn of 1961. This period reached its peak with the floods of 18–19 October 1961, which affected the province of Avellino and the province of Benevento (Campania region), and in particular, its chief town. The article just aims to cast light on the hydrological-pluviometric features of the period and on the physical and economic damage caused to public and private buildings, infrastructures, and the environment of the affected area.

The work, based on a careful vetting of multiple and differentiated unpublished archival sources, benefits from an interdisciplinary and multidisciplinary approach, which required collaboration between experts in the use of historical data and hydraulic engineers. Particular attention was paid to analyse the impacts on the town of Benevento where two rivers flooded. The historical information was also suitable for developing and validating the hydraulic model of the two rivers which overflowed.

The knowledge of the features of these types of events, both in hydrodynamic and probabilistic terms, is of crucial importance both for territorial planning and for drawing up civil protection scenarios, very important in view of putting in place plans for climate change adaption.

The research is in line with the *2030 Agenda for Sustainable Development* and its Goal 11 concerned with making cities and human settlements inclusive, safe, resilient, and sustainable, thus reducing both the epidemiological effects of disasters and economic losses as well as increasing the disaster resilience of communities [33].

Beyond the Introduction, the article is arranged in the following sections: Section 2, where an overview of the main geographical, topographical, and hydrological features of the Campania and Molise is tracked; Section 3, historical and recent floods that hit the Benevento province and its chief town; Section 4, where a detailed examination of the documentary heritage consulted and the criteria used to interpret it are discussed; Section 5, where analyses of both pluviometric and hydrometric data as well as economic and physical damage on urban areas and the environment are considered; Section 6, where a recap of the research findings jointly with some suggestions for stakeholders and policymakers, future research perspectives, and limitations of the research are argued.

## 2. Study Area

The research aims to investigate the effects of the autumn 1961 adverse weather conditions on both the Campania region and territory of the current Molise region, in Southern Italy (Figure 2).

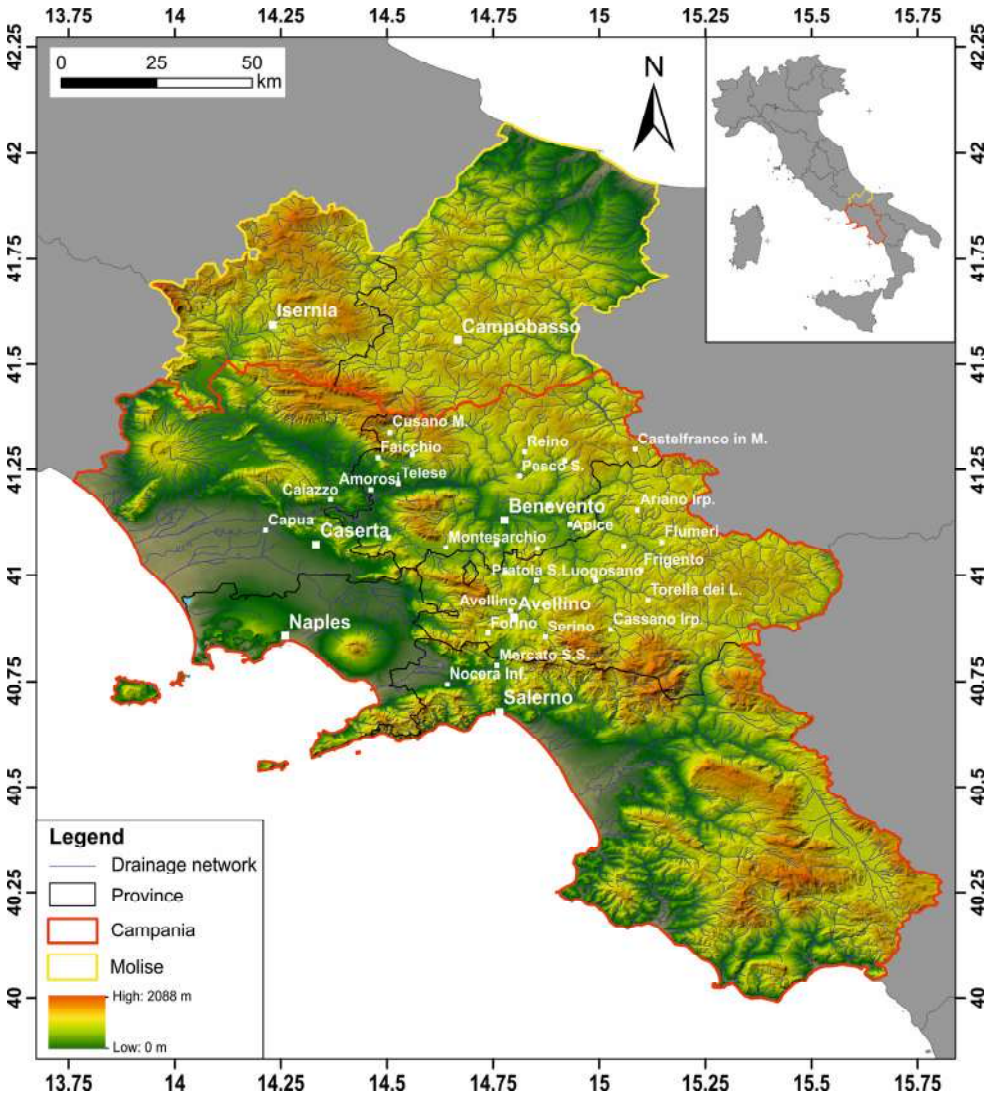


**Figure 2.** Geographical sketch showing the main features of the Campania and Molise regions. The figure also includes some localities reported throughout the article.

The Campania region, whose chief town is Naples, is made up of five provinces, including the province of Avellino and Benevento. Campania is three times larger than Molise with approximately 13,671 km$^2$ and a population of over 5,700,000 inhabitants divided into 550 municipalities [34]. Over half of the whole territory of the Campania Region is included into the basins of the Volturno River and the Sele River that flow almost entirely into the region boundary [35]. In the northern part of the Campania region, two parts can be distinguished, stretching from NW to SE: a coastal section, mostly flat, interspersed with mountainous reliefs of volcanic or sedimentary origin, and an internal section. The most important area of the coastal section is the Campania lowland crossed to the north by the Volturno River and to the south by the Sarno River. The internal region includes the stretch of the Apennines in which the chain loses its unity, being divided into a series of limestone massifs aligned from NW to SE. The climate of Campania is Mediterranean, recording average annual temperatures ranging from 10 °C to 12 °C in the internal areas and 13 ° to 15 °C along the coast [36]. The average annual rainfall is between 700 and 900 mm along the coast and 1700–2000 mm in the internal Apennine areas [37]. Benevento, whose municipality is made up of about 57,000 inhabitants, is in the Apennine hinterland of Campania, at the confluence of two rivers: the Calore Irpino, a tributary of the Volturno, and the Sabato, which flows into the Calore just west of the town centre. A

third river, the Tammaro, flows into Calore to the east of the urban centre 6 km upstream of the Sabato confluence.

The Molise region was established in 1963 when the Campobasso province was separated from the "Abruzzi e Molise" region to establish the autonomous region. In 1970, some municipalities in the province of Campobasso were separated to constitute the province of Isernia. Molise is made up of 136 municipalities and it is the second-to-last in terms of extension among the Italian regions with an area of 4460 km$^2$ and approximately 300,000 inhabitants [38]. It extends between the Adriatic Sea to the east and the Apennine ridge to the west, of which it also includes the high basins of the Volturno and Tammaro rivers, belonging to the Tyrrhenian side. The landscape of the Molise region changes from a mostly mountainous (55% of the surface) and hilly territory in the central area to plains and low hills near the coast [39]. The SW sector is dominated by Meso-Cenozoic carbonate units shaped into a mountainous landscape; the central sector is characterized by a typical hilly morphology, mainly developed on clayey-marly limestone successions and siliciclastic sediments from Upper Cretaceous to Miocene, and the NE sector is dominated by Plio-Pleistocene clays, sandstones, and conglomerates from marine and continental environments, where the morphology is made up of terraced ridges gently sloping toward the Adriatic coast and the interposed alluvial coastal plains of the Trigno and Biferno rivers [40]. Regional rainfall is frequent, especially in autumn and spring; it is abundant (sometimes exceeding 3000 mm per year) and often becomes snowy. The rivers, among which only the Biferno River flows entirely in the Molise territory, have a torrential regime closely linked to the rainfall frequency [35].

## 3. Historical and Recent Floods in Benevento and Its Province

Benevento lies at the point where the Sabato River joins the Calore Irpino River. At the junction, the Calore Irpino basin catchment counts for about 76% (1548 km$^2$) of the overall basin area (2030 km$^2$) with the Sabato River contributing for the remaining 24% (482 km$^2$).

Benevento has been affected by floods of both rivers over time. Historical research carried out by [41–46] and the Aree Vulnerate in Italia Project [47], allowed authors to identify more than 40 major floods in the last 14 centuries (Table 1). Due to the geographical positions of the two basin catchments, larger floods in one of the rivers are not synchronous with floods in the other river, so that damages are generally recorded along only one of the two rivers.

**Table 1.** Historical and recent floods in the Benevento town and Benevento province.

| Year | Description |
|---|---|
| 704 | Overflow of the Sabato river in Benevento with heavy damage to the Leproso Bridge |
| 894 | Overflow of the Calore River and flooding in Benevento |
| 897 | Overflow of the Calore and Sabato rivers due to heavy rain for several days |
| 992 | Floods near Benevento |
| 1029 | Overflow of the Calore and Sabato rivers in Benevento |
| 1031 | Overflow of the Sabato river in Benevento |
| 1105 | Flood in Benevento due to snowmelt |
| 1120 | Overflow of the Calore River in Benevento |
| 1501 | Overflow of the Calore River in Benevento with damage to bridges |
| 1504 | Overflow of the Sabato river in Benevento with damage to the Roman Leproso Bridge |
| 1597 | Overflow of the Sabato river in Benevento |
| 1599 | Overflow of the Calore River in Telese due to heavy rain for several days |
| 1696 | Overflow of the Calore River in Solopaca |
| 1707 | Overflow of the Calore and Sabato rivers in Benevento. Damage to the Ponte Leproso Bridge and three mills |
| 1740 | Overflow of the Calore and Sabato rivers in Benevento due to rain and the sirocco with rapid snow melting |

**Table 1.** *Cont.*

| Year | Description |
|---|---|
| 1748 | Flood of the Calore River in Vitulano |
| 1770 | Overflow of the Calore River in Benevento induced by heavy rain |
| 1808 | Overflow of the Calore River in Solopaca and Telese |
| 1809 | Overflow of the Calore River in Solopaca and Telese |
| 1811 | Overflow of the Tammaro river. Overflow of the Calore River close to Solopaca. The rainfall events, extending from the Tyrrhenian side to the Adriatic side, caused damage to around forty locations |
| 1815 | Overflow of the Calore River in Solopaca. A pillar of the bridge Saint Maria Cristina under construction over the river was destroyed |
| 1837 | Overflow of the Tammaro river in Campolattaro. A bridge over the river was destroyed |
| 1840 | Overflow of the Tammaro river in Campolattaro and other localities. Overflow of the Calore River close to Solopaca |
| 1841 | Overflow of the Tammaro river. There were 40 deaths in Morcone. Nine localities were damaged |
| 1851 | Overflow of the Calore River in Solopaca. The Saint Maria Cristina Bridge was destroyed. Another bridge located upstream from the Saint Maria Cristina Bridge was also destroyed (Ponte Fenicoli, today Finocchio) |
| 1889 | Overflow of the Calore and Tammaro rivers in Benevento and Morcone. Damage to Avellino. |
| 1890 | Overflow of the Calore River in Benevento with heavy damage to the bridges |
| 1895 | Overflow of the Calore River in Benevento's countryside due to heavy rain for several days and snowmelt |
| 1897 | Flooding in the Benevento countryside |
| 1899 | Overflow of the rivers in Benevento due to heavy rain for several days |
| 1900 | Overflow of the rivers in Benevento due to heavy rain for several days |
| 1935 | Overflow of the Calore and Sabato rivers in Benevento |
| 1938 | Overflow of the Calore and Sabato rivers in Benevento and Calore River in Apice |
| 1949 | Overflow of the Calore River in Benevento. The flooding is the most damaging event for Benevento. Flooding of the railway district, with 47 victims and destruction of the industrial area |
| 1951 | Flooding in Benevento, Apice, and San Giorgio La Molara |
| 1952 | Overflow of the Calore River in Benevento and Apice |
| 1955 | Overflow of the Calore and Sabato rivers in Benevento, Frasso Telesino, and Telese (Terme) |
| 1957 | Overflow of the rivers in Benevento |
| 1961 | Overflow of the Sabato and Calore rivers in Benevento |
| 1966 | Flooding in Benevento |
| 1968 | Overflow of the Sabato and Calore rivers in Benevento |
| 1993 | Overflow of the Calore River in Benevento and Solopaca |
| 2015 | Overflow of the Tammaro and Calore rivers. Flooding in Benevento due to overflow of Calore River |

## 4. Materials and Methods

This work examines for the first time, according to a tailored methodology (Figure 3), both the meteorological-pluviometric-hydrological background and the physical as well as economic effects caused by the intense raining period of October–November 1961 to the territories of Campania and Molise. Particular attention was paid to the 19 October flood in Benevento town.

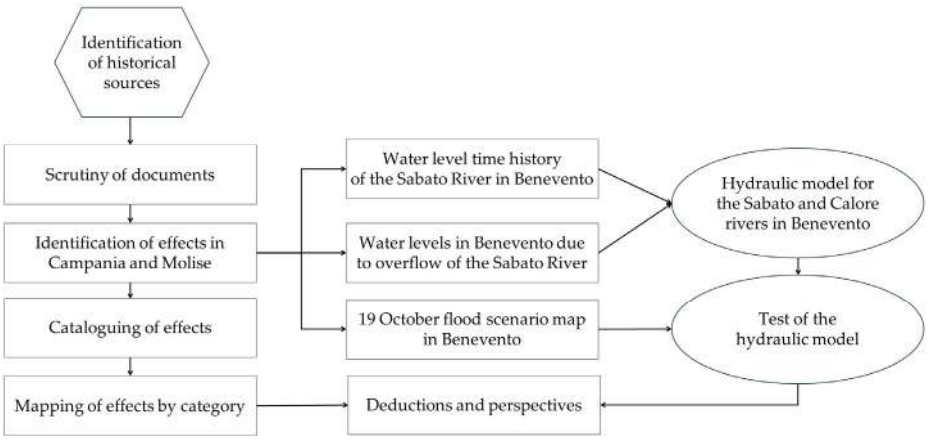


**Figure 3.** Flow chart showing the methodological approach adopted in the research.

Considering the lack of literature about the subject, the research was the result of a systematic examination of a large number of unpublished archival sources, both technical and administrative, contemporary with the natural events under investigation here (Figure 4) [1a–20a,1b–60b] in Appendix A.

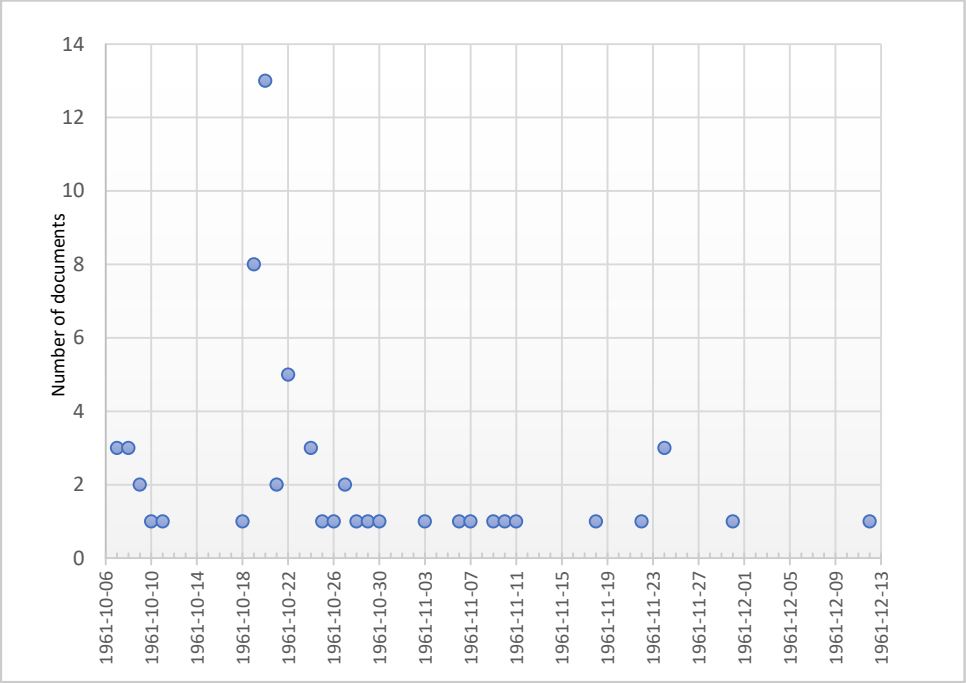


**Figure 4.** Statistical overview of historical sources consulted (archive documents and newspapers) arranged by date. Some archive documents are not included as they are undated. The sources cover all the period analysed and beyond. Most of the sources refer to the second half of October when some floods occurred.

Documentary heritage was found both in the historical archives of the Department of Civil Protection in Rome (ASDPC) and in the State Archive of Benevento (ASBN).

Particularly useful were the sources found at ASDPC, which preserves a considerable series of records relating to some natural hazards that occurred in Italy since 1908. That documentation comes largely from the archive of the General Directorate of Special Services of the Ministry of Public Works. This General Directorate was established with Royal Decree of 22 November 1908, No. 690, and subsequent Ministerial Decree of 20 December 1908, within the more general framework of a new division of the services of the Ministry of Public Works. The Directorate operated until the mid-seventies of the last century and the activities carried out concerned post-earthquake intervention actions, consolidation works, and the transfer of towns threatened by landslides or hit by storms, floods, volcanic eruptions, and other natural hazards. Its competences were then transferred to the Ministry of the Interior, General Directorate for Civil Protection and Fire Prevention Services. This body of the Ministry, which was established with Law 8 December 1970, No. 996, assumed the direction of the relief interventions and the implementation of the coordination of all the activities carried out because of disasters. Its function was then taken over by the current National Department of Civil Protection [48].

When two authors of this article (FTG and MRP) consulted the ASDPC, it did not have an official inventory useful for predefining and planning structured archival research paths. Therefore, it was not possible to know the contents of the archival units (envelope, files, registers, volumes, etc.) according to their original aggregations. Precisely to reorganize the documentary material and make it fully accessible to the public, a few years after our consultation, the entire ASDPC was acquired by the State Archive of Rome.

To overcome the lack of an inventory, the authors proceeded with a manual and systematic selection of the useful documentation, identified after an overall analysis of the Archive based on the names of the contents of the individual archive units reported externally to them. Documents selected and consulted included:

(1) The correspondence between local authorities and peripheral state bodies (e.g., prefectures, police headquarters, civil engineering offices) and between the latter and the Ministries (e.g., Ministry of the Interior and Finance, Ministry of Public Works).
(2) Telegrams and phonograms relating to communications between local authorities, peripheral bodies, and central institutions. Overall, this correspondence, sent in the hours and days immediately following the occurrence of extreme meteorological-hydrometric phenomena, concerns the reports on the evolution of atmospheric conditions, the monitoring of rivers and streams, the effects on people, the environment, the damage to properties, and the request for economic and logistical benefits.
(3) The resolutions and measures adopted by the Municipality of Benevento and other bodies regarding economic provisions and benefits (wage supplement, compensation) and housing to the benefit of disadvantaged families).
(4) The texts of parliamentary questions addressed to ministers regarding the placement of the homeless and the reconstruction of companies damaged by the flood in the town of Benevento.
(5) The cartographic and photographic documentation of flooded areas concerning Benevento related to the hours immediately following the overflowing of the rivers in the town.

However, the technical reports drawn up between the last ten days of October and the end of November 1961 deserve a separate note. By these, the information regarding the meteorological, pluviometric, and hydrometric phenomena, as well as the information regarding the effects caused in the municipalities of Campania and Molise, was drawn. We refer to the following documents (in direct chronological order, from the oldest to the newest):

(1) Report, dated 20 October 1961, by the President of the 3rd Section of the Superior Council of Public Works, Giuseppe Rinaldi, addressed to the Minister of Public Works relating to the "Report on the visit carried out after the flood of 18–19 October 1961 in the area of the provinces of Avellino and Benevento" (our translation) (hereinafter Rinaldi Report) [42b] in Appendix A.
(2) Report, dated 21 October 1961, by the director of the Civil Engineering of Benevento, Federico Marini, sent to the Prefect of Benevento relating to the flood event in Benevento on 19 October supplemented by a memorandum (undated) containing information both on the damage and on the institutional response planned after the extreme hydrometeorological phenomena. The memorandum was updated on 31 October 1961 (Marini Report and Memo) [24b] in Appendix A.
(3) Report of the Prefect of Benevento Bruschelli, dated 22 October 1961, relating to "Floods of 19 October 1961 in the Province of Benevento, caused by the overflowing of the Sabato and Calore rivers and by torrential rains" (our translation) (Bruschelli Report) [48b] in Appendix A.
(4) Report of the Prefect of Benevento Bruschelli, dated 24 October 1961, regarding "Floods of 19 October 1961 in the Province of Benevento" (our translation) (Bruschelli Report bis) [15b] in Appendix A.
(5) Report, dated 29 October 1961, by the Provincial Commander of the Fire Brigade, Antonio Barone, regarding "Rescue intervention for floods caused in Benevento and its province by the overflowing of the Sabato and Calore rivers and torrential rains" (our translation (19–23 October 1961)" (Barone Report) [17b] in Appendix A.
(6) Synoptic summary report (undated) of a technical-economic nature by the Superintendent of Public Works for Campania and Molise in Naples regarding the "Illustrative report on the flood of October-November 1961 in Campania and Molise" (our translation) (Department of Public Works Report, DPWR) [56b] in Appendix A.

The last document, having a synoptic and summary character, was the document of greatest interest for the entire research. The DPWR provides a detailed picture of the meteorological, pluviometric, and hydrometric phenomena of October–November 1961 for the entire area of Campania and Molise and represents the most up-to-date synthesis of the damage caused by the floods. Unfortunately, the DPWR is not dated, but its textual analysis suggests 29 December 1961 as a terminus *post quem* for the drafting of the document. The substantial report, consisting of 107 typed pages and two statistical tables, is divided into two main parts that can be identified as "general" and "specific". The general part is dedicated to the narration of the meteorological, pluviometric, and hydrological events of October–November 1961 in the entire territory involved. It describes the space-time migration of meteorological and pluviometric occurrences, also focusing on the effects over the entire territory. The specific part concerns, for each province, the following information:

(1) General picture of the effects for each municipality;
(2) Damage to hydraulic defence works, with related work required and costs expected for their functional restoration;
(3) Damage to aqueducts, sewers, and roads and related necessary works to restore functionality with the estimated work costs;
(4) Consequences on private and public buildings as well as churches;
(5) Measures taken for the consolidation of the inhabited areas.

In our research, the information contained within the DPWR report was partially integrated with that reported in the Rinaldi Report reporting the description of the situation in the period immediately following the flood deduced based on inspections carried out from the night of 19 October in the territory of the provinces of Avellino and Benevento. The Rinaldi Report allowed us to identify the consequences in localities not listed in the DPWR and to integrate analyses for those locations whose effects were only partially known through the DPWR.

In addition to the documentation preserved at the ASDPC, other documents useful for the analysis of the damage caused by meteorological and pluviometric phenomena in the province of Benevento and in Benevento town are those preserved at the ASBN. Of particular interest was the consultation of two archival units.

The first unit contains: (a) the administrative documents relating to the first-aid work carried out in the aftermath of the floods, (b) the lists of damaged companies with the amount of damage suffered, (c) the list of damaged houses, (d) the actions implemented by the central government to deal with the needs of the flooded population, (e) the reports of private citizens or owners of artisan businesses regarding the damage suffered by their properties, (f) the correspondence relating to the accommodation of the homeless, and the texts of parliamentary questions.

The second unit includes 229 damage survey sheets for flooded houses drawn up following inspections by the urban police in Benevento. The cards include information on the location of the house, the description of the composition of the family unit, the measurement of the height reached by the water and the description of the damage suffered by the property (Figure 5). These cards were valuable for setting up the hydrological model of the Sabato River that only overflowed in the inhabited centre of Benevento, as is discussed in the next sections.

Other documentation consulted at the ASBN was the historical cartography available for the town of Benevento. Consultation of the cartography was necessary to reconstruct and contextualize the flood phenomenon in the urban context. The examination of the flood event was also possible thanks to the examination of newspapers.

From a methodological point of view, the archival documentation was analysed according to a chronological sequence, starting from the documentation produced immediately after the event and then continuing the analysis for the subsequent periods.

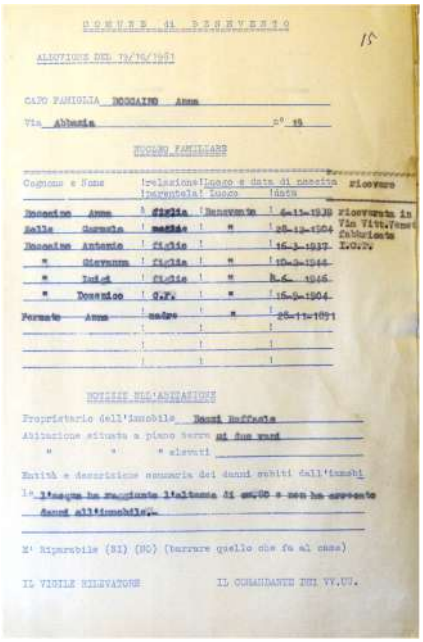

**Figure 5.** Damage survey cards compiled in the aftermath of the 1961 flood in Benevento to ascertain the damage to housings [35b] in Appendix A.

A first general analysis of the documentation allowed the identification of the entire geographical area affected by the meteorological-pluvial-hydrometric events. Based on such information, we then proceeded with the related consultation of all the sources useful for the systematic identification of the effects, in terms of both physical and economic damage, produced on the buildings and infrastructures of the municipalities and inhabited centres of Campania and Molise. In this regard, in order to make the information easy to use, the data presented in the following sections are made available with the current provincial administrative subdivision for Molise in mind.

It should be underlined that the attribution of a specific type of effect to a municipality was carried out based on direct data deriving or deducible from the consultation and correlated interpretation of the data, without making independent deductions (e.g., the flooding of a section of a river was catalogued as such only if traceable in the documentation).

## 5. Results and Discussions

### *5.1. The Meteorological-Hydrological Context of October–November 1961*

The meteorological and hydrological picture of autumn 1961 in Campania and Molise was characterized by temperatures significantly higher than the average values of the previous thirty years: in particular, for Ariano Irpino there was a seasonal deviation in autumn of about +2 °C, which, for the month of September, even reached +3.4 °C. The same happened for areal rainfall: in autumn, in the Calore Irpino basin, rainfall was 222% higher than the average value of the previous thirty years [49,50]. A synoptic framework at the mesoscale is provided in the analysis of Gabriele and Chiaravalloti [50], who used the European Centre for Medium-Range Weather Forecasts (ECMWF) database to highlight how the orographic influence locally amplifies meteorological effects. These effects had already been identified in the same area, but on a statistical basis [51,52].

From the examination of the historical records, it emerges, in particular, that the hydrometeorological extreme events of 1961 arose in three different time windows (Table 2): (1) in the first days of the month of October; (2) in the second half of October; (3) in the first days of November.

**Table 2.** Meteorological periods affecting Campania and Molise in 1961 (AV = Avellino, BN = Benevento, CE = Caserta, NA = Naples, SA = Salerno, CB = Campobasso, IS = Isernia).

| | CAMPANIA | | | | | MOLISE | |
|---|---|---|---|---|---|---|---|
| **Current Provinces** | **AV** | **BN** | **CE** | **NA** | **SA** | **CB** | **IS** |
| **Periods** | 7–8 Oct. | 7 Oct. | 7–8 Oct. | Early Oct. | 7–13 Oct. | Early Oct. | 7, 17–18, 27 Oct. |
| | 18–19 Oct. | 18–19 Oct. | 18–19 Oct. | 19, 22, 26 Oct. | 17 Oct. | 18–19 Oct. | —— |
| | Early Nov. | 4 and 12 Nov. | 3–7 Nov. | Early Nov. | 4–10 Nov. | Early Nov. | 4 Nov. |
| **Hydrological effects** | Overflowing of the Sabato River | Overflowing of Sabato and Calore rivers | Flood of many municipalities. Overflowing of Peccia river. | Overflowing of some streams and headers | Overflowing of some rivers and streams | Overflowing of Carpino, Biferno, and Trigno rivers | Overflowing of high Volturno River and its tributaries |

On 7 and 8 October 1961, adverse weather conditions caused the first damage in the provinces of Avellino, Benevento, and Caserta, although the effects were limited to a few inhabited centres and were not particularly significant. The period of intense raining also continued in the following weeks, resulting in a worsening of atmospheric conditions between 17 and 19 October, when bad weather conditions started from the Tyrrhenian Sea, coming from the south-west, and then moved from the border of the provinces of Caserta, Naples, and Salerno to that of Avellino. Later on, the bad weather moved to the province of Benevento causing floods of the Sabato, Calore, Tammaro, and Ufita rivers. The disturbance decreased in intensity in the Molise area, causing some minor rivers to flood.

On 17 October, the flooding of the rivers in the Sarnese-Nocerino (Salerno district) countryside caused banks to break for a length of approximately 200 m. Subsequently, the critical situation affected the provinces of Avellino and Benevento due to the swelling of both the Sabato and Calore Irpino rivers and other rivers and streams (Tammaro, Ufita rivers and the Titerno stream). As regards the province of Avellino, the floods of 18 and 19 October and the rains of the first days of November mainly affected the municipalities belonging to the Sabato River and to a lesser extent other municipalities belonging to the Calore River basin and other municipalities in the province. On 18–19 October, many municipalities of the Benevento province were also affected by heavy rainfall. In particular, the floods that affected Benevento on 19 October was the most significant event of the period. The flood involved the Sabato River, which overflowed in the urban centre of the town while the Calore River, despite reaching flood level, did not overflow in the urban area but to the west of it (Pantano site).

In the province of Campobasso, the meteorological phenomena of 18–19 October caused some rivers to swell, including the Biferno, with consequent flooding of cultivated lands. Differently from the province of Campobasso, in the (current) province of Isernia, the flood events occurred on 7, 18, 27 October, and 4 November, for which there was significant damage in the areas of the Alto Volturno and in the Isernia town.

At the beginning of the month of November (from 3 to 6 inclusive, and 12) further intense rainfall affected Campania and Molise, causing an increase in damage in the same areas already affected by previous bad weather conditions.

While the archival documents studied underline the hydrological importance of the 1961 autumn period, the official published sources report only poor information about it. In fact, the published sources do not include any specific analysis of the hydrometeorological events. Only for one section of the Biferno River (Molise) is reported a flood flow rate of 987 $m^3/s$ for 19 October, corresponding to a unit contribution of approximately 1.7 $m^3/s/km^2$, which is among the maximums observed in the area up to that date [53]. The lack of information from institutional sources concerns not only Molise but also the Campania region. The *Hydrological Annals* [49] in the section dedicated to the study of the

main floods that occurred during 1961 contain only some brief information relating to the flood of the Calore River (Table 3). The same source indirectly testifies the importance of the hydrometeorological period by recording the destruction of a bridge in the province of Avellino (Prata), where a hydrometrograph on the Sabato River was installed. Furthermore, the *Hydrological Annals* reports, based on the survey of water levels detected in a locality in the province of Avellino (Tufo), an estimate of the peak flow rate for the Calore River equal to 940 $m^3/s$. Since the basin subtended by this section is 360 $km^2$, this flow rate resulted in a udometric coefficient equal to 2.6 $m^3/s\ km^2$, judged by the official source to be of particular importance "[...] since it is the maximum recorded in the Campania compartment, for the respective surface" (our translation) [49].

**Table 3.** Water levels and discharges recorded at different stations on 19 October 1961 [50].

| River | Measuring Stations | Daily Water Heights (m) | Maximum Water Heights (m) | Maximum Discharges ($m^3/s$) |
|---|---|---|---|---|
| Calore | Apice | 4.10 | 6.20 | 887 |
| Calore | Benevento | 4.30 | --- | --- |
| Calore | Solopaca | 7.08 | --- | --- |
| Calore | Ponte-Casalduni | 7.70 | 8.00 | 1870 |
| Tammaro | Paduli | 3.60 | 3.70 | 300 |

### *5.2. The Economic and Physical Effects in Campania and Molise*

The rainfall period of October–November 1961, and particularly the flood of 19 October in Benevento, is historically little known. In spite of this, the documentation identified highlighted the significant extension of the area involved and the relevant economic damage recorded. The overall economic damage to public and private buildings as well as infrastructures amounted to approximately EUR 220 million (revaluated 2023) and mainly concerned Campania (88%), and in particular, the provinces of Avellino and Benevento where the damages to buildings and infrastructures was comparable (25% against 24% of the total amount), followed by the Salerno district (23%) (Table 4, Figure 6). These economic data can be useful in assessing the impact of possible future extreme events and for careful planning of resources. This point is of particular interest as in Italy, the last fifteen years saw the expenditure to repair damage resulting from hydro-geological phenomena tripled, from a historical average of EUR 1 billion per year to around 3.3 billion, in contrast to the expenditure incurred to repair the damage caused by earthquakes that remained at the historical levels [54]. The economic data can also be read in a disaggregated way. For example, damage related to houses destroyed or damaged by hydrometeorological events amounted to about EUR 27,000,000, from which we can estimate the rebuilding or reparation costs for houses (Table 5). These data, once updated with respect to the change in construction techniques and materials compared to the nineteen-sixties, might help set disaster insurance rates. Indeed, after thirty years of attempts to legislate on the matter in Italy, the growth of extreme natural events and their socioeconomic impact over time is fuelling the debate on how to manage future disasters, paying attention again to the different insurance coverage systems [55–57].

**Table 4.** Municipalities of Campania and Molise involved in the intense rainfall period of October–November 1961. Districts: AV = Avellino, BN = Benevento, CE = Caserta, NA = Naples, SA = Salerno, CB = Campobasso, IS = Isernia. The costs of the damage in euros revalued in October 2023 are also reported (https://rivaluta.istat.it/Rivaluta/, 13 December 2023). Damage is related to both public and private buildings and infrastructures. Damage to crops is not included). (*) In round brackets, the "unofficial" number of municipalities affected as derived by our cross-correlated historical research analyses. (**) Percentage of the official number of affected municipalities of the region computed considering the total municipalities of the same region. In round brackets, the percentage computed considering the non-official number of municipalities affected; (***) percentage of the affected municipalities of the region computed considering the total official number of municipalities affected in both regions (201). In round brackets, the percentage computed considering the total non-official number of municipalities affected (253). ([a]) Number of municipalities in 1961.

| CAMPANIA | | | | | Municipality Affected | Total Municipality | % | Damages (EUR) |
|---|---|---|---|---|---|---|---|---|
| **AV** | **BN** | **CE** | **NA** | **SA** | | | | |
| Number of municipalities involved | | | | | | | | |
| 62 (64) * | 11 (20) * | 21 (45) * | 22 (36) * | 39 (24) * | 155 (189) * | 543 [a] | 29 (35) **<br>77 (75) *** | - |
| EUR 54,496,540 | EUR 53,292,188 | EUR 25,546,368 | EUR 9,272,194 | EUR 49,944,722 | - | - | - | 192,552,012 (88%) |
| **MOLISE** | | | | | 46 (64) * | 136 | 34 (47) **<br>23 (25) *** | - |
| CB | | | IS | | - | - | | - |
| EUR 20,629,341 | | | EUR 5,061,293 | | - | - | - | 25,690,634 (12%) |
| Total damage (EUR) | | | | | | | | 218,242,646 |

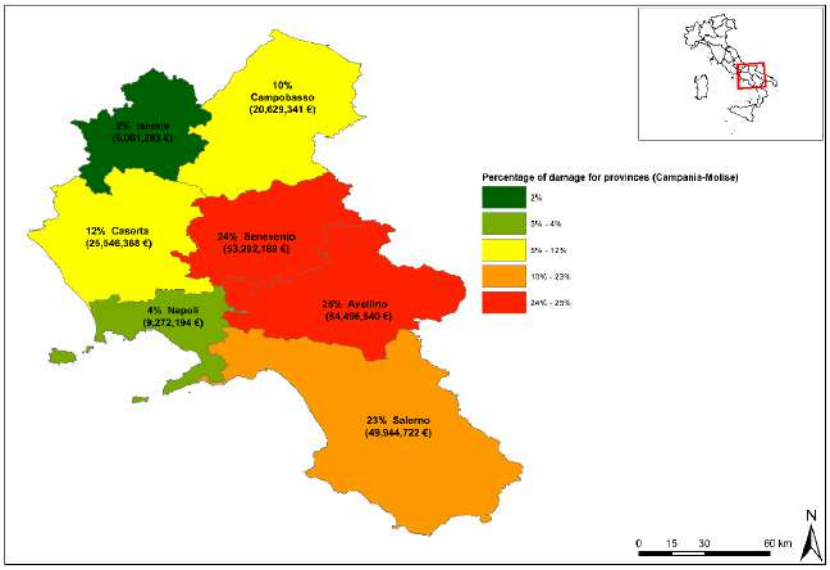


**Figure 6.** Damage in Campania and Molise related to both public and private buildings as well as infrastructures (see Table 4 for details).

**Table 5.** Damage to residential properties and number of houses involved. CL, NR = collapsed, not repairable); HD, R (heavily damaged, repairable); SD = slight damage; AD = average damage.

| | Campania | | | | | Molise | | Houses Involved | AD for Houses (EUR) |
|---|---|---|---|---|---|---|---|---|---|
| **Prov.** | **AV** | **BN** | **CE** | **NA** | **SA** | **CB** | **IS** | | |
| CL, NR | EUR 1,373,517 (12) | EUR 76,306 (6) | EUR 1,755,049 (32) | - | EUR 2,319,717 (38) | - | EUR 1,831,356 (52) | 140 | 52,540 |
| HD, R | EUR 1,373,517 (180) | EUR 244,180 (40) | 1,678,743 (80) | - | EUR 1,526,130 (182) | - | - | 482 | 10,000 |
| SD | - | EUR 335,748 (110) | EUR 671,497 (198) | EUR 228,919 (63) | - | - | - | 371 | 3330 |

As regards the number of municipalities involved, the statistic table included in the DPWR highlights that the number of municipalities of Campania and Molise that were officially damaged and beneficiaries of state funding for damage restoration were 201 out of a total (as of 1961) of 679 municipalities (~30%). However, the detailed analyses of both the DPWR and the remaining historical documents discussed in Section 4 allowed us to increase the number of municipalities to 253 (Table 4, Figures 7 and 8), 52 more than that registered in the statistical table. Disaggregating the data at the provincial scale, the "unofficial" statistical information refers to a number of municipalities greater than the official one for all the provinces except for one province (Salerno) (Table 4). On the one hand, the greater number of damaged municipalities identified once compared to official statistical data can be explained by the fact that part of these municipalities was probably not admitted to the economic benefits of the law for slight damage and therefore was not included in the official list. On the other hand, the number of damaged municipalities lower than the data reported in official statistical (Salerno district) is due to the circumstance that documents report descriptions of the effects in an aggregate way, listing only some of the affected municipalities. This did not allow us to know all the municipalities involved.

For most of the municipalities (222, ~88%) damaged, historical sources allowed us to know the local effects of raining events and floods. This narrative information made it possible to catalogue the effects into seventeen different categories thus gaining a detailed synoptic picture by regions, provinces, and municipalities (Table 6). However, considering both the statistical differences between "unofficial" and official data and the fact that among the 253 municipalities, 31 have no detailed description of the effects, the data listed in Table 6 could underestimate the real effects for the same categories, with particular attention to the Salerno and Avellino provinces. Figure 9 maps the municipalities involved in the different typologies of effects summarized in Table 6.

In detail, for the Campania region, we identified all 17 different types of effects for 159 municipalities, while for the Molise region, we identified 13 different types of effects involving 63 municipalities. Figure 9 shows the municipalities affected by the 12 most statistically significant effects (those that were recorded in a number of municipalities greater than five).

From a closer look at the territory, in the province of Avellino, there were floods in at least twelve municipalities, with widespread damage to both private, religious, and public buildings as well as to infrastructure. In particular, the province recorded the highest number of municipalities with damage to churches.

In the Avellino town, the overflowing of two streams caused flooding of the surrounding countryside with damage to crops, and numerous buildings were damaged in three quarters of the town where 150 families remained homeless. In general, the high amount of damage in the province was linked to the lack of suitable plumbing works. To reduce the risk of flooding due to future extreme weather events, massive repair, addition and

raising works were planned on the damaged banks of rivers and streams, with particular attention to the Sabato River, with an expected expenditure of around EUR 26 million (2023). In the province of Benevento, there were floods in a number of municipalities equal to those in the province of Avellino (12), but the overall effects on the built heritage and infrastructure affected a smaller number of municipalities. Particularly important, as we see in the following sections, was the overflowing of the Sabato River in Benevento, which caused the flooding of 229 homes, 159 of which suffered damage. The floods in the province were mainly due to the lack of adequate hydraulic river system works and the delay in their execution, although the works had already been planned for some years before 1961.

The province of Caserta was affected by flooding in a considerable number of municipalities (32), almost three times as many as the province of Avellino or Benevento, mainly due to the topographical position of the inhabited areas, located in the foothills or in plain areas. Therefore, the flooding was not due to the overflowing of rivers or streams, but to the invasion of rainwater coming from mountains lacking in adequate hydraulic works and to the ineffectiveness of the existing drainage system. Due to the topographic context of the area, the damage to crops affected a high number of municipalities (beyond 30). Part of the territory of the Caserta province is served by the Regi Lagni, which crosses the Piana Campana. The Regi Lagni is a network of mainly artificial channels built at the beginning of the 17th century during the Spanish vice-kingdom in Italy. It collects rainfall runoff from the vast plain located between Naples and Caserta and conveys it to the Tyrrhenian Sea [58,59]. During the extreme weather events of the autumn of 1961, some of the canals conveying the waters of the Caserta area and flowing into the Regi Lagni were blocked by the large quantity of debris, cancelling their draining functionality and at the same time the effectiveness of the Regi Lagni. Moreover, the extensive flooding occurred in Castelvolturno, due to the flooding of the Volturno River near the mouth, confirming the high flood hazard of the area [60].

**Table 6.** Statistics related to the municipalities affected by different typologies of effects in Campania and Molise. Districts: AV = Avellino, BN = Benevento, CE = Caserta, NA = Naples, SA = Salerno, CB = Campobasso, IS = Isernia. (*) Effects involving a number of municipalities greater than 5. The geographic distributions of such municipalities are mapped in Figure 9. (**) Data derive from an independent historical source. Therefore, the counting of damaged goods could include the effects for municipalities additional to those listed in this table.

| Effects | Campania | | | | | Molise | | Total Municipalities | Damaged Goods (No.) |
|---|---|---|---|---|---|---|---|---|---|
| | AV | BN | CE | NA | SA | CB | IS | - | - |
| Deposit of alluvial material or debris * | 12 | 3 | 31 | 1 | 13 | - | 1 | 61 | - |
| Flooded area * | 12 | 12 | 32 | 13 | 16 | 6 | 7 | 98 | - |
| Churches damaged * | 23 | - | 1 | 7 | 1 | 13 | 7 | 52 | 106 ** |
| Public or private buildings damaged * | 5 | 4 | 25 | 9 | 9 | 6 | 13 | 71 | 1044 ** |
| Productive activities damaged | - | 1 | - | 2 | - | - | - | 3 | 70 ** |
| Retaining walls damaged, uprooted, or collapsed * | 5 | 1 | - | 1 | - | 5 | 1 | 13 | N.A. |
| Breakage of banks/collapse of bank walls * | 5 | 5 | 3 | 5 | 15 | 6 | 2 | 41 | N.A. |
| Water mains damaged | 1 | 2 | - | - | 1 | 1 | - | 5 | N.A. |
| Intake works or supply pipes damaged | 1 | 1 | - | - | - | 1 | - | 3 | N.A. |
| Sewers damaged * | 10 | 1 | - | 2 | 8 | 2 | 1 | 24 | N.A. |
| Check dam damaged | - | - | - | - | 4 | - | - | 4 | N.A. |
| Bridge uprooted or damaged * | 5 | 2 | - | - | - | - | 1 | 8 | 38 ** |
| Bridge occlusion | 3 | - | - | 1 | - | - | - | 4 | N.A. |
| Road interruption * | 13 | 3 | 3 | 1 | 2 | - | 2 | 24 | N.A. |
| Failure of road pavement * | 10 | 2 | 4 | 17 | 9 | 23 | 9 | 74 | N.A. |
| Landslides * | 2 | 2 | 1 | 5 | - | 13 | 5 | 28 | ≥70 |
| Damage to crops * | 1 | 8 | 21 | 2 | 1 | - | - | 33 | - |
| Municipalities with damage information | 41 | 19 | 42 | 36 | 21 | 38 | 25 | - | |

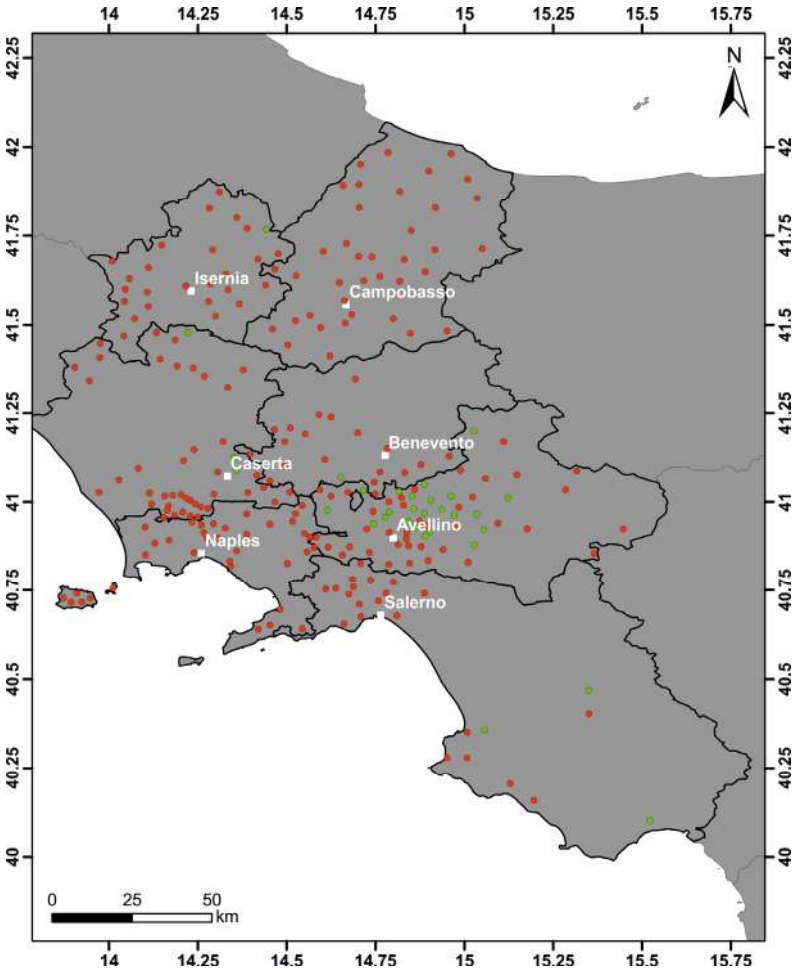


**Figure 7.** Geographic distribution of 253 municipalities of Campania and Molise involved in the bad weather conditions of autumn 1961. In red colour, the 222 municipalities for which historical sources allowed us to catalogue the effects (see Table 6). In green, the 31 municipalities for which only generic information on effects was available.

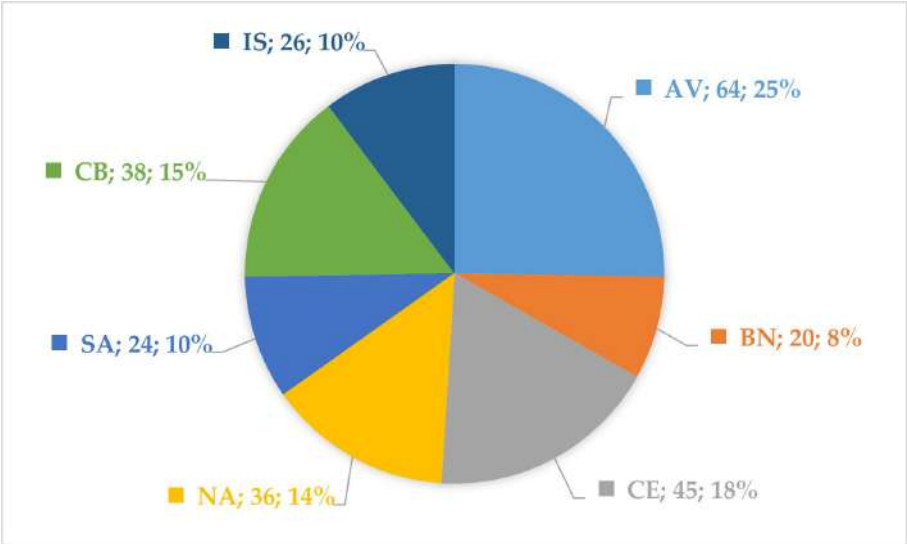


**Figure 8.** Statistics related to the 253 municipalities of Campania and Molise damaged during the autumn 1961.

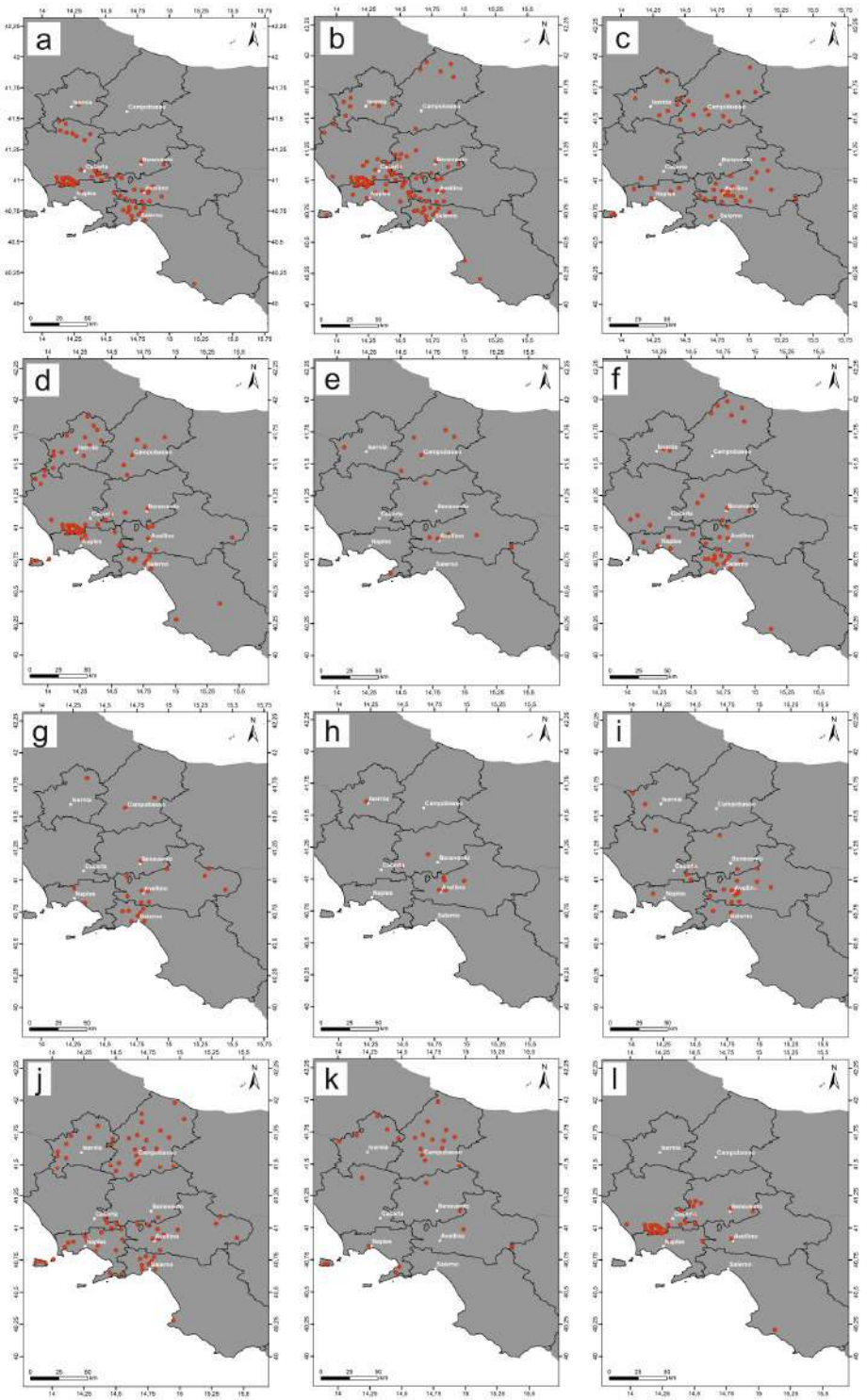


**Figure 9.** Municipalities of Campania and Molise affected by 1961's bad weather conditions. The maps report the municipalities involved in the different typologies of effects (see also Table 6). Only the most significant effects are reported (those involving a number of municipalities greater than 5). (**a**) Deposit of alluvial material or debris; (**b**) flooded area; (**c**) churches damaged; (**d**) public or private buildings damaged; (**e**) retaining walls damaged, uprooted, or collapsed; (**f**) breakage of banks/collapse of bank walls; (**g**) sewer damage; (**h**) bridge uprooted or damaged; (**i**) road interruption; (**j**) failure of road pavement; (**k**) landslide; (**l**) damage to crops.

In the province of Naples, there were river overflows and flooding in thirteen municipalities with damage to public, religious, and private buildings, and to infrastructures, specifically roads and riverbank defence works. In addition, in the province of Salerno there were river overflows and flooding in many localities (16), with damage mainly concentrated on riverbank defence works, road infrastructures, and sewerage networks, as well as public and private buildings.

Concerning Molise, the floods affected a smaller number of municipalities, but the widespread rainfall caused a large number of landslides along the roads and in residential areas. Regarding the (current) province of Campobasso, 18 municipalities were involved, and an even higher number of landslides higher affected the entire Campania. It is not possible to quantifying the number of landslides that occurred in the whole Molise as the documents generically group together several landslides, without indicating the number. However, the landslides were probably not less than 70. The geomorphological phenomena that occurred in Molise and Campania are to be seen in the broader hydrogeological context in which the Italian towns were, between the end of the 1950s and the beginning of the 1960s of the twentieth century. In this period, out of one thousand inhabitants of the Peninsula involved in phenomena of slope instability, approximately 175 were in Campania and over 100 in the Abruzzo region, which in that period still included Molise [61].

### *5.3. The Hydro-Meteorological Event and the Flood of 19 October 1961 in Benevento*

The extent of the hydro-meteorological phenomenon can be deduced from the pluviometric data summarized in Table 7. Overall, from the data emerges a landscape of high weather variability in a wide time window as evidenced by the presence, eleven days before 19 October, of a rainfall event that for some pluviometric gauges was even more intense than that of 19 October. The comparative analysis of historical data indicates that the amount of precipitation recorded on 19 October was between the second and third critical case for numerous stations with a rainfall epicentre in Luogosano (Avellino). At that site, the amount of precipitation identified the first critical case in 42 years of history of the rain gauge station.

The only data regarding the temporal distribution of precipitation can be deduced from the hydrological annals [49]. The data indicated rainfall of high intensity and short duration for the Avellino rain gauge station. For this station, data indicated a value of 96.6 mm in 3 h for 19 October 1961, which is higher than 80% of the entire daily precipitation reported in Table 7.

The situation in October 1961 is representative of a not rare meteorological condition which, as already found in the historical analysis, involves the repetition of rainfall events of high intensity a few days apart from each other. In this regard, a similar situation occurred during the flood event of 15 October 2015, which was followed on 19 October by a second event with similar characteristics [62,63].

The analysis of unpublished historical documentation also allowed us to make interesting deductions at the basin scale. In fact, according to the Rinaldi Report, the intense rainfall was responsible for water flows coming from the Sabato, Calore, Tammaro and Ufita basins equal to 1.8 $m^3/s/km^2$.

These overall extreme raining conditions led to the overflow of the Sabato and Calore Irpino rivers in Benevento on 19 October 1961. The flood is very little known, probably due to the (fortunately) low number of victims (three deaths were recorded, of which one was for a heart attack). Thanks to historical sources it was possible to shed light on the extension of the flooded area and the timing of the water level of rivers, with special attention to the Sabato River (Figures 10 and 11, Table 8).

**Table 7.** Daily rainfall values recorded in some rain gauge stations (Volturno and Sarno river basins) on 19 October 1961 from both published sources [49] and unpublished technical reports (*). The reports only include observations whose rainfall values fall between the second and third critical cases compared to the respective years of start of observation; (**) the values of the rainfall epicentre (Luogosano, Avellino) represent the first critical case in 42 years. To frame the meteorological context of the period, the rainfall recorded on 8 October 1961 is also reported. BVR = Basin of Volturno River; BSR = Basin of Sarno River.

| Rain Gauge Station | Drainage Basin | Historical Report | SIMN 19 October | SIMN 8 October | Year of Monitoring Start |
|---|---|---|---|---|---|
| Altavilla Irpina * | BVR | 110.0 | 32.0 | 70.8 | 1919 |
| Apice * | BVR | 110.0 | 104.0 | 77.0 | 1885 |
| Ariano Irpino * | BVR | 88.0 | 88.0 | 41.0 | 1919 |
| Avellino * | BVR | 120.0 | 121.5 | 135.0 | 1886 |
| Benevento | BVR | - | 46.0 | 76.0 | 1919 |
| Caiazzo | BVR | - | 54.0 | 139.2 | 1920 |
| Capua * | BVR | 53.0 | 53.0 | 81.2 | 1920 |
| Cassano Irpino * | BVR | 100.0 | 100.0 | 46.0 | 1903 |
| Castelfranco in Miscano | BVR | - | 73.0 | 40.0 | 1953 |
| Cerreto Sannita | BVR | - | 57.0 | 188.0 | 1919 |
| Cusano Mutri | BVR | - | 188.0 | 170.0 | 1921 |
| Faicchio | BVR | - | 100.3 | 172.3 | 1920 |
| Flumeri * | BVR | 122.0 | 122.0 | 26.0 | 1919 |
| Forino | BSR | - | 105.0 | 35.0 | 1920 |
| Frigento * | BVR | 90.0 | 90.0 | 25.0 | 1919 |
| Grottaminarda * | BVR | 121.0 | 121.0 | 16.0 | 1919 |
| Luogosano ** | BVR | 221.0 | 221.0 | 32.0 | 1919 |
| Mercato S. Severino * | BSR | - | 160.0 | 70.0 | 1920 |
| Montesarchio | BVR | - | 88.0 | 195.0 | 1919 |
| Nocera Inferiore | BSR | - | 102.1 | 87.1 | 1919 |
| Paduli | BVR | - | 43.0 | 40.0 | 1920 |
| Pescosannita | BVR | - | 45.0 | 71.0 | 1920 |
| Pratola Serra * | BVR | - | 130 | 126.0 | 1954 |
| Reino | BVR | - | 25.0 | 66.7 | 1920 |
| S. Agata dei Goti | BVR | - | 77.0 | 215.0 | 1920 |
| San Giorgio la Molara | BVR | - | 48.0 | —- | 1920 |
| San Leucio del Sannio * | BVR | 57.0 | 57.0 | 80.3 | 1919 |
| Serino * | BVR | 140.5 | 145.0 | 92.0 | 1920 |
| Telese | BVR | - | 76.0 | 227.0 | 1919 |
| Torella dei Lombardi * | BVR | 70.0 | 70.0 | 20.0 | 1919 |

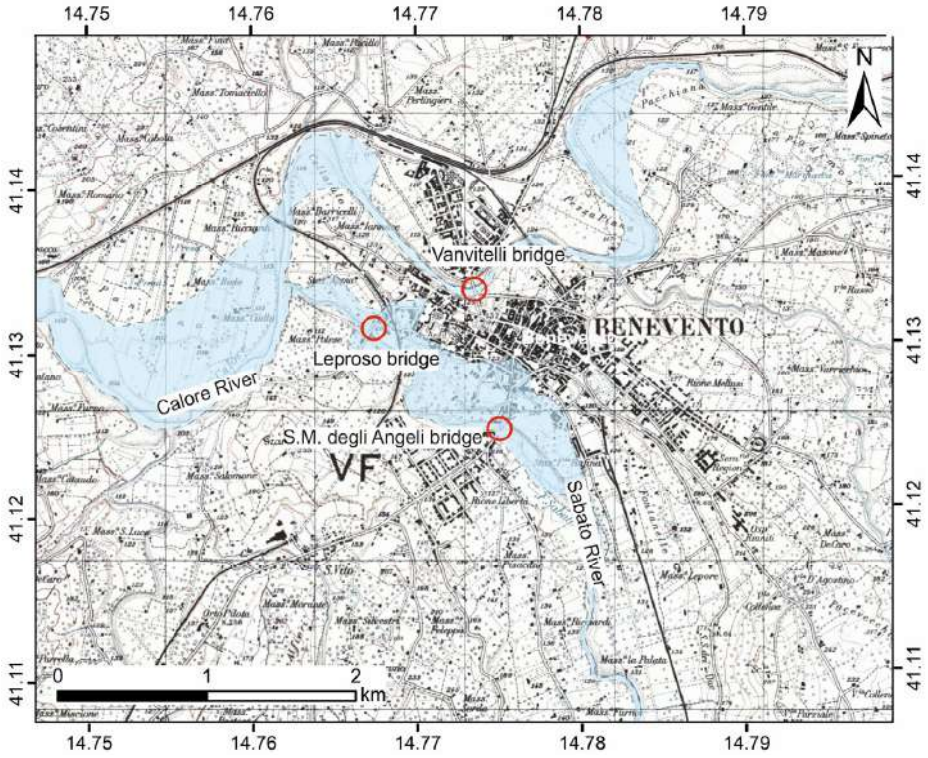


**Figure 10.** Flood of 19 October 1961 in Benevento. The Sabato and Calore Irpino rivers overflowed. The total flooded area was about 2.9 km$^2$. Redrawn and modified by [58b] in Appendix A. In red, the main bridges.


(**a**) (**b**)

**Figure 11.** Photo taken in Benevento in the aftermath of the 19 October 1961 flood. (**a**) Left, the street most affected by the flood (Via Napoli). On the right part of the photo the maximum level reached by the overflow of the Sabato River is identifiable, (**b**) right, detail on the water level in the same street as (**a**) (sources: [60b] in Appendix A).

**Table 8.** Flood of 1961 in Benevento. Time history of water stages in the Calore Irpino River at Vanvitelli Bridge and in the Sabato River at Santa Maria degli Angeli Bridge.

| Local Time | Calore River (m a.s.l.) | Sabato River (m a.s.l.) |
|---|---|---|
| 9:00 a.m. | 113.2 | 117.5 |
| 10:15 a.m. | 116.19 | 119.0 |
| 10:45 a.m. | 116.19 | 121.0 |
| 12:30 p.m. | 116.09 | 120.0 |
| 15:00 p.m. | 115.09 | 118.0 |
| 17:00 p.m. | 113.19 | 116.2 |

As a consequence of the amount of rainfall contribution, in the morning of 19 October, the hydrometric stages reached critical levels: at 9 a.m. the level of the Calore Irpino River, at the Vanvitelli Bridge in Benevento, was 3 m above the low water level, reaching around 6 m at 10.15 a.m., without flooding the inhabited area, unlike what it did in the province, where it caused extensive flooding of cultivated lands. The Calore Irpino River did not overflow into the inhabited area but only west of it, thanks to the effectiveness of the river management training works carried out following the 1949 flood (replacement of the old Vanvitelli Bridge with larger sections, construction of retaining walls, levelling, and widening of the riverbed) and to the nonconcomitance of the floods of two main Calore Irpino tributaries: the Ufita and Tammaro rivers (Figures 12 and 13).

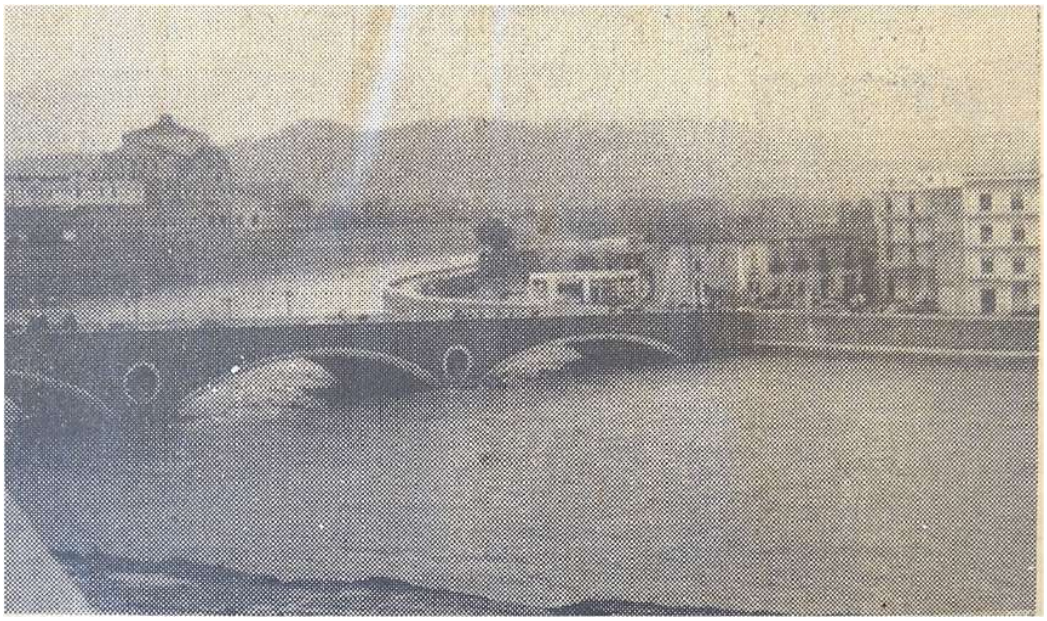

**Figure 12.** Benevento, the bridge over the Calore River (Vanvitelli Bridge) reached but not exceeded by the river waters during the 1961 flood. The bridge was rebuilt after the 1949 flood to enlarge the sections of the openings (Source: Newspaper "Roma" of 20 October 1961 [12a] in Appendix A).

**Figure 13.** The bridge over the Calore in a photo taken before 1949, the year of its demolition following the high afflux effect exerted by the structure during the flood of the same year (source: [64]).

The Sabato River, unlike the Calore Irpino, overflowed copiously in the urban area of Benevento causing a wide inundation. The waters overflowed near the Santa Maria degli Angeli Bridge. During the flood event, the river reached a flow rate of approximately 1100 $m^3/s$, almost double the value estimated for the 1949 flood event. From 10:45 a.m. to 12:30 p.m., the level of the Sabato River decreased by 1 m, while that of Calore reduced only 10 cm due to the continuous water supply of the Tammaro River. After approximately four and a half hours, at 5 p.m. the level of the Calore River was 3 m above the low water level and that of the Sabato River was 1.20 m. The rapid return to the beds of the two rivers was due to the decrease in rainfall events and the flooding that occurred in the neighbouring areas (Table 8).

On the whole, the flood affected around 800 people. Of a total of 229 flooded houses, 159 suffered damage. Of these, 52 (33%) suffered slight damage, 64 serious damage (40%), and 43 very serious damage (27%). Damage was also reported to over 70 industrial, artisan, and commercial companies. Furthermore, crops suffered (unquantified) extensive damage. Finally, damage occurred in some sections of the banks of the Sabato River and in some roads.

### *5.4. Hydrodynamic Model for the Sabato and Calore Rivers in Benevento*

#### 5.4.1. Brief Historical Background

The historical town of Benevento is located on a high ground that is crowned on the northern flank by the Calore Irpino River and on the southern flank by the Sabato River; both rivers contour the town's high ground flowing westward. At the western tip of the high ground, the Calore Irpino turns southward and then joins the Sabato River; it then progresses through the Pantano plane before exiting the plane through the Sciabacca strait. Before the confluence with the Sabato River, the Calore Irpino has a basin catchment of about 1548 $km^2$, while the Sabato has a basin catchment of about 482 $km^2$. The alluvial plane along the Calore Irpino kept an exclusive agricultural use until the second part of the XIX century when Benevento was reached by the railway stretching from Napoli to Foggia. The direction linking the Vanvitelli Bridge to the rail station became a new axis of the city development. In 1949, this part of the city was affected by the great flood of the Calore Irpino that occurred on 2 October.

In 1961, along the Sabato River, two crossings were present: the Leproso Bridge dating back to Roman times, and the Santa Maria degli Angeli Bridge which is located upstream of the Leproso Bridge. Since the Sabato River is fed by larger and more constant springs than the Calore Irpino, several mills were historically located along the right bank of the Sabato River. These mills were powered by a network of canals departing from a

main canal named Canale Morra that diverted the water from the Sabato River. The main "hydraulic" elements of interest along the Sabato River are depicted in Figures 14 and 15. Furthermore, in 1961, the layout of Santa Maria degli Angeli was different from the present one (Figures 16 and 17).

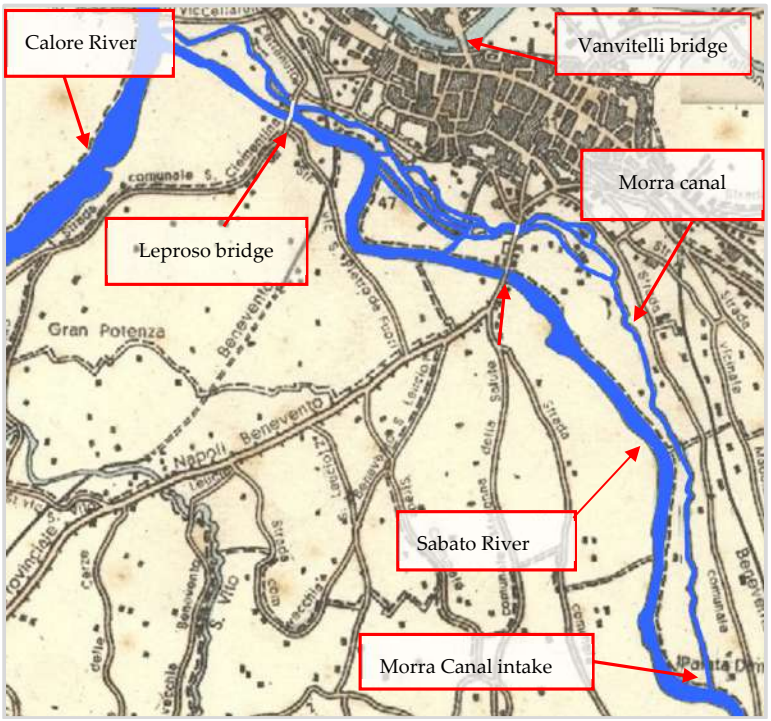


**Figure 14.** Main hydrographic elements along the Sabato stretch of the hydraulic model (source [63], modified).


**Figure 15.** The Sabato River and the Morra Canal immediately upstream of the Santa Maria degli Angeli Bridge in the aftermath of the 1961 flood in Benevento (source [60b] in Appendix A).

**Figure 16.** Santa Maria degli Angeli Bridge crossing the Sabato River in 1961 (https://beneventoceraunavolta.blogspot.com/, accessed on 10 December 2023).

**Figure 17.** Santa Maria degli Angeli Bridge crossing the Sabato River today (photo by F.T. Gizzi).

In particular, the Sabato River breadth at the Santa Maria degli Angeli Bridge was about 76 m. The bridge had seven narrow openings that left available slightly more that 50% of overall breadth.

#### 5.4.2. The Hydraulic Model

Hydraulic models are commonly employed to both understand the behaviour of floods and to analyse the hydraulic characteristics of rivers. They are useful for preparing flood hazard and risk maps and implementing proper mitigation actions, which are nowadays particularly important considering the ongoing climate change [65,66]. In our study, historical data were used both to implement the hydraulic model and validate it. Indeed, the historical documentation collected for the 1961 flood makes this an ideal case for carrying out a hydraulic backanalysis of the event since the historical accounts provide valuable information. In particular, historical accounts allowed us to identify the flooded area of the town, the discharge and water depths for the Sabato River, the water depths for the Calore Irpino River, and the water depths measured in premises along the streets flooded by the Sabato River. What is more, historical data supported us in reconstructing how the flooding originated. To this regard, Relazione Marini reports that flooding had its "focal" point in two sections: the first located near the diversion weir that supplied the Canale Morra and the second located at the Santa Maria degli Angeli Bridge. At the upstream section (Canale Morra), both banks of the river were flooded: on the right bank

the water overflowed from the Canale Morra, while on the left bank about 40 m of levee collapsed. At the downstream section (Santa Maria degli Angeli), the bridge could not convey the overall discharge, and the water spilled over both banks for a length of about 500 m upstream of the bridge. During the flood upstream of Santa Maria degli Angeli, the water depth reached about 5.2 m above the riverbed. The water stages at both ends of the bridge were about 1.5 m above the road level. Relazione Marini evaluated a maximum discharge of about 1100 $m^3/s$. Additionally, data in Table 8 clearly indicate water stages peaked in both rivers at roughly the same time, and for both rivers (Sabato and Calore Irpino) the peak lasted at least 1.5 h.

Since it is not quite common to have at one's disposal so large a wealth of data, a two-dimensional hydraulic model for the Sabato River was implemented. The software used was RIVER-D2 (version 0.95a) developed by the University of British Columbia (https://www.river2d.ca, 10 October 2023). River2D is a two-dimensional unsteady hydraulic model that solves numerically the depth-averaged equations of motion adopting a finite element approach. It accommodates supercritical and subcritical flows and allows one to simulate the dry/wetting process that takes place during a flood. Although as all two-dimensional models, River-2D is inherently a transient model, it has a built-in numerical procedure that allows one to speed-up the reaching of steady-state conditions. The software is widely used by the scientific community (e.g., [67–69]).

The available time history of water stages reported in Table 8 would have allowed us to attempt to carry out a fully unsteady simulation. However, since the steady approach is the standard approach used to identify potential flooded areas, in this study, we preferred to focus on testing procedures and capabilities of the steady simulation approach. In other terms, we opted to test the capability of the steady approach to correctly identify the flooded areas in a complex situation that involved two rivers and their confluence, located just at the heart of the flooded area.

Detailed topographic data used to set up the hydraulic model were taken from the 1 m × 1 m LIDAR Survey carried out by the Italian Ministry for the Environment in 2012 (http://www.pcn.minambiente.it/viewer/, 10 October 2023). However, a broad check of the congruity of the 2012 data with the 1961 situation was carried out comparing the LIDAR data with both the topographic survey map of the Italian Military Geographical Institute (IGM) at the 1:25,000 scale of 1954 and aerial photos taken in 1954 as well as other historical information available on the infrastructure crossing the Sabato River. In particular, the networks of canals shown in Figure 14 were confronted with an historical map of Benevento [70] while the Vanvitelli Bridge crossing of the Calore Irpino, the S. Maria degli Angeli and Leproso bridges were confronted with the images displayed in old post cards or photos. As said before, the main difference between the 1961 and the present layout concerns the Santa Maria degli Angeli Bridge (Figures 16 and 17).

In the hydraulic model, the Santa Maria degli Angeli Bridge was modelled by shaping the mesh elements along the piers and raising the corresponding topographic levels of the terrain of the bridge deck level.

The model covered an overall area of about 9.75 $km^2$ with a triangular mesh of 10 m side and a total of 98,823 nodes and 194,871 elements. DTM derived from the LIDAR survey shows that the Sabato River flows through a shallow cut into a plane that is higher than 125 m a.s.l. Approaching Benevento and the confluence with the Calore Irpino, the valley of the Sabato River widens, taking a funnel shape. In addition, old fluvial terraces lower than 125 m a.s.l. appear on both sides of the river. The old fluvial terraces encircle small pockets with levels slightly higher than the river thalweg.

The two-dimensional model required three boundary conditions: the first two concerned the input discharges at the heads of the Calore Irpino and Sabato rivers, the third condition concerned the water depth at the outlet of the model. On the one hand, the boundary condition for the Sabato River was straightforward since the maximum discharge of 1100 $m^3/s$ had to be assumed as known. On the other hand, the boundary condition for the Calore Irpino River was not as straightforward since no information on the maximum

discharge was provided by the historical sources but only the maximum depth at the location of the Vanvitelli Bridge, that was inside and not on the border of the computational domain. Therefore, a series of runs were carried out by applying a progressive increase in the flow rate entering the Calore Irpino River until the water stage calculated at the location of the Vanvitelli Bridge was equivalent to the maximum water stage reported in Table 8. This procedure allowed us to gain an educated estimate of the maximum discharge into the Calore Irpino equals to 1250 $m^3/s$ and of the maximum combined discharge downstream of the confluence equals to 2350 $m^3/s$. This is referred to as the *1961 scenery*. As a useful comparison, during the 1949 and 2015 floods, the maximum discharge in the Calore Irpino reached the value of 3000 $m^3/s$ [63]. This seems to support the circumstance that due to their geographical position, it is unlikely that a major flood takes place at the same time in both rivers. As far as the downstream boundary condition is concerned, it needs be observed that, as is discussed later, results concerning the lower part of the Pantano plane (toponym means "morass") were the least satisfactory. Considering that this part of the overall modelled area was the closest to the model outlet and it was therefore the most sensitive to the value of the water stage set at the model outlet, a lot of efforts were made to improve the comparison of simulated results with the contour map deriving from historical accounts (Figure 10). However, despite many attempts made, it was not possible to improve the fitting of the model with the observed-historical data. Even lowering the outlet water stage close to the critical state condition had no significant improvement in the flooded areas' comparison. The low sensitivity of the flooded area extension in the lower part of the Pantano plane to change in the output water stage was a good indication that overall model results, upstream of this area, were consistent and not influenced by an arbitrary choice of the outlet boundary condition. Water depths contours obtained from the hydraulic model are depicted in Figure 18.

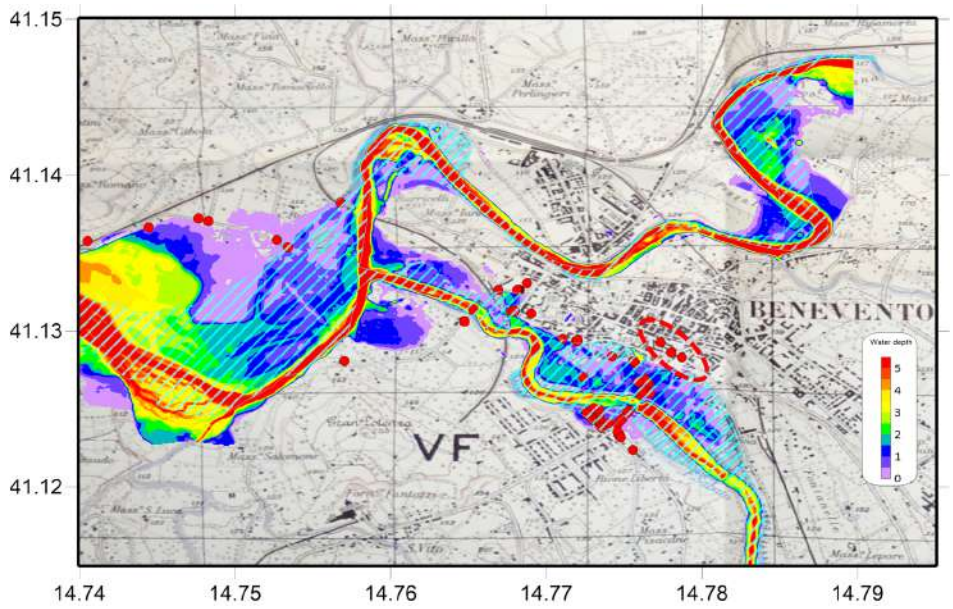


**Figure 18.** Water depths contours for the 1961 scenery (Sabato 1100 $m^3/s$ Calore Irpino 1250 $m^3/s$) over the historical map of flooded areas (area highlighted by the light blue dotted lines). Red dots represent building reported as damaged except those encircled into the oval. Water depths are in meters.

For the sake of clarity, the comparison of measured (historical) and simulated maximum water stages along the Calore Irpino River at the Vanvitelli Bridge and the Sabato River at the Santa Maria degli Angeli Bridge is reported in Table 9.

**Table 9.** Comparison of measured (historical) and simulated maximum water stages at both Vanvitelli and Santa Maria degli Angeli bridges.

| Calore River (m a.s.l.) | | Sabato River (m a.s.l.) | |
|---|---|---|---|
| **Measured** | **Modelled** | **Measured** | **Modelled** |
| 116.2 | 116.3 | 121.0 | 121.3 |

The good fit between measured and simulated maximum water stages is an indirect indication that discharges were set correctly. The overall comparison of the simulated flooded areas with the ones depicted on the historical data was more than acceptable, the only significant difference concerned the northern part of the Pantano plane where the model showed a larger flooded area compared to the one shown on the map deriving from historical sources. Differences in minor areas may be caused by several local factors such as (a) small differences between 1961 and present topographies, (b) possible minor levee failures or overtopping not recorded into the historical documents and that cannot be predicted in a hydraulic model, and (c) secondary scale effects due to buildings nonincluded into the model. Historical documents aimed to record first-aid financial support and estimates of the amount required to restore damage caused mainly to premises on the flooded streets also contain an indication of the water depth. The information concerning water stages reached during a flood event is important not only because it would allow, jointly with the flood map, a double-checked definition of the extent of the flooded areas, but also because it would provide a dataset useful to test hydraulic model results. Unfortunately, available historical data do not allow a straightforward evaluation of the maximum water stage reached during the flood as only water depths are reported without any further information on the level of the floor from which each water depth was measured. Furthermore, the circumstance where in several cases, at the same address, significantly different water depths were measured is a clear indication that at the same location, more than one rooms with different floor levels were flooded. Therefore, in order to compare results of the hydraulic model with the measured (historical) water depth, we assumed that the majority of the premises were located at the street level so it may be inferred that the lowest water depths referred to water depth along the street and that higher water levels referred to rooms located below the street level.

A general comparison of the lower measured depths with the hydraulic model results shows a good agreement. The observation of the hydraulic model results also show that higher measured water depths refer to premises located inside lowland pockets that may be clearly distinguished in the DTM map. Examples are Munazio Planco and Appio Cladio streets, just downstream of the railway line, where consistent water stages higher than to 2 m were measured; similarly, in Torre delle Catene Street just upstream of the railway line, water depths up to 1.6 m were measured. The effect on the recorded water depths of the presence of lowered pockets is clearly shown also in the area located just downstream of Santa Maria delle Grazie Bridge where in Galanti Street, on the left bank, water stages were only up to 1.2 m, while in Abbazia Street on the right bank, in a small, lowered pocket, water stages reached up to 2.5 m. Finally, since the historical accounts blame the old Santa Maria degli Angeli Bridge as the main cause of the flood, a specific scenery, named here the *Sabato scenery*, where the bridge was removed, was implemented. In the Sabato scenery, to assess the effect of the combined discharges of the Sabato and Calore Irpino rivers on the water depth in the lower stretch of the Sabato River just upstream of the confluence, the discharge into the Calore Irpino River was reduced to 400 $m^3/s$. A comparison of the water depth contours for the two sceneries with and without the Santa Maria degli Angeli Bridge is depicted in Figure 19.

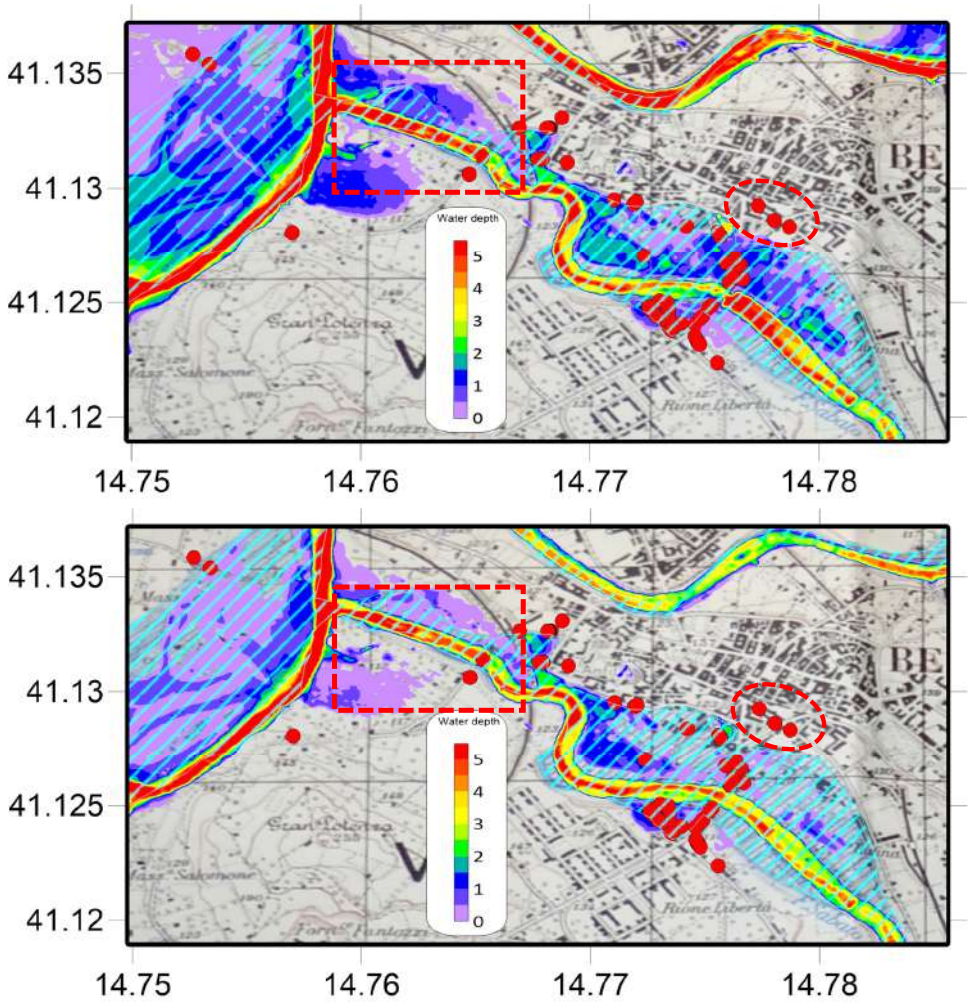


**Figure 19.** Comparison of water depth contours for the two sceneries: upper, 1961 scenery with Santa Maria degli Angeli Bridge (Sabato 1100 $m^3/s$ Calore Irpino 1250 $m^3/s$); lower, Sabato scenery without Santa Maria degli Angeli Bridge (Sabato 1100 $m^3/s$ Calore Irpino 400 $m^3/s$). Red dots represent buildings reported as damaged except those encircled into the oval; rectangles show the effect of the changing boundary conditions at the confluence. Water depths are in meters.

Summarizing, Figure 19 shows that the Santa Maria degli Angeli Bridge certainly made the flood consequences worse in the area close to its right bank. However, the model also shows that the afflux effect of the bridge was not extended far downstream. In the same Figure 19, the buildings encircled into the ovals were not affected by the flood coming directly from the Sabato River, but very likely, they were flooded from the water overflowing from the Morra Canal. Indeed, probably some stretches of the Morra Canal had a reduced discharge capacity due to the lack of maintenance following the closure of mills already some years before 1961. Furthermore, the area included into the rectangles shows the effect of the changing boundary conditions at the confluence: in the case of the 1961 scenery, water depths were increased by 1 m on average compared to the Sabato scenery that assumed a much lower discharge into the Calore Irpino River.

## 6. Conclusions

This research shed light for the first time on the intense rainfall period that characterized the autumn of 1961 in Campania and Molise (Southern Italy). Taking advantage of many unpublished archival sources, the number of municipalities involved was defined. Furthermore, a detailed picture of the physical effects, catalogued in seventeen different categories, and economic damage caused by rains and floods in municipalities

of the Campania region and the current Molise region were drawn. The overall damage to public buildings, cultural heritage, private buildings, and especially infrastructure was approximately EUR 220 million (2023). To this has to be added the damage to crops that cannot be quantified through the historical data consulted. For the town of Benevento, the area affected by the flooding of the two rivers that cross or surround the urban area was reconstructed in detail, also analysing the main cause that led to the overflow of the Sabato River in the town, relating to the reduced daylight outflow from a bridge crossing the river. The local historiographical study also highlighted how this cause is no longer present as the bridge was rebuilt after 1961 with an architectural scheme so as to reduce the afflux effect of the structure in the event of future river floods. In fact, after 1961, the Santa Maria degli Angeli Bridge suffered the same fate (demolition and reconstruction) as had happened to the old Vanvitelli Bridge located on the Calore Irpino River which contributed to exacerbate the flooding of 1949. It follows that after the two most significant floods of the 20th century (1949 and 1961), the flood risk in the urban area of Benevento has certainly been mitigated.

The set of this information and deductions can be useful to policymakers and stakeholders to evaluate adequate hydraulic risk control and mitigation policies of the two regions by comparing, in a retrospective framework, the risk mitigation works currently present in the territory with the picture of the effects produced (and potentially repeatable) by the intense hydrometeorological events of 1961. Furthermore, economic damage data can also be useful for insurance companies to improve the assessment of premiums for flood damage policies. Finally, due to the wealth of data gathered from historical documents consulted, the seventeen categories in which were catalogued the effects of floods can be useful for scholars and practitioners as a guideline to search for information on natural hazards in historical sources and historical archives particularly.

The study highlights the importance of the historical approach to investigate extreme natural events, underlining the need to build structured and interoperable databases to be made available to the different administrative levels and the different bodies responsible for land management. This information will be useful to know the effects caused by natural hazards so as to learn valuable lessons from the past about the extent of floods, the water flow routes as well as the evaluation of the negative consequences they produced in both physical and economic terms. In this perspective and to increase the use of historical data in natural hazards analysis, a *social approach* to research could be pursued with citizen participation in the scholarly projects through the transcription in editable and queryable format of the huge amount of historical information preserved in archives of both national and local institutions. What is more, the community-based and bottom-up approaches can be a first-rate way for people and in particular young generations to develop a shared understanding of hazardous phenomena, thus increasing the risk perception and awareness of natural hazards. Future research could investigate this perspective through some test sites (e.g., schools) spread throughout the country.

This research is not free from some limitations. It was not possible to associate some effects with individual municipalities (e.g., broken banks along rivers, landslides along road infrastructures), as geographical constraints were not always present in historical sources. Furthermore, some information on the effects on the territory and on the inhabited areas may be missing due to the incompleteness of the original technical-historical information analysed (e.g., damage to crops, damage to religious buildings). This could lead to an underestimation of the hazard and risk for some areas.

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**Data Availability Statement:** Data related to the effects on municipalities can be requested to the corresponding author.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## Appendix A. Historical Sources

Newspapers

[1a] Il Mattino del 20/10/1961
[2a] Il Mattino del 21/10/1961
[3a] Il Mattino del 22/10/1961
[4a] Il Mattino del 26/10/1961
[5a] Il Mattino del 27/10/1961
[6a] Il Mattino del 28/10/1961
[7a] Il Mattino del 29/10/1961
[8a] Il Mattino del 03/11/1961
[9a] Il Mattino del 07/11/1961
[10a] Il Mattino del 09/11/1961
[11a] Il Mattino del 10/11/1961
[12a] Il Roma del 20/10/1961
[13a] Il Tempo del 20/10/1961
[14a] Il Tempo del 27/10/1961
[15a] Il Tempo del 11/11/1961
[16a] L'Avanti del 20/10/1961
[17a] L'Unità del 20/10/1961
[18a] L'Unità del 21/10/1961
[19a] Messaggio d'Oggi—Cronache del Sannio del 16-31/10/1961
[20a] La Nazione del 20-10-1961

Archive sources
ASBN (Archivio di Stato di Benevento).

[1b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Marconigramma della Comandante della Compagnia Esterna CC di Benevento ai Ministeri Interno, Sanità, Lavori Pubblici, Lavoro e Previdenza Sociale di Roma; al Comando CC, Presidio Militare di Napoli, a Prefettura, Questura, Presidio Militare e Gruppo CC di Benevento riguardante smottamenti nel Comune di Durazzano. Benevento, 07/10/1961.

[2b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Marconigramma urgentissimo della Prefettura di Benevento al Ministero dell'Interno (Gabinetto, Direzione Generale P.S., Direzione Generale Assistenza Pubblica) riguardante notizie su violentissimo nubifragio verificatosi nel Comune di Durazzano. Benevento, 07/10/1961, ore 18:45.

[3b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Articolo dal titolo Gravi danni nel beneventano tratto dal quotidiano "Il Mattino" dell'8/10/1961.

[4b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Marconigramma urgentissimo della Prefettura di Benevento al Presidente dell'Amministrazione Provinciale

con oggetto richiesta di ripristino in tempi brevissimi strada provinciale tra Sant'Agata de' Goti e Durazzano rimasta interrotta. Benevento, 08/10/1961, ore 13:05.

[5b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Fonogramma del Comandante Provinciale dei Vigili del Fuoco (Firmato Antonio Barone) al Prefetto di Benevento riguardante gli interventi effettuati dai Vigili del Fuoco. Benevento, 08/10/1961.

[6b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Marco-nigramma della Prefettura di Benevento al Ministero dell'Interno (Gabinetto, Direzione Generale P.S., Direzione Generale Assistenza Pubblica) riguardante l'aggiornamento delle sulle operazioni di intervento nei comuni interessati dal violento nubifragio. Benevento, 09/10/1961.

[7b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Fonogramma della Prefettura di Benevento all'Ispettorato Agrario di Benevento con oggetto richiesta di sopralluoghi tecnici per accertamento danni. Benevento, 09/10/1961, ore 13:15.

[8b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Marconigramma urgente della Prefettura di Benevento al Ministero dell'Interno (Gabinetto, Direzione Generale P.S., Direzione Generale Assistenza Pubblica) riguardante Quadro della situazione alle ore 19:00 sensibilmente migliorata per deflusso acque fiume e cessazione temporanea delle piogge. Benevento, 19/10/1961.

[9b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Marconigramma urgentissimo della Prefettura di Benevento al Ministero dell'Interno (Gabinetto, Direzione Generale P.S., Direzione Generale Assistenza Pubblica) riguardante Informazioni circa la situazione dopo l'alluvione che ha colpito la parte bassa della città di Benevento (Rioni Libertà e San Cosimo) con un bambino morto. Benevento, 19/10/1961.

[10b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961–62 Alluvione—Atti diversi. Delibera del Consiglio Comunale di Benevento per l'erogazione della somma di £. 5.000.000 per interventi conseguenti alluvione Fiume Sabato. Benevento, 19/10/1961.

[11b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Marconigramma di ringraziamento della Prefettura di Benevento al Ministero dell'Interno (Direzione Generale Assistenza Pubblica e p.c. Gabinetto) per l'erogazione di somme per i primi urgenti soccorsi pro-alluvionati. Benevento, 20/10/1961.

[12b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Telegramma del Gruppo CC di Benevento ai Ministeri Interno, LL.PP., Lavoro e Previdenza Sociale, Agricoltura e Foreste e al Comando CC di Roma, COMOLITER di Napoli, CC Divisione e Brigata di Napoli, Legione CC di Napoli, Prefettura e Questura di Benevento riguardante aggiornamenti sull'alluvione del 19 ottobre 1961 in provincia di Benevento. Benevento, 21/10/1961.

[13b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Marconigramma della Prefettura di Benevento ai Ministeri dell'Interno, Lavoro, Industria e Commercio, Agricoltura e p.c. Interno riguardante aggiornamenti sulle operazioni di soccorso. Benevento, 21/10/1961, ore 19:05.

[14b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Marconigramma ur-gente della Prefettura di Benevento al Ministero dell'Interno (Gabinetto, Direzione Generale P.S., Direzione Generale Assistenza Pubblica) con oggetto Alluvione del 19/10/1961 in Provincia di Benevento causate dallo straripamento dei fiumi Sabato e calore e da piogge torrenziali con Allegato A (Elenco Aziende Industriali di Benevento danneggiate), Allegato B (Elenco Aziende Artigi-ane di Benevento danneggiate), Allegato C (Elenco Attività Commerciali e varie di Benevento danneggiate) e Verbale della riunione della giunta della Camera di Commercio Industria e Agricoltura di Benevento, Benevento, 22/10/1961.

[15b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con do cumenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Lettera della Prefettura di Benevento ai Ministeri Agricoltura e Foreste, Industria e Commercio, Lavoro e Previdenza Sociale, Lavori Pubblici e p.c. Interno e Finanze con oggetto Alluvione del 19/10/1961 in Provincia di Benevento. Benevento, 24/10/1961.

[16b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961 a Benevento e in Provincia. Lettera del Ministero dell'Industria e del Commercio alla Prefettura di Benevento con oggetto Richiesta di notizie sui danni verificatisi in seguito ad avversi eventi atmosferici. Roma, 25/10/1961.

[17b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961-62 Alluvione—Atti diversi. Lettera e relazione del Comandante Provinciale dei Vigili del Fuoco A. Barone al Ministero dell'Interno di Roma e p.c. Ispettorato VV.FF. di Palermo, alla Prefettura, Amministrazione provinciale e Comune di Benevento, alla Direzione Rivista Antincendio e Protezione Civile di Roma riguardante il resoconto delle operazioni di inter-vento e di soccorso, con allegate la Mappa rappresentante l'andamento dei fiumi Sabato e Calore a Benevento e parte della sua Provincia e la Mappa rappresentante distanze in Km tra alcuni Comuni della Provincia di Benevento. Benevento, 30/10/1961.

[18b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Marconigramma urgente della Prefettura di Benevento al Ministero dell'Interno (Gabinetto, Direzione Generale P.S., Direzione Generale Assistenza Pubblica) con oggetto cessazione di assistenza agli alluvionati e rientro nelle case rese abitabili. Benevento, 18/11/1961.

[19b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Relazione del Questore di Benevento inviata al Prefetto di Benevento relativamente allo sgombero degli edifici scolastici da parte degli alluvionati. Be-nevento, 22/11/1961.

[20b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione 1961—Segnalazioni a Roma e varie. 1961 Alluvione—Varie Segnalazioni a Roma. 1° Benevento 19/10/1961, 2° Sant'Agata e Durazzano 7/10/1961. Alluvione 19/10/1961—Segnalazioni e rapporti a Roma. Lettera della Prefettura di Benevento al Ministero dell'Interno (Gabinetto, Direzione Generale P.S., Direzione Generale Assistenza Pubblica) riguardante la conclusione delle operazioni di sgombero degli edifici scolastici adibiti a ricoveri di emergenza. Benevento, 24/11/1961.

[21b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. Lettera della Prefettura di Benevento al Presidente dell'E.C.A. di Benevento riguardante le misure di assistenza a favore degli alluvionati con allegato elenco dei capi-famiglia destinatari dei sussidi. Benevento, 30/11/1961.

[22b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961–62 Alluvione—Atti diversi. Delibera del Consiglio Comunale di Benevento per l'erogazione della somma di £. 5.000.000 per interventi conseguenti alluvione Fiume Sabato. Benevento, 12/12/1961.

[23b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961 a Benevento e in Provincia. Promemoria ed Elenco degli alloggi degli alluvionati che possono essere riparati e relativa spesa. S.l., s.d.

[24b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961 a Benevento e in Provincia. Relazione Promemoria riguardante gli aggiornamenti al 31/10/1961 dei danni causati dall'alluvione del 19/10/1961. S.l., s.d.

[25b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961 a Benevento e in Provincia. Promemoria su carta della Prefettura riguardante la grave e passiva situazione del Comune di Benevento per gli anni 1960 e 1961. S.l., s.d.

[26b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. 1961-62 Alluvione—Atti diversi. Lettera di ringraziamento della Ditta Cavalieri Arturo- Molino a cilindri al Comando dei VV.FF. di Benevento e p.c. Prefetto di Benevento per l'operato di alcuni Vigili del Fuoco durante l'alluvione del 19/10/1961. S.l., s.d.

[27b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. Elenco Assistenza alle famiglie alluvionate. S.l., s.d.

[28b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. Promemoria riguardante condizioni economiche di alluvionati. S.l., s.d.

[29b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. N° 2 elenchi dei capifamiglia destinatari dei sussidi. S.l., s.d.

[30b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. Elenco delle famiglie alluvionate per le quali l'Ufficio Tecnico Erariale non ha effettuato la valutazione danni ai mobili. S.l., s.d.

[31b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. Esito accertamenti svolti dal Comandante dei Vigili Urbani. S.l., s.d.

[32b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. Elenco delle famiglie alluvionate non schedate dal Comune di Benevento e per le quali l'Ufficio Tecnico Erariale ha accertato danni ai mobili. S.l., s.d.

[33b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. Elenco delle famiglie da sottoporre a valutazione dell'Ufficio Tecnico Erariale per danni ai mobili. S.l., s.d.

[34b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B. 292. Alluvione del 19 ottobre 1961. Assistenza alle famiglie alluvionate—Elenchi. N° 6 elenchi dei capifamiglia destinatari dei sussidi. S.l., s.d.

[35b] ASBN, Fondo Prefettura—Atti di Gabinetto, estremi cronologici: 1870–1968 con documenti anteriori al 1870 e successivi 1968, B.298, Schede di rilevamento danni causati dall'alluvione a cura del Comune di Benevento. s.l., s.d.

ASDPC (Archivio Storico del Dipartimento della Protezione Civile, Roma).

[36b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Sindaco di San Felice a Cancello (CE) indirizzata alla Direzione Generale dei Servizi Speciali del MM.LL.PP. di Roma riguardante danni alla strada statale, alle case coloniche ed alle campagne circostanti per straripamento dell'Alveo Arena. San Felice a Cancello, 10/10/1961, ore 17:45.

[37b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante Segnalazione danni in vari comuni della Campania a seguito delle violenti piogge alluvionali dei giorni 7 e 8 ottobre 1961. Napoli, 11/10/1961, ore 16:00.

[38b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Sindaco di San Felice a Cancello (CE) indirizzata alla Direzione Generale dei Servizi Speciali del MM.LL.PP. di Roma riguardante straripamento dell'Alveo Arena a seguito di piogge torrenziali. San Felice a Cancello, 18/10/1961, ore 18:00.

[39b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante segnalazione di danni nel Comune di San Felice a Cancello. Napoli, 19/10/1961, ore 12:50.

[40b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante segnalazione di danni nei Comuni di San Felice a Cancello e Marina di Vietri. Napoli, 19/10/1961, ore 21:00.

[41b] ASDPC, Ministero dell'Interno, Direzione Generale di Protezione Civile e Servizi Antincendi, Alluvioni 18/19 ottobre 1961—Avellino e Benevento, B. 9. Telegramma del Comando CC di Benevento ai Ministeri Interno, LL.PP., Lavoro e Previdenza Sociale, Agricoltura e Foreste; al Comando CC di Roma, COMOLITER di Napoli, CC Divisione e Brigata di Napoli, Legione CC di Napoli, Prefettura e Questura di Benevento riguardante situazione alluvione del 19 ottobre 1961 in provincia di Benevento. Benevento, 20/10/1961.

[42b] ASDPC, Ministero dell'Interno, Direzione Generale di Protezione Civile e Servizi Antincendi, Alluvioni 18/19 ottobre 1961—Avellino e Benevento, B. 9. Rapporto del Presidente della 3 Sezione del Consiglio Superiore dei LL.PP. Giuseppe Rinaldi al Ministro dei LL.PP. sulla visita eseguita dopo l'alluvione del 18-19/10/1961 nella zona delle province di Avellino e Benevento. Roma 20/10/1961.

[43b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante segnalazione danni nei

Comuni di Avellino, Altavilla Irpina, Atripalda, Mercogliano, Tufo, Solofra, Vallata, Prata, Volturara Irpina. Napoli, 20/10/1961, ore 13:10.

[44b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma dell'Ingegnere dirigente Lorito (del Genio Civile) indirizzata alla Direzione Generale dei Servizi Speciali del MM.LL.PP., all'Ufficio Interrogazioni di Roma, al Prefetto di Salerno ed al Provveditore alle OO.PP. di Napoli riguardante segnalazione di una tromba d'aria che ha investito l'abitato del Comune di Perdifumo causando lo scoperchiamento di circa 40 fabbricati, della Chiesa parrocchiale e dell'edificio scolastico ed il ferimento di 7 persone. Salerno, 20/10/1961, ore 13:30.

[45b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma dell'Ingegnere dirigente Lorito (del Genio Civile) indirizzata alla Direzione Generale dei Servizi Speciali del MM.LL.PP., all'Ufficio Interrogazioni di Roma, al Prefetto di Salerno ed al Provveditore alle OO.PP. di Napoli riguardante invio personale tecnico per sopralluogo nel Comune di Roscigno. Salerno, 20/10/1961, ore 13:50.

[46b] ASDPC, Ministero dell'Interno, Direzione Generale di Protezione Civile e Servizi Antincendi, Alluvioni 18/19 ottobre 1961—Avellino e Benevento, B. 9. Telegramma del Comando CC di Benevento ai Ministeri Interno, LL.PP., Lavoro e Previdenza Sociale, Agricoltura e Foreste; Al Comando CC di Roma, CC Divisione e Brigata di Napoli, Legione CC di Napoli, Prefettura e Questura di Benevento riguardante normalizzazione della situazione per miglioramento delle condizioni atmosferiche e rapido deflusso delle acque. Benevento, 21/10/1961.

[47b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante segnalazione danni a seguito alluvione del 18/19 ottobre 1961 nella Regione Campania ed in provincia di Campobasso. Napoli, 21/10/1961, ore 21:05.

[48b] ASDPC, Ministero dell'Interno, Direzione Generale di Protezione Civile e Servizi Antincendi, Alluvioni 18/19 ottobre 1961—Avellino e Benevento, B. 9. Lettera/relazione del Prefetto Bruschelli di Benevento al Ministero dell'Interno (Ufficio di Gabinet-to, Direzione generale della P.S, Direzione Generale Assistenza Pubblica) riguardante Alluvioni del 19 ottobre 1961 in Provincia di BN, causate da straripamenti dei Fiumi Sabato e Calore e da piogge torrenziali, Benevento, 22/10/1961.

[49b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante risultati degli accertamenti eseguiti dal Genio Civile di Salerno in vari Comuni della provincia. Napoli, 22/10/1961 ore 10:20.

[50b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante segnalazione di danni nei Comuni di Benevento, Apice e Tocco Caudio. Napoli, 22/10/1961, ore 10:20.

[51b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante segnalazione danni nelle province di Avellino, Salerno e Napoli. Roma, 23/10/1961, ore 12:15.

[52b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. con richiesta di accertamenti funzionario del Genio Civile di Salerno nel Comune di Roscigno. Napoli, 23/10/1961, ore 13:50.

[53b] ASDPC, Ministero dell'Interno, Direzione Generale di Protezione Civile e Servizi Antincendi, Alluvioni 18/19 ottobre 1961—Avellino e Benevento, B. 9. Lettera del Prefetto

di Benevento ai Ministeri dell'Agricoltura e Foreste, dell'Industria e del Commercio, del Lavoro e Previdenza Sociale, dei Lavori Pubblici, dell'Interno e delle Finanze riguardante Trasmissione di copia del-la relazione conclusiva riportanti approssimativamente i danni causati dallo straripamento dei Fiumi Sabato e Calore e da piogge torrenziali in tutta la provincia di BN. Benevento, 24/10/1961.

[54b] ASDPC, Div. 26, A.A.G.G., Alluvioni 1961, 1959. Situazione danni—Legge per le Alluvioni—Servizio P.S. Vicenza e Viterbo, B. 24. Telegramma del Provveditore alla Direzione Generale dei Servizi Speciali del MM.LL.PP. riguardante risultati degli accertamenti eseguiti dal Genio Civile di Salerno nel Comune di Roscigno. Napoli, 24/10/1961, ore 11:00.

[55b] ASDPC, Ministero dell'Interno, Direzione Generale di Protezione Civile e Servizi Antincendi, Alluvioni 18/19 ottobre 1961—Avellino e Benevento, B. 9. Telegramma del Comando CC di Cerreto Sannita (BN) ai Ministeri Interno, LL.PP., Lavori Pubblici, Agricoltura e Foreste, Trasporti; al Comando CC di Roma, CC Divisione e Brigata di Napoli, Legione CC di Napoli, Prefettura e Questura di Benevento, Gruppo CC e Compagnia Esterna di Benevento riguardante franamento in località Ponte San Marco Comune di Morcone—BN). Cerreto Sannita (BN), 06/11/1961.

[56b] ASDPC, Relazione Illustrativa sull'alluvione dell'ottobre-novembre 1961 nella Campania e nel Molise (a cura del Provveditorato alle Opere Pubbliche per la Campania ed il Molise). S.l., s.d.

[57b] ASDPC, Intervento di soccorso per alluvione in Benevento e provincia (19-23 Ottobre 1961). Relazione tecnica del dott. Ing. Antonio Barone, Comandante Provinciale dei VV.F. di Benevento. S.l, s.d.

[58b] ASDPC, Avellino e Benevento, Alluvione 1961. Pianta della città di Benevento–Zone alluvionate. S.l., s.d.

[59b] ASDPC, Avellino e Benevento, Alluvione 1961. Pianta della città di Benevento–Zona allagata nell'abitato di Benevento e immediate vicinanze il giorno 19 ottobre 1961. S.l., s.d.

[60b] ASDPC, Avellino e Benevento, Alluvione 1961. N° 12 foto della città di Benevento allagata. S.l., s.d.

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