

CURRICULUM **Vittorio Ernesto Brando**

VITAE

WORK EXPERIENCE

- Dates (from – to) 2020 – to date
Name and address of employer CNR-ISMAR
Via Fosso del Cavaliere, 100
Roma, Italy
Type of sector R&D
Position held Research Director (Dirigente di Ricerca), *Advisor for PhD and MSc students*
Main activities and responsibilities *Deputy Leader for the Ocean Colour Thematic Assembly Center, Copernicus Marine Environment Monitoring Service; delivery of operational ocean colour data streams in the ocean-observing infrastructure for European coastal and marine environments. Partner PI for two H2020 projects (CoastObs and HYPERNETS) Research activities focused on earth observation of optically complex waters, with the development and implementation of physics based inversion algorithm for the retrieval of water quality parameters in optically deep and shallow systems.*
- Dates (from – to) 2016 – 2019
Name and address of employer CNR-ISMAR
Via Fosso del Cavaliere, 100
Roma, Italy
Type of sector R&D
Position held Principal Research Scientist (Primo Ricercatore), *Advisor for PhD and MSc students*
Main activities and responsibilities *Deputy Leader for the Ocean Colour Thematic Assembly Center, Copernicus Marine Environment Monitoring Service; delivery of operational ocean colour data streams in the ocean-observing infrastructure for European coastal and marine environments. Partner PI for two H2020 projects (CoastObs and HYPERNETS) Research activities focused on earth observation of optically complex waters, with the development and implementation of physics based inversion algorithm for the retrieval of water quality parameters in optically deep and shallow systems.*
- Dates (from – to) 2014 - 2015
Name and address of employer CNR-IREA
Via Bassini,15
Milano, Italy
Type of sector R&D
Position held Senior Marie Curie Fellow
Main activities and responsibilities *Research activities focused on earth observation of optically complex waters, with the development and implementation of physics based inversion algorithm for the retrieval of water quality parameters in optically deep and shallow systems. Optical oceanography in inland, estuarine and coastal systems, hyperspectral signal and imagery analysis, radiative transfer models.*
- Dates (from – to) 2013-2015 (on leave without pay in 2014-2015)
Nome and address of employer Environmental Earth Observation Program
CSIRO Land & Water
Clunies Ross St
Acton ACT
Australia
Type of sector R&D
Position held Principal Research Scientist
Main activities and responsibilities *Research Team Leader - Remote Sensing of Aquatic Ecosystems in the Environmental Earth Observation Program at CSIRO Land & Water in Canberra (12 staff members). Principal Investigator for several large collaborative projects (~6.4MA\$, ~4.6MEUR) focussed on the development of applications of Earth Observation for the environmental management of the Great Barrier Reef coastal waters and on the addition of optical oceanography data streams to the ocean-observing infrastructure in Australian coastal and marine environments.*
- Dates (from – to) 2007-2013
Name and address of employer Environmental Earth Observation Program
CSIRO Land & Water

Clunies Ross St
 Acton ACT
 Australia
 Type of business or sector R&D
 Position held Senior Research Scientist, *PhD Advisor for three PhD students*
 Main activities and responsibilities *Principal Investigator for several large collaborative projects (~4 MA\$) focussed on the development of applications of Earth Observation for the environmental management of the Great Barrier Reef coastal waters and on the addition of optical oceanography data streams to the ocean-observing infrastructure in Australian coastal and marine environments.*
Research activities focused on earth observation of coastal waters, with the development and implementation of physics based inversion algorithm for the retrieval of water quality parameters in optically deep and shallow systems.

Dates (from – to) 2000-2007
 Name and address of employer Environmental Remote Sensing Group
 CSIRO Land & Water
 Clunies Ross St
 Acton ACT
 Australia
 Type of sector R&D
 Position held Research Scientist, PostDoctoral Scientist
 Main activities and responsibilities *Research activities focused on earth observation of coastal waters, with the development and implementation of physics based inversion algorithm for the retrieval of water quality parameters in optically deep and shallow systems.*

Dates (from – to) 2000
 Name and address of employer Dipartimento di Scienze Ambientali dell'Università di Venezia
 Type of sector R&D
 Position held Collaboratore (Research Associate)
 Main activities and responsibilities *'Valutazione di parametri di qualità dell'acqua del delta del Po attraverso l'analisi di dati iperspettrali (MIVIS)'.*

ADJUNCT POSITIONS

Dates (from – to) *January 2016 – to date*
 Name and address of employer Environmental Earth Observation Program
 CSIRO Oceans & Atmosphere
 Clunies Ross St
 Acton ACT
 Australia
 Type of sector *R&D*
 Position held Adjunct Science Leader
 Main activities and responsibilities *Collaborative research activities focused on observing systems, optical oceanography and earth observation of optically complex waters in Australian inland, coastal and marine environments.*

Dates (from – to) 2006-2013
 Name and address of employer School of Geography, Planning and Environmental Management
 University of Queensland, Brisbane, Australia
 Type of sector R&D
 Position held Adjunct Senior Lecturer, PhD Advisor for two PhD students
 Main activities and responsibilities *Collaborative research activities focused on earth observation of inland and coastal waters, with the development and implementation of physics based inversion algorithm for the retrieval of water quality parameters in subtropical and tropical optically deep and shallow systems.*

EDUCATION AND TRAINING

Dates (from – to) 1998-2000
 Name and type of organisation providing education and training Dottorato di Ricerca in Modellistica dei Sistemi Ambientali, Facoltà di Ingegneria, Università di Padova
 Principal subjects covered Environmental sciences, ecological modeling, remote sensing of coastal aquatic environments, aquatic ecology
 Title of qualification awarded *Dottore di Ricerca (PhD)*

Dates (from – to) 1989-1995
 Name and type of organisation providing education and training Corso di Laurea in Scienze Ambientali, Facoltà di Scienze, Università di Venezia
 Principal subjects covered Environmental sciences, ecological modeling, aquatic ecology
 Title of qualification awarded Laurea in Scienze Ambientali (110 e Lode)

RESEARCH INTERESTS

Vittorio Brando has a background in aquatic ecology and ecological modelling of in shallow water environments. He worked on ecological modelling of macro algae colonies dynamics and of trophic interactions in shallow water basins.

Vittorio's research is focused on earth observation of optically complex waters to enable a better understanding of environmental processes of inland and coastal systems through the translation of earth observation data into information suitable to address societal challenges. His main interests include: optical oceanography in inland and coastal systems, hyperspectral signal and imagery analysis, radiative transfer models, retrieval of water quality parameters from ocean color data, shallow waters mapping, fine scale oceanography, inclusion of ocean colour in operational oceanography data streams.

PUBLICATIONS SUMMARY AND BIBLIOMETRIC INDEXES

Author of 76 journal papers, 12 book chapters, 49 conference papers and 33 technical reports.

	Career citations	h-index	citations for most cited paper	As of 12/12/2021
Google Scholar	6798	41	557	
Scopus	4476	38	369	Scopus ID 6603611887
WoS	4073	36	332	ResearcherId A-1321-2008

SCIENTIFIC ACTIVITIES AND IMPACTS

Ecological modelling

The research activities carried out during the “tesi di laurea” and the following collaboration with the group of Environmental Physical Chemistry at University of Venice, led to the implementation of a model for the macroalgae (*Ulva rigida*) population dynamics into the 3D structure of a water quality model for the Venice Lagoon. The spatial distribution of macroalgae as estimated from remote sensing imagery was an input for the simulations of macroalgae (*Ulva rigida*) population and oxygen cycle in the Venice Lagoon (Solidoro et al 1996a, Solidoro et al 1996b, Solidoro et al 1997a, Solidoro et al 1997b, Dejak et al 2000, Solidoro et al 2000).

During the Ph.D., a comparative analysis of trophic networks was carried out for the Orbetello Lagoon, Italy to assess the environmental management of frequent algal blooms leading to anoxic crisis and death of aerobic organisms. Two mass-balance models (ECOPATH) of this shallow water coastal system were implemented for 1995 and 1996. The effects of management actions carried out in the system were quantified by estimating the changes in primary production and accumulation of detritus in the system. Management of the lagoon as an extensive aquaculture operation was assessed by analysing the fishery catch, the transfer efficiencies at different trophic levels and the impact of cormorants, and it was found to contribute to system stability (Brando et al 2004). As part of the PhD activities a procedure for mapping and detecting changes in submerged vegetation was implemented using airborne hyperspectral data (MIVIS) (Alberotanza et al 1998, Alberotanza et al 1999, Alberotanza et al 2000). In 2002 Dr Brando was conferred for this work the SAPIO Environmental Research Junior award (Premio Ambiente Junior, Premio Sapio per la Ricerca Italiana 2002).

Imaging Spectrometry of Inland and Coastal Waters	<p>Since his PhD Thesis, Dr Brando research has focused on the development of methods and applications of airborne and spaceborne imaging spectrometry data in aquatic systems. Activities included the retrieval of water quality parameters in inland and coastal waters (Brando & Dekker 2003, Giardino et al 2007, Campbell et al 2011, Giardino et al 2014) and shallow water mapping in temperate and tropical environments (Alberotanza et al 1999, Dekker et al 2001, Roelfsema et al 2006, Brando et al 2009 Phinn et al 2008, Dekker et al 2011, Giardino et al 2019).</p> <p>In 2001-2002 Dr Brando was member of the Hyperion EO-1 Australian Science Validation Team. He was co-PI for the assessment of Hyperion performance for the retrieval of water quality parameters in coastal waters. The method developed was the first application from spaceborne imaging spectrometry in optically complex waters with an inversion of physics based models (Brando & Dekker 2003).</p>
Physics based inversion algorithms in optically complex systems	<p>Since joining CSIRO in 2000, Brando's research activities focused on remote sensing of optically complex waters coupling the fields of optical oceanography and radiative transfer based model inversions. He developed and implemented physics based inversion algorithm for the retrieval of water quality parameters in optically deep and shallow systems (Brando & Dekker 2003, Brando et al 2009, Brando et al 2012, Dekker et al 2001, Dekker et al 2006, Odermatt et al 2012, Werdell et al 2013, Giardino et al 2019).</p> <p>In 2001-2002 Dr Brando developed a method for the retrieval of water quality parameters in coastal waters from Hyperion data based on an inversion of physics based models (Brando & Dekker 2003). The methodology was then applied to Landsat multispectral imagery for the retrieval of water quality parameters in Moreton Bay and the Fitzroy River Estuary, QLD, Australia (Phinn et al 2005, Dekker et al 2005). The methodology was adapted for mapping water quality in inland waters in Lake Garda and other peri-alpine lakes in collaboration with CNR-IREA in Milan (Candiani et al 2005, Giardino et al 2007, Giardino et al 2014), and in tropical reservoirs in collaboration with the University of Queensland (Campbell et al 2011).</p> <p>Dr Brando contributed NASA's efforts in developing the generalized ocean color inversion model for retrieving marine inherent optical properties (Werdell et al 2013) and to EUMETSAT's study on semi analytical algorithms for estimating inherent optical properties over oceanic, coastal, and inland waters (Jorge et al 2021). He was member of the International Ocean-Colour Coordinating Group (IOCCG) working group for the "Intercomparison of Retrieval Algorithms for Coastal Waters" (2013-2015), and he contributed to the CEOS Feasibility Study for an Aquatic Ecosystem Earth Observing System (2016-2017) (Dekker et al 2018).</p>
Remote sensing applications in shallow waters	<p>Through his career, Dr Brando contributed to the development and implementation of remote sensing applications in shallow waters. The physics based approach enabled the estimate of the depth and the water column composition accompanied by estimates of substrate visibility and retrieval accuracy (Brando et al 2009), and the detailed mapping of the dominant substrate components per pixel in multispectral and hyperspectral imagery (Dekker et al 2001, Dekker et al 2005, Dekker et al 2006, Roelfsema et al 2006, Phinn et al 2008, Dekker et al 2011, Botha et al 2013, Sagar et al 2014, Giardino et al 2015, Giardino et al 2016, Botha et al 2016). In 2016-17, Dr. Brando was member of the ESA Sen2Coral project for the implementation of a coral reef processing chain in ESA's SNAP (Hedley et al 2018, Kutser et al 2020). In September 2005, he was awarded, together with Dr. Dekker and Ms. Janet Anstee, the "Excellence in Science Award" at the Coastal CRC Annual General Meeting for the project on benthic mapping in Moreton Bay. The paper Brando et al (2009) was recognized with the CSIRO Land and Water Publication Award for 2009.</p>
Optical oceanography in optically complex systems	<p>Dr Brando has been involved in the optical characterization of temperate and tropical aquatic systems to tease out the hydrological and oceanographic processes influencing optical properties of particulate and dissolved matter in inland, estuarine and coastal waters (Oubelkheir et al 2005, Brando et al 2006, Brando et al 2008, Blondeau-Patissier et al 2009, Cherukuru et al 2014, Hestir et al 2015, Cherukuru et al 2016, Blondeau-Patissier et al 2017, Soja-Wozniak et al 2019, Volpe et al 2021). Optical characterization has been used extensively in Dr Brando's research for the parametrization of forward and inverse modelling of the underwater light climate of optically complex systems (e.g. Brando & Dekker 2003, Phinn et al 2005, Giardino et al 2007, Qin et al 2007, Cocking et al 2008, Brando et al 2009, Dekker et al 2011, Brando et al 2012, Giardino et al 2014, King et al 2014, Giardino et al 2015, King et al 2016, Pitarch et al 2016). He has also contributed to the establishment of global bio-optical datasets for ocean colour algorithms validation in coastal waters (Nechad et al 2015, Valente et al 2016, Valente et al 2019).</p>

Optical oceanography and earth observation algorithms in the GBR	<p>To effectively inform and support the management of the Great Barrier Reef (GBR) World Heritage area (GBRWHA), accurate and spatially comprehensive water quality information is required. To meet the environmental reporting needs of the Great Barrier Reef Marine Park Authority (GBRMPA), it was necessary to ensure accurate retrieval of water quality variables from satellite imagery.</p> <p>In-situ optical measurements of the coastal waters in the Great Barrier Reef (GBR) have shown a large variability in inherent optical properties such as absorption and scattering of particulate and dissolved matter (Blondeau-Patissier et al 2009, Brodie et al 2010). Global ocean colour algorithms developed for MODIS and MERIS showed poor accuracy in these optically complex waters (Qin et al 2007, Brando et al 2008, Schroeder et al 2008). Dr Brando devised, developed and implemented a novel physics based approach to accurately retrieve water quality variables for the GBR coastal waters based on regional optical properties of these optically complex waters. The physics based method developed originally for Hyperion (Brando & Dekker, 2003) was applied to the spectral characteristics of MODIS to enable a reliable mapping of water quality parameters for the coastal waters in the GBR (Brando et al 2012). In February 2010 Dr Brando was invited to give a talk on this topic at the Special Session on "Validation and Uncertainty Analysis of Optical Remote Sensing Algorithms for the Coastal Ocean", at 2010 Ocean Sciences Meeting held in Portland, USA. Dr Brando presented an overview of this work as a plenary talk at the 2014 AMSA conference In Canberra, Australia.</p>
Management relevant information for the GBR from satellite imagery	<p>Dr Brando devised methods to derive environmental information products tailored to end-user requirements from time series of daily remote sensing images for use in the Reef Rescue Marine Monitoring Program (RRMMP). He implemented the assessment of the exceedance of GBRMPA's water quality guidelines using time series of remote sensing data for two key water quality variables: total suspended solids as a proxy for resuspension or catchment sediment delivery and chlorophyll as a proxy for nutrient availability (Brando et al 2010, 2011, Johnson et al 2011). In the RRMMP he also contributed to devise methods to describe the freshwater plume extent into the GBR lagoon using satellite imagery and assess their influence on coral reef health (Devlin 2012, Kennedy et al 2012, Schroeder et al 2012, Blondeau-Patissier et al 2014, Thompson et al 2014).</p> <p>The Australian Bureau of Meteorology has implemented the pre-operational processing system for the retrieval of water quality in the GBRWHA (King et al 2014, King et al 2016) for an operational real time delivery of the satellite derived water quality to environmental managers, stakeholders and scientific community. In 2012 Queensland's Department of Premier and Cabinet invited Dr Brando to join the scientific panel tasked to update the Reef Plan Scientific Consensus Statement recognizing his role in making earth observation data available for the GBRWHA environmental monitoring and reporting. The paper Schroeder et al (2012) was recognized with the "CSIRO Land and Water Publication Award. Dr Brando presented an overview of this work as a plenary talk and the AMSA conference in July 2014 and at the GEO Water Quality Summit in April 2015.</p>
Fine scale oceanography and data assimilation in coastal environments	<p>In coastal regions, where modelling efforts require high resolution data sets due to short time and space scales of coastal ocean processes, use of multi-temporal satellite data sets may become crucial. Assimilation of ocean colour satellite observation into coastal ocean biogeochemical models lagged several years in comparison with SST in hydrodynamic models, partly due to the lack of adequately developed coastal ocean colour products with good error estimates. In 2006/2007 Dr Brando led an exploratory data assimilation project investigating several strategies to combine and compare the newly developed remote sensing data and biogeochemical models output for the Fitzroy River Estuary (Brando et al 2007, Robson et al 2007, Robson et al 2008, Margvelashvili et al 2013). Within Nagur Cherukuru's Postdoctoral fellowship, a physics based bio-optical model was developed for coupling in bio-geochemical models for coastal waters (Cherukuru et al 2006, Cherukuru et al 2008). Dr Brando presented the preliminary results of this work as a Keynote Speech at the EARSEL conference in June 2007.</p> <p>In 2014 and 2015, as part of the research activities carried out during the Senior Marie Curie fellowship at CNR-IREA focusing on observation classes suitable for fine scale processes, he led a comparison of remote sensing data at high spatial resolution (Landsat-8 at 30 metres) with hydrodynamic models to describe the 2014 Po river flood and its effects on the Northern Adriatic Sea (Brando et al 2015). The study was then extended by collaborators to investigate the temporal variations of the Po river plume characteristics at fine scale using Landsat-8 and hydrodynamic models (Braga et al 2017, Manzo et al 2018, Bellafiore et al 2019). The approach was then extended to Sentinel 2 imagery to COVID-19 lockdown impact on water transparency in the Venice Lagoon (Braga et al 2020). He also supervised a PhD Thesis exploring the use of multiple ocean colour images during the day</p>

to observe short term variations in particulate matter in the coastal environment leading to the design of a virtual geostationary Ocean Color sensor (Bracaglia et al 2019, 2020).

Ocean observing infrastructure in Australia To overcome the sparseness of bio-optical observations in Australian waters, Dr Brando led the enhancement of ocean observing infrastructure in Australian coastal and marine environments with the adoption of optical oceanography data streams (Lynch et al 2015). Dr Brando led the IMOS Satellite Remote Sensing Ocean Colour sub-facility (2007-2016). As IMOS sub-facility leader he established a coastal observatory (Lucinda Jetty Coastal Observatory, LJCO, imos.org.au/ljco.html) using state-of-the-art bio-optical measurement packages to provide reliable data streams for calibration and validation of satellite ocean colour products in coastal waters, including an autonomous above-water radiometry AERONET-OC site (Brando et al 2010). Dr Brando also initiated bio-optical observations carried out at the IMOS national reference stations (Lynch et al 2015) and on board of two research vessels (RV Southern Surveyour and RV Solander) (Brando et al 2013, Brando et al 2016). A Bio-Optical data base collects instrumental data from the cruises carried out by the Australian bio-optical community from 1997 to the present (Clementson et al 2012). Dr Brando's expertise in optical oceanography has been recognized by the IMOS Bio-optical working group, where as a member he contributed to recommend calibration procedures for the bio-optical sensors adopted at the IMOS data streams (Earp et al, 2011).

Satellite Validation activities Dr Brando has been involved in satellite validation activities since 2001. Within the Hyperion EO-1 Australian Science Validation Team (2001-2002), he focused on the assessment of Hyperion performance for the retrieval of water quality parameters in coastal waters. Dr Brando was the establishing PI of the NASA's AERONET-OC Lucinda site (2007-2016) and for the deployment of autonomous above-water radiometers on board of two Australian research vessels (2010-2015). Since 2017, within the H2020 HYPERNETS project, he is contributing to design of autonomous hyperspectral above-water radiometers and of their network of validation of satellite aquatic radiometry. Several of his papers included assessment and validation of radiometric and/or biogeochemical products (e.g. Brando and Dekker, 2003; Schroeder et al 2012; Giardino et al 2014, 2020; Brando et al 2016, 2021; Valente et al 2016, 2019; Braga et al 2017, 2020; Hedley et al 2018; Bracaglia et al 2019, 2020; Volpe et al 2019; Concha et al 2021).

Operational Oceanography in Europe Since 2015, Dr Brando became involved in the development and delivery of operational ocean colour data streams in the ocean-observing infrastructure for European coastal and marine environments. He serves as Deputy Leader for the Ocean Colour Thematic Assembly Center within CMEMS (Copernicus Marine Environment Monitoring Service), and as Partner PI for the H2020 CoastObs project focussed on developing downstream service for coastal waters. He contributed to the development of the ocean colour operational processing chain for the Mediterranean Sea (Volpe et al 2019) and the Baltic Sea (Brando et al., 2021), to environmental reporting based on CMEMS data streams and Sentinel data (Ocean State Report 2 & 3: Von Schuckman et al 2018 and 2019, Papatanaopoulou et al 2019), to community papers focussing on the in situ and satellite observing systems (Le Traon et al 2019, Sathyendranath et al 2019).

PROJECT LEADERSHIP EXPERIENCE Dr Brando has led several large collaborative projects (~6.4 MA\$, ~4.6 MEUR) focussed on the development of applications of Earth Observation for the environmental management of the Great Barrier Reef coastal waters and on the addition of optical oceanography data streams to the ocean observing infrastructure in Australian coastal and marine environments. Currently he is the Deputy Leader of Ocean Colour Thematic Assembly Center within the Copernicus Marine Environment Monitoring Service (5.4ME) and Partner PI for two H2020 projects (730KE).

	Role	Project title	Funding agency	Secured funding
2020-2021	WP leader	SOON	ESA	150KE
2019-2023	Task leader	CERTO	Horizon2020	400KE (2.84ME)
2018-2021	Deputy Leader	Ocean Colour Thematic Assembly Center	Copernicus Marine Environment Monitoring Service	2.9ME
2017-2021	Partner PI	CoastObs	Horizon2020	287KE (1.87ME)
2018-2022	Partner PI	HYPERNETS	Horizon2020	450KE (5ME)

2015-2018	Deputy Leader	Ocean Colour Thematic Assembly Center	Copernicus Marine Environment Monitoring Service	2.5ME
2014-2015	Senior Marie Curie Fellow	OCARINAS (Oceanic Color Radiometry to assess spatial and temporal variability of bio-optical processes in Northern Adriatic Sea)	Marie Curie Action COFUND RITMARE	156kE
2013-2015	Facility leader	Satellite Remote Sensing – Ocean Colour	Integrated Marine Observing System	700 kA\$ *
2013-2016	Facility leader	Lucinda Jetty Coastal Observatory	Integrated Marine Observing System	720 kA\$ *
2013-2014	Project leader	Bio-optical transformations in the catchment to reef continuum	CSIRO Land & Water	110 kA\$
2011-2013	Project leader	Developing integrated assessment metrics for reporting of water quality in the Great Barrier Reef lagoon	Reef Rescue Research and Development Fund	480 kA\$
2010-2013	Facility leader	Australian National Mooring Network – Bio-optics	Integrated Marine Observing System	480 kA\$
2010-2013	Facility leader	Satellite Remote Sensing – Ocean Colour	Integrated Marine Observing System	1220 kA\$
2007-2013	Facility leader	Lucinda Jetty Coastal Observatory	Integrated Marine Observing System	880 kA\$
2007-2013	Project leader	Using remote sensing for GBR-wide water quality	Reef Rescue Marine Monitoring Program	1000 kA\$
2007-2009	Project leader	Remote-sensing of GBR Waters to assist performance monitoring of Water Quality Improvement Plans in Far North Queensland	Department of the Environment and Water Heritage and the Arts	360 kA\$
2006-2007	Project leader	Toward assimilation of ocean colour satellite observation into coastal ocean biogeochemical models: the tropical Fitzroy River Estuary case study	CSIRO Land & Water	150 kA\$
2004-2006	Principal Investigator	Bilateral cooperation project Earth Observation for adaptive management of inland and coastal waters	CNR-CSIRO MoU (2004-2006)	90 kA\$
2004-2006	Task leader	Physics based retrieval of bathymetry from hyperspectral data for coastal waters	CRC for Coastal Zone, Estuary and Waterway Management	
2004-2006	Task leader	Chlorophyll and Suspended Sediment Assessment in a Macro-Tidal Tropical Estuary Adjacent to the Great Barrier Reef: Spatial and Temporal Assessment Using Remote Sensing	CRC for Coastal Zone, Estuary and Waterway Management	

* in 2014-2016 the facility was led by Dr Thomas Schroeder, as Dr Brando was on leave from CSIRO.

ACADEMIC ACTIVITIES

2017-2023: Italian National Academic Qualification as Full Professor in Geophysics (ASN class 04/A4).

2017-2023: Italian National Academic Qualification as Full Professor in Astronomy, Astrophysics, Earth and Planetary Physics (ASN class 02/C1).

2019: Associate Advisor for the Laurea Thesis *Spectral Attenuation and Backscattering as Indicators of Particle Size, Density and Composition in the Adriatic Sea* for Beatrice Giambenedetti School of Physics, University of Rome “La Sapienza”, Italy.

- 2017:** PhD Thesis Opponent for *Application of close range remote sensing for monitoring aquatic environment* by Martin Ligi, Estonian Marine Institute and Department of Zoology, Institute of Ecology and Earth Sciences, Faculty of Science and Technology, University of Tartu, and Tartu Observatory, Estonia
- 2016-2019:** Associate Advisor for the PhD Thesis *A Virtual Geostationary Ocean Colour Sensor to observe short term variations in particulate matter in the coastal environment* for Marco Bracaglia Department of Science and Technology, University of Naples "Parthenope", Italy.
- 2015:** Member of the examining committee for the PhD School of Earth Sciences, University of Pavia, Italy.
- 2015:** PhD Thesis Examiner for *The role of photoacclimation on the phytoplankton seasonal cycle in the Mediterranean Sea through satellite data* by Marco Bellacicco, Department of Science and Technology, University of Naples "Parthenope", Italy.
- 2015:** PhD Thesis Examiner for *The Development and Validation of Algorithms for Remotely Sensing Case-II Waters* by Wojciech Mateusz Klonowski, School of Applied Physics, Curtin University of Technology, Perth, Australia.
- 2012:** International assessor for the PhD Thesis *Assessment of passive optical remote sensing for mapping macroalgae communities on the Galician coast* by Gema Casal Pascual, University of A Coruña, Spain.
- 2011 – 2015:** Associate Advisor for the PhD Thesis *Inversion of Remote Sensing Data in a Shallow Water Environment using a Trans-Dimensional Probabilistic Framework* for Stephen Sagar, Australian National University, Australia
- 2007 –2011:** Associate Advisor for the PhD Thesis *Detection and Quantification of Algal Bloom Dynamics in the Great Barrier Reef Lagoonal Waters Using Remote Sensing and Bio-Optics* for David Blondeau-Patissier, University of Queensland, Australia
- 2005 –2010:** Associate Advisor for the PhD Thesis *Dirty Water: Remote Sensing of Water Quality in Tropical and Sub-tropical Freshwater Impoundments in Tropical Australia* for Glen Campbell, University of Queensland, Australia.
- 2006:** 'Professore incaricato' in 'Aerophogrammetry and Remote Sensing' for the Faculty of Sciences of the University of Venice.
- 2000:** 'Cultore della materia' in 'Aerophogrammetry and Remote Sensing' for the Faculty of Sciences of the University of Venice and member of the exams commissions.
- 1998 –2000:** 'Cultore della materia' in Mathematics for the Faculty of Sciences of the University of Venice and member of the exams commissions of Mathematics
- INVITED TALKS, SESSION ORGANIZER/CHAIR, CONFERENCE STEERING COMMITTEES**
- 2021-2022:** Member of the Scientific Committee of ESA's Living Planet Symposium 2022, 23-27 May 2022, Bonn, Germany.
- 2019-2022:** Co-Chair of "Oceans from Space" 5th edition, Venice, Italy, 28 March – 1 April 2022.
- 2019:** Co-Chair of "Foresight Workshop: Data needs for Hyperspectral Algal Bloom Discrimination", 4-6 June 2019, Ostende, Belgium.
- 2019:** Member of the Scientific Planning Committee of 2019 International Ocean Colour Science Meeting, 9-12 April 2019, Busan, South Korea.
- 2017:** Member of the Scientific Steering Committee of the HIGHROC Science Conference, 7-9 November 2017, Brussels, Belgium.
- 2017:** Member of the Scientific Committee and of the Organising Committee at 8th EARSeL Workshop on Remote Sensing of the Coastal Zone, 31 August – 02 September 2017, Kaliningrad, Russia.
- 2015:** Organizer and co-chair (together Dr Blake Schaeffer) of the break-out session "Tools to harness the potential of earth observations for water quality reporting and management" at International Ocean Colour Symposium, 15-19 June 2015, San Francisco, USA.
- 2015:** Steering Committee member and Plenary talk at the GEO Water Quality Summit "Using Earth observation for environmental reporting in coastal ecosystems", 20-22 April 2015, Geneva, Switzerland.
- 2014:** Plenary Talk at the *AMSA 2014 Conference* in Canberra, Australia: "Harnessing the potential of earth observation for environmental reporting in marine ecosystems"

**SCIENCE TEAMS,
PANELS,
COMMITTEES AND
WORKING GROUPS**

- 2012:** Organizer and co-chair (together with Gang Liu, Chris Roelfsema, Stuart Phinn, Stacy Jupiter, Alastair Harborne, James Goodman, William Skirving, Scarla Weeks) of the mini-symposium "Remote sensing of reef environments" at the 12th International Coral reef Symposium, 9-13 July 2012, Cairns, Australia.
- 2011:** Member of the Technical Program Committee at the 34th *International Symposium on Remote Sensing of Environment*, 10-15 April 2011, Sydney, Australia. Co-chair for sessions of the "Coastal and Marine Resources" and "Water A Limited and Degraded Resource" themes.
- 2010:** Invited Talk at the session on "Development, Validation, and Uncertainty Analysis of Optical Remote Sensing Algorithms for the Coastal Ocean" of the AGU/ASLO 2010 Ocean Sciences Meeting in Portland, USA (21-26 February 2010): "Optical complexity of the coastal waters of the Great Barrier Reef: Strategies to incorporate regional and seasonal knowledge of optical properties"
- 2008:** Organizer and Co-Chair (together with Frank Aikman, John Pereira, Cara Wilson, Robert Arnone, Guoqi Han, and Woody Turner) of the Special Session on "Operational Oceanography: Assimilation, Modeling, and Applications in Coastal/Estuarine Ecosystems and Living Marine Resources" at AGU/ASLO 2008 Ocean Sciences Meeting in Orlando, USA
- 2007:** Invited by the Embassy of Italy in Canberra to contribute to the activities of "Settimana Italiana della Cultura" (Italian Culture week). I presented "*Without the Bridge the world would be an island: Venetians and the lagoon*" on 18 October at the Institute of Italian Culture in Melbourne, on 21 October at CSIRO in Canberra, and on 26 October the Institute of Italian Culture in Sydney.
- 2007:** Keynote Speech at the *EARSEL Conference* in Bolzano, Italy: "Towards assimilation of ocean colour satellite observation into coastal ocean biogeochemical models: the tropical Fitzroy River Estuary case study".
- 2006:** Organizer and Chair (together with Janet Anstee) of the special Session on Aquatic remote sensing at the 13th *Australasian Remote Sensing and Photogrammetry Conference*, November 20 - 24 2006, Canberra, Australia
- 2002:** Invited by the Italian Embassy to organize and chair a workshop on Remote Sensing of Coastal Waters for the "IATICE02 Italo-Australian Technology Innovation Conference and Exhibition" held in Melbourne March 25-28 2002.
- 2002:** Convener for CSIRO and Coastal CRC of a workshop on Coastal Monitoring and Assessment for the "IATICE02 Italo-Australian Technology Innovation Conference and Exhibition" held in Melbourne March 25-28 2002.
- 1999-2000:** Member of the Steering Committee of the First AISA (Italian Association for Environmental sciences) *International Congress "Towards an environmental citizenship: perception, communication and education"* Venice, March 23-24, 2000.
- 2021-:** Member of the Application Working Group (AWG) of the EnMAP Science Advisory Group (EnSAG) for DLR.
- 2021-:** Member of the ESA Copernicus Sentinel-3 Next Generation Optical Ad Hoc Expert Group.
- 2019-:** Committee Member of the International Ocean-Colour Coordinating Group (IOCCG) (the Committee is equivalent to a UNESCO IOC/SCOR working group).
- 2018-:** Member of the ESA/EUMETSAT Copernicus Sentinel-3 OLCI/SYN Quality Working Group.
- 2017:** Member of the Science Team for the ESA project "Hyperspectral Imaging Mission Concepts" (ESA-ESRIN ITT AO/1-8579/16/I-SBo)
- 2016-:** Invited to the joint Future Earth Coasts and IMBER workshop "Exploitation of EO data to improve the understanding and monitoring of coastal areas", Cork, 1-3 November 2016.
- 2016-:** Invited to the Future Earth SOLAS workshop "Harnessing Remote Sensing to Address Critical Science Questions in the Ocean- Atmosphere Interface", 13-15 June, Frascati (Rome) Italy
- 2016-2018:** Member of the CEOS C10 Feasibility Study Aquatic for Ecosystem Imaging Spectrometer working group
- 2016-2018:** Member of the Science Team for the ESA project "Sen2Coral" (SEOM S2-4Sci Land and Water - Study 6: Coral reefs)

- 2014-:** Member of NASA's HyspIRI Aquatic Studies Group.
- 2014:** Co-Chair of the Working group for the "Intercomparison of Retrieval Algorithms for Coastal Waters" of the International Ocean-Colour Coordinating Group (IOCCG).
- 2012:** Member of the scientific panel tasked to update the ReefPlan Scientific Consensus Statement (invited by the Queensland Department of Premier and Cabinet).
- 2012-2014:** Member of the Working group for the "Intercomparison of Retrieval Algorithms for Coastal Waters" of the International Ocean-Colour Coordinating Group (IOCCG).
- 2010-2013:** Member of the Scientific Steering Committee for the IMOS National Reference Station Network
- 2010-2013:** Member of the IMOS Bio-optics Working Group
- 2008:** Invited to the Global Bio-optical Algorithms for Ocean Color Satellite Applications - Inherent Optical Properties Algorithm Workshop organized by the NASA Ocean Biology Processing Group at Ocean Optics XIX; Barga, Italy, 3-4 October 2008.
- 2008:** Invited as an expert to contribute to the Great Barrier Reef Water Quality Prospectus, a workshop to identify key knowledge gaps and water quality research needs in the Great Barrier Reef for future investment.
- 2007-2012:** Founding member of the international working group for the "intercomparison of shallow water bathymetry, hydro-optics, and benthos mapping techniques", funded by US/ONR and ARC.
- 2007:** Invited as an expert to contribute to design the new strategy for the Marine Monitoring Program - Reef Water Quality Protection Plan for the Great Barrier Reef World Heritage Area.
- 2006:** Invited by Geoscience Australia to attend the workshop "Forging a National Remote Sensing Strategy".
- PROJECT REVIEW AND EVALUATOR ROLES**
- 2021:** International Evaluator and member of the International Expert Panel (IEP) for the MarTERA Joint Call 2021 in marine and maritime technologies proposals - Priority Area: Automation, sensors, monitoring and observations.
- 2021:** International review panel member for Science Foundation Ireland (SFI.ie) for the scientific progress review of the Investigator Programme Award.
- 2019:** International expert referee for the Research Council of Norway for the 2019 Centres for Research-based Innovation (SFI) scheme.
- 2018:** Project proposal reviewer for the Irish Environmental Protection Agency (EPA.ie) 2018 Water Research Call - Theme 5: Emerging and Cross-cutting Issues.
- 2017:** Project proposal reviewer for the Estonian Research Council (ETAg) for personal research funding applications.
- 2017:** International Evaluator for the MarTERA Joint Call 2016-17 in marine and maritime technologies proposals - Priority Area: Sensors, automation, monitoring and observations.
- 2017:** Project proposal reviewer for the Irish Environmental Protection Agency (EPA.ie) 2017 Water Research Call - Topic Project 5: Remote sensing of surface water in Ireland.
- 2017:** Project proposal reviewer for A*MIDEX project, Aix-Marseille University Excellence Initiative.
- 2017:** Outer International Assessment Board member for the Irish Research Council for the Marie Skłodowska-Curie Actions COFUND Postdoctoral Fellowship Programme CAROLINE – 'Collaborative Research Fellowships for a Responsive and Innovative Europe'.
- 2016:** Project proposal reviewer for the Natural Sciences and Engineering Research Council of Canada "Discovery Grant" funding program.
- 2015:** Project proposal evaluator for the Scientific Commission of Lower Saxony "Coastal and Marine Research in Lower Saxony" funding program.
- 2015:** PhD/MSc project proposal evaluator for the Cullen Fellowship Awards funded by Ireland's Marine Institute
- 2014:** Project proposal evaluator for the European Union Horizon2020 funding program (H2020-EO-2014)
- 2013:** Reviewer for National Sea Grant College Program Proposal for University of Puerto Rico

- 2013:** Reviewer for User Support Programme Space Research grant application for Netherlands Space Office (NSO).
- 2012:** Reviewer for Postdoctoral fellowship proposal for UK's Natural Environmental Research Council NERC.
- 2007:** 'Expert of international standing' for the Australian Research Council (ARC) College of Experts.
- ADVISORY BOARDS ROLES**
- 2019-2022:** Member of the Scientific Advisory Board of the PrimeWater project funded by the European Union H2020.
- 2019-2020:** Scientific committee member for the ESA project "EO4SIBS".
- 2018-2019:** Review Expert Team member for the EUMETSAT/E.C. Copernicus project "OLCI Fluorescence".
- 2018:** Review Expert Team member for the EUMETSAT/E.C. Copernicus project "OLCI Inherent Optical Properties".
- 2017-2018:** Member of the Scientific Advisory Board of the SPACE-O project funded by the European Union H2020.
- 2017:** Review Expert Team member for the EUMETSAT/E.C. Copernicus project "Requirements for Copernicus Ocean Colour Vicarious Calibration Infrastructure (OC-VCAL)".
- 2014-2017:** Member of the Scientific Advisory Board of the INFORM project funded by the European Union FP7.
- PEER REVIEW AND EDITORIAL ROLES**
- 2020 – :** Guest Editor of special issue of *Remote Sensing* on "Remote Sensing of Aquatic Ecosystem Health and Processes" (with Evangelos Spyarakos , Claudia Giardino and Shenglei Wang)
- 2019 – :** Associate editor of *Remote Sensing*
- 2015-2016:** Guest Editor of a special issue of *Ocean Sciences* on Oceanographic Processes on the Shelf: Observations and Modeling (with Sandro Carniel, Lakshmi Kantha and Judith Wolf)
- 2008 – 2013:** Associate editor of the *Journal of Applied Remote Sensing*
- 2007:** Guest Editor of a special section of the *Journal of Applied Remote Sensing* on Aquatic Remote Sensing Applications in Environmental Monitoring and Management (with Stuart Phinn).
- 2001-to date:** Reviewer for Remote Sensing of Environment, IEEE Transactions on Geoscience and Remote Sensing, Applied Optics, Optics Express, IEEE Geoscience and Remote Sensing Letters, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Journal of Applied Remote Sensing, International Journal of Remote Sensing, Photogrammetric Engineering and Remote Sensing, Limnology and Oceanography, Estuarine Coastal and Shelf Sciences, Continental Shelf Research, Ocean Sciences, Marine and Freshwater Research, Coral Reef, Ecological Modelling, Water Resources and Management, Chinese Journal of Oceanography and Limnology, Oceanological and Hydrobiological Studies, Italian Journal of Remote Sensing.
- AWARDS**
- 2012:** "CSIRO Land and Water Publication Award for 2012" for the paper Schroeder, T., M.J. Devlin, V.E. Brando, A.G. Dekker, J.E. Brodie, L.A. Clementson, and L. McKinna, Inter-annual variability of wet season freshwater plume extent into the Great Barrier Reef lagoon based on satellite coastal ocean colour observations. *Marine Pollution Bulletin*, 2012. 65(4-9): p. 210-223.
- 2009:** "CSIRO Land and Water Publication Award for 2009" for the paper Brando, V.E., J.M. Anstee, M. Wettle, A.G. Dekker, S.R. Phinn, and C. Roelfsema, A physics based retrieval and quality assessment of bathymetry from suboptimal hyperspectral data. *Remote Sensing of Environment*, 2009. 113(4): p. 755-770.
- 2005:** "Excellence in Science Award" at the Coastal CRC Annual General Meeting for the Environmental Remote Sensing Group
- 2005:** "Teamwork Award" at the Coastal CRC Annual General Meeting for the Fitzroy Contaminants Project
- 2002:** "Excellence in Science Award" at the Coastal CRC Annual General Meeting for the Environmental Remote Sensing Group
- 2002:** "Coastal CRC Shield" at the Coastal CRC Annual General Meeting for the Environmental Remote Sensing Group

2002: “Junior Environmental Prize 2002” (Premio Sapio per la Ricerca Italiana 2002) for the PhD Thesis work in Orbetello Lagoon.

- PUBLICATIONS LIST** Author of 76 journal papers, 12 book chapters, 49 conference papers and 33 technical reports.
- JOURNAL PAPERS**
- ALL PDFS AT :**
[HTTP://TINYURL.COM/VB-CV-PAPERS](http://tinyurl.com/vb-cv-papers)
- Brando, V. E.; Sammartino, M.; Colella, S.; Bracaglia, M.; Di Cicco, A.; D’Alimonte, D.; Kajiyama, T.; Kaitala, S.; Attila, J. Phytoplankton Bloom Dynamics in the Baltic Sea Using a Consistently Reprocessed Time Series of Multi-Sensor Reflectance and Novel Chlorophyll-a Retrievals. *Remote Sensing* 2021, 13 (16), 3071. <https://doi.org/10.3390/rs13163071>.
- Concha, J. A.; Bracaglia, M.; Brando, V. E. Assessing the Influence of Different Validation Protocols on Ocean Colour Match-up Analyses. *Remote Sensing of Environment* 2021, 259, 112415. <https://doi.org/10.1016/j.rse.2021.112415>.
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- von Schuckmann, K., Le Traon, P. Y., Smith, N., Pascual, A., Brasseur, P., Fennel, K., ... & Axell, L. (2018). Copernicus Marine Service Ocean State Report. *Journal of Operational Oceanography*, 11(sup1), S1-S142
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