International Centre for Climate Change Research and Studies

In collaboration with

Università Ca'Foscari Venezia

Università Iuav di Venezia

Istituto Veneto di Scienze Lettere ed Arti

Living on the **Water**

Towards 2100 - Sea level Science in **Venice**

Venice has been facing challenges from its coastal environment since it was founded. Sedimentation has threatened its vital waterways in the past, and subsidence along with high waters began affecting buildings and streets. Today, rising sea levels are expected to worsen flooding, necessitating engineering solutions to protect the lagoon's heritage. In June 2025, Venice will become the center of global climate research hosting **three international events** focused on sea-level change.

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INSTANT INSTABILITIES & THRESHOLDS IN ANTARCTICA

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AIQUA

SUMMER SCHOOL

Climate Change in coastal areas: knowledge, resilience, adaptation

> **June 12-17th, 2025** - Sala dell'Adunanza, Palazzo Loredana - Venice

Scientific Committee: *Carlo Barbante, Alessio Rovere, Andrea Rinaldo, Florence Colleoni, Barbara Stenni, Marco Marani, Francesco Musco*

Lead Organisers: *Alessio Rovere, Davide Zanchettin, Giulia Lucertini, Denis Maragno, Filippo Magni*

The International Center for Climate Change Studies, a newly established institute bringing together Venetian universities and research centers, is organising its inaugural summer school. This program is designed for Early Career Scientists (ECRs) and will feature lectures conducted by international experts. The program's objective is to equip young scientists with the understanding of the dynamic interactions between atmosphere, ocean and land that shape the evolution of coastal zones, alongside with an understanding of dynamic adaptation, resilience and urban planning

CONFERENCE

WARMCOASTS: sea level and extreme waves in the Last Interglacial

> **June 18th, 2025** - Ca' Dolfin, Saoneria - Dorsoduro 3825/D, Venice

Lead Organisers: *Alessio Rovere, Elisa Casella, Silas Dean, Ciro Cerrone, Ali Mubashir*

WARMCOASTS is a project funded by the European Research Council to understand changes in sea level, rapid ice-sheet collapse and subsequent sea-level rise and extreme storms in the Last Interglacial. This is the last period that the Earth was slightly warmer than today and represents an important calibration for future climate projections. The project will end in September 2025. Besides highlighting the project results, the conference day will host some of the most prominent scientists working on this period, who will present their recent research.

WORKSHOP

Warmer coasts in a warming world: predictions, processes, and proxies, from past to present

> **June 19th – 21st, 2025** - Auditorium Danilo Mainardi, Campus Scientifico Via Torino (Edificio ALFA)

Lead Organisers: *Matteo Vacchi, Gaia Mattei, Marta Pappalardo, Patrizia Ferretti, Alessandro Fontana*

Scientific committee: *Juliet Sefton, Roger Creel, Holly Han, Tamara Pico, Claudia Caporizzo, Ana Novak, Matthieu Giaime, Driss Chahid.*

Workshop fee: 100 euros

This workshop is organised by the working groups PALSEA and ONSEA. It will bring together researchers from diverse disciplines spanning sea level science, glaciology, solid Earth dynamics, geomorphology, and archaeology to explore how sea-level change has shaped coastal environments through time. Featuring scientific sessions, a field trip, and collaborative discussions, the workshop aims to advance interdisciplinary integration by fostering dialogue that meshes observations and modeling. This workshop will strengthen the scientific basis for understanding past, present, and future ice sheet and sea level changes, emphasizing the connections between environmental processes and human responses. Researchers from all career stages are encouraged to participate.

Living on the water is sponsored by the **International Centre for Climate Change Research and Studies**, funded by the Italian Ministry for University and Research. PALSEA is sponsored by the I**nternational Union for Quaternary Research (INQUA), Past Global Changes (PAGES)** and **INSTANT (Instabilities and Thresholds in Antarctica)**. ONSEA is sponsored by **INQUA**. The meeting falls under the purview of **AIQUA** and **AIGEO**. The WARMCOASTS project is sponsored by the **European Research Council** (ERC) under the European Union's Horizon 2020 Research and Innovation Programme (grant agreement n. 802414).

Compile the online form to subscribe to the events **Click here!**

FULL PROGRAM
Towards 2100 - Sea level Science in Venice

Summer School
Climate Change in coastal areas: knowledge, resilience, adaptation

June 12-17th, 2025
Sala del Portego di palazzo Franchetti - Venice

Thursday, June 12th
Morning: Arrival of participants
Afternoon: Ice sheet melting and sea-level changes at different timescales

13.00 - 14.00 **Welcome and registration**

14.00 -15.00 **Sea-level and ice sheet changes in the Plio-Pleistocene**
Prof. **Maureen E. Raymo** (LDEO, Columbia University, USA)

15.00 - 16.00 **Sea-level and ice sheet changes in the Holocene**
Prof. **Benjamin P. Horton** (City University of Hong Kong, HK)

16.00 - 17.00 **Sea-Level changes and the solid Earth**
Prof. **Jerry X. Mitrovica** (Harvard University, USA)

17.00 - 19.00 Ice breaker party

Friday, June 13th
Morning: historical, modern and future sea-level changes
9.00 - 10.00 **Sea-level changes in the Last Interglacial**
Prof. **Alessio Rovere** (Ca' Foscari University of Venice, Italy)

10.00 - 11.00 **The instrumental record of sea-level changes**
Prof. **Marta Marcos** (University of the Balearic Islands, Spain)

11.00 - 12.00 **Future sea-level and ice sheet projections**
Prof. **Robert M. DeConto** (University of Massachusetts Amherst, USA)

12.00 - 14.00 Lunch break

Afternoon: past and future coastal processes
14.00-15.00 **Coastal processes in the deep past: paleo waves and paleo tides**
Teacher to be defined

15.00-16.00 **Flooding and storm surges: future projections**
Prof. **Piero Lionello** (University of Salento, Italy)

16.00-17.00 **The COP goals: meaning for coastal areas**
Dr. **Florence Colleoni** (OGS Trieste, Italy)

Saturday June 14th – Sunday June 15th
Saturday June 14th
time to explore the city and social dinner

Sunday June 15th
Tour of Venice via water - Lido, Mose, Bocche di Porto, Lazzaretto Vecchio and Sant'Erasmo, with lunch included

Monday, June 16th
Morning: regional perspectives
9.00 - 10.00 **Climate-driven future wave projections in the Mediterranean**
Prof. **Giovanni Besio** (University of Genoa, Italy)

10.00 - 11.00 **Assessing Coastal Vulnerability to Medicanes: Propagation Effects and Implications**
Prof. **Giovanni Scicchitano** (University of Bari, Italy)

11.00 - 12.00 **Countering coastal erosion: the Adriatic coast example**
Prof. **Paolo Stocchi** (University of Urbino, Italy)

12.00 - 14.00 Lunch break

Afternoon: Sea Level changes and Coastal Subsidence in Venice
14.00 - 15.00 **Sea-level and ice sheet changes in the Common Era**
Prof. **Jennifer S. Walker** (Rowan University, USA)

15.00-16.00 **Subsidence and sea-level rise in Venice**
Prof. **Davide Zanchettin** (Ca' Foscari University of Venice, Italy)

16.00-18.30 **Venice towards 2100 - a tour of the city**
Prof. **Davide Zanchettin** and Prof. **Alessio Rovere** (Ca' Foscari University of Venice, Italy)

Tuesday, June 17th
Morning: Impacts of sea-level rise
9.00 - 10.00 **Unfit for the Future: Climate Change Is Here. Science, Innovation, and the Urgency of Adaptation**
Prof. **Marco Marani** (University of Padua, Italy)

10.00 - 11.00 **Sea level rise and impacts on coastal Agricolture**
Prof. **Giulia Lucertini** (IUAV University of Venice, Italy)

11.00 - 12.00 **Sea-level rise and impacts on coastal environments**
Prof. **Fabio Pranovi** (Ca' Foscari University of Venice, Italy)

12.00 - 14.00 Lunch break

Afternoon: Adaptation to sea-level rise
14.00-15.00 I**mpacts of sea level rise on urbanized coastal areas**
Prof. **Franco Montalto** (Drexel University of Philadelphia, USA)

15.00-16.00 **A long history of geoarcheology and sea level**
Prof. **Matteo vacchi** (University of Pisa, Italy)

16.00-17.00 **Adaptation experience in the venetian Coast**
Dr. **Pierpaolo Campostrini** (CORILA) and **Manuela Manfredi** (Thetis)

Conference

WARMCOASTS: sea level and extreme waves in the Last Interglacial

June 18th, 2025

Ca'Dolfin – Saoneria, Dorsoduro 3825D - Venezia

8.00 - 9.30 **Welcome and registration** (Breakfast included)

9.30 - 10.00 **The WARMCOASTS Project: 5(+1.5) years in and out of the Last Interglacial**
Prof. **Alessio Rovere** (Ca' Foscari University of Venice, Italy)

10.00 - 11.00 **Sea level changes in the Last Interglacial**
Prof. **Andrea Dutton** (University of Wisconsin-Madison, USA)

11.00 - 12.00 **The Last Interglacial in Argentina**
Prof. **Sebastian Richiano** (CONICET Puerto Madryn, Argentina)

12.00 - 13.00 Lunch Break

13.00 - 14.00 **Waves in the Last Interglacial**
Speaker to be defined

14.00 - 14.15 **Modelling reefs in the Last Interglacial**
Dr. **Denovan Chauveau** (IFREMER Brest, France)

14.15 - 14.30 **Holocene and Last Interglacial sea-level changes in South America**
Dr. **Karla Rubio-Sandoval** (UNAM, Mexico)

14.30 - 14.45 **Last Interglacial sea-level changes along the Argentinian coasts**
Dr. **Deirdre D. Ryan** (University of Pisa, Italy)

14.45 - 15.00 **Last Interglacial sea level on the North American Atlantic coasts**

15.00 - 15.45 Coffee break

Dr. **Silas Dean** (Ca' Foscari University of Venice, Italy)
15.45 - 16.00 **Last Interglacial sea level in the Gulf of Mexico**
Dr. **Nikos Georgiou** (Ca' Foscari University of Venice, Italy) - To Be Confirmed

16.00 - 16.15 **Last Interglacial sea-level changes in Brazil**
Dr. **Ciro Cerrone** (Ca' Foscari University of Venice, Italy)

16.15 - 16.30 **Last interglacial sea-level indicators from South Asia and the South China Sea**
Dr. **Ali Mubashir** (Ca' Foscari University of Venice, Italy)

16.00 - 17.00 Coffee break

17.00 - 18.00 **What's next: from WARMCOASTS to HISEAS**
Prof. **Blake Dyer** (University of Victoria, Canada) - To Be Confirmed

18.00 - 18.10 **Projection of the video "WARMCOASTS: Sea level and extreme waves in a warmer world"**

This workshop has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement no. 802414)

Funded by the European Union

European Research Council
Established by the European Commission

Workshop

Warmer coasts in a warming world: predictions, processes, and proxies, from past to present

June 19th – 21st, 2025

Auditorium Danilo Mainardi, Campus Scientifico Via Torino (Edificio ALFA)

Thursday, June 19th

SESSION 1

Sea-Level and Palaeo-Shoreline Reconstructions: Quantifying changes during the late Quaternary using geological, archaeological, and biological indicators.

Invited speaker: To Be Confirmed

SESSION 2

Ice Sheet Dynamics and Earth Response: Insights from ice sheet modeling and glacial isostatic adjustment processes.

Invited speaker: Dr. Florence Colleoni (OGS Trieste, Italy)
Evening: Tour of local "Bacaro" and social night out in Venice

Friday June 20th

SESSION 3

Environmental and Climatic Reconstructions: Proxy-based studies using foraminifera, pollen, and ostracods to track environmental change.

Invited speaker: Paolo Montagna (CNR ISPI, Bologna, Italy)

SESSION 4

Coastal Archaeology and Submerged Landscapes: Geoarchaeological investigations of ancient coastal settlements and submerged prehistoric landscapes.

Invited speaker: Prof. Alessandro Fontana (University of Padua, Italy)

Evening: Social Dinner in Venice

Saturday June 21st

The field trip aims to show to the participants two major aspects that are testified along the coast of the Northern Adriatic:

1. the deposits of the marine highstand which characterised the Last Interglacial (MIS 5.5)
2. the sea-level variations occurred during the Holocene, focusing on the role of eustasy, subsidence, pre-existing topography and their interplay with the ancient and modern anthropogenic activities.

In the **first stop** some of the reference stratigraphic cores of the Venice area will be shown, with the aim to describe and discuss the deposits forming the coastal wedge accumulated during the Last Interglacial. In that period the sea level arrived some meters above the present one, but now the lagoon deposits of that phase are some tens of meters below in the subsoil because of the subsidence going on in the area.

Along the itinerary we will visit the coastal plain between the eastern Lagoon of Venice and the Lagoon of Caorle. In particular, specific stops are planned in the area of Altinum, Carole and Concordia Sagittaria for visiting some of the index points which constrain the Holocene sea-level rise. Altinum was a Roman city at the north-eastern corner of the Lagoon of Venice. The settlement is considered the ancestor of Venice because during the early Middle Age the people escaped the barbarian invasion seeking refuge in the middle of the lagoon. The urban centre was crossed by an artificial canal connected to the port and the lagoon, with a pier still visible, allowing to reconstruct the position of the sea around the 1st century CE.

North of Caorle a large area has been reclaimed between the end of the 19th and the first half of the 20th century, transforming the former lagoon into farmland, eradicating the malaria disease and peopling the zone. We will stop in "La Frassina", a farm where we will have a light lunch with **possibility to taste the local foods** and the wines, now produced at -2m below mean sea level. In the area the drainage system is maintained by pumping stations, a dense network of ditches and canals and a lagoon dike. In this area the lagoon arrived about 5000 years ago and the expansion of the brackish environment was constrained by the pre-existing alluvial plain.

In the afternoon the visit of the area of Concordia Sagittaria is planned, with the description of the deep incised valley that was formed by the Tagliamento River between Late Glacial and early Holocene. The valley was over 1 km wide and up to 20 m deep and this depression started to feel the effects of the marine transgression since around 9000 years ago. It was lately invaded by lagoon waters around 7000 years ago, forming an estuary that elongated for over 20 km upstream of the coeval coastline. Since that period the former fluvial valley was progressively filled by brackish deposits that testify the sea-level rise occurred in the area. Prehistoric settlements developed along the estuary and Concordia Sagittaria was already an important settlement since the end of Bronze Age and became a Roman city in the 1st century BCE, displaying a strong relationship with the lagoon environment that surrounded it. The floods of the 6th century CE sealed the zone with 4 m of sands and silts, allowing the extraordinary preservation of the ancient landscape. We will visit the archaeological area of the palaeo-Christian basilica, now at -3 m below m.s.l. covered by 4 meters of Medieval deposits.

The end of the field trip is at the airport of Venice and later to the railway station of Mestre-Venezia