

# Curriculum Vitae

## Personal Information

**a. Name:** Carl Leonetto AMOS

**b. Date of birth:**

## Present Appointment

**a. Present post and grade:** Emeritus Professor

**b. Date of appointment to present post:** 1 March, 2017

**c. Academic affiliation:** University of Southampton

Dates	Appointment
1974-1975	Royal Society of London, John Murray Travelling Scholar Geological Survey of Canada, Bedford Institute of Oceanography (BIO) Post-Doctoral Fellow(BIO)
1975-1977	Research Scientist (RES-1) (BIO)
1977-1981	Research Scientist (RES-2) (BIO)
1982-1990	Geological Survey of Canada, Institute of Ocean Sciences
1990-1992	Research Scientist (RES-2) Geological Survey of Canada, Bedford Institute of Oceanography
1992-1998	Research Scientist (RES-3) Geological Survey of Canada, Bedford Institute of Oceanography
1998-1999	Research Scientist (RES-4) University of Southampton, School of Ocean and Earth Science
1999-2003	Senior Lecturer
2003 – 2017	Professor
2005-2008	Co-Director Coastal Centre for Engineering and Management
2008-2017	Director Tuscan Consultancy Ltd.
2017-present	Emeritus Professor, University of Southampton

## Qualifications

Date	Title of Award	Subject	Class	Awarding Body
1971	BSc	Oceanography/ Geology	2i	University of Wales, Swansea
1974	PhD	Sedimentology		Royal School of Mines, Imperial College, London

## Honours and Distinctions

<b>Date</b>	<b>Honour/Distinction</b>
1984	APICS (Canada) Distinguished Lecturer
1985- present	Honorary Research Associate, Acadia Centre for Estuarine Research, Acadia University, Canada
1993	CIDA (Canada) consultant in Oceanography - Argentina
1993	UN Consultant on coastal studies - China
1993- 1994	Honorary Research Associate, Gatty Marine Labs, St. Andrews University, Scotland.
1994- present	Honorary Professor, Dipartimento di Scienze della Terra, Parma University, Italy.
1994-1999	Distinguished Visiting Fellow and Honorary Professor, Department of Earth Sciences, Cardiff University, Wales.
1995	CCOP consultant in Coastal issues - Philippines
1997	Received a Sector Award for outstanding research (Canada Government)
1999-2005	Invited lecturer at International Maritime Academy, Trieste
2001-present	Research Associate, University of Rome, Italy
2002	CIESM (Monaco) consultant on coastal erosion, Morocco
2003-2009	Member of SCOR committee 122
2007- present	Research Associate – W. Vancouver Marine Laboratories, Canada
2009- present	Honorary Professor – Institute of Hydrography, Genoa, Italy

## **Postgraduate Supervision (Higher Research Degrees) in coastal sediment dynamics**

### **a. Number of Students**

<b>Degree</b>	<b>Total to date</b>
PhD	24
MSc	81

## **Research and Scholarship**

### **Summary of current research and scholarship activities**

My current research focuses on three linked areas: the establishment of a saltwater microcosm facility at NOC; the development of field technologies for coastal surveying and mapping; and numerical simulations of sediment transport in coastal regions. The work is underpinned by 275 scientific, international publications and reports (details and copies can be found on <https://www.researchgate.net/profile/Carl-Amos>). The microcosm facility is completed (under a Small NERC grant – GR9/4717), is operational and has resulted in participation within the EU Framework-5 Network BIOFLOW (with 16 other institutions across Europe). A series of key experiments to: (1) calibrate sensors and define the stress distribution within our flumes; (2) evaluate different methods to define bed shear stress; and (3) evaluate the role of natural bed roughnesses on flow character and the benthic flux of inorganic and organic constituents (5 scientific papers have been published on this work, and a PhD awarded to C.E.L. Thompson). Three Conferences and three scientific special issue Journals have resulted to date. The development of a new technique to monitor bed roughness was funded by EPSRC (grant GR/R46311/01) and has been completed in full. It has also led to funding from Consorzio Venezia Nuova (the builders of the MOSE Project) and CORILA in a series of contracts since 2004.

The link of laboratory measurements to field applications has been studied within an EU project (EURODELTA) and a Research Assistant (Dr. U. Neumeier) has incorporated results into our numerical model SEDTRANS04 (published in Computers & Geoscience). This work is being undertaken in parallel with funding from CNR-Grandi Masse (Venice). SEDTRANS04 has been linked to a 2-D, finite element, hydrodynamic model (SHYFEM) of Venice Lagoon in association with CNR-Grandi Masse, CORILA, and University of Ca' Foscari, Venice. This has resulted in two new grants from CORILA: (1) to study the sources of sand in Venice Lagoon, and (2) to provide input to field geophysical/surveying tools relevant to Venice. A PhD student (R. Helsby) has completed on this subject under my supervision. In order to place SEDTRANS04 into a broader context, we are compiling data on the northern Mediterranean as part of the EU-funded EUROSTRATAFORM project.

### **Summary of significant personal achievements in research, consultancy, and scholarship**

I have achieved international recognition for my scientific accomplishments in the fields of sediment dynamics, coastal stability and evolution, and marine technological innovation. I have achieved a balance between pure and applied research which has been supported in the past by industry. For example, my work on the role of the ballistic momentum flux of saltating material (an aeolian process) to seabed stability (combining aerodynamic, hydrodynamic, and geotechnical principles) was funded by NERC and EPSRC and forms a cornerstone of my present-day research which has resulted in many PhD's and a series of scientific publications. The outcome is we know that terrestrial and marine landscapes are strongly influenced by these mechanisms at a global scale. This is spinning off to the interpretation of gullies, habitat erosion/stability as well as channels on Mars, and in the deep sea.

My work at NOC has focussed on laboratory instrumentation: Mini Flume and Lab Carousel which have been used exhaustively in international, national and student research projects. Similar devices have been installed (through collaboration) in University of Odense (Denmark) and Acadia University (Canada). Advances in knowledge have been used to update the cohesive and non-cohesive sub-routines of SEDTRANS04, which is now linked to the hydrodynamic model of Venice (SHYFEM) used to design to Storm Gate project (MOSE) and in the prediction of the Po river plume to understand delta evolution. These developments have lead to international cooperative research with National Research Council of Italy (Venice and Messina), University of Rome and University of Parma. Outstanding examples of international cooperation are EUROSTRATAFORM (a US/European project involving 50 Institutions, designed to understand and predict coastal landscape evolution), and BIOFLOW (an EU Network programme of 17 Institutions on biological/physical interactions at the seabed). Four special journal issues have evolved from BIOFLOW (one I will co-edit), and 4 conferences (one I helped co-ordinated). My research and scholarship achievements are contained within 275 scientific publications reports. Recent (accepted) invitations to lecture include: GKSS, Germany (Feb., 05), POL, Liverpool (Feb., 05), EcoGeoMar, Romania (Mar., 05), Univerita di Parma, Italy, and Istituto di Talassografia, Messina (Jan., 05).

### **Academic and Professional Activities Outside the University**

2001 – 2010 Editorial Board, Estuarine, Coastal and Shelf Science, Holland  
 2001 – 2012 Editorial Board, Journal of Coastal Research, USA  
 2001-2006 Annual presentation of short course to IMO/IMA, Trieste  
 2002 – CIESM member panel on coastal erosion (Monaco)  
 2003 – Reviewer of MURST grant applications (Italy)  
 2003 – External examiner on 3 PhD theses in France (La Rochelle, Aix, and Perpignan)  
 2003 – Steering committee to M.Sc. on Coastal Management (ENEA, Italy)  
 2004 – Scientific advisor to Dept. Fisheries and Oceans (Canada)  
 2004 – present Panel member of SCOR group 122 (International)  
 2008 – External examiner on PhD (Bilbao, Spain)  
 2008 – present - founder and director of Tuscan Consultancy Ltd.  
 2009 – External examiner on PhD (Delft, Holland)  
 2010 – Invited session Chair Venice in Peril Conference, Venice May, 2010  
 2020 – Editorial board, Water

I have taught coastal processes (20 hours/year) at the International Maritime Academy (Trieste) and Institute of Hydrography (Genoa) to military hydrographers (about 10/year) from the Mediterranean region. I was instrumental in developing the Short Course in Applied Coastal Sediment Dynamics which has taken place annually throughout Italy between 1995 - 2000. This Course has evolved into a Specialization Course in Coastal Science offered by University of Parma and sponsored by the National Research Council of Italy (CNR) and the Atomic Energy Commission of Italy (ENEA). I am the only non-Italian teaching on this course and on the Academic Board. I have a two-volume, 120-hour intensive course on Sediment Dynamics that I have presented world-wide including at Gran Combin School of Fluid Dynamics. I am a scientific consultant to National Research Council of Italy on coastal research, to Magistrato alle Aque (Venice) and to Istituto Talassografia, Messina on sedimentation.

## **RECOGNITION**

My research and teaching activities are world-wide in scope. This is evidenced by strong affiliations with academic institutions around the world (International Maritime Academy, Trieste; Acadia University, Canada; St Andrews, Scotland; Parma University, Italy; and University of Rome, Italy), by requests for participation in joint academic projects (BIOFLOW, EUROSTRATAFORM, EURODELTA, EU-PROTECT) and by the high attendance and successes of his short courses (Argentina - 1993, China - 1993, Parma, Italy - 1995, Philippines - 1995, La Spezia, Italy - 1996, Bologna, Italy - 1997, Sapri, Italy - 1998, Pescara, Italy – 1999; Santa Teresa, 2001; Itajai, Brazil, 2001, Gran Combin, 2002). I am a member of SCOR committee 122 (Coastal erosion on muddy coasts) and on the editorial Boards of Estuarine, Coastal and Shelf Science, and Journal of Coastal Research. I am a regular reviewer for premiere publications Journal of Geophysical Research, Sedimentology, and Continental Shelf Research and provide regular reviews for NSERC, NERC, MURST, and NSF proposals. Invited to coordinate Chapman Conference on Tidal Flats (Canada), session chair at IGC (Florence), and coordinator of BIOFLOW conference (Venice). Invited to give lecture series at Istituto di Talassografia, Messina, and special lectures at EcoGeoMar (Romania), GKSS (Germany), POL (UK). Invited as external examiner on Marine Sciences at Plymouth University.

## **CONSULTANCY**

My role in consultancy is within the subject of coastal sedimentation, sediment transport, and coastal habitat sustainability. I have provided advice since 1977 to the Canadian Government on sedimentation issues in the Bay of Fundy (related to Lobster spawning grounds), on issues of benthic stability and exchanges related to Oyster farming in Fanny Bay, BC, and on the impact of causeways in estuaries. Since 1999, I have successfully undertaken contractual work on issues of habitat stability and sedimentation in Venice lagoon (THETIS SpA, CORILA, Consorzio Venezia Nuova). More recently I have worked for the Atomic Energy Commission on the stability of low grade nuclear disposal sites in the UK. I have also provided input to the Lymington River Association on the impact of Wightlink Ferries on

the stability of salt marshes in Lymington estuary. I also provide ongoing consultancy advice to HRWallingford Ltd., Scott Wilson Ltd., Partrac Ltd., and ABPmer Ltd. The expansion of this work has forced the creation of a Consultancy to undertake this work (Tuscan Consultancy Ltd.) of which I am the Director.

### **LEADERSHIP**

My leadership skills are evident in the impact of my studies of sediment dynamics research around the world and on development of Coastal research at NOC. I have significantly altered the direction of coastal studies in Italy (about 500 have attended my courses to date) and administrators of the coastal zone to consider soft engineering over the previously used hard engineering approach. I have influenced the direction of research in New Zealand where NIWA (the premiere marine Institute) have joined me in deployments and processing of data from my benthic landers and benthic flumes. I built the sediment Dynamics Group at Bedford Institute, Canada before coming to Southampton University. I have been chief scientist on all of my last 16 scientific cruises while at BIO (about 160 days). I have supervised 30 Ph.D.s or post-doctorates, 81 M.Sc. students (Engineering in the Coastal Environment), and have presently 5 PhD students active in aspects of sediment dynamics.

**Signed**

**Date : Friday, 31 March, 2023**