university of groningen

Harvesting Salt the Ancient Way:
A Story from 2500 Years Ago

L. Alessandri, P. Attema, F. Bulian, J. Sevink, A. Sotgia

SALT DOESN'T WAIT FOR DREAMS

A. Piacentini & A. Schreiner

S·A·L·T AND POWER
EARLY STATES · ROME AND RESOURCE CONTROL

Published in 2026 by
Salt and Power. Early States, Rome and Resource Control

Groningen Institute of Archaeology
University of Groningen
Poststraat 6, 9712 ER Groningen
The Netherlands

This research was financed by the **Dutch Research Council (NWO)**
(*Nederlandse Organisatie voor Wetenschappelijk Onderzoek*)

Grant number: *406.20.HW.013*

With the support of
Scuola Romana dei Fumetti - SRF
Via Flaminia, 29
00196 Roma, Italia
www.scuolaromanafumetti.it

Cover Image: Angela Piacentini
Book Layout: Agostino Sotgia

Harvesting Salt the Ancient Way:
A Story from 2,500 Years Ago

L. Alessandri, P. Attema, F. Bulian, J. Sevink, A. Sotgia

SALT DOESN'T WAIT FOR DREAMS

A. Piacentini & A. Schreiner

2026

INDEX

Preface
(F. Bulian)..... 1

Salt Doesn't wait for dreams
(A. Piacentini, A. Schreiner, A. Sotgia)..... 3

Salt & Power Project
(A. Sotgia)..... 19

Piscina Torta
(L. Alessandri)..... 21

Further reading
..... 23

Salt Doesn't Wait for Dreams is set on the Tyrrhenian coast in the 6th century BCE, where salt was produced using *briquetage*, a technique that involved structures for heating brine in clay vessels to extract salt.

The story follows a small community engaged in this process, linking daily life to the broader political tensions surrounding control of this essential resource.

Blending archaeological evidence with visual storytelling, the comic transforms material data (kilns, ceramic fragments, production features) into narrative form, showing how comics can serve as an effective tool for archaeological interpretation and public engagement.

PREFACE

For much of human history, salt was not a seasoning as we mainly think of it today, but an essential resource. It was fundamental for preserving food, nourishing people and animals, and sustaining economies and political power.
Salt was produced across many regions of the world since the Copper Age (3500-2000 BCE), thousands of years ago, and over time its production relied on different methods. In Europe, these ranged from *briquetage*, based on the evaporation of brine in ceramic vessels heated in kilns, to solar evaporation in salterns, where seawater or brine was concentrated in controlled systems of ponds to obtain larger quantities of purer salt, similarly as we can see even today in coastal areas. Other techniques, such as the burning of salt-tolerant plants (*halophytes*), the evaporation of brine in wooden troughs, or the mining of rock salt, were also employed, depending on local environmental conditions and available resources.
The choice of production method was closely tied to landscape, climate, technological knowledge, and scale of production, shaping both labor organization and the societies that depended on this essential resource.

A fundamental requirement for salt production was the availability of saline resources. In the Italian peninsula, surrounded by the sea, these were certainly abundant. Within this context, the coastal communities of Tyrrhenian Italy developed large-scale salt production already in the Late Bronze Age (1350-900 BCE), initially through briquetage and later, as technological knowledge and hydraulic control advanced, through salterns. This shift in production techniques was also linked to increasing demand in a landscape marked by the emergence of city-states and, later, by the demographic peak reached during the Roman period. Control over salt could determine economic and political dominance and even become a cause of conflict between communities. As a result, salt production was a fundamental activity that set the rhythm of work, shaped the landscape, and profoundly influenced daily life.

Given the extensive impact of these activities along the Italian coastline, particularly along the Tyrrhenian margin, archaeologists have investigated ancient salt production for decades. The evidence emerging from these studies forms the foundation and inspiration for this story.

The comic is set in the Iron Age (900-600 BCE), along the Tyrrhenian coast of Latium. It is a narrative reconstruction inspired by archaeological, environmental, and historical evidence, including production structures, remains of saltworks, traces of resource exploitation, and dynamics of territorial control. The characters and dialogues are fictional, but the contexts in which they move reflect concrete issues of the past: labour, dependence on natural resources, violence linked to their control, and the fragility of the communities that produced them.

Through the eyes of a child, the story explores the relationship between environment and society, showing how even seemingly “ordinary” activities, such as salt production, could have profound consequences for people’s lives. The narrative closes by returning to the present, reminding us that archaeology is built from material fragments and that, from these fragments, we attempt to reconstruct not only economies and technologies, but also human experiences. This comic is an invitation to look at the past as a set of possible stories, rooted in data, yet open to interpretation.

THE AUTHORS

Angela Piacentini

Born in 1993, she is a former student and now a teacher at the *Scuola Romana dei Fumetti.*
She began her career creating comic strips for CGIL and educational comics for Carocci Editore. In 2021, her short comic '*Cromomenti'* was published in the literary magazine *Nuovi Argomenti*, and she illustrated '*Miracolo a Rozzano*' for the volume '*Accattoni, Vitelloni e Zombi – Il neorealismo rivisitato a fumetti*' (Ultra Edizioni).
She later worked as assistant colorist to Emiliano Tanzillo on *Psychothérapies* (Glénat, 2023), *Le Chevalier au Dragon 2* (Dargaud, 2025), and its third volume currently in progress. In 2025, she published the short comic '*Residui Detriti Storie*' in *Nuovi Argomenti*.

Alessio Schreiner

He holds a degree in the History of the Italian Language and made his debut in 1999 as a comic book writer, sometimes under the pseudonym *Mr. Grady*, publishing short erotic stories in Italian and international magazines. He later moved into television writing, contributing over 250 episodes to the long-running soap opera *Un posto al sole*.
He has written comics for magazines such as *Lanciostory* and *Comics&Science*, as well as for publishers including Glénat and Comicon Edizioni. His short stories have appeared in literary magazines and anthologies, and in 2021 he released his debut novel, *'Altre aspettative'* (Ensemble Edizioni).

SALT DOESN'T WAIT FOR DREAMS

DRAWINGS & COLOURS BY ANGELA PIACENTINI
STORY & SCREENPLAY BY ALESSIO SCHREINER
CONSULTANCY BY AGOSTINO SOTGIA


CRASH
WE NEED MORE WOOD FOR THE KILN...
I'LL GO.


CRACK
HEY, WAIT!


BEEE!
THESE ARE THE LAST ONES. THANKS FOR THE CHEESE.
WOOF! WOOF!
THANK YOU FOR THE SALT. A LONG JOURNEY BACK AWAITS US.
BOY, I ALMOST DIDN'T RECOGNISE YOU. YOU'VE GROWN SINCE LAST TIME.
NEXT TIME WE MEET, YOU'LL HAVE A BEARD LIKE YOUR FATHER!
HERE, FEED THE SHEEP.
THESE DAYS, IT'S NOT WISE TO SEND HIM ALONE INTO THE FOREST.


THE ROMANS ATTACKED ANOTHER VILLAGE. THEY'RE HUNTING FUGITIVES TO FORCE THEM TO WORK IN THE SALT PANS. THEY WANT CONTROL OF SALT MORE THAN ANYTHING.


THEY'RE EXPANDING AND THEY WON'T STOP. WHY DON'T YOU COME WITH ME? WHEN THEY ARRIVE, YOU WON'T BE ABLE TO FACE THEM ALONE.


THEN I WON'T FIGHT, IF THAT'S WHAT IT TAKES TO KEEP MY SON SAFE.


WHERE ARE YOU? I BROUGHT YOU SOME FOOD!


GGGROW!
I DON'T WANT TO HURT YOU!
WHAT'S YOUR NAME?
CAISRA...
I'M ALUS. I LIVE WITH MY FATHER NEAR THE SEA. DON'T YOU HAVE A HOME?
NOT ANYMORE.
I'M SORRY.


I HAVE TO GO NOW. TOMORROW I'LL BRING YOU MORE FOOD. STAY HIDDEN.
ALL RIGHT.


YOU'VE GATHERED ENOUGH FIREWOOD THESE DAYS. YOU CAN REST FOR A WHILE.
DON'T WORRY, FATHER. I LIKE GOING INTO THE FOREST.
I KNEW YOU WERE HIDING SOMETHING FROM ME!
COME AWAY!
BUT SHE'S MY FRIEND!
NO, SHE'S DANGEROUS. AND YOU, LEAVE NOW! STAY AWAY FROM MY SON!


PLEASE, DON'T LEAVE ME.
MY TIME IS OVER...
PROMISE ME YOU'LL ALWAYS PROTECT OUR SON.
I PROMISE.
FATHER, LOOK!
GET INSIDE, NOW!

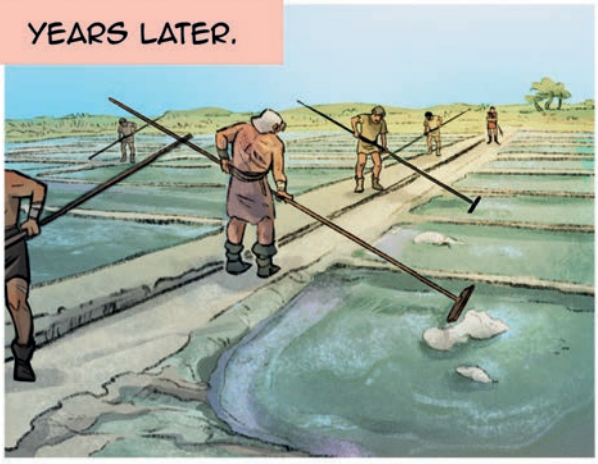

WE MUST HELP HER!
WE CAN'T DO ANYTHING. THEY'LL CAMP HERE FOR THE NIGHT AND LEAVE TOMORROW.
BUT FATHER...!
FORGET ABOUT HER. DO YOU UNDERSTAND?

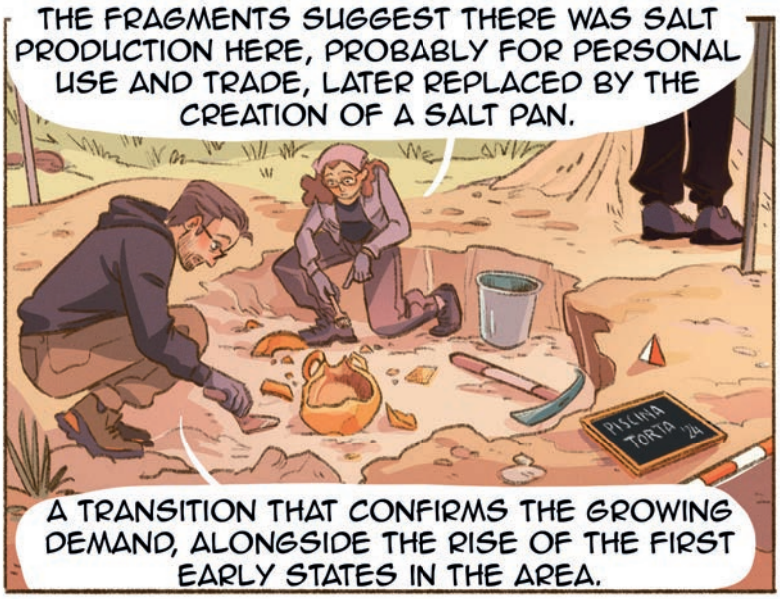

WHAT DO YOU THINK YOU'RE DOING?
DO YOU REALISE HOW FOOLISH AND DANGEROUS THIS IS?
WHEN WE CARE ABOUT SOMEONE, WE MUST DO EVERYTHING WE CAN TO PROTECT THEM. YOU TAUGHT ME THAT.
ALL RIGHT. IF THEY WANT SALT, WE'LL LET THEM TASTE OURS...

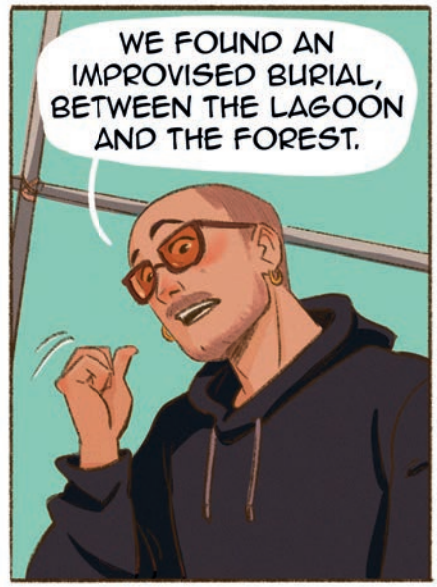

WHAT ARE YOU DOING HERE? YOU WERE ORDERED TO STAY IN THE HUT.
I THOUGHT YOU MIGHT BE HUNGRY...
THE PRISONERS! THEY'RE ESCAPING!
HURRY!
STOP THEM!
MAKE SURE THE KIDS GET AWAY!


I WANT YOU TO KEEP THIS. IT BELONGED TO ALUS'S MOTHER.
FATHER...
TRY TO BE HAPPY.

YEARS LATER.




THE FRAGMENTS SUGGEST THERE WAS SALT PRODUCTION HERE, PROBABLY FOR PERSONAL USE AND TRADE, LATER REPLACED BY THE CREATION OF A SALT PAN.
PISCINA TORTA '24
A TRANSITION THAT CONFIRMS THE GROWING DEMAND, ALONGSIDE THE RISE OF THE FIRST EARLY STATES IN THE AREA.


WE FOUND AN IMPROVISED BURIAL, BETWEEN THE LAGOON AND THE FOREST.


THAT'S UNUSUAL. PERHAPS IT WAS SOMEONE WHO WORKED IN THE SALTERN...


HE'S SMILING...
WHAT'S GOING ON HERE?
MASTER, THIS MAN IS DEAD...
DON'T WASTE TIME. BURY HIM SOMEWHERE AND GET BACK TO WORK.

SALT & POWER

university of groningen

Salt is a simple substance, almost banal in our modern daily lives.
Yet, for millennia it was one of the most precious and strategic resources available to human societies.
It is from this awareness that the project "*Salt & Power. Early States, Rome and Resource Control*", carried out between 2021 and 2026 at the University of Groningen (The Netherlands), was born.

The project set out to answer an ambitious question: how was salt produced along the Tyrrhenian coast of central Italy, and what role did it play in the formation of the earliest state-level societies between the Late Bronze Age and the Roman period?

The research focused in particular on two key areas – Southern Etruria and *Latium Vetus* – regions that, between the end of the second and throughout the first millennium BCE, witnessed the rise of urban centres that would later become major players in Mediterranean history.
Through an interdisciplinary approach combining archaeology, geology, and landscape reconstruction, the project sought to answer a fundamental question: who produced salt, how was it produced, and who controlled its distribution?

To understand the importance of this research, we must remember that in antiquity salt was far more than a seasoning.

First and foremost, it was a tool of survival. Its desiccating properties made it possible to preserve meat, fish, vegetables, and dairy products in a world without refrigeration. Salt enabled communities to accumulate food reserves, withstand periods of scarcity, and transport provisions over long distances. It also played a crucial role in food processing: in cheesemaking, for example, salt aids the separation of whey from curd and helps form a protective rind; in the case of olives, brining was essential to make them edible.
Its applications extended well beyond food. In tanning, salt ensured the preservation and durability of hides. In textile production, it helped fix dyes to fibres. In certain ceramic processes, it contributed to modifying the structure of clay fabrics. Salt also held ritual and medicinal significance, valued for its purifying and preservative qualities. In short, it was a transversal resource, embedded in nearly every aspect of daily life.

It is therefore not surprising that control over salt production could translate into political and economic power.

THE RESEARCH GROUP

Prof. **Peter A. J. Attema**
Project Supervisor

Professor of Mediterranean Archaeology at the Groningen Institute of Archaeology.

Dr. **Luca Alessandri**
Principal Investigator

Expert in protohistory of Latium and salt production in antiquity.

Prof. **Jan Sevink**
Supervisor

Emeritus Professor of Physical Geography at IBED, University of Amsterdam

Dr. **Francesca Bulian**
Post-Doc

Geologist, expert in micropalaeontology and sediment geochemistry.

Dr. **Agostino Sotgia**
Post-Doc

Expert in protohistory of Southern Etruria and agricultural landscape in antiquity.

Archaeological research has shown that as early as the tenth century BCE, communities in central Italy were systematically occupying stretches of the Tyrrhenian coastline to exploit this resource.

Numerous sites have yielded vast quantities of ceramic fragments associated with the technique known as *briquetage*, a production method involving the boiling of seawater in clay containers. Once the water evaporated, the salt crystallised along the inner walls of the vessel, which then had to be broken to extract the salt cake. This explains why archaeologists today uncover large accumulations of *reddish ollae*, the material traces of sustained and intensive production.

Alongside this combustion-based technique, which required significant amounts of fuel, the project also investigated the possible development of more efficient systems over time, based on solar evaporation in coastal basins, whether natural or artificially managed.

The demographic growth and urban expansion that characterised the Iron Age led to increased demand for salt, encouraging both intensified production and more structured management of coastal zones.

It may therefore be no coincidence that this same period witnessed intensified competition for control of the Tyrrhenian shoreline. Ancient sources (Dionysius of Halicarnassus, *Roman Antiquities* 2.55.5; Livy, *Ab Urbe Condita* 1.33) describe Rome's expansion towards the mouth of the Tiber and its conflicts with neighbouring communities such as Veii.

Beyond their military dimension, these events can also be interpreted as part of a broader strategy aimed at controlling key coastal resources, among which salt played a crucial role.

The *"Salt & Power"* project thus invites us to reconsider the history of protohistoric and early historic central Italy from a new perspective. Behind the rise of cities, behind wars and alliances, behind Rome's territorial expansion, we can discern the management of essential resources such as salt. A humble substance, perhaps, but one capable of shaping economic balances, political strategies, and territorial organisation.

In this sense, salt is not merely a natural product:
it is a key to understanding the formation of complex societies in central Italy.

The project was funded by the
NWO - Dutch Research Council
(*Nederlandse Organisatie voor Wetenschappelijk Onderzoek*)
Grant number: *406.20.HW.013*

PISCINA TORTA

Among the dunes and coastal pinewoods south of Ostia, where today the sound of the sea blends with the wind moving through the trees, lies one of the most important productive sites of protohistoric Italy: Piscina Torta. At first glance, the landscape appears entirely natural, shaped only by time and sea storms. Yet beneath just a few centimetres of sand survive the traces of intense human activity that occupied this area between the late 8th and the 6th century BCE.

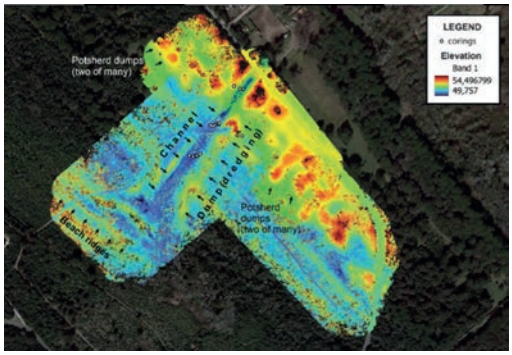
The site extends across an ancient beach ridge of the Tiber delta, in a strategic position: the Ostia lagoon on one side and the Tyrrhenian Sea on the other. Running through its centre is an elongated depression, still visible today in satellite and LiDAR imagery, which gives the site its name: the so-called Piscina Torta channel. This paleochannel must once have played a crucial role in the organization of the production area.

Discovered in the 1980s because of the extraordinarily high concentration of ceramic material visible on the surface, the site is now, thanks to research carried out within the framework of the *Salt & Power* project, interpreted as a true proto-industrial area devoted to salt production.

Through archaeological, geomorphological, and geophysical investigations, as well as coring campaigns and sedimentological analyses, it has been possible to reconstruct the long history of this place: a complex and layered story shaped by continuous interaction between environment and human activity.

The channel, cut into marine sands belonging to the ancient coastal ridges, was partly natural but was substantially modified by human intervention. Stratigraphic data show that between the late 8th and 6th centuries BCE its central section was artificially deepened, transforming it into a true anthropogenic canal. Approximately 400 metres long and up to 40 metres wide at its broadest point, it represents a remarkable feat of hydraulic engineering for its time. Its precise function remains uncertain, but it may have functioned as a harbour, as a source of freshwater supply, or both. Whatever its role, it testifies the technical sophistication of the communities that shaped it.
Around this axis the productive site developed.

Soprintendenza Speciale di Roma
Archeologia Belle Arti Paesaggio



Excavations, geophysical surveys, and surface surveys quickly revealed a mosaic of productive installations, characterised by the presence of kilns and extensive ceramic discard deposits. No traces of houses or of a stable resident community, such as those found in contemporary inland centres, have been identified. Millions of ceramic fragments, invariably belonging to reddish jars, testify to the intensity of the activities that took place at Piscina Torta, among which salt production through the briquetage technique was certainly prominent.

The density of the materials, together with the site's extent, approximately 15 hectares, suggest that the production was likely intended to supply the inland regions of Latium during a period of profound socio-political transformation.

It is precisely in this period that Rome began its expansion toward the mouth of the Tiber and the Tyrrhenian coast. Even before the foundation of Ostia, sites such as Piscina Torta may have represented key nodes in the control and distribution of salt. In an era when food preservation, stock management, and exchange networks were crucial for urban growth, controlling salt production meant exercising power.

Piscina Torta thus tells a story that is not only economic, but also political and environmental. It demonstrates how the communities of central Italy could intervene in the coastal landscape, adapting it to their productive needs. And it reminds us that behind the rise of the first city-states stood infrastructure, technical expertise, and a profound knowledge of the environment.

From this perspective, the site is not merely a place of salt production: it stands as testimony to a crucial moment in the formation of the earliest state structures of Tyrrhenian Italy, when control over coastal resources helped reshape the balance of power in the central Mediterranean.

DIRECTOR

Dr. **Luca Alessandri**

EXCAVATION TEAM

Dr. **Angelica Fiorillo**

Dr. **Agostino Sotgia**

Luca Cusimano

Giovanni A. Della Sala

Virginia Gianni

Caterina Rossi

GEOLOGICAL INVESTIGATIONS

Prof. **Jan Sevink**

Dr. **Francesca Bulian**

GEOPHYSICAL SURVEY

Dr. **Wieke De Neef**

Prof. **Giorgio De Donno**

EXPERIMENTAL ARCHAEOLOGY

Dr. **Agnese Fischetti**

ARCHEOMETRY

Prof. **Gianluca Sottili**

TOPOGRAPHY

Prof. **Valerio Baiocchi**

SOPRINTENDENZA

Dr. **Barbara Rossi**

Dr. **Alba Casaramona**

PARK

Alessandro Clemente

Maria Teresa Orlando

Francesco Boccoli

FURTHER READING

SALT & POWER PAPERS

Alessandri, L., Attema, P., 2021. From briquetage to salterns in protohistoric central Italy. Research of a fundamental subsistence commodity. *IpoTESI di Preistoria* 14, 161–168.

Alessandri, L., Attema, P.A.J., Bulian, F., Sevink, J., De Neef, W., Baiocchi, V., Rolfo, M.F., Cifani, G., Ceccato, Z.L.A., Cusimano, L., De Vos, M., Di Giacomo, L., Fiorillo, A., Gianni, V., Improta, C., Rossi, C., Ter Horst, Y., Vagliviello, S., 2024. Salt in Late Iron Age Italy. A multidisciplinary approach to the exploration of Italy's coastal exploitation sites: Piscina Torta (Ostia, Rome) case study. *Journal of Archaeological Science: Reports* 53, 104361.

Alessandri, L., Baiocchi, V., Monti, F., Cusimano, L., Fiorillo, A., Gianni, V., Rossi, C., Attema, P.A.J., Rolfo, M.F., 2023a. Low-cost GPS/GNSS Real Time Kinematic receiver to build a cartographic grid on the ground for an archaeological survey at Piscina Torta (Italy). *Acta IMEKO* 12, 1–6.

Alessandri, L., Bulian, F., Neef, W. de, Dee, M.W., Plessis, J. du, Attema, P., Sevink, J., 2023b. *Paleoenvironmental reconstruction of the southern extension of the Tiber delta with the Ostia palaeo lagoon: interplay between human activity and landscape change* (No. EGU23-8467). Presented at the EGU23, Copernicus Meetings.

Alessandri, L., Di Chiara, A., Bonilla Alba, R., Cusimano, L., Della Sala, G.A., Fiorillo, A., Gianni, V., Rossi, C., Sotgia, A., Florindo, F., 2026. *Archaeomagnetic Dating as a Tool to Overcome the Hallstatt Plateau: A Combined Chronological Approach at the Salt Production Site of Piscina Torta (Rome, Italy*).

Attema, P.A.J., Alessandri, L., Bulian, F., De Neef, W., Sevink, J., 2024. Studying Coastal Resources and Resource Control in the Context of Early State Formation on the Tyrrhenian Coast (Italy), in: Pirson, F., Schütt, B., Schulz, T. (Eds.), *Tagungen Und Kongresse 3. Presented at the Micro-Regions as Spaces of Socio-Ecological Interaction,* 59–65.

Bulian, F., Alessandri, L., Attema, P., Sevink, J., 2024. Bronze Age to Roman period salt production in the coastal areas of peninsular Italy: Palaeoenvironments, production methods and archaeological evidence. *Quaternary Science Reviews 344*, 108930.

Fulminante, F., Alessandri, L., 2024. Salt Production in Central Italy and Social Network Analysis Centrality Measures: An Exploratory Approach. *Open Archaeology* 10.

Alessandri, L., Bulian, F., Attema, P.A.J., Sevink, J., 2025. Salt production, trade and consumption in European pre-industrial societies: Analytical methods and socioeconomic contexts. *Quaternary Science Reviews 356*, 109291.

Attema, P., Alessandri, L., Bulian, F., Sevink, J., Sotgia, A., 2025. Production and Demand of Salt in Ancient Italy from the Bronze Age to the Roman Period, in: Eubanks, P.N., Dumas, A.A., McKillop, H., Alexianu, M. (Eds.), *Meridians of Salt: Global Perspectives on Archaeology and Ethnoarchaeology*. Springer Nature, 211–233.

Sotgia, A., Alessandri, L., Attema, P., Bulian, F., Sevink, J., 2026. Sodium Chronicles... Grain by Grain. New Methods for Quantifying Ancient Salt Demand. *Journal of Archaeological Method and Theory* 33 (36)

BIBLIOGRAPHY ON SALT

Eubanks, P., Dumas, A.A., McKillop, H., Alexianu, M. (Eds.), 2025. *Meridians of Salt - Global Perspectives on Archaeology and Ethnoarchaeology*. Springer Nature.

Harding, A., 2021. *Salt: White Gold in Early Europe*, Elements in the Archaeology of Europe. Cambridge University Press.

Weller, O., Brigand, R. (Eds.), 2015. *Archaeology of Salt: approaching an invisible past.* Sidestone Press.

On the Tyrrhenian coast in the 6th century BC, salt is more than a seasoning... it is power.

Extracted through *briquetage*, by boiling brine in clay vessels over fires, this essential resource shapes the rhythm of daily life and draws the attention of expanding political forces eager to control it.

Amid kilns, smoke, and fragments of fired clay, a young boy encounters a girl in hiding. Their meeting is cautious at first, marked by difference and uncertainty, but it gradually grows into a quiet friendship. In a landscape defined by labour and rising tensions, their bond becomes a space of trust and shared discovery — a small, human connection within broader historical change.

As outside powers threaten local autonomy, the community must confront shifting alliances and difficult decisions. Through the perspective of its young protagonists, *Salt Doesn't Wait for Dreams* explores how large-scale historical processes are experienced at ground level.

Rooted in archaeological research and material evidence, the comic transforms kilns, *briquetage* fragments, and excavation data into a vivid visual narrative — demonstrating how comics can bridge scholarship and storytelling, and bring the human dimension of the past into focus.