

22 DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN

Michele RUSSO, Marta ACIERNO (Eds.)



DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
Vol. XXII

DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
Vol. XXII

Editors
Michele Russo, Marta Acierno
Sapienza Università di Roma



SAPIENZA
UNIVERSITÀ DI ROMA



Series Defensive Architecture of the Mediterranean

General editor: Pablo Rodríguez-Navarro

The papers published in this volume have been peer-reviewed by the Scientific Committee of FORTMED2026_Roma

© editors: Michele Russo, Marta Acierno

© editorial team: Silvia Seller, Martina Casciola, Giovanna Ferra, Giulia Flenghi, Carlotta Mellone, Luca Martelli

© cover picture: Francesco Giampietro

© papers: the authors

© publishers: Sapienza Università Editrice, edUPV (Universitat Politècnica de València)

© Copyright 2026 Sapienza Università Editrice

Dipartimento di Storia, Disegno e Restauro dell'Architettura

ISBN: 978-88-9377-433-8 (three-volume collection)

DOI: <https://doi.org/10.13133/9788893774338>

ISBN: 978-88-9377-434-5 (vol. 22)

DOI: <https://doi.org/10.13133/9788893774345>

© Copyright edUPV (Universitat Politècnica de València) 2026

ISBN: 978-84-1396-410-2 (three-volume collection)

ISBN: 978-84-1396-411-9 (vol. 22)

edUPV Ref. 6858_01_01_01

DOI: <https://doi.org/10.4995/Fortmed2026.2026.21472>

ISSN: 2792-5633 (*Series Defensive Architecture of the Mediterranean*)

Proceedings of the International Conference on Fortifications of the Mediterranean Coast FORTMED 2026

Roma, 19, 20 and 21 February 2026

CC BY-NC-SA 4.0

Legal Code: <https://creativecommons.org/licenses/by-nc-sa/4.0/legalcode.en>



Organization and committees

Organizing Committee

Chairs:

Russo Michele. Sapienza Università di Roma
Acierno Marta. Sapienza Università di Roma

Scientific Secretary:

Seller Silvia. Sapienza Università di Roma

Topic Chairs:

Acierno Marta. Sapienza Università di Roma
Cutarelli Silvia. Sapienza Università di Roma
Russo Michele. Sapienza Università di Roma
Spadafora Giovanna. Università di Roma Tre

Members:

Casciola Martina, Ferra Giovanna, Flenghi Giulia, Martelli Luca,
Mellone Carlotta. Sapienza Università di Roma

Scientific Committee

Acierno, Marta. Sapienza Università di Roma. Italy
Almagro Gorbea, Antonio. Real Academia de Bellas Artes de San Fernando. Spain
Barrera Vera, José Antonio. Universidad de Sevilla. Spain
Bertocci, Stefano. Università degli Studi di Firenze. Italy
Bevilacqua, Marco Giorgio. Università di Pisa. Italy
Bouزيد, Boutheina. École Nationale d'Architecture. Tunisia
Bragard, Philippe. Université Catholique de Louvain. Belgium
Bru Castro, Miguel Ángel. Instituto de Estudios de las Fortificaciones – AEAC. Spain
Cámara Muñoz, Alicia. UNED. Spain
Camiz, Alessandro. Özyeğin University. Turkey
Campos, João. Centro de Estudos de Arquitectura Militar de Almeida. Portugal
Castrorao Barba, Angelo. Escuela de Estudios Árabes, CSIC. Spain
Cherradi, Faïssal. Ministère de la Culture du Royaume du Maroc. Morocco
Cirafici, Alessandra. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
Cirillo, Vincenzo. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
Cobos Guerra, Fernando. Arquitecto. Spain
Columbu, Stefano. Università di Cagliari. Italy
Coppola, Giovanni. Università degli Studi Suor Orsola Benincasa di Napoli. Italy
Córdoba de la Llave, Ricardo. Universidad de Córdoba. Spain
Cornell, Per. University of Gothenburg. Sweden
Corniello, Luigi. University of Campania *Luigi Vanvitelli*. Italy
Cutarelli, Silvia. Sapienza Università di Roma. Italy
Daci, Entela. Universiteti Politeknik i Tiranës. Albania
Dameri, Annalisa. Politecnico di Torino. Italy
Eppich, Rand. Universidad Politécnica de Madrid. Spain
Fairchild Ruggles, Dorothy. University of Illinois at Urbana-Champaign. USA
Fatta, Francesca. Università Mediterranea di Reggio Calabria. Italy
Faucherre, Nicolas. Aix-Marseille Université – CNRS. France
Fiorino, Donatella Rita. Università degli Studi di Cagliari. Italy

García Porras, Alberto. Universidad de Granada. Spain
 García-Pulido, Luis José. Escuela de Estudios Árabes, CSIC. Spain
 Georgopoulos, Andreas. Nat. Tec. University of Athens. Greece
 Gil Crespo, Ignacio Javier. Asociación Española de Amigos de los Castillos. Spain
 Gil Piqueras, Teresa. Universitat Politècnica de València. Spain
 Guarducci, Anna. Università di Siena. Italy
 Guidí, Gabriele. Politecnico di Milano. Italy
 González Avilés, Ángel Benigno. Universitat d'Alacant. Spain
 Hadda, Lamia. Università degli Studi di Firenze. Italy
 Harris, John. Fortress Study Group. United Kingdom
 Islami, Gjergji. Universiteti Politeknik i Tiranës. Albania
 Jiménez Castillo, Pedro. Escuela de Estudios Árabes, CSIC. Spain
 León Muñoz, Alberto. Universidad de Córdoba. Spain
 López González, Concepción. Universitat Politècnica de València. Spain
 Marotta, Anna. Politecnico di Torino. Italy
 Martín Civantos, José María. Universidad de Granada. Spain
 Martínez Medina, Andrés. Universitat d'Alacant. Spain
 Mazzoli-Guintard, Christine. Université de Nantes. France
 Mirabella Roberti, Giulio. Università degli Studi di Bergamo. Italy
 Mira Rico, Juan Antonio. Universitat Oberta de Catalunya. Spain
 Navarro Palazón, Julio. Escuela de Estudios Árabes, CSIC. Spain
 Orihuela Uzal, Antonio. Escuela de Estudios Árabes, CSIC. Spain
 Pane, Andrea. Università Federico II di Napoli. Italy
 Parrinello, Sandro. Università di Pavia. Italy
 Pirinu, Andrea. Università di Cagliari. Italy
 Piscitelli, Manuela. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
 Pompejano, Federica. Università di Genova, Italy
 Quesada García, Santiago. Universidad de Sevilla. Spain
 Rodríguez Domingo, José Manuel. Universidad de Granada. Spain
 Rodríguez-Navarro, Pablo. Universitat Politècnica de València. Spain
 Romagnoli, Giuseppe. Università degli Studi della Toscana. Italy
 Ruiz-Jaramillo, Jonathan. Universidad de Málaga. Spain
 Russo, Michele. Sapienza Università di Roma. Italy
 Santiago Zaragoza, Juan Manuel. Universidad de Granada. Spain
 Spadafora, Giovanna. Università di Roma Tre. Italy
 Spallone, Roberta. Politecnico di Torino. Italy
 Toscano, Maurizio. Universidad de Granada. Spain
 Ulivieri, Denise. Università di Pisa. Italy
 Veizaj, Denada. Universiteti Politeknik i Tiranës, Albania
 Varela Gomes, Rosa. Universidade Nova de Lisboa. Portugal
 Verdiani, Giorgio. Università degli Studi di Firenze. Italy
 Vitali, Marco. Politecnico di Torino. Italy
 Vokshi, Armand. Universiteti Politeknik i Tiranës, Albania
 Zaragoza, Catalán Arturo. Generalitat Valenciana. Spain
 Zerlenga, Ornella. Università degli Studi della Campania *Luigi Vanvitelli*. Italy

Advisory Committee

Pablo Rodríguez-Navarro. President of FORTMED. Universitat Politècnica de València
 Giorgio Verdiani. Vice-president of FORTMED. Università degli Studi di Firenze
 Teresa Gil Piqueras. Secretary of FORTMED. Universitat Politècnica de València
 Roberta Spallone. FORTMED advisor. Politecnico di Torino
 Ornella Zerlenga. FORTMED advisor. Università degli Studi della Campania *Luigi Vanvitelli*
 Vincenzo Cirillo, FORTMED advisor. Università degli Studi della Campania *Luigi Vanvitelli*

Organized by:



SAPIENZA
UNIVERSITÀ DI ROMA

DIPARTIMENTO DI STORIA
DISEGNO E RESTAURO
DELL'ARCHITETTURA

FACOLTÀ DI ARCHITETTURA

Partnership:



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DIDA
DIPARTIMENTO DI
ARCHITETTURA



Universitat d'Alacant
Universidad de Alicante



**Politecnico
di Torino**

Dipartimento
di Architettura e Design



DESTEC
DIPARTIMENTO DI INGEGNERIA
DELL'ENERGIA, DEI SISTEMI, DEL TERRITORIO E DELLE COSTRUZIONI



CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



UNIVERSITETI
POLITEKNIK
I TIRANËS



Università
degli Studi
della Campania
Luigi Vanvitelli
Dipartimento di Architetture
Disegno Industriale



SAPIENZA
UNIVERSITÀ DI ROMA

With the patronage of:



**Istituto Italiano
dei Castelli**



International Council on
Monuments and Sites

Consiglio Nazionale Italiano
dei Monumenti e dei Siti

With the sponsorship of:



COIMA ITALIA



DIA
PREMIUM FOOD COMPANY

Table of contents

Preface	XIII
Contributions	
HISTORICAL RESEARCH	
Castruccio Castracani and the Castles of Lunigiana <i>Claudia Aveta, Stefano Calabretta</i>	5
The Della Rovere Castles in the Unpublished Drawings by Girolamo Cialdieri: The Muzio Oddi Album from the University of St Andrews <i>Paolo Bertoncini Sabatini, Marco Giorgio Bevilacqua</i>	13
The fortress of Sinj: fortification projects and border defence in Venetian Dalmatia until 1714..... <i>Darka Bilić, Krasanka Majer Jurišić</i>	21
<i>Plan de la Ville et Citadelle</i> : representations in the Napoleonic era for a border stronghold..... <i>Cristina Boido, Pia Davico</i>	29
Oneglia's fortifications: new documents and remaining legacies <i>Maria Vittoria Cattaneo</i>	37
From <i>Mellianum</i> to Miglianico, from the <i>castrum</i> to the Masci palace: the difficult protection of an Adriatic historical center..... <i>Stefano Cecamore, Claudio Varagnoli</i>	45
The Tower of Tablate, a case of a Nasrid defensive tower in the Lecrín Valley..... <i>Alessia Chillemi</i>	53
Art of War in Teofilo Gallaccini's Drawings <i>Fabio Colonnese</i>	61
The Ismaili fortresses of the 'Assassins' in Syria: a heritage yet to be discovered and explored <i>Giovanni Coppola</i>	69
Pompeo Robutti Gentleman, a military engineer and treatise writer <i>Annalisa Dameri</i>	77
Oriental marbles in Castel del Monte in Andria (Puglia, Italy) <i>Maurizio Delli Santi</i>	85
Stately towers in the Estate and House of Baza of the Enríquez-Luna lineage (Kingdom of Granada, Spain)..... <i>Luis José García-Pulido, Lorenzo Sánchez Quirante, Frida Salazar Martín</i>	91

The Kasbah of Essaouira. A fortified naval base on the Atlantic coast of Morocco (18th century)	99
<i>Lamia Hadda</i>	
The little-known warning function of the bell tower of the Mother Church of Acireale in the 16th-17th century	107
<i>Davide Li Rosi</i>	
Fortifications of the maritime stronghold of Civitavecchia: expansions and transformations between the Papal States and the Kingdom of Italy	115
<i>Carmen Vincenza Manfredi</i>	
Perspectives of <i>Monumenta bellica</i> in the treatise of Andrea Pozzo.....	123
<i>Anna Marotta</i>	
Fortresses and castles in Val d’Aniene. Traces in historical cartography and landscape.....	131
<i>Valeria Montanari</i>	
Procedures, management and workers in war demolitions: the adjustment and dismantling of Castro’s fortifications (1641-1649).....	139
<i>Giordano Ocelli</i>	
From caravanserai to fortress: early typological foundations of medieval fortifications on the Mediterranean coast.....	147
<i>Mohand Oulmas, Angel Benigno Gonzalez Aviles, Mohammed Chabi, Amina Abdessemed-Foufa</i>	
Where was the Church located in St Michael’s Fortress in Šibenik?	153
<i>Karla Papeš</i>	
<i>Villanova Maris Valentiae</i> , a walled town by the port of Valencia	161
<i>Rosa M^a Pastor Villa</i>	
The defenses of Corsica in the second half of the sixteenth century. El Fratin’s design for the citadels of Ajaccio and San Fiorenzo	169
<i>Andrea Pirinu</i>	
Engineers against water: The case of the aljibes in La Cabaña fortress in Havana	177
<i>Talia Quesada Campaña, Marica Forni</i>	
Port and coastal fortifications from Brundisium to Brindisi: new geoarchaeological data and archival research.....	185
<i>Fabiana Ribezzi, Maurizio Lazzari</i>	
The image of Territorial ‘ <i>Entremeios</i> ’ in the Vila Nova de Cerveira-Goián Defensive Subsystem (1621-1763). Cartographic analysis for reading the military landscape	193
<i>Tiago Rodrigues, João Cabeleira</i>	
Examples of military architecture in Piedmont in the first decades of the eighteenth century through the drawing collection of the engineer Augusto de la Vallée (1698-1742)	201
<i>Marcello Schirru</i>	
Analyzing the design and structure of the Sea Walls of Constantinople	209
<i>Nisa Semiz</i>	
Parallel Lives: Guarini and Dechalets and the Theories of Fortification	217
<i>Roberta Spallone, Martina Rinascimento</i>	

Critical comparison of von Sholl's never-built plans for the Verona bridgehead	225
<i>Denise Ulivieri, Michele Russo</i>	
THEORETICAL CONCEPTS	
Urban walls and castles within bastioned fortifications: a contrastive analysis.....	235
<i>Francesco Broglio</i>	
From the high citadels of Pedro Escrivá in Naples to the new portuguese paradigm of coastal city-fortresses	243
<i>João Campos</i>	
The Great Castle of Brindisi. A palimpsest of poliorcetics.....	251
<i>Astro Ferrante</i>	
Defensive Architecture and the Oval Shape in Military Treatises between the 16th and 18th Centuries	259
<i>Ornella Zerlenga, Margherita Cicala, Riccardo Miele, Vincenzo Cirillo</i>	
BUILT HERITAGE RESEARCH	
Torre Paola in the Circeo National Park (LT), between history, restoration and valorisation	269
<i>Maria Letizia Accorsi, Roberta Maria Dal Mas, Marta Formosa</i>	
Layers of Stone: Investigating the Building Techniques of Vico's Ancient Wall.....	277
<i>Marta Acierno, Giovanna Ferra, Elisabetta Giorgi, Carlo Inglese</i>	
The Tower of San Domenico: A Knowledge Project for the Restoration of the Walls of Vico nel Lazio	285
<i>Marta Acierno, Elisabetta Giorgi, Carlo Inglese, Silvia Seller</i>	
Rediscovery of a Sicilian coastal defensive complex: historical evolution and morphological analysis of the Brolo tower-castle (ME).....	293
<i>Alessio Altadonna, Alessia Chillemi, Giuseppina Salvo, Fabio Todesco</i>	
Multidisciplinary Studies, Knowledge Development, and Dissemination of Fragile and Inaccessible Fortified Heritage: The Case Study of <i>Castle of Uggiano Ruins</i> in Ferrandina (MT), Italy	301
<i>Daniele Altamura, Antonio Pecci, Michele Iacovazzi, Pietro B. Carosone, Leonardo Pecora, Giuseppe Lafergola, Paolo D'Amelio</i>	
The Borgo Fantasma of Celleno: a medieval fortification	309
<i>Barbara Aterini, Raffaele Vergaro</i>	
The Fortress of Senigallia and the fortifications in the Malatesta territory in the 15th century. Typological comparisons between coeval fabrics and conservation and enhancement features.....	317
<i>Alfonso Ausilio, Alessandra Pacheco</i>	
From abandonment to heritage resource: hypotheses for the virtual restitution of the Castle of Villanueva del Fresno (Badajoz)	325
<i>Alejandro Bocanegra Cayero</i>	
Comparative data at the conclusion of the conservation restoration works of the civic walls in Piazza Fiera (Trento).....	333
<i>Anna Bruschetti, Monica Endrizzi, Giorgia Gentilini, Elena Milesi</i>	

Ceilings in medieval defensive buildings in Sicily. The case study of the painted ceiling of the XIV century Ventimiglia's Castle in Castelbuono (Palermo): comparisons between regional and European examples	341
<i>Maria Teresa Campisi, Giulia Scalia</i>	
Historical continuities and physical discontinuities among fortified elements of the Genoese coast.....	349
<i>Cristina Cándito, Alessia Segalerba</i>	
The Angevin-Aragonese Castle of Gaeta: Historical Sources and Restoration Insights through Paterna Baldizzi's Drawings.....	357
<i>Luigi Cappelli</i>	
The fortress of the Royal Citadel of Messina. A project for the regeneration and restoration of the falcata area	365
<i>Enrico Carafa, Vincenzo Guadagno, Salvatore Tito Vaccaro</i>	
The fortified rural landscape in Piedmont: some examples of 'rural castles' between Turin and Racconigi	373
<i>Federica Castiglione, Alice Vergano</i>	
A strategic fortified route between the Guadalquivir River and the Kingdom of Granada (Spain)	381
<i>Pilar Chías, Tomás Abad, Lucas Fernández-Trapa</i>	
The defensive complex of the Lecrín Valley: between intervisibility and typological definitions of Nasrid defensive elements	389
<i>Alessia Chillemi, Jose Francisco Peral Lopez, Fabio Todesco</i>	
Fortified masserie (farmhouses) along the transhumance routes in the Abruzzo region	397
<i>Annalisa Colecchia</i>	
Promoting knowledge and interpretation of fortified architecture: the case of the digital reconstruction of the central courtyard of Trani Swabian Castle	405
<i>Daniela Concas, Davide Mezzino, Fabrizio Tritto</i>	
The forts of Valdivia: Theory and methods in the restoration of Chile's colonial ruins (1950-54)	413
<i>María Victoria Correa Baeriswyl, Juan Blánquez Pérez</i>	

Preface

Fortifications constitute one of the most complex and stratified expressions of the built heritage, in which technical knowledge, political structures, territorial strategies and cultural representations are closely intertwined. Their understanding necessarily rests on an interdisciplinary approach, capable of bringing into dialogue historical, architectural, engineering, archaeological and landscape perspectives. Within this framework, the historiographical reflection of Marc Bloch appears particularly pertinent and fruitful, as it highlights how historical knowledge is grounded in the crossing of perspectives and in the capacity to interrogate the traces of the past through multiple viewpoints; a principle that finds in fortified architectures a particularly productive field of application, given their systemic nature and their long duration over time (Bloch, M., *Apologie pour l'histoire ou Métier d'historien*, Paris, 1949). As a matter of fact, fortifications are not merely military artefacts, but complex devices that have structured cities and territories, contributing decisively to the definition of their forms and spatial hierarchies. They are situated at the intersection of different scales, ranging from the territorial and urban dimensions to the level of construction and material detail. Within this multiscale articulation, architecture assumes the role of a hinge, capable of connecting urban design with knowledge of construction techniques, and the overall layout of defensive systems with the material reality of structural solutions. To understand fortifications therefore means recognizing and interpreting the relationships between these different scales, avoiding reductive approaches and fragmented readings.

The international conference FORTMED, conceived as a space for encounter and exchange among different disciplines and research traditions, offering a qualified forum for discussion on issues related to the knowledge, conservation, and enhancement of fortifications. In a context marked by profound social, environmental, and technological transformations, the conference aims to contribute to the construction of a shared culture of fortified heritage, grounded in a critical awareness of its historical, architectural, and landscape values, as well as of its role in the present.

The idea for FORTMED was born in 2014 from the brilliant initiative of a research group at the Polytechnic University of Valencia, coordinated by Pablo Rodríguez-Navarro, who gathered international researchers on this topic with the primary objective of exchanging and sharing knowledge on fortifications to understand better, evaluate, manage, and enhance them. On this basis, the FORTMED 2015 conference, organised at the Instituto Universitario de Restauración del Patrimonio of the Universitat Politècnica de València on 15, 16 and 17 October 2015, was proposed with the hope of starting a new tradition and making FORTMED a consolidated reality. Since then, eight other institutions have taken up the tradition. The second edition of FORTMED 2016 was organised by the Department of Architecture of the University of Florence and chaired by Giorgio Verdiani on 10, 11 and 12 November 2016. The third edition of FORTMED 2017 was curated by Víctor Echarri Iribarren and held on 26, 27, and 28 October 2017 at the Escuela Técnica Superior de Arquitectura of the Universitat d'Alacant. The fourth edition of FORTMED 2018 was organised by the Department of Architecture and Design of the Politecnico di Torino on 18, 19 and 20 October 2018, chaired by Anna Marotta and Roberta Spallone. The fifth edition of FORTMED 2020, organised by the Escuela de Estudios Árabes in Granada under the coordination of Julio Navarro Palazón and Luis José García-Pulido, suffered several setbacks due to the outbreak of the COVID-19 pandemic, moving from an in-person conference scheduled for 26, 27 and 28 March 2020 in Granada to an online conference on 4, 5 and 6 November 2020.

Precisely because of these difficult circumstances and the “slow return to normality”, there was a time jump that led to the sixth edition of FORTMED 2023, organised by the Department of Energy, Systems, Territory and Construction Engineering (DESTEC) of the University of Pisa under the coordination of Marco Giorgio Bevilacqua and Denise Olivieri on 23 and 24 and 25 March 2023. Since then, conferences have been held annually, with the seventh edition, FORTMED 2024, organised by Gjergji Islami and Denada Veizaj with the support of the Polytechnic University of Tirana, taking place on 18, 19 and 20 April 2024. The eighth edition, FORTMED 2025, was hosted by the University of Campania Luigi Vanvitelli in Caserta and chaired by Ornella Zerlenga and Vincenzo Cirillo on 10, 11 and 12 April 2025.

Looking at this sequence of events, we can appreciate some aspects that make this conference unique. On the one hand, international venues demonstrate a desire to build and grow a large community around the domain of fortifications. On the other hand, there is the incredible quantitative and qualitative richness contained in the macro-theme of fortifications, which is developed through a huge number of theoretical and existing case studies scattered across territories and expressed in multiple forms of study and analysis aimed at knowledge, conservation, and promotion. A complex and rich ecosystem, represented by FORTMED over the years with great care, and perfectly represented by the collection of open-access conference proceedings, which guarantees excellent visibility and accessibility. With the ninth edition of the Rome conference, the FORTMED series of publications reaches 24 volumes in 2026, with more than 10,000 pages dedicated to research on the macro-theme of fortifications, a heritage to be preserved and promoted. The comprehensive overview of such a rich and diverse system of knowledge is certainly a harbinger of future developments, confirming the valuable insight gained in 2015. The same evidence is provided by the fact that the annual event always attracts a large number of scholars, showing that this subject is constantly evolving and offers new nutrition for thought, while increasingly consolidating a community built over time. The FORTMED 2026 Conference, now reaching its 9th edition, will be in Rome from 19th to 21st of February, 2026, hosted by Sapienza University of Rome, with the support of the Department of History, Representation and Restoration of Architecture and the Faculty of Architecture. The conference, following the past format, is structured around seven thematic areas, designed to cover the full spectrum of research and practice in the field of fortified heritage: Historical and Documentary, Theoretical Concepts, Research on Built Heritage, Characterization of Geomaterials; Digital Heritage, Culture and Management of Cultural Heritage, Miscellaneous.

In this context, the challenges and opportunities offered by digitalization assume a central role. Digital technologies now allow the collection, organization and interrelation of large quantities of heterogeneous data, making it possible to construct complex knowledge systems capable of reflecting the multilayered nature of fortifications. However, such tools cannot be regarded as mere technical support: they entail methodological and interpretative choices that profoundly affect the way heritage is understood and, consequently, transformed. The availability of integrated information systems represents a fundamental resource for guiding more informed restoration projects, founded on critical and shared knowledge, and capable of reconciling conservation, use, and transformation. Alongside the established presence of a large number of research projects in the fields of history, design, modelling and representation, diagnostics, it is therefore unsurprising that the Rome edition of FORTMED 2026 features a significant number of contributions devoted to restoration, understood not as an exclusively technical practice or as an isolated specialized field, but as a privileged space of synthesis between historical knowledge, critical interpretation, and design. The restoration of fortifications, given their complex and stratified nature, indeed requires constant engagement with historical reading, material analysis, structural assessment, and interpretation of cultural values, placing design at the centre of an articulate and reflective knowledge process. The prominence of these studies reflects a widespread sensitivity towards design as a critical act, capable of engaging with the long-term endurance, incompleteness, and heterogeneity of fortified systems, while avoiding standardized approaches and one-dimensional solutions. An expression of a shared epistemological stance, which recognizes in restoration design a space of mediation between memory and contemporaneity, between permanence and change. This cultural orientation finds particularly fertile ground in Rome and connects with the well-established tradition of the Roman school of restoration, which has always emphasized the inseparable relationship between reading the work, recognizing its stratifications, and assuming responsibility for contemporary intervention.

Within this framework, the decision to invite Donatella Fiorani as a keynote speaker for the conference is particularly pertinent for the role her research has played in developing a restoration approach founded on critical knowledge and design responsibility, as well as for her specific contributions to the study of fortified architectures, approached as complex systems where constructional, historical, territorial, and landscape dimensions are intertwined. Her work feeds the debate on restoration not merely as a tool of preservation, but as a field of theoretical elaboration capable of guiding the transformation of fortified heritage in the present. Besides, the choice of Pilar Chias Navarro as keynote speaker lies in her interest on the documentation and dissemination of cultural heritage, in particular on the analysis of architecture, cities and landscapes as essential cultural resources. She also specialises in the study of ancient cartography as an essential tool for understanding the evolution of landscapes, as well as in the use of GIS and remote sensing tools for impact assessment. The multidisciplinary and multiscalar research applications of these two invited speakers are representative of the complexity of the fortifications.

Reflection on knowledge is inevitably intertwined with consideration of the processes of heritagization of fortifications and city walls. As Françoise Choay has emphasised, heritage is not a fixed category, but the result of a cultural process that attributes value to certain objects, places, or systems, selecting them within a broader built reality (Choay, F., *L'allégorie du patrimoine*, Paris, 1992). In the case of fortifications, heritagization has involved a profound transformation of status: from functional military infrastructures to elements recognized as carriers of historical, identity-based, and symbolic values. This transition is not without ambiguity, as Choay observes, since the risk lies in reducing heritage to a museumized object or an iconic image, separated from its functional dimension and everyday life. The challenge, therefore, is to consciously manage these processes, recognizing fortifications as active agents in the present, as cultural devices capable of balancing between memory, design, and social practices.

It is no coincidence that this dialogue takes place in Rome, a city where the relationship between walls and urban fabric is particularly evident. The Roman walls, in their various historical phases, do not merely define a defensive perimeter, but rather constitute a threshold—a porous limit that is at once deeply lived. They continue to accompany and shape the experience of the contemporary city, functioning as a spatial and symbolic device that links past and present. Rome thus provides an emblematic context for reflecting on the role of fortifications in the modern city: not as isolated relics, but as cultural infrastructures capable of generating new relationships, practices, and meanings.

Within this perspective, FORTMED 2026 is conceived not only as a moment for presenting the state of the art in research, but also as an opportunity to envision future scenarios, promoting a vision of fortified heritage founded on critical knowledge, design responsibility, and an awareness of the equal and relational value of all its components.

Michele Russo, Marta Acierno
FORTMED 26 Chairs

23 DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN

Michele RUSSO, Marta ACIERNO (Eds.)



DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
Vol. XXIII

DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
Vol. XXIII

Editors
Michele Russo, Marta Acierno
Sapienza Università di Roma



SAPIENZA
UNIVERSITÀ DI ROMA



Series Defensive Architecture of the Mediterranean

General editor: Pablo Rodríguez-Navarro

The papers published in this volume have been peer-reviewed by the Scientific Committee of FORTMED2026_Roma

© editors: Michele Russo, Marta Acierno

© editorial team: Silvia Seller, Martina Casciola, Giovanna Ferra, Giulia Flenghi, Carlotta Mellone, Luca Martelli

© cover picture: Francesco Giampietro

© papers: the authors

© publishers: Sapienza Università Editrice, edUPV (Universitat Politècnica de València)

© Copyright 2026 Sapienza Università Editrice

Dipartimento di Storia, Disegno e Restauro dell'Architettura

ISBN: 978-88-9377-433-8 (three-volume collection)

DOI: <https://doi.org/10.13133/9788893774338>

ISBN: 978-88-9377-435-2 (vol. 23)

DOI: <https://doi.org/10.13133/9788893774352>

© Copyright edUPV (Universitat Politècnica de València) 2026

ISBN: 978-84-1396-410-2 (three-volume collection)

ISBN: 978-84-1396-412-6 (vol. 23)

edUPV Ref. 6860_01_01_01

DOI: <https://doi.org/10.4995/Fortmed2026.2026.21473>

ISSN: 2792-5633 (*Series Defensive Architecture of the Mediterranean*)

Proceedings of the International Conference on Fortifications of the Mediterranean Coast FORTMED 2026

Roma, 19, 20 and 21 February 2026

CC BY-NC-SA 4.0

Legal Code: <https://creativecommons.org/licenses/by-nc-sa/4.0/legalcode.en>



Organization and committees

Organizing Committee

Chairs:

Russo Michele. Sapienza Università di Roma
Acierno Marta. Sapienza Università di Roma

Scientific Secretary:

Seller Silvia. Sapienza Università di Roma

Topic Chairs:

Acierno Marta. Sapienza Università di Roma
Cutarelli Silvia. Sapienza Università di Roma
Russo Michele. Sapienza Università di Roma
Spadafora Giovanna. Università di Roma Tre

Members:

Casciola Martina, Ferra Giovanna, Flenghi Giulia, Martelli Luca,
Mellone Carlotta. Sapienza Università di Roma

Scientific Committee

Acierno, Marta. Sapienza Università di Roma. Italy
Almagro Gorbea, Antonio. Real Academia de Bellas Artes de San Fernando. Spain
Barrera Vera, José Antonio. Universidad de Sevilla. Spain
Bertocci, Stefano. Università degli Studi di Firenze. Italy
Bevilacqua, Marco Giorgio. Università di Pisa. Italy
Bouزيد, Boutheina. École Nationale d'Architecture. Tunisia
Bragard, Philippe. Université Catholique de Louvain. Belgium
Bru Castro, Miguel Ángel. Instituto de Estudios de las Fortificaciones – AEAC. Spain
Cámara Muñoz, Alicia. UNED. Spain
Camiz, Alessandro. Özyeğin University. Turkey
Campos, João. Centro de Estudos de Arquitectura Militar de Almeida. Portugal
Castrorao Barba, Angelo. Escuela de Estudios Árabes, CSIC. Spain
Cherradi, Faissal. Ministère de la Culture du Royaume du Maroc. Morocco
Cirafici, Alessandra. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
Cirillo, Vincenzo. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
Cobos Guerra, Fernando. Arquitecto. Spain
Columbu, Stefano. Università di Cagliari. Italy
Coppola, Giovanni. Università degli Studi Suor Orsola Benincasa di Napoli. Italy
Córdoba de la Llave, Ricardo. Universidad de Córdoba. Spain
Cornell, Per. University of Gothenburg. Sweden
Corniello, Luigi. University of Campania *Luigi Vanvitelli*. Italy
Cutarelli, Silvia. Sapienza Università di Roma. Italy
Daci, Entela. Universiteti Politeknik i Tiranës. Albania
Dameri, Annalisa. Politecnico di Torino. Italy
Eppich, Rand. Universidad Politécnica de Madrid. Spain
Fairchild Ruggles, Dorothy. University of Illinois at Urbana-Champaign. USA
Fatta, Francesca. Università Mediterranea di Reggio Calabria. Italy
Faucherre, Nicolas. Aix-Marseille Université – CNRS. France
Fiorino, Donatella Rita. Università degli Studi di Cagliari. Italy

García Porras, Alberto. Universidad de Granada. Spain
 García-Pulido, Luis José. Escuela de Estudios Árabes, CSIC. Spain
 Georgopoulos, Andreas. Nat. Tec. University of Athens. Greece
 Gil Crespo, Ignacio Javier. Asociación Española de Amigos de los Castillos. Spain
 Gil Piqueras, Teresa. Universitat Politècnica de València. Spain
 Guarducci, Anna. Università di Siena. Italy
 Guidí, Gabriele. Politecnico di Milano. Italy
 González Avilés, Ángel Benigno. Universitat d'Alacant. Spain
 Hadda, Lamia. Università degli Studi di Firenze. Italy
 Harris, John. Fortress Study Group. United Kingdom
 Islami, Gjergji. Universiteti Politeknik i Tiranës. Albania
 Jiménez Castillo, Pedro. Escuela de Estudios Árabes, CSIC. Spain
 León Muñoz, Alberto. Universidad de Córdoba. Spain
 López González, Concepción. Universitat Politècnica de València. Spain
 Marotta, Anna. Politecnico di Torino. Italy
 Martín Civantos, José María. Universidad de Granada. Spain
 Martínez Medina, Andrés. Universitat d'Alacant. Spain
 Mazzoli-Guintard, Christine. Université de Nantes. France
 Mirabella Roberti, Giulio. Università degli Studi di Bergamo. Italy
 Mira Rico, Juan Antonio. Universitat Oberta de Catalunya. Spain
 Navarro Palazón, Julio. Escuela de Estudios Árabes, CSIC. Spain
 Orihuela Uzal, Antonio. Escuela de Estudios Árabes, CSIC. Spain
 Pane, Andrea. Università Federico II di Napoli. Italy
 Parrinello, Sandro. Università di Pavia. Italy
 Pirinu, Andrea. Università di Cagliari. Italy
 Piscitelli, Manuela. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
 Pompejano, Federica. Università di Genova, Italy
 Quesada García, Santiago. Universidad de Sevilla. Spain
 Rodríguez Domingo, José Manuel. Universidad de Granada. Spain
 Rodríguez-Navarro, Pablo. Universitat Politècnica de València. Spain
 Romagnoli, Giuseppe. Università degli Studi della Toscana. Italy
 Ruiz-Jaramillo, Jonathan. Universidad de Málaga. Spain
 Russo, Michele. Sapienza Università di Roma. Italy
 Santiago Zaragoza, Juan Manuel. Universidad de Granada. Spain
 Spadafora, Giovanna. Università di Roma Tre. Italy
 Spallone, Roberta. Politecnico di Torino. Italy
 Toscano, Maurizio. Universidad de Granada. Spain
 Ulivieri, Denise. Università di Pisa. Italy
 Veizaj, Denada. Universiteti Politeknik i Tiranës, Albania
 Varela Gomes, Rosa. Universidade Nova de Lisboa. Portugal
 Verdiani, Giorgio. Università degli Studi di Firenze. Italy
 Vitali, Marco. Politecnico di Torino. Italy
 Vokshi, Armand. Universiteti Politeknik i Tiranës, Albania
 Zaragoza, Catalán Arturo. Generalitat Valenciana. Spain
 Zerlenga, Ornella. Università degli Studi della Campania *Luigi Vanvitelli*. Italy

Advisory Committee

Pablo Rodríguez-Navarro. President of FORTMED. Universitat Politècnica de València
 Giorgio Verdiani. Vice-president of FORTMED. Università degli Studi di Firenze
 Teresa Gil Piqueras. Secretary of FORTMED. Universitat Politècnica de València
 Roberta Spallone. FORTMED advisor. Politecnico di Torino
 Ornella Zerlenga. FORTMED advisor. Università degli Studi della Campania *Luigi Vanvitelli*
 Vincenzo Cirillo, FORTMED advisor. Università degli Studi della Campania *Luigi Vanvitelli*

Organized by:



SAPIENZA
UNIVERSITÀ DI ROMA

DIPARTIMENTO DI STORIA
DISEGNO E RESTAURO
DELL'ARCHITETTURA

FACOLTÀ DI ARCHITETTURA

Partnership:



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DIDA
DIPARTIMENTO DI
ARCHITETTURA



Universitat d'Alacant
Universidad de Alicante



**Politecnico
di Torino**

Dipartimento
di Architettura e Design



DESTEC
DIPARTIMENTO DI INGEGNERIA
DELL'ENERGIA, DEI SISTEMI, DEL TERRITORIO E DELLE COSTRUZIONI



CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



UNIVERSITETI
POLITEKNIK
I TIRANËS



Università
degli Studi
della Campania
Luigi Vanvitelli
Dipartimento di Architettura
Disegno Industriale



SAPIENZA
UNIVERSITÀ DI ROMA

With the patronage of:



unione
italiana
disegno



**Istituto Italiano
dei Castelli**



International Council on
Monuments and Sites

Consiglio Nazionale Italiano
dei Monumenti e dei Siti

With the sponsorship of:



COIMA ITALIA



DIA
PREMIUM FOOD COMPANY

Table of contents

Preface	XIII
Contributions	
BUILT HERITAGE RESEARCH	
The role of non-invasive diagnostic investigations in the conservation of fortified cultural heritage: methodology and a case study	5
<i>Cesare Crova, Francesco Miraglia</i>	
An examination of Putignano’s defensive system: historical and architectural perspectives.....	11
<i>Maurizio Dalena</i>	
Forte Bravetta in Rome: a fortress safeguarding historical memory, pending a definitive designation	19
<i>Fabrizio De Cesaris, Liliana Ninarello</i>	
The demolition of the Monjas bastion and the construction of the Hotel Imperial Tarraco: vicissitudes of a Mediterranean watchtower	27
<i>Elena de Ortueta Hilberath</i>	
Pietramelara: architecture and identity of a Campania village	35
<i>Felicia Di Girolamo</i>	
The Castle of Mazzarino: Territorial Connections, Historical Transformations, and Emerging Opportunities for Public Engagement	43
<i>Silvia Di Stefano, Maria Teresa Campisi</i>	
The walls of Altamura. Stratigraphic and morpho-typological investigations for understanding and enhancing their value.....	51
<i>Angela Diceglie, Aleksandar Dajković</i>	
Torre Astura. Surveys and investigations on a multi-stratified site	59
<i>Marina Docci, Elisa Fidenzi</i>	
Rocca Orsini in Alba Fucens (Abruzzo, Italy): structural lecture and intervention strategies for the conservation of a ‘weak’ fortress.....	67
<i>Adalgisa Donatelli, Barbara Tarullo</i>	
Castles and towers of the order of Calatrava in the Sierra Sur de Jaén: archaeological study of the Torrevieja castle and the Algarrobo tower (Fuensanta de Martos, Jaén, Spain).....	75
<i>José David Espinosa Fernández</i>	

Accessible cities, ‘permeable’ urban walls. Experiences of accessibility to fortified heritage between Italy and Spain	83
<i>Antonio Festa</i>	
The continuation of the conservation and restoration project of the Paleologi Castle in Casale Monferrato (Alessandria). The western bastions and the southern counterscarp	91
<i>Giorgia Gentilini, Monica Endrizzi</i>	
San Nicola of Colleparado: Between Spirituality and Defense, the Hybrid Identity of a Medieval Monastery	99
<i>Francesco Giampietro, Federica Guglielmi, Marta Acierno</i>	
Defensive Build-up: Coastal Fortifications of the Second World War in Occupied Attica, Greece	107
<i>Stylianos Gidis</i>	
The Kasbah of Mehdiya, the early historical development of a Moroccan fortress	115
<i>Elena Gigliarelli, Anna Paola Pola, Stefano Cursi, Filippo Calcerano, Letizia Martinelli, Youssef Al Ganadi, Luciano Cessari</i>	
A complex ‘offensive machine’: the bastion of Santa Trinita in the Prato city walls.....	123
<i>Paula Guarducci, Alessandro Merlo</i>	
Inheriting Gourara’s Fortresses Materiality through Vernacular Stone Master-Builders’ Know-How (Algerian Sahara).....	131
<i>Mahrour Illili</i>	
Experimental connections among the fortified <i>Masserie</i> of the <i>Montagna Materana</i> : digital forms for knowledge, dissemination and regeneration.....	139
<i>Ali Yaser Jafari, Antonio Contea Marianna Calia, Alessia Allkoci, Davide Lagrotta</i>	
Considerations about fortified rural architecture in Southern Italy. The case of ‘masserie fortificate’ between Basilicata and Puglia: a proposal for analysis and demistification	147
<i>Enrico Lamacchia, Evelina Proto</i>	
Camerino fortress system at the time of Da Varano dukedom: knowledge of history and military architecture.....	155
<i>Michelle Lippi</i>	
From tomb to fortress: the mausoleum of Cecilia Metella and its reuse in the Caetani <i>castrum</i> at Capo di Bove from the post-ancient period to the Nineteenth Century	163
<i>Simone Lucchetti</i>	
Between conservation and progress: the use of ancient walls in Rome, capital of the Kingdom of Italy	171
<i>Rossana Mancini</i>	
Earth and rock as constituent elements of 16th century fortifications	179
<i>Pietro Matracchi</i>	
Techniques and preservations of a Venetian structure in Albania (Castle of Bashtova).....	187
<i>Jonida Meniku, Eralda Bushi</i>	
The wuidinghi stronghold of the lower Valdisieve: documentation of Vicorati Castle	193
<i>Alessandro Merlo, Gaia Lavoratti, Giulia Lazzari</i>	

Fortifications in Abruzzo's coastal territory: the Aragonese Castle of Ortona.....	201
<i>Tiziana Mignogna, Francesca Russo</i>	
A new approach to the Castilian-Nasrid border: Belmez castle and the watchtowers of the Sol and the Lucero (Belmez de la Moraleda, Jaén, Spain).....	209
<i>Roque Modrego Fernández, José David Espinosa Fernández, Mercedes Navarro Pérez, Juan Carlos Castillo Armenteros, José María Martín Civantos</i>	
The Lancellotti Castle in Lauro: between fiction and noble identity	217
<i>Giuseppe Mollo</i>	
From garrison to imprisonment: Issues of conservation and reuse of stratified island fortresses: the case of the phlegraean Islands in the Gulf of Naples	225
<i>Francesca Naldi</i>	
Approach to the Historical-Artistic City of Moya and its recovery. Key to the three Kingdoms	233
<i>Fernando Olmedilla Lacasa, Yanira Huertas de Maya, Matías A. Ramírez Fernández</i>	
'Adaptive reuse' as a Conservation Technique: the Eleftheria Square Project in Nicosia	241
<i>Zehra Öngül</i>	
Comparative study of the restoration of eight 'Battery Towers for two cannons', built in the former Kingdom of Granada from 1764 onwards.....	249
<i>Antonio Orihuela Uzal, Luis José García-Pulido</i>	
Interventions in Castel Sant'Angelo and its visual connection to Saint Peter's Basilica through via della Conciliazione during the <i>Ventennio fascista</i>	257
<i>Xingrui Pan</i>	
The Three Walls Problem: The Unearthing and Protection of Structures beneath St. Michael's Fortress in Šibenik, Croatia	265
<i>Josip Pavić, Andrija Nakić</i>	
The <i>Manuali del Recupero</i> : a systemic intervention strategy for the watchtowers of the western Mediterranean	273
<i>Marina Peral Parra, Yolanda Spairani Berrio</i>	
Three stages of the fortification of Split in the 17th century: comparative analysis.....	281
<i>Snježana Perojević</i>	
Picene, Roman, Medieval Walls and other subsequent construction stratifications in the defense system of the city of Ascoli Piceno: some contributions of knowledge	289
<i>Enrica Petrucci, Maria Giovanna Putzu</i>	
Fortifications as Guardia Civil barracks: the ultimate act of service	297
<i>Daniel Pinzón-Ayala</i>	
Medieval defensive structures in Poland (10th-16th c.). Typological and proprietary classification, territorial distribution, state of preservation	305
<i>Alicja Maria Postrożny</i>	
Space, Identity and Protection: the Apulian "Masseria" as a reflection of the human-landscape relationship.....	313
<i>Evelina Proto, Enrico Lamacchia</i>	

Constructing on the Frontier of al-Andalus: Building Evolution at the Castle of La Estrella in Teba (Málaga).....	321
<i>Juan Manuel Rios Jiménez, Alberto García Porras</i>	
The industrialisation of iron as a material used in heritage enhancement to highlight the value of slopes of Callosa del Segura Castle.....	329
<i>Angel L. Rocamora Ruiz, Angel B. González Avilés, Carlos Pérez Carramiñana, Jose A. Huesca Tortosa</i>	
Theory and Practice in the Fortification of the Spanish Empire: Escrivá, Antonelli and Uduarte	337
<i>Andrea Ruggieri, Diego Javier Celis Estrada, Teresa Gil-Piqueras, Pablo Rodríguez-Navarro</i>	
Fortified farmhouses and rural settlements in the medieval Campagna Romana: the Case of the Casale della Spizzichina	345
<i>Silvia Seller</i>	
Aversa Castle from its origins to the present day.....	353
<i>Riccardo Serraglio, Danila Jacazzi</i>	
From Ragusa to the Eo estuary: the defensive system of a strategic area for shipbuilding in the western Cantabrian Sea (Asturias-Galicia, northern Spain).....	361
<i>Patricia Suárez Manjón</i>	
The Cassero di Fulignano and its geometry. Architectural and structural restoration of the Colonica di Fulignano in the municipality of San Gimignano, Siena	369
<i>Domenico Taddei, Caterina Calvani, Antonio Taddei, Andrea Martini</i>	
The evolution of Crotone Castle from a defensive assault to a full-scale flanking operation	377
<i>Tommaso Tedesco</i>	
The Towers of the Tyrrhenian coast (ex Papal State) between history and new realities	385
<i>Maria Grazia Turco</i>	
<i>Castrum et feudum Ralsuctani in Valle Demine Sicilie Regni et in territorio Terre Petralie Superioris: notes for restoration and conservation.....</i>	<i>393</i>
<i>Salvatore Tito Vaccaro</i>	
Tracing the influence of fortification culture in the morphology and architectural features of housing developed in the territory of Albania in the 14th-19th century.....	401
<i>Denada Veizaj, Iris Bulku</i>	
The origins of Bracciano Castle: the fortress of the Prefects of Vico.....	409
<i>Francesco Vinciguerra</i>	

Preface

Fortifications constitute one of the most complex and stratified expressions of the built heritage, in which technical knowledge, political structures, territorial strategies and cultural representations are closely intertwined. Their understanding necessarily rests on an interdisciplinary approach, capable of bringing into dialogue historical, architectural, engineering, archaeological and landscape perspectives. Within this framework, the historiographical reflection of Marc Bloch appears particularly pertinent and fruitful, as it highlights how historical knowledge is grounded in the crossing of perspectives and in the capacity to interrogate the traces of the past through multiple viewpoints; a principle that finds in fortified architectures a particularly productive field of application, given their systemic nature and their long duration over time (Bloch, M., *Apologie pour l'histoire ou Métier d'historien*, Paris, 1949). As a matter of fact, fortifications are not merely military artefacts, but complex devices that have structured cities and territories, contributing decisively to the definition of their forms and spatial hierarchies. They are situated at the intersection of different scales, ranging from the territorial and urban dimensions to the level of construction and material detail. Within this multiscale articulation, architecture assumes the role of a hinge, capable of connecting urban design with knowledge of construction techniques, and the overall layout of defensive systems with the material reality of structural solutions. To understand fortifications therefore means recognizing and interpreting the relationships between these different scales, avoiding reductive approaches and fragmented readings.

The international conference FORTMED, conceived as a space for encounter and exchange among different disciplines and research traditions, offering a qualified forum for discussion on issues related to the knowledge, conservation, and enhancement of fortifications. In a context marked by profound social, environmental, and technological transformations, the conference aims to contribute to the construction of a shared culture of fortified heritage, grounded in a critical awareness of its historical, architectural, and landscape values, as well as of its role in the present.

The idea for FORTMED was born in 2014 from the brilliant initiative of a research group at the Polytechnic University of Valencia, coordinated by Pablo Rodríguez-Navarro, who gathered international researchers on this topic with the primary objective of exchanging and sharing knowledge on fortifications to understand better, evaluate, manage, and enhance them. On this basis, the FORTMED 2015 conference, organised at the Instituto Universitario de Restauración del Patrimonio of the Universitat Politècnica de València on 15, 16 and 17 October 2015, was proposed with the hope of starting a new tradition and making FORTMED a consolidated reality. Since then, eight other institutions have taken up the tradition. The second edition of FORTMED 2016 was organised by the Department of Architecture of the University of Florence and chaired by Giorgio Verdiani on 10, 11 and 12 November 2016. The third edition of FORTMED 2017 was curated by Víctor Echarri Iribarren and held on 26, 27, and 28 October 2017 at the Escuela Técnica Superior de Arquitectura of the Universitat d'Alacant. The fourth edition of FORTMED 2018 was organised by the Department of Architecture and Design of the Politecnico di Torino on 18, 19 and 20 October 2018, chaired by Anna Marotta and Roberta Spallone. The fifth edition of FORTMED 2020, organised by the Escuela de Estudios Árabes in Granada under the coordination of Julio Navarro Palazón and Luis José García-Pulido, suffered several setbacks due to the outbreak of the COVID-19 pandemic, moving from an in-person conference scheduled for 26, 27 and 28 March 2020 in Granada to an online conference on 4, 5 and 6 November 2020.

Precisely because of these difficult circumstances and the “slow return to normality”, there was a time jump that led to the sixth edition of FORTMED 2023, organised by the Department of Energy, Systems, Territory and Construction Engineering (DESTEC) of the University of Pisa under the coordination of Marco Giorgio Bevilacqua and Denise Olivieri on 23 and 24 and 25 March 2023. Since then, conferences have been held annually, with the seventh edition, FORTMED 2024, organised by Gjergji Islami and Denada Veizaj with the support of the Polytechnic University of Tirana, taking place on 18, 19 and 20 April 2024. The eighth edition, FORTMED 2025, was hosted by the University of Campania Luigi Vanvitelli in Caserta and chaired by Ornella Zerlenga and Vincenzo Cirillo on 10, 11 and 12 April 2025.

Looking at this sequence of events, we can appreciate some aspects that make this conference unique. On the one hand, international venues demonstrate a desire to build and grow a large community around the domain of fortifications. On the other hand, there is the incredible quantitative and qualitative richness contained in the macro-theme of fortifications, which is developed through a huge number of theoretical and existing case studies scattered across territories and expressed in multiple forms of study and analysis aimed at knowledge, conservation, and promotion. A complex and rich ecosystem, represented by FORTMED over the years with great care, and perfectly represented by the collection of open-access conference proceedings, which guarantees excellent visibility and accessibility. With the ninth edition of the Rome conference, the FORTMED series of publications reaches 24 volumes in 2026, with more than 10,000 pages dedicated to research on the macro-theme of fortifications, a heritage to be preserved and promoted. The comprehensive overview of such a rich and diverse system of knowledge is certainly a harbinger of future developments, confirming the valuable insight gained in 2015. The same evidence is provided by the fact that the annual event always attracts a large number of scholars, showing that this subject is constantly evolving and offers new nutrition for thought, while increasingly consolidating a community built over time. The FORTMED 2026 Conference, now reaching its 9th edition, will be in Rome from 19th to 21st of February, 2026, hosted by Sapienza University of Rome, with the support of the Department of History, Representation and Restoration of Architecture and the Faculty of Architecture. The conference, following the past format, is structured around seven thematic areas, designed to cover the full spectrum of research and practice in the field of fortified heritage: Historical and Documentary, Theoretical Concepts, Research on Built Heritage, Characterization of Geomaterials; Digital Heritage, Culture and Management of Cultural Heritage, Miscellaneous.

In this context, the challenges and opportunities offered by digitalization assume a central role. Digital technologies now allow the collection, organization and interrelation of large quantities of heterogeneous data, making it possible to construct complex knowledge systems capable of reflecting the multilayered nature of fortifications. However, such tools cannot be regarded as mere technical support: they entail methodological and interpretative choices that profoundly affect the way heritage is understood and, consequently, transformed. The availability of integrated information systems represents a fundamental resource for guiding more informed restoration projects, founded on critical and shared knowledge, and capable of reconciling conservation, use, and transformation. Alongside the established presence of a large number of research projects in the fields of history, design, modelling and representation, diagnostics, it is therefore unsurprising that the Rome edition of FORTMED 2026 features a significant number of contributions devoted to restoration, understood not as an exclusively technical practice or as an isolated specialized field, but as a privileged space of synthesis between historical knowledge, critical interpretation, and design. The restoration of fortifications, given their complex and stratified nature, indeed requires constant engagement with historical reading, material analysis, structural assessment, and interpretation of cultural values, placing design at the centre of an articulate and reflective knowledge process. The prominence of these studies reflects a widespread sensitivity towards design as a critical act, capable of engaging with the long-term endurance, incompleteness, and heterogeneity of fortified systems, while avoiding standardized approaches and one-dimensional solutions. An expression of a shared epistemological stance, which recognizes in restoration design a space of mediation between memory and contemporaneity, between permanence and change. This cultural orientation finds particularly fertile ground in Rome and connects with the well-established tradition of the Roman school of restoration, which has always emphasized the inseparable relationship between reading the work, recognizing its stratifications, and assuming responsibility for contemporary intervention.

Within this framework, the decision to invite Donatella Fiorani as a keynote speaker for the conference is particularly pertinent for the role her research has played in developing a restoration approach founded on critical knowledge and design responsibility, as well as for her specific contributions to the study of fortified architectures, approached as complex systems where constructional, historical, territorial, and landscape dimensions are intertwined. Her work feeds the debate on restoration not merely as a tool of preservation, but as a field of theoretical elaboration capable of guiding the transformation of fortified heritage in the present. Besides, the choice of Pilar Chias Navarro as keynote speaker lies in her interest on the documentation and dissemination of cultural heritage, in particular on the analysis of architecture, cities and landscapes as essential cultural resources. She also specialises in the study of ancient cartography as an essential tool for understanding the evolution of landscapes, as well as in the use of GIS and remote sensing tools for impact assessment. The multidisciplinary and multiscalar research applications of these two invited speakers are representative of the complexity of the fortifications.

Reflection on knowledge is inevitably intertwined with consideration of the processes of heritagization of fortifications and city walls. As Françoise Choay has emphasised, heritage is not a fixed category, but the result of a cultural process that attributes value to certain objects, places, or systems, selecting them within a broader built reality (Choay, F., *L'allégorie du patrimoine*, Paris, 1992). In the case of fortifications, heritagization has involved a profound transformation of status: from functional military infrastructures to elements recognized as carriers of historical, identity-based, and symbolic values. This transition is not without ambiguity, as Choay observes, since the risk lies in reducing heritage to a museumized object or an iconic image, separated from its functional dimension and everyday life. The challenge, therefore, is to consciously manage these processes, recognizing fortifications as active agents in the present, as cultural devices capable of balancing between memory, design, and social practices.

It is no coincidence that this dialogue takes place in Rome, a city where the relationship between walls and urban fabric is particularly evident. The Roman walls, in their various historical phases, do not merely define a defensive perimeter, but rather constitute a threshold—a porous limit that is at once deeply lived. They continue to accompany and shape the experience of the contemporary city, functioning as a spatial and symbolic device that links past and present. Rome thus provides an emblematic context for reflecting on the role of fortifications in the modern city: not as isolated relics, but as cultural infrastructures capable of generating new relationships, practices, and meanings.

Within this perspective, FORTMED 2026 is conceived not only as a moment for presenting the state of the art in research, but also as an opportunity to envision future scenarios, promoting a vision of fortified heritage founded on critical knowledge, design responsibility, and an awareness of the equal and relational value of all its components.

Michele Russo, Marta Acierno
FORTMED 26 Chairs

24 DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN

Michele RUSSO, Marta ACIERNO (Eds.)



DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
Vol. XXIV

DEFENSIVE ARCHITECTURE OF THE MEDITERRANEAN
Vol. XXIV

Editors
Michele Russo, Marta Acierno
Sapienza Università di Roma



SAPIENZA
UNIVERSITÀ DI ROMA



Series Defensive Architecture of the Mediterranean

General editor: Pablo Rodríguez-Navarro

The papers published in this volume have been peer-reviewed by the Scientific Committee of FORTMED2026_Roma

© editors: Michele Russo, Marta Acierno

© editorial team: Silvia Seller, Martina Casciola, Giovanna Ferra, Giulia Flenghi, Carlotta Mellone, Luca Martelli

© cover picture: Francesco Giampietro

© papers: the authors

© publishers: Sapienza Università Editrice, edUPV (Universitat Politècnica de València)

© Copyright 2026 Sapienza Università Editrice

Dipartimento di Storia, Disegno e Restauro dell'Architettura

ISBN: 978-88-9377-433-8 (three-volume collection)

DOI: <https://doi.org/10.13133/9788893774338>

ISBN: 978-88-9377-436-9 (vol. 24)

DOI: <https://doi.org/10.13133/9788893774369>

© Copyright edUPV (Universitat Politècnica de València) 2026

ISBN: 978-84-1396-410-2 (three-volume collection)

ISBN: 978-84-1396-413-3 (vol. 24)

edUPV Ref. 6859_01_01_01

DOI: <https://doi.org/10.4995/Fortmed2026.2026.21474>

ISSN: 2792-5633 (*Series Defensive Architecture of the Mediterranean*)

Proceedings of the International Conference on Fortifications of the Mediterranean Coast FORTMED 2026

Roma, 19, 20 and 21 February 2026

CC BY-NC-SA 4.0

Legal Code: <https://creativecommons.org/licenses/by-nc-sa/4.0/legalcode.en>



Organization and committees

Organizing Committee

Chairs:

Russo Michele. Sapienza Università di Roma
Acierno Marta. Sapienza Università di Roma

Scientific Secretary:

Seller Silvia. Sapienza Università di Roma

Topic Chairs:

Acierno Marta. Sapienza Università di Roma
Cutarelli Silvia. Sapienza Università di Roma
Russo Michele. Sapienza Università di Roma
Spadafora Giovanna. Università di Roma Tre

Members:

Casciola Martina, Ferra Giovanna, Flenghi Giulia, Martelli Luca,
Mellone Carlotta. Sapienza Università di Roma

Scientific Committee

Acierno, Marta. Sapienza Università di Roma. Italy
Almagro Gorbea, Antonio. Real Academia de Bellas Artes de San Fernando. Spain
Barrera Vera, José Antonio. Universidad de Sevilla. Spain
Bertocci, Stefano. Università degli Studi di Firenze. Italy
Bevilacqua, Marco Giorgio. Università di Pisa. Italy
Bouزيد, Boutheina. École Nationale d'Architecture. Tunisia
Bragard, Philippe. Université Catholique de Louvain. Belgium
Bru Castro, Miguel Ángel. Instituto de Estudios de las Fortificaciones – AEAC. Spain
Cámara Muñoz, Alicia. UNED. Spain
Camiz, Alessandro. Özyeğin University. Turkey
Campos, João. Centro de Estudos de Arquitectura Militar de Almeida. Portugal
Castrorao Barba, Angelo. Escuela de Estudios Árabes, CSIC. Spain
Cherradi, Faïssal. Ministère de la Culture du Royaume du Maroc. Morocco
Cirafici, Alessandra. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
Cirillo, Vincenzo. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
Cobos Guerra, Fernando. Arquitecto. Spain
Columbu, Stefano. Università di Cagliari. Italy
Coppola, Giovanni. Università degli Studi Suor Orsola Benincasa di Napoli. Italy
Córdoba de la Llave, Ricardo. Universidad de Córdoba. Spain
Cornell, Per. University of Gothenburg. Sweden
Corniello, Luigi. University of Campania *Luigi Vanvitelli*. Italy
Cutarelli, Silvia. Sapienza Università di Roma. Italy
Daci, Entela. Universiteti Politeknik i Tiranës. Albania
Dameri, Annalisa. Politecnico di Torino. Italy
Eppich, Rand. Universidad Politécnica de Madrid. Spain
Fairchild Ruggles, Dorothy. University of Illinois at Urbana-Champaign. USA
Fatta, Francesca. Università Mediterranea di Reggio Calabria. Italy
Faucherre, Nicolas. Aix-Marseille Université – CNRS. France
Fiorino, Donatella Rita. Università degli Studi di Cagliari. Italy

García Porras, Alberto. Universidad de Granada. Spain
 García-Pulido, Luis José. Escuela de Estudios Árabes, CSIC. Spain
 Georgopoulos, Andreas. Nat. Tec. University of Athens. Greece
 Gil Crespo, Ignacio Javier. Asociación Española de Amigos de los Castillos. Spain
 Gil Piqueras, Teresa. Universitat Politècnica de València. Spain
 Guarducci, Anna. Università di Siena. Italy
 Guidí, Gabriele. Politecnico di Milano. Italy
 González Avilés, Ángel Benigno. Universitat d'Alacant. Spain
 Hadda, Lamia. Università degli Studi di Firenze. Italy
 Harris, John. Fortress Study Group. United Kingdom
 Islami, Gjergji. Universiteti Politeknik i Tiranës. Albania
 Jiménez Castillo, Pedro. Escuela de Estudios Árabes, CSIC. Spain
 León Muñoz, Alberto. Universidad de Córdoba. Spain
 López González, Concepción. Universitat Politècnica de València. Spain
 Marotta, Anna. Politecnico di Torino. Italy
 Martín Civantos, José María. Universidad de Granada. Spain
 Martínez Medina, Andrés. Universitat d'Alacant. Spain
 Mazzoli-Guintard, Christine. Université de Nantes. France
 Mirabella Roberti, Giulio. Università degli Studi di Bergamo. Italy
 Mira Rico, Juan Antonio. Universitat Oberta de Catalunya. Spain
 Navarro Palazón, Julio. Escuela de Estudios Árabes, CSIC. Spain
 Orihuela Uzal, Antonio. Escuela de Estudios Árabes, CSIC. Spain
 Pane, Andrea. Università Federico II di Napoli. Italy
 Parrinello, Sandro. Università di Pavia. Italy
 Pirinu, Andrea. Università di Cagliari. Italy
 Piscitelli, Manuela. Università degli Studi della Campania *Luigi Vanvitelli*. Italy
 Pompejano, Federica. Università di Genova, Italy
 Quesada García, Santiago. Universidad de Sevilla. Spain
 Rodríguez Domingo, José Manuel. Universidad de Granada. Spain
 Rodríguez-Navarro, Pablo. Universitat Politècnica de València. Spain
 Romagnoli, Giuseppe. Università degli Studi della Toscana. Italy
 Ruiz-Jaramillo, Jonathan. Universidad de Málaga. Spain
 Russo, Michele. Sapienza Università di Roma. Italy
 Santiago Zaragoza, Juan Manuel. Universidad de Granada. Spain
 Spadafora, Giovanna. Università di Roma Tre. Italy
 Spallone, Roberta. Politecnico di Torino. Italy
 Toscano, Maurizio. Universidad de Granada. Spain
 Ulivieri, Denise. Università di Pisa. Italy
 Veizaj, Denada. Universiteti Politeknik i Tiranës. Albania
 Varela Gomes, Rosa. Universidade Nova de Lisboa. Portugal
 Verdiani, Giorgio. Università degli Studi di Firenze. Italy
 Vitali, Marco. Politecnico di Torino. Italy
 Vokshi, Armand. Universiteti Politeknik i Tiranës. Albania
 Zaragoza, Catalán Arturo. Generalitat Valenciana. Spain
 Zerlenga, Ornella. Università degli Studi della Campania *Luigi Vanvitelli*. Italy

Advisory Committee

Pablo Rodríguez-Navarro. President of FORTMED. Universitat Politècnica de València
 Giorgio Verdiani. Vice-president of FORTMED. Università degli Studi di Firenze
 Teresa Gil Piqueras. Secretary of FORTMED. Universitat Politècnica de València
 Roberta Spallone. FORTMED advisor. Politecnico di Torino
 Ornella Zerlenga. FORTMED advisor. Università degli Studi della Campania *Luigi Vanvitelli*
 Vincenzo Cirillo, FORTMED advisor. Università degli Studi della Campania *Luigi Vanvitelli*

Organized by:



SAPIENZA
UNIVERSITÀ DI ROMA

DIPARTIMENTO DI STORIA
DISEGNO E RESTAURO
DELL'ARCHITETTURA

FACOLTÀ DI ARCHITETTURA

Partnership:



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DIDA
DIPARTIMENTO DI
ARCHITETTURA



Universitat d'Alacant
Universidad de Alicante



**Politecnico
di Torino**

Dipartimento
di Architettura e Design



DESTEC
DIPARTIMENTO DI INGEGNERIA
DELL'ENERGIA, DEI SISTEMI, DEL TERRITORIO E DELLE COSTRUZIONI



CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



UNIVERSITETI
POLITEKNIK
I TIRANËS



Università
degli Studi
della Campania
Luigi Vanvitelli
Dipartimento di Architettura
Disegno Industriale



SAPIENZA
UNIVERSITÀ DI ROMA

With the patronage of:



unione
italiana
disegno



**Istituto Italiano
dei Castelli**



International Council on
Monuments and Sites

Consiglio Nazionale Italiano
dei Monumenti e dei Siti

With the sponsorship of:



COIMA ITALIA



DIA
PREMIUM FOOD COMPANY

Table of contents

Preface	XIII
Contributions	
CHARACTERIZATION OF GEO-MATERIALS	
Archaeometric and geophysical analyses for the study and conservation of the watchtower of St. Agatha (Red Tower) in Malta.....	5
<i>Maurizio Lazzari, Francesco Cavalcante, Emanuele Colica, Sebastiano D'Amico, Lara De Giorgi, Antonio Lettino, Giovanni Leucci, Raffaele Persico</i>	
Preliminary archaeometric analyses of reused Roman materials: the case of the tower at Via dei Montanini 16 in Siena, Italy.....	11
<i>Gioele Rossi, Fabio Gabbrielli, Marco Giamello, Andrea Scala, Enrico Tavarnelli</i>	
DIGITAL HERITAGE	
Architectural analysis of the Aragonese castle of Venosa. Pirro del Balzo.....	21
<i>Luis Agustín-Hernández, Michele Buldo, Marta Quintilla Castán, Javier Domingo Ballesti</i>	
Digital translation of early-modern fortification models. The case of “Della fortificazione delle citta...” by Girolamo Maggi and Giacomo Fusti Castriotto.....	29
<i>Lorenzo Belli, Piergiuseppe Rechichi, Denise Ulivieri, Marco Giorgio Bevilacqua</i>	
Watchtowers on the coast of the kingdom of Granada (Spain). Graphic documentation as a starting point for their protection and conservation. Case studies: Melicena tower.....	37
<i>Jose Antonio Benavides-Lopez, Jose Antonio Barrera-Vera, Enrique-José Fernandez-Tapia, Maria Isabel Mancilla Cabello</i>	
The digital survey for the construction of information models of fortified architecture on the island of Capri.....	45
<i>Massimiliano Campi, Carmine Gambardella, Valeria Cera, Rosaria Parente, Marika Falcone, Marica Camerino</i>	
Reconstrucción digital y análisis morfológico del trazado de la muralla de Trujillo (Perú) mediante herramientas SIG.....	53
<i>Diego Javier Celis Estrada, Teresa Gil-Piqueras, Pablo Rodríguez-Navarro</i>	
Franciscan reinterpretations: architectural adaptations and reuse of medieval fortified structures in Campania.....	61
<i>Valeria Cera, Giuseppe Antuono</i>	
The fortified island of Ortigia: rediscovering a lost heritage through digitalization and historical memory.....	69
<i>Roberta Cerruto</i>	

Kruja Castle in Albania: digital technologies for the knowledge and valorisation of the fortified heritage..... <i>Angelo De Cicco, Andrea Maliqari</i>	77
Monastic Fortifications in the Judean Desert (<i>al-Barriyya</i>): 3D geo-mapping and Virtual Heritage for the assessment of dynamic heritage values	85
<i>Raffaella De Marco</i>	
Eastern Elba: The Birth and Transformations of Portoferraio and Its Military Architecture	93
<i>Tommaso Empler, Adriana Caldarone, Pasquale Micelli</i>	
The medieval museum of Casentino valley: the case study of Romena castle as a design and research lab.....	101
<i>Alessio Fantoni</i>	
The coastal tower of San Giovanni in Ugento (Le): historical investigations, architectural survey and digital restoration	109
<i>Ivan Ferrari, Francesco Giuri</i>	
Historical-architectural analysis and digital documentation of the military complex and Norman castle of <i>Civitas Allipharum</i>	117
<i>Raffaella Fiorillo, Angelo De Cicco</i>	
The Castellina of Norcia: from historical knowledge to digital valorization	125
<i>Francesca Funis, Valeria Menchetelli, Serena Pallotti</i>	
Defending the Venetian Lagoon: Digital Reconstruction of the Early Modern Fortress at the <i>Lido</i>	133
<i>Ludovica Galeazzo, Gianlorenzo Dellabartola, Federico Panarotto</i>	
Virtual Tours and BIM as Heritage Tools: The Case of Forte San Giovanni.....	141
<i>Riccardo Maria Giannelli, Volha Petravets, Maksim Afonchanka, Michele Codeglia, Daniela Barbieri, Norbert Frroku</i>	
Digitization of fortifications using UAV and TLS for conservation, diagnosis and structural analysis: the case of the Castles of Callosa del Segura and Forna.....	149
<i>José Antonio Huesca-Tortosa, Yolanda Spairani-Berrio, María Isabel Pérez-Millán, Carlos Pérez-Carramiñana</i>	
Geospatial analysis of the visual domain exercised by the Trigueros castle and its insertion in the castral system of the county of Niebla in the 15th Century	157
<i>Juan José Fondevilla Aparicio</i>	
The bunkers of Clot de Galvany, Mediterranean Wall, 1937-1938.....	165
<i>Andrés Martínez Medina, Giancarlo Sanna, Pablo Jeremías Juan Gutiérrez</i>	
Methodologies for the valorisation of research applied to the fortified heritage. The INFORTREAT project	173
<i>Alessandro Meloni, Martina Rinascimento, Marco Giorgio Bevilacqua, Roberta Spallone</i>	
The Guglielmi Castle on Isola Maggiore: from Architectural Survey to a Proposal for Valorization and Communication.....	181
<i>Valeria Menchetelli, Francesco Cotana, Chiara Spipoli</i>	
Sacrum et Munitum: architecture between faith and defense. The case of the Church of Saints Peter and Paul in Agrò	189
<i>Sonia Mercurio, Marinella Arena</i>	
Parametric modelling between supputation and graphic descriptions in Antoine de Ville's Les fortifications (1628).....	197
<i>Martino Pavignano, Fabrizio Natta, Roberta Spallone</i>	

Strategy and optimisation of the surveying process using SfM photogrammetry: the case of Alcudia de Veo Castle (Castellón).....	205
<i>Ana Pérez-Vila, Teresa Gil-Piqueras, Pablo Rodríguez-Navarro</i>	
Endangered fortifications: The kulla of northern Albania in survey and conservation	211
<i>Edmond Pergega, Blerina Tabaku, Saimira Arapi, Gjergji Islami</i>	
Advanced digital modelling of the Torre del Mar (Borriana, Castellón): from digital fabrication to immersive experience through eXtended Reality (XR)	219
<i>Enrico Pupi, Roberta Spallone, Teresa Gil-Piqueras, Pablo Rodríguez-Navarro</i>	
Patterns of settlement in rural Andalusia in the Cocentaina region (Alicante).....	227
<i>Santiago Quesada-García, María Lozano-Gómez</i>	
LiDAR sensors and mobile mapping for the survey of historical architecture: the case study of the Castellare degli Ugurgeri - Siena (Italy).....	235
<i>Gioele Rossi, Jacopo Bruttini, Fabio Gabbrielli, Marco Giamello, Enrico Tavarnelli</i>	
Bastion survey protocol: operational activity framework for multi-scale surveys of fortified walls	243
<i>Michele Russo, Gabriella Caroti</i>	
Stone sentinels: the coastal towers of Forio d'Ischia	251
<i>Patryk Rynkowski, Francesca Romana Stabile, Daniele Calisi</i>	
Defensive architecture between land and coast: the tower of Sessa Aurunca and the tower of Lago Patria	259
<i>Michele Sabatino, Maria Prisco</i>	
The Alcamo Stronghold: Multi-Scalar Survey and Hybrid Representation of the Sardinian Defensive Front (1942–1943).....	267
<i>Giancarlo Sanna, Andrea Pirinu, Andrés Martínez Medina, Nicola Paba</i>	
New perspectives on the Theodosian Land Walls of Istanbul through digital photogrammetry.....	275
<i>Mustafa Sayan, Zeynep Eres</i>	
The Pietrenere Coastal Battery in Taureana di Palmi (RC)	283
<i>Francesco Stilo, Lorella Pizzonia</i>	
Semantic representation of historical architectural heritage with digital modeling methods: The Aragonese Tower in Bitonto (Bari).....	291
<i>Riccardo Tavolare, Giovanni Mongiello</i>	
Fortification, transformations, disasters, a complex vicissitude for the Krujë Fortress in Albania	299
<i>Giorgio Verdiani, Stéphane Giraudeau, Elisa Miho</i>	
Consistence of memories and lightness of the present: the Rigena Tower in Larnaca, Cyprus	309
<i>Giorgio Verdiani, Alexia Charalambous</i>	
Digitally Reframing Coastal Fortifications: Enhancing Visibility and Meaning in the Mediterranean Landscape	317
<i>Giorgio Verdiani, Ylenia Ricci, Andrea Pasquali</i>	
The Montalbano Fortress in La Spezia, third session and last notes.....	325
<i>Giorgio Verdiani, Ludovica Marinaro</i>	
The Castelluccio of Gela: from documentation to digital rediscovery	333
<i>Antonella Versaci, Alessio Cardaci, Paola Cammilleri</i>	

CULTURE AND MANAGEMENT

Defending the Langhe: the potential for castle networks within regional and cultural development policy 343
Fabio Ambrogio, Emanuele Romeo

Ancona: from fortress city to an inclusive city of the future. Military heritage as a driver for urban identity, experimentation, exploration, and regeneration..... 351
Giovanna Badaloni

The Night of Fortresses: A transnational model for sustainable and inclusive cultural heritage management..... 359
Gorana Barišić Bačelić, Đurđa Vrljević Šarić

Interdisciplinary methodological perspectives in university research. The ForteMare project: an ongoing research path..... 367
Zaira Barone, Clelia La Mantia

Wartime landscapes and cultural heritage: the Gustav Line's Abruzzo segment between historical memory and territorial development 375
Annalisa Colecchia

Participatory Model for the Management and Enhancement of the Cultural Heritage of Mussomeli (CL): The Manfredonian Castle as a Driver of Widespread Tourism..... 383
Mariateresa Galizia, Gloria Russo, Graziana D'Agostino, Giuseppe Maria Spera

The fortress *Le Castella* on the Ionian Sea. Results of a diagnostic plan 391
Caterina Gattuso, Domenico Gattuso

Analysis and proposals for Genoese Walls and Forts Park..... 399
Massimo Malagugini

The Museum of Defensive Systems in Europe, in the Citadel of Alexandria 407
Anna Marotta

A proposal for regional development: towards a network of 'fortresses/faro' in the Alessandria area .. 415
Anna Marotta, Piera Migliore

Heritage education and dissemination in the castles of the province of Alicante (Spain) and the voivodeship of Pomorskie (Poland) 423
Juan Antonio Mira Rico, Agnieszka Kowalska, Monika Rogalewska

MISCELLANY

Rocks, settlements and fortifications in Calabria, between tangible and intangible protection..... 433
Rosario Chimirri

Adaptive Reuse and Musealization Strategies for the Rocca di Sala in Pietrasanta..... 441
Andrea Crudeli

The submerged wall of the Bocagrande canal in Cartagena de Indias, a defensive work by the military engineer Antonio de Arévalo (1769-1788)..... 449
Jorge Galindo-Díaz, Joan Fontás-Serrat

Thaddeus' Tower. A modern-era defensive structure in Burriana (Castellón, Spain)..... 457
Jose Manuel Melchor Monserrat

The Castle of Casertavecchia: ongoing research between archaeological excavation and digital surveying..... 463
Ornella Zerlenga, Nicola Busino, Domenico Iovane, Rosina Iaderosa

Preface

Fortifications constitute one of the most complex and stratified expressions of the built heritage, in which technical knowledge, political structures, territorial strategies and cultural representations are closely intertwined. Their understanding necessarily rests on an interdisciplinary approach, capable of bringing into dialogue historical, architectural, engineering, archaeological and landscape perspectives. Within this framework, the historiographical reflection of Marc Bloch appears particularly pertinent and fruitful, as it highlights how historical knowledge is grounded in the crossing of perspectives and in the capacity to interrogate the traces of the past through multiple viewpoints; a principle that finds in fortified architectures a particularly productive field of application, given their systemic nature and their long duration over time (Bloch, M., *Apologie pour l'histoire ou Métier d'historien*, Paris, 1949). As a matter of fact, fortifications are not merely military artefacts, but complex devices that have structured cities and territories, contributing decisively to the definition of their forms and spatial hierarchies. They are situated at the intersection of different scales, ranging from the territorial and urban dimensions to the level of construction and material detail. Within this multiscale articulation, architecture assumes the role of a hinge, capable of connecting urban design with knowledge of construction techniques, and the overall layout of defensive systems with the material reality of structural solutions. To understand fortifications therefore means recognizing and interpreting the relationships between these different scales, avoiding reductive approaches and fragmented readings.

The international conference FORTMED, conceived as a space for encounter and exchange among different disciplines and research traditions, offering a qualified forum for discussion on issues related to the knowledge, conservation, and enhancement of fortifications. In a context marked by profound social, environmental, and technological transformations, the conference aims to contribute to the construction of a shared culture of fortified heritage, grounded in a critical awareness of its historical, architectural, and landscape values, as well as of its role in the present.

The idea for FORTMED was born in 2014 from the brilliant initiative of a research group at the Polytechnic University of Valencia, coordinated by Pablo Rodríguez-Navarro, who gathered international researchers on this topic with the primary objective of exchanging and sharing knowledge on fortifications to understand better, evaluate, manage, and enhance them. On this basis, the FORTMED 2015 conference, organised at the Instituto Universitario de Restauración del Patrimonio of the Universitat Politècnica de València on 15, 16 and 17 October 2015, was proposed with the hope of starting a new tradition and making FORTMED a consolidated reality. Since then, eight other institutions have taken up the tradition. The second edition of FORTMED 2016 was organised by the Department of Architecture of the University of Florence and chaired by Giorgio Verdiani on 10, 11 and 12 November 2016. The third edition of FORTMED 2017 was curated by Víctor Echarri Iribarren and held on 26, 27, and 28 October 2017 at the Escuela Técnica Superior de Arquitectura of the Universitat d'Alacant. The fourth edition of FORTMED 2018 was organised by the Department of Architecture and Design of the Politecnico di Torino on 18, 19 and 20 October 2018, chaired by Anna Marotta and Roberta Spallone. The fifth edition of FORTMED 2020, organised by the Escuela de Estudios Árabes in Granada under the coordination of Julio Navarro Palazón and Luis José García-Pulido, suffered several setbacks due to the outbreak of the COVID-19 pandemic, moving from an in-person conference scheduled for 26, 27 and 28 March 2020 in Granada to an online conference on 4, 5 and 6 November 2020.

Precisely because of these difficult circumstances and the “slow return to normality”, there was a time jump that led to the sixth edition of FORTMED 2023, organised by the Department of Energy, Systems, Territory and Construction Engineering (DESTEC) of the University of Pisa under the coordination of Marco Giorgio Bevilacqua and Denise Olivieri on 23 and 24 and 25 March 2023. Since then, conferences have been held annually, with the seventh edition, FORTMED 2024, organised by Gjergji Islami and Denada Veizaj with the support of the Polytechnic University of Tirana, taking place on 18, 19 and 20 April 2024. The eighth edition, FORTMED 2025, was hosted by the University of Campania Luigi Vanvitelli in Caserta and chaired by Ornella Zerlenga and Vincenzo Cirillo on 10, 11 and 12 April 2025.

Looking at this sequence of events, we can appreciate some aspects that make this conference unique. On the one hand, international venues demonstrate a desire to build and grow a large community around the domain of fortifications. On the other hand, there is the incredible quantitative and qualitative richness contained in the macro-theme of fortifications, which is developed through a huge number of theoretical and existing case studies scattered across territories and expressed in multiple forms of study and analysis aimed at knowledge, conservation, and promotion. A complex and rich ecosystem, represented by FORTMED over the years with great care, and perfectly represented by the collection of open-access conference proceedings, which guarantees excellent visibility and accessibility. With the ninth edition of the Rome conference, the FORTMED series of publications reaches 24 volumes in 2026, with more than 10,000 pages dedicated to research on the macro-theme of fortifications, a heritage to be preserved and promoted. The comprehensive overview of such a rich and diverse system of knowledge is certainly a harbinger of future developments, confirming the valuable insight gained in 2015. The same evidence is provided by the fact that the annual event always attracts a large number of scholars, showing that this subject is constantly evolving and offers new nutrition for thought, while increasingly consolidating a community built over time. The FORTMED 2026 Conference, now reaching its 9th edition, will be in Rome from 19th to 21st of February, 2026, hosted by Sapienza University of Rome, with the support of the Department of History, Representation and Restoration of Architecture and the Faculty of Architecture. The conference, following the past format, is structured around seven thematic areas, designed to cover the full spectrum of research and practice in the field of fortified heritage: Historical and Documentary, Theoretical Concepts, Research on Built Heritage, Characterization of Geomaterials; Digital Heritage, Culture and Management of Cultural Heritage, Miscellaneous.

In this context, the challenges and opportunities offered by digitalization assume a central role. Digital technologies now allow the collection, organization and interrelation of large quantities of heterogeneous data, making it possible to construct complex knowledge systems capable of reflecting the multilayered nature of fortifications. However, such tools cannot be regarded as mere technical support: they entail methodological and interpretative choices that profoundly affect the way heritage is understood and, consequently, transformed. The availability of integrated information systems represents a fundamental resource for guiding more informed restoration projects, founded on critical and shared knowledge, and capable of reconciling conservation, use, and transformation. Alongside the established presence of a large number of research projects in the fields of history, design, modelling and representation, diagnostics, it is therefore unsurprising that the Rome edition of FORTMED 2026 features a significant number of contributions devoted to restoration, understood not as an exclusively technical practice or as an isolated specialized field, but as a privileged space of synthesis between historical knowledge, critical interpretation, and design. The restoration of fortifications, given their complex and stratified nature, indeed requires constant engagement with historical reading, material analysis, structural assessment, and interpretation of cultural values, placing design at the centre of an articulate and reflective knowledge process. The prominence of these studies reflects a widespread sensitivity towards design as a critical act, capable of engaging with the long-term endurance, incompleteness, and heterogeneity of fortified systems, while avoiding standardized approaches and one-dimensional solutions. An expression of a shared epistemological stance, which recognizes in restoration design a space of mediation between memory and contemporaneity, between permanence and change. This cultural orientation finds particularly fertile ground in Rome and connects with the well-established tradition of the Roman school of restoration, which has always emphasized the inseparable relationship between reading the work, recognizing its stratifications, and assuming responsibility for contemporary intervention.

Within this framework, the decision to invite Donatella Fiorani as a keynote speaker for the conference is particularly pertinent for the role her research has played in developing a restoration approach founded on critical knowledge and design responsibility, as well as for her specific contributions to the study of fortified architectures, approached as complex systems where constructional, historical, territorial, and landscape dimensions are intertwined. Her work feeds the debate on restoration not merely as a tool of preservation, but as a field of theoretical elaboration capable of guiding the transformation of fortified heritage in the present. Besides, the choice of Pilar Chias Navarro as keynote speaker lies in her interest on the documentation and dissemination of cultural heritage, in particular on the analysis of architecture, cities and landscapes as essential cultural resources. She also specialises in the study of ancient cartography as an essential tool for understanding the evolution of landscapes, as well as in the use of GIS and remote sensing tools for impact assessment. The multidisciplinary and multiscalar research applications of these two invited speakers are representative of the complexity of the fortifications.

Reflection on knowledge is inevitably intertwined with consideration of the processes of heritagization of fortifications and city walls. As Françoise Choay has emphasised, heritage is not a fixed category, but the result of a cultural process that attributes value to certain objects, places, or systems, selecting them within a broader built reality (Choay, F., *L'allégorie du patrimoine*, Paris, 1992). In the case of fortifications, heritagization has involved a profound transformation of status: from functional military infrastructures to elements recognized as carriers of historical, identity-based, and symbolic values. This transition is not without ambiguity, as Choay observes, since the risk lies in reducing heritage to a museumized object or an iconic image, separated from its functional dimension and everyday life. The challenge, therefore, is to consciously manage these processes, recognizing fortifications as active agents in the present, as cultural devices capable of balancing between memory, design, and social practices.

It is no coincidence that this dialogue takes place in Rome, a city where the relationship between walls and urban fabric is particularly evident. The Roman walls, in their various historical phases, do not merely define a defensive perimeter, but rather constitute a threshold—a porous limit that is at once deeply lived. They continue to accompany and shape the experience of the contemporary city, functioning as a spatial and symbolic device that links past and present. Rome thus provides an emblematic context for reflecting on the role of fortifications in the modern city: not as isolated relics, but as cultural infrastructures capable of generating new relationships, practices, and meanings.

Within this perspective, FORTMED 2026 is conceived not only as a moment for presenting the state of the art in research, but also as an opportunity to envision future scenarios, promoting a vision of fortified heritage founded on critical knowledge, design responsibility, and an awareness of the equal and relational value of all its components.

Michele Russo, Marta Acierno
FORTMED 26 Chairs