# S +T+ARTS 4 WATER

# IO S+T+ARTS RESIDENCIES

FOR IO REGIONAL CHALLENGES ON SUSTAINABLE WATER MANAGEMENT

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S+T+ARTS



Bringing together art, technology and science, **STARTS4Water** aimed to tackle one of the most pressing challenges of our times: water management. The project supported artists, researchers, technology experts and other stakeholders in finding a common ground and language to respond to regional water-related challenges. STARTS4Water builds on the **United Nations' Sustainable Development Goals** (SDGs) 2030 and especially on SDG 5 'Clean Water and Sanitation' and SDG14 'Life Below Water'.

STARTS4Water was a pilot project selected following the European Commission's DG CONNECT call "Art and the digital: unleashing creativity of European water management", seeking to unite the digital technologies with the arts and artists/ creatives to promote a strong unified European policy vision on the future of water.

Through artistic residencies and a series of S+T+ARTS Academy workshops, intersectoral and transversal networking activities, field expeditions and discussions engaging local communities, STARTS4Water engaged with wider communities and proposed new narratives to inform and communicate on a common challenge.

In July 2021, STARTS4Water launched a call for artists for 10 residencies in 6 different locations, kick-starting a series of collaborative processes that aimed to generate projects that raise awareness and offer concrete solutions for regional water challenges in Europe.

Each residency addressed a different **regionspecific water management challenge** and was related to the UN's Sustainable Development Goals (especially SDG6 and SDG14). The challenges were defined by the Consortium partners with the support of a regional **expert network,** including digital experts, entrepreneurs, regional leading art and research institutions, specialists in digital transformation, administration and public governance.

The STARTS4Water residencies led to tangible **artworks** that develop knowledge and raise awareness of water challenges, or to **applications & processes** that contribute to the local development of sustainable water use and management.

In this leaflet you can find the initial residency challenges, the artists selected and some information on the outcome of the residencies. Enjoy the reading!

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### **ABOUT S+T+ARTS**

STARTS is an initiative of the European Commission to foster alliances of science, technology, and the arts, that effectively implement a European approach to technological innovation centered on human needs and values.

Science, Technology and Arts form a nexus with an extraordinarily high potential for creative and reflective innovation. And such innovation is considered to be precisely what is called for to master the social, ecological and economic challenges that Europe is facing.

With disruptive methods of exploration and an accurate critical eye on the use of technology, artists decisively raise awareness of the societal challenges and global concerns we are tackling. The artistic practices are seen as innovative processes and have a wide-reaching potential to contribute to the development of new economic, social and business models.

### ABOUT STARTS4WATER

The STARTS4Water Consortium is led by <u>LUCA</u> <u>School of Arts</u> (Belgium) and includes <u>Thyssen-</u> <u>Bornemisza Art Contemporary - TBA21</u> (Austria), <u>Universal Research Institute</u> (Croatia), <u>V2 Lab</u> <u>for the Unstable Media</u> (The Netherlands), <u>Ohi Pezoume/ UrbanDig Project</u> (Greece) and <u>Cittadellarte - Fondazione Pistoletto</u> (Italy) in collaboration with STARTS partners <u>Gluon</u> (Belgium) and <u>BOZAR</u> (Belgium)



# **STARTS4WATER**:

### MOBILISING SCIENCE, TECHNOLOGY AND ARTS FOR NEW WATER REALITIES







# ZERO POLLUTION **ADRIATIC**

#### Abstract

This residency seeks to develop innovative tools and ideas for dealing with water pollution and the tourism & hospitality industry's footprint.

#### Keywords

Sea, sustainable tourism, hybrid art, new ecological technologies, engineering/ biotechnology, tourism & hospitality industry footprint, new digital tools (IoT, Big Data, Cognitive computina)

#### Description of the regional challenge

For some time, Croatia has been faced with the problem of large quantities of liquid and solid waste from the tourism and hospitality industry. For example, waste water from restaurants, cruise ships and boats ends up in marine waters, without proper liquid waste processing. Since the release of liquid waste occurs underwater, it mostly goes unnoticed, and so becomes neglected as a problem. These practices are threatening the quality of the Adriatic Sea's coastal waters and affecting the environment (microorganisms, animal and plant life) and human health – which are all connected through the food chain. Many cities and islands are struggling with the absence of effective, universal solutions to these problems, which are also difficult to overcome individually. Can a STARTS collaboration lay a path of creative disruption and the foundations for sustainable change towards a systemic approach to waste water and marine management? Can art be a generative driving force in improving marine management, enabling new sustainable practices that promote the preservation and remediation of clean (marine) water and the restoration of a rich water biodiversity?

#### photo by: UR Institute



# HOSTED BY:

The focus of the call is the Croatian and Slovenian UR INSTITUTE coastal region of the Adriatic Sea - and specifically the cities whose economy is based on unsustainable mass tourism, which produces a negative impact on **REGION:** marine waters and their biodiversity. The countries DUBROVNIK, with coasts on the Adriatic are Albania, Bosnia CROATIA / CROATIAN and Herzegovina, Croatia, Italy, Montenegro and Slovenia. The Adriatic contains over 1,300 islands, AND SLOVENIAN mostly located along the Croatian part of its eastern COASTAL AREA OF THE coast. This coastline is Croatia's most popular tourist ADRIATIC SEA region by far, receiving around 11 million tourists a year who over-utilise most of the local water bodies, leading to a massive release of waste into marine waters.





#### **Region information**

#### How is the mission S+T+ARTS driven?

The project seeks a truly integrative approach to innovation, beyond the compartmentalisation of art and science & technology, and within a unified S+T+ARTS framework. UR Institute offers a platform for mutual, collaborative and DIWO (do-it-withothers) opportunities for sharing knowledge, and mutual development. We ask: can we use science & digital technology related intermedia/new media art to go beyond merely building awareness towards the hands-on development of concrete, applicable ideas?

- City of Dubrovnik Association of Technical Culture (HR)
- Dubrovnik-Neretva County Association of Technical Culture (HR)
- Association of Innovators of Dubrovnik-Neretva County (HR)
- The City of Dubrovnik (Administrative Department for Education Sports, Social Welfare and Civil Society) (HR)
- Nature Reserve Island Lokrum (HR)
- ARL Art Workshop Lazareti (HR)
- Konteiner: Bureau of Contemporary Art Praxis (HR)
- Ars Electronica Linz GmbH (AT)
- Dubrovnik Water Supply (HR)
- PiNA: Association for Culture and Education (SI)

S+T+ARTS **4 WATER** 

+ ZERO POLLUTION ADRIATIC S+T+ARTS ARTIST-IN-RESIDENCE

## ZITNIK MARJAN ROBERTINA SEBJANIC





photo credits: Margherita Pevere

Robertina Šebjanič is an internationally awarded artist, whose work revolves around the biological, chemical, political, and cultural realities of aquatic environments and explores humankind's impact on other species and on the rights of non-human entities, while calling for strategies emphatic towards other species to be adopted. In her analysis of the theoretical framework of the Anthropocene, the artist uses the term 'aquatocene' and 'aquaforming' to refer to humans' impact on aquatic environments. Her works received awards and nominations at Prix Ars Electronica, Starts Prize, Falling Walls. Her work was exhibited and performed at venues and festivals such as Ars Electronica Festival (AT), Prix Cube Exhibition (FR), MONOM\_CTM (DE), Matadero (ES), (Onassis Cultural Center Athens (GR), Kosmica festival & Laboratorio Art Almeda (MX), Kapelica Gallery (SI), Device\_art (CRO), Art Laboratory Berlin (DE), Kiblix Festival (SI), Gallery of Contemporary Art Celje (SI), Museum of Contemporary Art Beograd (SRB), Eye Museum Amsterdam (NL).

Marjan Žitnik, born 28th March 1990 in Dubrovnik, Croatia. In early childhood developed interest in musical art as a piano player winning national and internal awards. Besides art he showed interest in computers and creative digital design. After getting a master's degree in computer engineering, he founded several successful mobile-app-based startups. Among recent work, he served as the Product Manager for Photomath – a mobile application that utilizes a smartphone's camera to scan and recognize mathematical equations (several times #1 AppStore educational app Worldwide, with more than 200 million downloads). His biggest passion since he was a child was fishing, a tradition taught by his family, and he never missed the opportunity to get back to the boat. In 2018 he founded Maritimo Fishing company in Dubrovnik with the slogan "Fish like locals do", which offers customized boat & kayak fishing trips. In 2020 the company founded a non-profit spinoff devoted to preservation of marine ecology – Maritimo Recycling, which cleans the Adriatic Sea from plastic, upcycling it into innovative use.



The storytelling of the artwork will represent the current situation of changes in the marine environment that are mostly caused by human presence (residue waste, oil, low oxygen, hypoxia). I want to go beyond showing the current situation and show the future potential of coexistence in the coastal areas. 'I'm working on the levels of empathic methods of connection to not only be observers of the situation but actively engage with the ecological situation that we are all part of .... '

Robertina Šebjanič

The development was auite challenaina. but we made it in the end. We successfully implemented all the sensors into the beta program "S.M.A.R.T urchin" and programmed the software for the data collection. calibration. and storage. We did onsite testing (in the sea) and we got successful results. The most interesting detection was an increase of the dissolved oxygen inside the benthic chamber. proving that the S.M.A.R.T. urchin's calibration was successfully done. Now we aim to detect the speeds of the dissolving oxygen process in different sea conditions, which will be our main parameter for the measurements and comparisons in the future

Marjan Žitnik



### ARTIST'S STATEMENT

The artwork Echinoidea future – Adriatic sensing addresses the current biogeological and morphological conditions in the sea urchin environment, which is aquaformed by anthropogenic liquid waste, resulting in low oxygen levels in the seawater.

Exploring the stressors of the local/global human footprint, the project demonstrates the resilience of the aquatic species. 'Echinoidea future – Adriatic sensing" acts as an activation of (sy)(e) mpathia.

The main research was carried out within The Zero Pollution Adriatic residency and took place in the coastal region of the southern Adriatic. The project includes an art installation Echinoidea future – Adriatic sensing by Robertina Šebjanič, technological innovation S.M.A.R.T Urchin by Marjan Žitnik, workshops and a ZPA Social Innovation initiative developed by Marjan Žitnik and Robertina Šebjanič.









# **CISTERNS** KNOW

#### Abstract

There is a need for community ownership of the vision for sustainable water management, especially in areas with scarce water resources. Water utilities and local authorities need to go beyond building awareness, towards participatory processes and systems inspired by water as a commons.

#### Keywords

drinking water services, water use efficiency, integrated water management, water as a commons, telemetry

#### Description of the regional challenge

The Greek island of Sifnos does not have sufficient water supplies to meet demand, especially during the summer, and relies on the use of water tankers for maintaining water supply, and on plastic bottles for safe drinking water – at considerable cost. The projected cumulative cost of drinking water supply for the period 2041-2050 is estimated at between 0.9-1.3% of GDP (Bank of Greece, 2011). Efficient water resource management requires a full knowledge of existing water resources. However, given that cisterns, natural water sources and boreholes are private and remain undeclared, official maps are lacking. A mix of measurement data, data research and Existing local knowledge is of critical importance for designing a truly integrated water resource management. Can we spark community-driven solutions and a culture of data and knowledge sharing between all stakeholders including authorities, citizens and visitors? Learning from tradition, cisterns were the way in which, for centuries, people collected water in the Mediterranean. They also embody the organic way in which humans deal with nature and the way in which communities manage a common good. Values such as good health, clean water, affordable energy and responsible consumption are only some of the SDGs that we address in this Sifnos Challenge.

#### photo by: Amalia Zepou

HOSTED BY: OHI PEZOUME / URBAN DIG PROJECT

**REGION:** SIFNOS ISLAND, GREEK CYCLADIC ISLANDS IN THE SOUTH EASTERN AEGEAN REGION







#### Region information

Sifnos is a Greek Cycladic island in the south eastern Aegean. Its size is 73,942 km2. It is typical of the 33 other islands of the Cyclades. Greece has around 6.000 islands, 117 of which are inhabited and which share many common features with the wider Mediterranean world.

Sifnos is rural and has 7 villages and 5 settlements near the sea. The main villages are Apollonia, the capital, Artemonas and Kastro.

#### How is the mission S+T+ARTS driven?

We are looking for artists/collectives able to unpack the multifaceted relationship between the island's inhabitants and water scarcity. Cisterns are a perfect symbol of the built-in wisdom of traditional practices: the principles of collectivity and sharing are embedded in their resilience. Having supported an inclusive and fair ecosystem in practice, cisterns have symbolically acquired a universal dimension. Art ought to generate a vision of their future. We expect the STARTS4Water residency to catalyse community participation in the exploration of mapping and data-driven technology, and to become a driver towards new uses of available resources and traditional techniques in order to reduce water stress.

- Department of Water Resources and Environmental Engineering, National Technical University of Athens
- Environmental Association of the Municipality of Sifnos. Greece
- Water Supply and Sewage Company (EYDAP) S.A.)
- Department of World Cultures, Benaki Museum, Athens
- Water Directorate of Decentralised Administration of Attica

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## CISTERNS KNOW

### S+T+ARTS ARTIST-IN-RESIDENCE



DECA Architecture is an architectural team founded in 2001 by Carlos Loperena and Alexandros Vaitsos who met during their postgraduate studies at UC Berkeley. The team, compromised of 15 architects, is based in Athens. DECA has engaged in over 100 projects that vary in subject matter, location and scale: Having designed joysticks, buildings and territories in urban contexts and the countryside, the work of DECA aspires to stimulate the senses beyond the limits of familiarity.DECA has been exhibited in museums in Tokyo, Boston, Athens and London while in 2012, the 'Bedrooms' installation was part of the Greek entry in the Biennale of Venice. In parallel with its active architectural practice, DECA nurtures a research branch that is currently engaged with two basic questions: The transitioning to the Information Age is rendering the existing uses of buildings obsolete. How will we transform our underused urban environments to foster vibrancy, diversity and resilience in our cities?The climate emergency is creating warmer cities, scarcity of water, and impacting our food sovereignty. What innovative strategies can shift the paradigm towards a sustainable future?



### **ARTIST'S STATEMENT**



photo by DECA architecture photo by Christos Bourelias

Over the past twenty years, our architecture practice has taken us to most of the Cycladic islands. On them, we have witnessed firsthand that water is one of the most mismanaged resources in these dry island landscapes. As a result of these journeys, we have come to see that the current push for tourist development is far outpacing the islands' capacities to sustain it. This realisation sparked a desire to research traditional and contemporary practices of water management.

In 2019, intrigued by its water management infrastructure and traditions, we visited the area of Poulati on Sifnos. However, our plans to continue our research were put on hold because of the pandemic. Thus it was a very fortunate coincidence that we learned about the S+T+ARTS4Water open call for artists, as being selected for the residency has provided us with resources to continue our research for the past 9 months.

The culmination of our efforts is an installation in two parts situated in the central square of Apollonia in Sifnos.



The STARTS for Water project in Sifnos comes at a crucial moment: the climate crisis is more evident than ever, tourism though an economic boon puts pressure on fragile ecosystems, and water is becoming a critical resource. In this context researching. documenting, and presenting the invaluable traditional knowledge related to the water commons on Sifnos in a way that is aesthetically engaging can be an important contribution to finding sustainable solutions for the future.

**Christos Carras** 

Executive director at the Onassis Cultural Centre Athens. Institution/Company: Onassis Foundation.

#### The first part addresses the past:

A video installation tells the story of the Poulati area, where an infrastructure of monumental scale, that included terracing with stone retaining walls, cisterns and irrigation channels, was once integrated seamlessly into the landscape. All of these elements were linked to Poulati's natural springs. They contributed, with minimal water wastage, to the irrigation of a vast area. The cisterns were not covered so that everyone knew how much water was stored in them. Each plot of land was granted the right to collect water by opening the connection between the spring and a cistern for 12 hours on designated days of the week. This system of measurement, which was called 'the waters', allowed the community to participate in decision-making and to govern the distribution of water with transparency and fairness.

Due to the island's economic shift from agriculture to tourism, Poulati's infrastructure is fast becoming obsolete and is not being maintained adequately to ensure its preservation. The intention behind this installation is to document this important example of a vernacular water management tradition before its traces disintegrate back into the landscape.

#### The second part addresses the present:

A triangular electronic gauge shows how much water is available in Sifnos' three primary water tanks. Every 30 minutes, the installation receives direct information from the municipal telemetry system, which measures the amount of water in each tank. It is perceived as a digital version of Poulati's open air cisterns, which allowed for transparency in the monitoring of water availability. Under normal circumstances, the three tanks should be full at all times. However, in summer, when the demand for water is greater, their levels decrease faster than they can be refilled.

This second installation's objective is to offer a clear picture of the stresses that are being exerted on the island's water network. It aspires to encourage people to participate in decision-making around water management in an informed way.

An artistic event that unveils traditional water management practices in dry Greek islands. The case of Poulati area in Sifnos was deployed by artists to trigger the public interest for water issues

Nikos Mamasis Associate Professor of hydrology, hydroelectric energy, and hydrometeorology Institution/ Company: National Technical University of Athens A work of art picturing the "gardens of Poulati" in Sifnos, that evolves like a palimpsest bringing out the ancient toils of man with land and water and emphasising our duty to treat this treasure as a cultural heritage.

Alexandra Katsiri Professor Emeritus at the school of Civil Engineering, Department of Water Resources and Environmental Engineering Institution/ Company: Environmental Association of the Municipality of Sifnos, Greece.





HOSTED BY: LUCA SCHOOL OF ARTS IN COLLABORATION WITH GLUON

> REGION: FLANDERS, BELGIUM

# PHARMACEUTICAL POLLUTION

#### Abstract

This residency imagines a reverse of the current system of pharmaceutical pollution and develop an approach that does not prioritize human health over the health of the aquatic ecosystem.

#### Keywords

pharmaceutical wastewater treatment, safe reuse, marine and river pollution, antibiotics contamination, restoration of water-related ecosystems







#### Description of the regional challenge

This STARTS residency addresses the problem of pharmaceutical pollution. Over 100000 tonnes of pharmaceutical products are consumed globally every year (24% in Europe) and since 90% of pharmaceuticals end up in water streams through human urine our aquatic life is swimming in a cocktail of active pharmaceutical ingredients with profound implications for the future of the planet. Many reports states that this pollution poses a threat to environmental and global health but despite growing scientific evidence, there is still a lack of common knowledge and awareness regarding the global occurrence of pharmaceutical in river. However, the presence of their residues in freshwater systems is increasingly recognised as a contaminant of growing concern to environmental and human health. For example: psychiatric drugs alter fish behaviour; the overuse of antibiotics is linked to antimicrobial resistance, itself a global health crisis; when feminised, fish and amphibians become more vulnerable to predators and develop abnormalities in their organs and reproduction. How can we overturn this system and develop a holistic approach that cares not only for humans, but also for the aquatic ecosystem as a whole?

#### **Region information**

Belgium is a major pharma valley in Europe. While the country represents only 2.2% of the EU's population, it lays claim to 12.5% of pharmaceutical investments made in the EU. As the number 1 in pharmaceutical R&D investments per inhabitant, Belgium wants to tackle the presence of pharmaceuticals in freshwater and terrestrial ecosystems.

#### How is the mission S+T+ARTS driven?

A highly collaborative residency bringing together diverse stakeholders with expertise in wastewater treatment, digital technology, health care, biodiversity, environmental engineering, environmental chemistry and aquatic ecology, working towards the design of new measures to reduce pollution and to encompass the entire life cycle of biodegradable "greener pharmaceuticals". As an artist, you will take an active role in questioning existing systems and boosting awareness around this challenge through a tangible artwork or an innovative application, product or service that contributes to a pollutionfree environment. The results of the residency will be shown at S+T+ARTS partner Bozar - Center for Fine Arts (Brussels, BE) in Fall 2022.

- Pollet Water Group
- Pharma.be
- Inopsys
- Vlakwa
- Surplace
- Capture-UGhent



+ PHARMACEUTICAL POLLUTION

### S+T+ARTS ARTIST-IN-RESIDENCE



Haseeb Ahmed (b. 1985) is an American artist who lives and works in Brussels, Belgium. He produces objects, installations, and films. His work is often collaborative and draws from the hard sciences, blending art and aeronautics, myth and technology, to create new narratives. Over the last 10 years Ahmed has structured his researchbased artistic practice around the fluid dynamics of wind and water. His focus is on what we can learn about our changing climates from the movements of the wind and the waters, by focusing on what they carry, both physically and in terms of cultural associations throughout history. His work was the subject of a solo exhibition at the Museum of Contemporary Art (Antwerp, BE) and has been exhibited internationally at the Göteborg Biennial (Göteborg, SE), Museum Bärengasse, (Zurich, CH), The Museum of Contemporary Art (Chicago, USA), De Appel (Amsterdam, NL), and the Frestas Triennial (Frestas, BR), amongst others.



I'm convinced that through this co-creation by different experts, we can transform today's societal habits into a more sustainable attitude towards the use of pharmaceuticals.

Dries Laperre (Company: Surplace)

The discussions with Haseeb are pushing me to think about the issue of pharmaceutical pollution from different angles. How can we translate this issue in such a way that we all want to contribute to solving it?

Korneel Rabaey (Company: Capture)

Scientists and engineers generate data and develop technology. Art visualises, creates public awareness and initiates an open discussion in society.

Steven De Laet (Company: Inopsys)





### ARTIST'S STATEMENT

Life as we know it exists within the relatively thin layer of the Earth's atmosphere and the fluids it contains. Over the last 10 years I have worked with wind and water to ask, how does this fluid reality inscribe itself onour forms of thought, sense perception, and built environment and how does society irrevocably alter ecologies?

90 percent of pharmaceutical pollution is introduced through human urine and that of the animals we rear for consumption. The substances developed to sustain our bodily health degrade the health of our ecosystems. The artwork I have produced through the S+T+ARTS4Water residency helps us to grasp this complexity by bridging the scales of the body and the extensive waterways of Flanders. Water clocks were some of the first means of measuring the passage of time. They feature heavily in my rendition of the "Fountain of Eternal Youth" to consider the vitality and degradation of ecologies and individuals alike.

The artwork is the product of collaboration with experts in water treatment, enviro-toxicology, and pharmaceuticals. Situating myself as the "artist as convener", I hope to redeem the aesthetic potential bound up in so much scientific research. Where knowledge becomes hyper-specialised, it erodes the standpoint from which to view the whole of reality, to which we all contribute. The resulting artworks offer such vistas.



### HOSTED BY: LUCA SCHOOL OF ARTS IN COLLABORATION WITH GLUON

REGION: FLANDERS, BELGIUM

# WATER CAPITALISM

#### Abstract

The purpose of this residency is to design a model of aquatic ownership based on trust, transparency and accountability.

#### Keywords

water scarcity, the commodification of water, blockchain, nature cultures, social equity

#### Description of the regional challenge

Water is arguably the most precious resource on Earth. Yet the way in which we value and manage it is often extremely poor, and has triggered exponential increases in water pollution, the depletion of fish stocks and the threat of extinction for certain species. There is growing awareness that more sustainable water management is necessary and that governments, companies, farmers and citizens need to radically shift their attitudes. Such a shift must be based on the true value of water, something which is far broader than mere descriptions of its utilitarian value based on cost-benefit analysis. Thus humanistic, moral, emotional, aesthetic and ethical values should also be taken into account. "How much do we value a walk along the river, the possibility of diving into its clean waters or the chance to play an active role in safeguarding biodiversity?" The value of water is difficult to quantify because different stakeholders conceptualise and describe its values differently. What if we allowed people to buy and sell water rights? Could capitalism be a viable solution? We see the residency as a catalyst for Target 6.5: Implement integrated water resources management and Target 6.b: Support stakeholder participation.







#### • Region information

Flanders is a water-stressed region where the balance between water management, rural development, and urbanisation is under strain. As a result of global warming, Flanders is experiencing more extreme weather conditions such as heavy rain showers, greater volumes of water in a single event and more flooding. At the same time, these are accompanied by dry periods with an increased danger of water shortages. This has earned it a position in the "high water stress" category on a list that maps water shortage regions worldwide.

#### How is the mission S+T+ARTS driven?

This STARTS residency is a highly collaborative residency that aims to aims to unfold historical and systemic interconnections of the cultural, economic and spiritual value of water combining expertise in water management and blockchain technology. This collaboration will lead to a speculative and explorative artwork and/or a functional prototype for the water industry. The results of the residency will be shown at S+T+ARTS partner Bozar - Center for Fine Arts (Brussels, BE) in Fall 2022.

- Farys
- De Watergroep
- Antea Group
- North Sea Port
- Smappee
- Snowball
- Timelab
- Vlakwa



## +WATER CAPITALISM

### S+T+ARTS ARTIST-IN-RESIDENCE



photo credits: Margherita Pevere

Anna Ridler is an artist and researcher who works with systems of knowledge and how technologies are created in order to better understand the world. She is particularly interested in ideas around measurement and quantification and how this relates to the natural world. Her process often involves working with collections of information or data, particularly data sets, exploring how they are created in order to better understand society and the world. She holds an MA in Information Experience Design from the Royal College of Art and a BA in English Literature and Language from Oxford University along with fellowships at the Creative Computing Institute at University of the Arts London (UAL), Ars Electronica, Edinburgh University and the Delfina Foundation. Her work has been exhibited at cultural institutions worldwide including the Victoria and Albert Museum, Tate Modern, the Barbican Centre, Centre Pompidou, HeK Basel, the ZKM Karlsruhe, Ars Electronica, Sheffield Documentary Festival and the Leverhulme Centre for Future Intelligence. Ridler lives and works in London.



Of all the water on the planet, just 3% is fresh water. Yet we consider it a given that it should be abundantly available in our households, at a fairly fixed and low price. That belief, that state of mind, is unsustainable and needs an urgent and major rethink.

Alexandra Vanhuyse (Company: Snowball) Scientists are looking for the truth and sometimes find beauty in it by accident. Artists are looking for beauty and sometimes find the truth in it by accident. What if we look for both at the same time?

**Dirk Halet** (Company: Vlakwa)

Water is the driving force of all nature -L. da Vinci

Dirk Halet (Company: Vlakwa)







photo by Anna Ridler



### ARTIST'S STATEMENT

Part of this project has been the construction of a dataset of the activity along the canal that runs from Ghent through to the North Sea, showing the activity that occurs on this waterway.

Water has had many interconnected and intertwined uses which historically have all been able to coexist but more recently, since the industrial revolution, water streams are more intensively managed and manipulated and usually given over to one purpose. The photographs that make up the dataset of this waterway reveal the different activities that exist alongside or on top of the primary purpose of trade, however slight. By presenting the images almost like a map (inspired by earlier medieval maps that showed all of the different

ways that rivers were used), it is possible to see the full scope of the river. It also raises questions around mapmaking, knowledge and ownership, as many of the sights that are mapped are otherwise blank on google maps.

This dataset is then used to create a moving image piece, where different parts of the images are collaged together in real time, depending on the combination of current environmental data APIs and a model trained on current and historic trading and environmental data of hundreds that attempts to find patterns between the current actual landscape.Confluence, as a word, is most usually associated as meaning the junction of two rivers, especially rivers of approximately equal width (such as in Ghent where there is the confluence of the rivers Scheldt and Leie). But it also has a distinct meaning in trading (there are multiple words or terminologies that have references to water or rivers): when more than one trading technique or analysis is combined to increase the odds of a winning trade.

Multiple trading indicators that all give the same "reading", to confirm the validity of a potential buy or sell signal. Both of these readings are collapsed (merged?) in this work.



### HOSTED BY:

CITTADELLARTE-FONDAZIONE PISTOLETTO, BIELLA, ITALY

REGION: NORTH-WESTERN ITALY, THE WESTERN ALPS AND WESTERN PD VALLEY

# REBUILDING RELATIONSHIPS WITH FLUVIAL SYSTEMS EXPLORING PEOPLE'S RELATIONSHIPS WITH RIVERS AND STREAMS

#### Abstract

In this residency, we invite artists to approach rivers as ecosystems marked by a precarious balance between resources and consumption. Further, the concepts of common good and shared use, when applied to rivers, open the possibility of defining new forms of relations between uses, protection and enhancement. We invite artists to use digital technologies such A. I., sensors, data collection, infographics, augmented reality.

#### Keywords

common good, resources, consumption, community, climate change impact

photo by: G. Ferraris







#### • Description of the regional challenge

In the area between the western Alps and the western Po Valley, in glaciers, snowfields and mountain springs, important rivers such as the Po, Tanaro, Ticino, Dora Baltea, Bormida, Agogna and Sesia, among others, have their source. While they are fundamental to human life, at the same time, they are perceived of and used as resources for domestic and industrial applications and for agricultural production.

If observed closely, rivers are the very definition of real ecosystems: they are in fact composed of different and articulated materials and are based on a complex and at the same time fragile environmental balance between human experience, vegetation and local fauna.

The challenge that we invite artists to tackle through the STARTS residency is to analyse the links that human beings establish with fluvial systems both in relation to the consumption and exploitation of this water resource and the impact that human activities have on this water ecosystem.

#### **Region information**

The region of the western Alps and western Po Valley is predominantly rural. The territory is divided into mountains and rural areas with dwindling populations, hill areas that transition between the rural and urban, and highly urbanised plains. There is an important presence of rivers and streams which rise in glaciers, snowfields and Alpine springs.

#### How is the mission S+T+ARTS driven?

We involve artists who are able to interact with experts from different disciplines, and who are disposed to actively listen to the needs, questions and ideas arising from both society and science and digital technology. In addition, they are able to translate the ideas and processes circulating within the scientific sector into artistic projects which impact society, inspiring, promoting or continuing processes of positive transformation.

- CNR: IMATI Institute: Enrico Magenes Institute for Applied Mathematics and Information Technology (Genoa)
- CNR: ISAC Institute: Institute of Atmospheric and Climate Sciences (Turin)
- CNR: STIIMA Institute: Institute of Intelligent Industrial Systems and Technologies for Advanced Manufacturing (Biella)
- University of Turin, Department of Earth Sciences
- Polytechnic of Turin, Department of Environment, Land and Infrastructure Engineering
- Polytechnic of Turin, Department of Territorial Sciences, Planning and Policies
- Cordar, Biella. Aqueduct, Sewage and Purification Management



TREBUILDING RELATIONSHIPS WITH FLUVIAL SYSTEMS **EXPLORING PEOPLE'S RELATIONSHIPS** WITH RIVERS AND STREAMS

### S+T+ARTS ARTIST-IN-RESIDENCE



photo credits: Margherita Pevere

Joshua G. Stein is the founder of Radical Craft, a Los Angeles-based studio that advances an experimental art and design practice saturated in history, archaeology, and craft. This inquiry inflects the production of urban spaces and artifacts by evolving newly grounded approaches to the challenges posed by virtuality, velocity, and globalisation. His recent projects reimagine the construction and resource extraction industries as anthropogenic geological processes while investigating new applications for earthen materials. Joshua G. Stein has received numerous grants, awards, and fellowships, including multiple grants from the Graham Foundation for Advanced Studies in the Fine Arts, the AIA Upjohn research award, and the 2010-11 Rome Prize Fellowship in Architecture. He is Professor of Architecture at Woodbury University where he is the Interim Chair of the Sustainable Practices programme.





photo by Pierluigi Di Pietro

photo by Joshua Stein



photo by Pierluigi Di Pietro



In the past, water, especially in its relationship with human beings, was considered an economic resource. It was only more recently that it came to be viewed as a precious element part of the environment which can sometimes also pose a threat. My involvement in this project starts from the idea that one can transform existing perspectives and formulate a new narrative of the human-water relationship in which water ceases to be the subject of extraction, and becomes a common good for all: to be experienced, enhanced and protected."

Ianira Vassallo, Assistant Professor, DIST (Inter-University Department of Regional and Urban Studies and Planning), Torino

#### **ARTIST'S STATEMENT Dissolution | Reconstitution:** Sediment as Cultural Heritage

The Dissolution | Reconstitution: Sediment as Cultural Heritage project reimagines Italy's western Po Valley as a territory whose hydrology is both directed by and composed of anthropogenic activities-saturated with the positive and negative aspects of human culture and development. The sediment mobilised by the area's waterways becomes the common medium for conceptualising a vast system operating both spatially and temporally at a territorial scale.

Upstream from the historic textile town of Biella, the UNESCO-designated monument of the Sacro Monte di Oropa slowly erodes and deposits trace amounts of its geology into the Oropa stream. In the Biella Textile District, historic factories passively offer their own mineral contributions to the fluvial networks, dissolving into the rush of adjacent waterways at the same moment as they attempt to control these natural forces. As their mortar joints slowly erode, they deposit lime into the waterways, which then collects downstream along with iron oxide deposits from rusting metal, trace amounts of terracotta roof tiles, and other substances. These materials mingle with the less desirable aspects of cultural heritage, such as the detrimental effluent of historical industry, collected in the region's sediment.

Farther downstream, the rice fields of Vercelli are irrigated by an intricate network of canals and ditches that distribute water-and mineral and chemical cultural heritage-from monuments and industries in distant watersheds, artificially connecting vast regions. The region's sediment thus acts as a slowly moving archive for its cultural heritage, of all valences. Sediment as Cultural Heritage seeks to use this newly mobilised understanding of anthropogenic materials, including architecture, to redefine our concepts of memory and stasis, reimagining how industry and nature commingle via the fluvial networks of the Po watershed, and beyond.

Fluvial systems urge greater attention to at least three major areas: rethinking what water is by moving from the concept of 'resource' to the concept of 'body'; developing engaged models of inter-sectoral governance, and adopting a multi-scalar approach to co-design.

Michele Cerruti But, Adjunct Professor. Department of Urbanism, Politecnico di Torino.





### HOSTED BY:

CITTADELLARTE-FONDAZIONE PISTOLETTO, BIELLA, ITALY

REGION: NORTH-WESTERN ITALY, THE WESTERN ALPS AND WESTERN PO VALLEY

REBUILDING RELATIONSHIPS WITH FLUVIAL SYSTEMS FLUVIAL SYSTEMS AS INDICATORS OF **CLIMATE CHANGE** 

AND ITS IMPACT

#### Abstract

We invite artists to develop a project using digital technology (such A. I., sensors, data collection, mathematical modeling of fluvial processes, infographics and augmented reality), that seeks to reflect on how we can anticipate and adapt to the new conditions brought about by extreme events and the resource depletion caused by climate change, whether ongoing or inevitable in the near future.

#### Keywords

Fluvial system as a whole: glaciers, snowfields, springs, streams, rivers, outlets

photo by: F. Lava







#### Description of the regional challenge

In the area between the western Alps and the western Po Valley, in glaciers, snowfields and mountain springs, important rivers such as the Po, Tanaro, Ticino, Dora Baltea, Bormida, Agogna and Sesia, among others, have their source. These fluvial systems are an essential component of the natural ecosystem and fundamental for human life.

The artist's challenge in developing the project consists in reading, interpreting and sharing the signals that the fluvial systems in this region produce about the fragility of the environment and transformations due to climate change. Is it possible to conceive of fluvial systems as sentinels of climate change and the vulnerability of territory, both of these amplified by human action?

#### **Region information**

The region of the western Alps and western Po Valley is predominantly rural. The territory is divided into mountains, roughly 50%, rural areas with dwindling populations, hills 26%, transitional areas between the rural and urban and highly urbanised plains, 24%. There is an important presence of rivers and streams which rise in glaciers, snowfields and Alpine springs.

#### How is the mission S+T+ARTS driven?

We involve artists who are able to interact with experts from different disciplines, and who are disposed to actively listen to the needs, questions and ideas arising from both society and science and digital technology. In addition, they are able to translate the ideas and processes circulating within the scientific sector into artistic projects which impact society, inspiring, promoting or continuing processes of positive transformation.

- CNR: IMATI Institute: Enrico Magenes Institute for Applied Mathematics and Information Technology (Genoa)
- CNR: ISAC Institute: Institute of Atmospheric and Climate Sciences (Turin)
- CNR: STIIMA Institute: Institute of Intelligent Industrial Systems and Technologies for Advanced Manufacturing (Biella)
- University of Turin, Department of Earth Sciences
- Polytechnic of Turin, Department of Environment, Land and Infrastructure Engineering
- Polytechnic of Turin, Department of Territorial Sciences, Planning and Policies
- Cordar, Biella. Aqueduct, Sewage and Purification Management



REBUILDING RELATIONSHIPS WITH FLUVIAL SYSTEMS FLUVIAL SYSTEMS AS INDICATORS OF CLIMATE CHANGE AND ITS IMPACT

### S+T+ARTS ARTIST-IN-RESIDENCE



photo credits: Margherita Pevere

Through an aesthetic that moves between alchemy and science fiction, **Theresa Schubert's** multi-award winning works question anthropocentrism and encourage alternative perspectives and new sensory experiences.

Schubert is a Berlin-based artist, researcher and curator who explores unconventional visions of nature, technology and the self. She holds a PhD in Media Art from Bauhaus University, Weimar. Her practice combines audiovisual and hybrid media with conceptual and immersive installations and performances. These incorporate organic matter and living organisms, algorithms and artificial intelligence, which become part of the artwork not just as material but as meaningful co-creators.

Her work has been awarded an Award of Excellence from the Japan Media Arts Festival 2022, a SHARE Prize 2022, a Prix Ars Electronica Honorary Mention (AI & Life Art 2021), a STARTS Prize 2021 Honorary Mention, and the NTAA (New Technological Art Award) 2016. In 2016 and 2018, sheit was also nominated for the GASAG Kunstpreis by Berlinische Galerie.







2022\_Biella-exhibition\_SCHUBERT



This project, which uses art and bridges the gap between science and society, enables participants to experience firsthand the connections between science and art. It does so through its aim of effectively conveying messages about climate change and its impacts, especially in relation to water.

**Elisa Palazzi,** Associate Professor, Department of Physics, University of Torino S+T+ARTS4Water Expert Network provides an opportunity to increase awareness of climate impacts of the capacities of water-related ecosystems. My personal focus within it is on the relationships between man and water in mountain environments.

Being part of the

Marco Giardino Associate Professor, Department of Earth Science, University of Torino, and Director UniTO-NatRisk Research Centre, Torino.

## ARTIST'S STATEMENT

#### Glacier trilogy (in progress)

During the residency, I explored glaciers as the starting points of fluvial systems. Glaciers are extremely important not only for their role in water storage, but also as a 'memory' of the Earth's past and as indicators of climate change. Ice contains information about the climate from thousands of years ago, including radiation, pollution and organic materials - and much of this information will be lost because of ongoing climate change. The three works presented explore glaciers from different perspectives, using various media and technologies to stimulate the public's emotional engagement with the issues raised by climate change.

## Re-imagining glaciers through AI (synthetic archive of glaciers)

This work, which shows the formation and abstraction of synthetic glaciers, is a video projection that was created by combining three machine learning models. From the initial abstract imagery, mountain landscapes that include glaciers slowly begin to emerge. The models are based on a previous AI training process with historical images from the Italian Glaciological Committee in Turin and the archives of the Sella Foundation in Biella, in combination with texts by the Italian geologist Ardito Desio. The results are synthetic landscapes that do not exist, a kind of machinic dream from the future that tries to imagine what glaciers once looked like.

#### Conservation of earth memory

#### (glacial meltwater sculptural storage)

This work consists of several blown glass objects. Their shape is taken from models of mountain landscapes, so that the glass bears the ground's imprint and resembles glacier tongues. In a second phase, the objects will be filled with meltwater from ice samples and then sealed. In this way, the water, which in some cases is tens of thousands of years old, will be stored in a closed system.

# Simulating glacial water systems and tangible human impact

Inspired by the idea of the hourglass, Sage Jenson and I designed a digital system that simulates the process of the emergence and melting of ice masses. Presented on panoramic screens, the installation allows visitors to observe the ice's progression, how river systems emerge and how the landscape is formed. The particle systems runs over a digital elevation map of a section of the West Italian Alps. The generative video is connected to sensors that open up the digital to the natural world and the surrounding environment. In this way, participants can experience very direct human impacts on the environment.



### HOSTED BY: V2\_, LAB FOR THE UNSTABLE MEDIA

REGION: PORT OF ROTTERDAM THE NEDERLANDS

# BIODIVERSITY IN PORT OF ROTTERDAM

#### Abstract

Port of Rotterdam, the largest in Europe, is a national icon. Yet there is very little awareness of the port's capacity to shelter, nurture and harbour marine life, and of the need to sustain and expand its marine ecosystem.

This residency focuses on cultivating sustainable interaction between a man made port and the marine life within it.

#### **Keywords**

port, environment, marine, ecosystem, sustainability, biodiversity, resilient development, eDNA determination, fish tagging technology, artificial reef construction, in-situ underwater sound measurement, data collection and information design



#### V. Description of the regional challenge

Port of Rotterdam is an unexpected haven for marine species. The large port's industrial complex has both a positive and a negative impact on the marine habitat's natural biodiversity.

It offers many places in which to shelter: shallow banks, quiet basins and deep thoroughfares. In the port, sweet and saltwater meet. It is also the only place in the Netherlands in which fish can migrate inland from the sea without encountering barriers. Yet it also encompasses some of the busiest shipping lanes in Europe, which bring about the problems of sound pollution and oil spills, amongst other things.

#### **Region information**

Port of Rotterdam is located in the middle of the Rhine-Meuse-Scheldt Delta and measures 105 square kilometres. The main waterway is the Nieuwe Waterweg (New Waterway), a large canal completed in 1872 that connects the Rhine and Meuse rivers to the North Sea.

Port of Rotterdam consists of the city centre's historic harbour area, including Delfshaven; the Maashaven/ Rijnhaven/Feijenoord complex; the harbours around Nieuw-Mathenesse, Waalhaven, Vondelingenplaat, Eemhaven, Botlek and Europoort; and the reclaimed Maasvlakte area, which projects into the North Sea.

#### How is the mission S+T+ARTS driven?

The project will contribute to the sustainable management of Port of Rotterdam's marine ecosystem.

It will focus on the potential opportunities offered up by underwater ecologies, regeneration of marine life, cybernetic human/non-human communication as well as nature-inclusive engineering, involving residents of the area directly.

The project aims to transform everyday thinking about the port area and the ways in which to conserve and sustainably use its marine ecosystem.

- Witteveen en Bos Engineering and Consultancy
- Ecoconsult
- Naturalis
- TU Delft
- Deltastad



BIODIVERSITY IN PORT OF ROTTERDAM

### S+T+ARTS ARTIST-IN-RESIDENCE



photo credits: Robin Alysha Clemens

Mark IJzerman is an interdisciplinary artist working on the intersection of ecology and media art. IJzermanuses digital technologies to create processes that have their own agency, to make works creating intimacy between us and the other-than-human. His work is always informed by field research as well as working with other professionals. He is the 2022 recipient of the S+T+ARTS4Water 'Biodiversity in the Rotterdam Port' residency hosted by V2\_, which he is currently working on. He has performed his A/V works at various media art festivals around Europe (Rewire Festival, Meakusma, Transmediale/CTM Vorspiel, LeGuess Who?, FIBER Festival, Mapping Festival) and has most recently exhibited works at MU in Eindhoven, Art Center Nabi in Seoul, \_V2 in Rotterdam, De Lakenhal in Leiden and on the International Space Station.

IJzerman is a tutor at Ecology Futures MA at the Master Institute of Visual Cultures in Den Bosch, where together with his students he looks at how sensory technologies can be used to address climate emergency through experiential projects. He is a part of the new media collective Zesbaans and runs the sound art blog Everyday Listening.



IJzerman's first challenge was to 'meet' the sea creature. "I immediately went there with a scoop but was left disappointed. On my own, I felt a bit lost in the large port." Most people he got in contact with were desktop researchers: very helpful in providing scientific articles but some never even laid eyes on the creatures they were devoting all their research to. "Weird, isn't it? I realised that if I never held a tubeworm in my hands, how could I say anything about it?"

Désirée Kroep, Journalist

The residencies have a great capacity to resonate with people.Apart from the art + science + technology cooperation, this is one of the key aspects of STARTS4Water that should be focused on.

Anne Nigten The Patching Zone

In the Netherlands, the argumentation around 'natural landscapes' versus 'cultural landscapes' is a very interesting one. The case could be made that the Netherlands has no natural landscapes but has been wholly planned and made by man. This is an interesting context for residencies that reflect on and may end up doing interventions in this landscape, for they will always be interventions on top of earlier interventions.

Anne Nigten The Patching Zone







Photos by Adriaan van de Polder

### ARTIST'S STATEMENT

For my S+T+ARTS4Water residency, I've taken the Australian tubeworm as a starting point. This is a small species that is becoming more common as waters warm up thanks to our climate emergency. This species is often seen as a pest because their reefs form on ships and can block infrastructures across the Netherlands, from Amsterdam's canals to the port of Rotterdam.

With the support of several biologists, ecologists, and planologists, I have spent the last nine months researching the entanglement of biodiversity, the history and futures of the port area, and social constructs about the port. I'm collaborating with the Australian tubeworm in the port, we are creating overgrown sculptures. On a social level, I have worked with a shanty choir consisting of men who used to work in the port of Rotterdam. These elements will soon come together in my final work, that questions the future of the port area and all its inhabitants.



### HOSTED BY: V2\_, LAB FOR THE UNSTABLE MEDIA

**REGION:** PORT OF ROTTERDAM THE NEDERLANDS

# **DROUGHT IN** WATERLAND

#### Abstract

The Veluwe area can be seen as a sandbox in which water retention is low. The purpose of this residency is to develop resilient strategies for rainwater retention and groundwater use in order to achieve a better balance between human activities and the natural environment in this area.

#### Keywords

groundwater depletion, drought, ecosystem restoration, safe and affordable drinking water, water retention, sandbox, drought monitoring, data collection and information design, bioretention planting, agroforestry, food forestry.





**Description of the regional challenge** Many would describe the Netherlands as a waterland. And yet, surprisingly, the most pressing water-related problem that the country is currently facing may be drought.

In fact, for the Veluwe area specifically, drought is a growing problem. Groundwater fluctuations over the next ten years will probably not be very different from those of the past thirty years, but a rising number of tourists, higher temperatures and a longer growing season will increase the pressure on Veluwe's water system.

#### **Region information**

The Veluwe area is a high-lying, forest-rich area in the province of Gelderland. It features many different landscapes that include woodland, heath, small lakes and Europe's largest sand drifts.

The Veluwe covers approximately 1,000 km<sup>2</sup>. The region is enclosed between the lissel river, IJsselmeer lake, the Lower Rhine and the Guelders Valley. Royal Estate Het Loo is located near Apeldoorn, and its 10,400 hectares make it the largest estate in the Netherlands. The Hoge Veluwe National Park is located in the southwest of the Veluwe and spans 5.400 hectares.

Within its forested area, there are only a few villages -approximately 13,900 people live in this area of 912 km<sup>2</sup>. Thus the area, with only 15 inhabitants per km<sup>2</sup>, is exceptionally sparsely populated by Dutch standards.

#### How is the mission S+T+ARTS driven?

The project encourages interest in rainwater - in its retention, storage and use - in such a way that the rights and interests of both people and nature are respected. This requires investment in adequate infrastructure, drought monitoring, data collection and information design, in collaboration with regional water authorities and other organisations. Protecting and restoring water-related ecosystems is also essential.

- Witteveen en Bos Engineering and Consultancy
- Hoge Veluwe National Park
- Provincie Gelderland
- Ketelbroek Food Forest
- Wageningen University
- Mason Fischer (Crypto Entrepreneur).



# TOROUGHT IN WATERLAND

### S+T+ARTS ARTIST-IN-RESIDENCE



photo credits: Center for Genomic Gastronomy

The Center for Genomic Gastronomy is an artist-led think tank launched in 2010 that examines the biotechnologies and biodiversity of human food systems.

- Their mission is to:
- -map food controversies
- -prototype alternative culinary futures
- -imagine a more just, biodiverse & beautiful food system.

The Center has collaborated with scientists, chefs, hackers and farmers in Europe, Asian and North America. They present their research about the organisms and environments manipulated by human food cultures in the form of recipes, meals, publications and exhibitions. Their work has been published in Science, Nature, Gastronomica and We Make Money Not Art and has been exhibited at the World Health Organization, Kew Gardens, Science Gallery Dublin, V2\_, MU and the V&A Museum.

The Center consists of Cathrine Kramer, Zack Denfeld and Emma Conley. Their current research initiatives include: prototyping a Norwegian National Dish and mapping, tasting & cooking with crops smoke-tainted by wildfires.







The residencies have a great capacity to resonate with people. Apart from the art + science + technology cooperation, this is one of the key aspects of STARTS4Water that should be focused on.

**Anne Nigten,** Centre of Expertise KUnst en Educatie AHK, The Patchingzone

In the Netherlands, the argumentation around 'natural landscapes' versus 'cultural landscapes' is a very interesting one. The case could be made that the Netherlands has no natural landscapes but has been wholly planned and made by man. This is an interesting context for residencies that reflect on and may end up doing interventions in this landscape, for they will always be interventions on top of earlier interventions

**Geert van der Meulen,** researcher at the Chair of Urban Design, Theory and Methods

Veluwe is one of the highest areas of the Netherlands. and will not be affected by sea level rise. However, the surrounding areas like the Flevopolderand the river area will be affected. So this 'Drought in Waterland' area might indeed become a museum of pre-sea-level rise landscapes, providing both a proving ground for the ideas and techniques developed in the residencies and a future conservation area.

**Ebbing van Tuinen,** senior project manager water management Witteveen+Bos



### ARTIST'S STATEMENT

When we began the 'Drought in Waterland' residency we wrote that it would be "a chance for us to collaborate with domain experts to explore how green technologies can be used to intervene in the regional water cycle. We are curious about how the material realities of rainwater management, plant selection and food forest maintenance meet the cultural need to imagine future land uses and prototype ecological societies."

One of the challenges we had to address in this research is the pace and rhythm that is set by the fact of working with living materials, and especially perennial plant species. Most media art is created and disseminated quickly, with projects organised in 6-month to 1 year cycles.

When you work with living things, there is a very significant delay between the moment when a project is conceived and when it begins to 'work'. This is the same challenge faced by those in Dutch agriculture who want to move away from industrial practices in order to revive both soils and water, but who face time lags of between 2 and 10 years before their farms become viable again.

During the residency, we focused on temporal themes of slowness, persistence and multigenerational thinking. We'd like to use our art to get people excited about this stretching of time. For example: would you be willing to book a table at a restaurant where you can only eat twelve years from now?

As we continue our artistic research into this area over the next decade, we are describing it this way:

FOOD FOREST FANTASIES is a suite of tools, recipes and rituals for farming and eating otherwise. A Food Forest uses perennial plants and edible trees in order to manage water, minimise chemical inputs and revive soils. Food Forest Fantasies is an ongoing project that assembles, displays and activates artistic research about food forests in order to stretch our imagination about time, place, technology and taste beyond human scales.



photos by Center for Genomic Gastronomy



### HOSTED BY: TBA2I-ACADEMY

**REGION:** VENETIAN LAGOON, ITALY

# THE FUTURE OF **HIGH WATERS** NATURE-BASED SOLUTIONS FOR THE **VENETIAN LAGOON**

#### Abstract

This residency explores nature-based solutions for the regeneration of the Venetian Lagoon.

#### Keywords

salt marsh and wetlands restoration, reedbeds, ecosystem regeneration, ecology, magic, kinship, multispecies collaboration, speculative mapping

photo by: Alice Ongaro Sartori





- **Description of the regional challenge** How can art and technology help us understand Venice's future relationship with the water that surrounds and permeates it? Exploring nature-based solutions for salt marsh restoration and ecosystem regeneration, this challenge investigates new ways of thinking and sensing the watery worlds that constitute the Venetian ecosystem, based on multispecies collaboration, kinship, and care.
  - In the spirit of the UN's Sustainable Development Goal 14: Life Below Water, the challenge strives to promote the reintroduction of sustainable practices, community-led initiatives and artistic research, exploring the possibilities of bringing nature-based and technological approaches into a shared space of coexistence and collaboration.

In the spirit of the UN's Sustainable Development Goal 14: Life Below Water, the challenge strives to promote the reintroduction of sustainable practices, community-led initiatives and artistic research, exploring the possibilities of bringing nature-based and technological approaches into a shared space of coexistence and collaboration.

#### **Region information**

The Venetian Lagoon is the largest wetland in the Mediterranean Basin, consisting of approximately 8% land and 92% water and wetland.

#### How is the mission S+T+ARTS driven?

This challenge strengthens collaborative practices between art and science to develop more creative and sustainable ways of engaging with the Venetian Lagoon's local environment.

The Future of High Waters explores the hydrodynamics of the Venetian Lagoon. Supported by artistic, scientific, and technological inquiry into nature-based solutions, it investigates how technology can be harnessed as a collaborator rather proposed as a solution.

- University Ca' Foscari
- We Are Here Venice
- ISMAR-CNR
- Venice on Board
- Kinonauts



THE FUTURE OF HIGH WATERS NATURE-BASED SOLUTIONS FOR THE VENETIAN LAGOON

### S+T+ARTS ARTIST-IN-RESIDENCE



photo credits: Carol Sachs

Sonia Levy's research-led practice considers shifting modes of engagement with more-than-human worlds in light of prevailing Earthly precarity. She is a 2021 commissioned artist at Radar Loughborough and Aarhus University. She has exhibited internationally, including shows and screenings at Centre Pompidou, Paris: Musée de la Chasse et de la Nature. Paris: Muséum d'Histoire Naturelle. Paris: ICA. London: and BALTIC. Gateshead.

Heather Anne Swanson is Associate Professor of Anthropology at Aarhus University, and Director of the Aarhus University Centre for Environmental Humanities. She is a founding member of the Aarhus University Research on the Anthropocene group. She has a long-standing interest in more-than-human relations of fish, rivers, and oceans.

Meredith Root-Bernstein is a CNRS research scientist based at the Natural History Museum in Paris. An ecologist by training, she researches ecological, social and multispecies aspects of restoration ecology, rewilding, and conservation.

Alexandra Arènes is an architect at S.O.C (Société d'Objets Cartographiques) and a doctoral researcher at the University of Manchester, focusing on the impact of the Anthropocene on landscape studies. She designed the installation 'CZO space' at the ZKM Museum, Karlsruhe, for the exhibition Critical Zones. Observatories for Earthly Politics, and co-authored Terra Forma, manuel de cartographies potentielles.



It is very exciting for We are here Venice to be working on the S+T+ARTS4Water project with TBA21-Academy. Our intention is to provide useful and accurate information about the realities of Venice's lagoon system and we are expecting to receive original, inspirational outputs from participating practitioners. We look forward to learning more from the dialogues and plan to use this project to strengthen WahV's engagement with communities as we work to articulate new approaches to building a better future for Venice.

Jane Da Mosto,

environmental scientist and activist based in Venice, co-founder of the NGO We are here Venice

### **ARTIST'S STATEMENT**

Our project explores Venice from below, to imagine new ways of thinking and doing futures and relationships with the wetlands that surround the city. Departing from Venice's grand historical narratives promoting the actions of "great men" and approaches to world-making grounded in expansions, we seek to engage the city from its worlds below the waters, shifting perspectives and broadening understandings of who makes history, including more-than-human entities and processes.

Through speculative mapping, ecological field methods, and underwater filmmaking, we probe ecological transformations, the specific biogeomorphological processes that one sees when one looks underwater. By starting from a below perspective, we also bring attention to often overlooked ways of knowing and being in the Venetian lagoon. Within the everyday lives of the lagoon are the already existing seeds of other possible solutions to its struggles. Our work seeks to foster new arts of noticing that might make some of these insights more visible.





photos by Anna Ridler









# HOSTED BY:

How can art and technology help us explore Venice's future relationship with the water that surrounds and permeates it? What imaginaries can geo-engineering offer, not only to datasets but also to the understanding of the porous borders between solid and fluid, land and sea? How can practitioners bridge art and science through meaningful integration of technology in order to an imagina call time for a TBA2I-ACADEMY **REGION:** technology in order to co-imagine solutions for a VENETIAN LAGOON, viable future? ITALY

# THE FUTURE OF **HIGH WATERS GED-ENGINEERING** SOLUTIONS FOR THE **VENETIAN LAGOON**

#### Abstract

This residency explores the potential of geoengineering in fostering a deeper understanding of the Venetian lagoon.

#### Keywords

salt marsh and wetlands restoration, ecosystem regeneration, ecology, magic, kinship, performance, storytelling

Photo: Territorial Agency: Oceans in Transformation, 2020. Installation view at Ocean Space, Venice. Commissioned by TBA21-Academy. Photo by Enrico Fiorese.





#### Description of the regional challenge

As exemplified by the controversial MOSE project, the conditions that surround Venice's relationship with the lagoon have changed dramatically. Although human intervention into marine ecosystems is far from a new phenomenon, its intensity and scale require careful examination - as echoed by the UN's SDG 14: Life Below Water.

#### **Region information**

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- University Ca' Foscari
- We Are Here Venice
- ISMAR-CNR
- Venice on Board
- Kinonauts

# S+T+ARTS **4 WATER**

# THE STARTS4WATER RESIDENCY

THE FUTURE OF HIGH WATERS GEO-ENGINEERING SOLUTIONS FOR THE VENETIAN LAGOON

### S+T+ARTS ARTIST-IN-RESIDENCE



photo credits: Sergio Alberts

Both artists, architects and researchers, Leonor Serrano Rivas (1986) and Diego Delas (1983) obtained their Masters in Artsin London (Goldsmiths and RoyalCollege of Art) and studied their PhDArt Practicein the UK (Slade, UCL and The Ruskin School of Art, University of Oxford). Serrano Rivas' sculptures, films and installations are often used as a way to present layered sensorial experiences where the viewer must forget the narrative impulse, unlearn this desire for resolution and delve into the realm of the work. Delas' paintings, textiles and installations look at certain vernacular architectural motifs -those related to storytelling-that configures the idea of a house as a familiar body, sustained by memories, populated with amulets. Both are currently working on two mayor solo shows opening next year. MNCARS Museo Reina Sofía, Madrid (Serrano Rivas) and CAB Burgos (Delas)International exhibitions feature Liverpool Biennale; E-Werk, Freiburg; Freelands Foundation, London; Matadero, Madrid; MUSAC, León; HAUS, Viena; C3A, Córdoba; Russian Museum St. Petersburg, Málaga; ICA London; Arcade, London; CAAC, Seville; Chisenhale Studios; BARCU, Bogotá; José La Fuente Gallery, Santander; Marta Cervera Gallery, Madrid; Lychee One Gallery, London; Tiro al Blanco, Guadalajara, Mexico;CentroCentro, Madrid; La Casa Encendida, Madrid; Galleri Rotor, Gothenburg; XI Venice Architecture Biennale, Venice; amongst others.-a short 1-2 sentences statement on your intention for the residency (what would you like to achieve).Underwater Worlds. An expedition is to set sail into the unknown at a point of imaginative exhaustion: Underwater Worlds conjures preenlightment devices to scrutinize the juncture of geo-engineering, art making and storytelling in Venice.



Breathings of the moon. Expedition, 2022. Leonor Serrano **Rivas and Diego Delas.** Commissioned by TBA21-Academy with the support of S+T+ARTS. Photo: Enrico Fiorese.

Venice and its lagoon need a relational envelopment with their wet-scapes through attention to multi-sensory experience, affect, emotion. and memory. There is a need to reconnect the rhythms of water not just to the local community, but also to all the people who partially live and stay in Venice, through developing and imagining 'hvdrophilic encounters' as essential in this quest.

Breathings of the moon. Expedition, 2022. Leonor Serrano Rivas and Diego Delas. Commissioned by TBA21-Academy with the support of

Francesco Visentin, cultural geographer and senior lecturer in Human Geography and Geographies of Central and Eastern Europe

### **ARTIST'S STATEMENT**

Breathings of the moon functions as both a performance and an expedition into the underwater worlds of the Venice Lagoon and its canals. Rooted in the idea of a magic trick, it follows the logic of pre-scientific amusement artifacts that conjured fresh eyes with which to look at the world and its different scales. The performance is structured as a series of quasitheatrical steps to be taken in sequence: to hold the hand of the rower (eternal storyteller), to descend into a vessel, to enter the belly of a guasi-fish, and become accustomed to the dark. Looking into the water through an instrument, resonating with the rower, the canal, the rhythms of the lagoon, and embodying a multiplicity of tidal patterns, to come back anew, return changed, amused and amazed, disembarking elsewhereclose, but elsewhere, perhaps in a much more complex realm.



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