



Programma triennale della Ricerca del DICAr – 2016/2018

(Data di approvazione da parte del CdD: 06/07/2017)

(Data di approvazione delle integrazioni: adunanza del 25/07/2017)

1. Cenni sul DICAr

Il Dipartimento Ingegneria Civile e Architettura (di seguito DICAr) si è costituito nel 2013 in esito all'afferenza di tutti i docenti del dipartimento di Ingegneria Civile e Ambientale (DICA), struttura multidisciplinare avente lo scopo di promuovere e coordinare l'attività di ricerca scientifica e di didattica nel campo delle discipline dell'Ingegneria Civile e dell'Ingegneria Ambientale, al Dipartimento di Architettura (DArc), i settori della progettazione edilizia e urbanistico-territoriale e del recupero dell'architettura esistente oltre alle discipline di base per la formazione dell'ingegnere edile e dell'architetto.

La nascita del DICAr ha dato così vita ad una realtà dipartimentale che comprendeva tutti i settori scientifico disciplinari dell'Università di Catania ricompresi nell'area CUN 08.

Successivamente, e precisamente in esito alla delibera del CdA del 04/04/2016 con la quale è stato disattivato il Dipartimento di Ingegneria Industriale (DII), un consistente gruppo di docenti, composto da 19 unità, è confluito nello stesso DICAr che, pertanto, rappresenta oggi una realtà articolata che comprende le seguenti aree CUN:

- 08 “Ingegneria civile ed architettura”
- 09 “Ingegneria industriale e dell'informazione”.

Il Dicar è oggi composto complessivamente da:

- n. 101 Docenti;
- n.8 Assegnisti tipo “A”;
- n.12 assegnisti tipo”B”;
- n.27 unità di personale Tecnico-amministrativo (sia T.I. che T.D.).

La sede del DICAr è presso la Città Universitaria di Catania, in via S. Sofia, 64 a Catania.

All'interno del DICAr, inoltre, è presente un gruppo di 30 docenti che presta la propria attività di didattica e di ricerca a Siracusa, presso la sede della Struttura Didattica Speciale (SDS) in Piazza Federico di Svevia. La SDS è presieduta dal prof. B. Messina.

Dal punto di vista gestionale, il DICAR, oltre alla direzione (Direttore è il prof. E. Foti e vice-Direttore è il prof. V. Sapienza), al segretario del CdD (prof. S. Leonardi), al Responsabile Ufficio Amministrativo e del Personale (Sig.ra S. Mazzeo) è organizzato in maniera tale da poter contare su alcuni delegati e su diverse strutture organizzative interne. E precisamente:

- Delega alla internazionalizzazione della didattica: prof. S. Cafiso;
- Responsabile della Qualità: prof. P. La Greca;
- Responsabile del sito (webmaster): prof. S. Leonardi;

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www.darc.unict.it/ – P.Iva e C.F. 02772010878

- Giunta di Dipartimento (rappresentanti dei Professori ordinari: prof. R. Lanzafame e C. Modica; rappresentanti dei Professori associati: prof. S. Cafiso e G. Margani; rappresentanti dei ricercatori: prof. E. Marino e M. Spina);
- Commissione paritetica dipartimentale (Componente docenti: prof. A. Salemi, G. A. Fargione, P. Roccaro, E. Motta, S. Fichera, G. Inturri);
- Commissione dei Presidenti di CdS, istituita al fine di armonizzare le attività didattiche dei diversi CdS in seno al DICAR e, soprattutto, tra i diversi livelli (primo e secondo).

2. La didattica

Al DICAr afferiscono numerosi corsi di studio, e precisamente:

n. 1 Corso di Laurea:

- CdL in Ingegneria Civile e Ambientale (Presidente: prof. A. Greco);

n. 2 corsi di Laurea Magistrale a Ciclo unico:

- CdLM a c.u. in Ingegneria Edile-Architettura (Presidente: prof. G. Sciuto);
- CdLM a c.u. in Architettura (Presidente: prof.ssa F. Castagneto)

n. 6 corsi di Laurea Magistrale, di cui uno erogato in lingua inglese:

- CdLM in Ingegneria Civile delle Acque e dei Trasporti (Presidente: prof. S. Leonardi);
- CdLM in Ingegneria Strutturale e Geotecnica (Presidente: prof.ssa L. Contrafatto);
- CdLM in Ingegneria per l'Ambiente e il Territorio (Presidente: prof. G. Mussumeci);
- CdLM in Ingegneria Gestionale (Presidente: prof. A. Fichera);
- CdLM in Ingegneria Meccanica (Presidente: prof. R. Sinatra);
- CdLM in Chemical Engineering for Industrial Sustainability (Presidente: prof. G. Cicala).

Il DICAr, inoltre, incentiva l'integrazione della ricerca con l'attività di Alta Formazione, realizzata attraverso i corsi di dottorato e post-dottorato, gli assegni di ricerca, i master di I e II livello, la collaborazione a progetti strategici di ricerca, la cooperazione internazionale.

Nell'anno accademico in corso, all'interno del DICAr, sono attivi i seguenti Dottorati di ricerca (n. 23 dottorandi di ricerca):

- Ingegneria delle infrastrutture idrauliche, sanitario-ambientali e dei trasporti - XXVIII Ciclo - Coordinatore: prof. A. Cancelliere;
- Valutazione e mitigazione dei rischi urbani e territoriali - XXIX Ciclo, XXX Ciclo e XXXII ciclo - Coordinatore: prof. M. Cuomo.

Docenti del DICAr, infine, afferiscono a diversi dottorati attivati in altri dipartimenti e in altre università.

3. I laboratori

Il DICAr possiede una rete articolata di laboratori che svolgono attività di didattica, di ricerca e anche di servizio al territorio.

Dal punto di vista gestionale, il DICAr ha adottato una organizzazione che prevede per ogni laboratorio un docente, nella qualità di responsabile scientifico. Inoltre, tutto il personale tecnico-amministrativo dei laboratori è coordinato e supervisionato da una unità di personale inquadrato nel ruolo di categoria funzionario EP (ing. A. Lo Faro).

Nella tabella seguente si riportano i laboratori ufficiali del DICAr e, per ciascuno di essi, il nominativo del docente responsabile.

Tabella I. Elenco laboratori ufficiali del DICAR.

DENOMINAZIONE	RESPONSABILE SCIENTIFICO
Laboratorio Ufficiale Prove Materiali	prof. Massimo Cuomo
Laboratorio Prove Stradali	prof. Salvatore Cafiso
Laboratorio di Geotecnica	prof. Ernesto Motta
Laboratorio di Idraulica	prof.ssa Rosaria E. Musumeci
Laboratorio di Geomatica	prof. Giuseppe Musumeci
Laboratorio Grafico e Archivio Aerofotografico	Direttore DICAR
Laboratorio Fotografico	prof. Angelo Salemi
Laboratorio Mediterraneo di "Rilievo e Diagnostica per l'Architettura"	prof. Angelo Salemi
Laboratorio di Tecnologie della Produzione Edilizia	prof. Rosa Caponetto
Laboratorio di Progettazione per il Paesaggio Urbano e la Mobilità	prof. Maurizio Spina, prof. Riccardo Dell'Osso, prof.ssa Grazia Lombardo
Laboratorio per la Progettazione Ecologica e Ambientale del Territorio	prof. Filippo Gravagno
Laboratorio di Prove sui Materiali per l'Edilizia	prof. Corrado Fianchino
Laboratorio di Pianificazione Territoriale e Ambientale	prof. Paolo La Greca
Laboratorio di ricerca sul recupero e la manutenzione edilizia e urbana	prof. Vittorio Fiore
Laboratorio di caratterizzazione polimeri e compositi	prof. Gianluca Cicala
Tecnologie di processo per termoplastici	prof. Gianluca Cicala
RTM	prof. Gianluca Cicala
Laboratorio chimica 3	prof. Antonino Pollicino
Laboratorio ESCA	prof. Antonino Pollicino
Laboratorio analisi termica	prof. Ignazio Blanco

Laboratorio di Meccanica	prof. Guido La Rosa
Enabling Technologies for Architecture LAB	prof. Vincenzo Sapienza
Laboratorio di Ingegneria Sanitaria Ambientale *	prof. Federico Vagliasindi
Laboratorio di Infrastrutture Idrauliche per il Territorio *	prof. Alberto Campisano

* Laboratori con attrezzature provvisoriamente ospitate presso altri Laboratori, in attesa di assegnazione di spazi presso il Polo Tecnologico.

4. La ricerca

Come ricorda la delibera della sua fondazione, il DICAR si interessa allo sviluppo di conoscenze relative ai diversi campi della scienza e della tecnica dell'Ingegneria civile e dell'Architettura nonché, più recentemente, dell'Ingegneria industriale.

In tutti questi ambiti i docenti del DICAR svolgono ricerca sia di base che applicata nonché attività di c.d. "terza missione", prevalentemente prestata come attività convenzionata.

Per quanto riguarda la ricerca di base, l'obiettivo è di rispondere a quesiti di tipo generale sulla realtà che ci circonda e su come macchine, strutture e infrastrutture civili e, più in generale, sistemi complessi, come quelli a scala territoriale, possono essere ottimizzati.

Per quanto concerne la ricerca applicata, l'obiettivo è lo sfruttamento della conoscenza di base al fine di studiare, sviluppare e implementare nuove metodologie e tecnologie per rispondere a problemi concreti ben definiti. A questo proposito, fondamentale è la scelta strategica del DICAR di sviluppare una intensa collaborazione con il territorio di riferimento al fine di risolvere le problematiche tecnologiche che quest'ultimo incontra nella sua quotidianità, e di tradurre le varie conoscenze maturate nello stesso DICAR in occasioni di innovazione e di sviluppo tramite una continua attività di disseminazione-collaborazione con la comunità produttiva, imprenditoriale e professionale rappresentata, tra gli altri, dagli ordini professionali (Ordine degli Ingegneri, Ordine degli Architetti, Collegio dei Geometri), da Enti sia Pubblici (Casa Italia, Dipartimenti regionali, Consorzi d'Ambito Territoriale Ottimale, Comuni, Aziende Ospedaliere, etc.) che privati (Associazione Nazionale Costruttori Edili, imprese di costruzione, imprese operanti nel settore della logistica, imprese manifatturiere, etc.).

Entrando più nel dettaglio, l'attività di ricerca del DICAR riguarda le 10 aree tematiche principali di seguito sinteticamente descritte.

Ingegneria ambientale:

ha come finalità quella di fornire tecniche e strumenti di base utili per affrontare i problemi relativi all'analisi, alla progettazione e alla gestione dei sistemi ambientali e territoriali, con particolare riferimento alla depurazione ed al disinquinamento, alla prevenzione e al controllo di disastri di origine naturale ed antropica e di impatti della tecnologia sulla salute collettiva e sulla qualità della vita in generale, alla razionale utilizzazione delle materie prime e delle risorse ambientali, geologiche ed energetiche;

Ingegneria delle acque:

ha come finalità quella di sviluppare le conoscenze volte alla salvaguardia delle risorse idriche, nonché all'analisi, alla progettazione e alla gestione di opere e di infrastrutture relative alla raccolta, all'utilizzazione e alla distribuzione delle acque per usi civili, irrigui ed industriali, alla difesa idraulica, alla protezione idraulica del territorio, alle sistemazioni fluviali, alla potabilizzazione, trattamento, smaltimento e depurazione delle acque, alla difesa delle coste dall'erosione e alle infrastrutture portuali;

Architettura:

ha come finalità lo sviluppo di conoscenze relative alla identificazione, formulazione e risoluzione, anche attraverso approcci innovativi, di temi progettuali propri dell'architettura, della pianificazione urbanistica, del restauro e del design, che possano richiedere anche un approccio interdisciplinare e multi scalare;

Ingegneria chimica:

ha come finalità quella di sviluppare e caratterizzare nuovi materiali e processi industriali con proprietà mirate, nel rispetto della sostenibilità; nonché quella di approfondire la correlazione tra struttura, processo e proprietà finali;

Ingegneria edile-architettura:

ha come finalità quella di migliorare la qualità edilizia, urbanistica attraverso la rigenerazione dell'esistente, la mitigazione e adeguamento dei rischi territoriali, ricercando appropriate soluzioni progettuali, al passo con le dinamiche innovative di settore;

Ingegneria geotecnica:

ha come finalità quella di sviluppare le conoscenze relative alla meccanica delle terre, all'ingegneria sismica, inclusa l'interazione suolo-struttura, alla stabilità dei pendii e alle opere di sostegno, anche ai fini della mitigazione del rischio ambientale;

Ingegneria gestionale:

ha la finalità di sviluppare e approfondire le conoscenze relative alle tecniche e agli strumenti per lo svolgimento di compiti di progettazione, di gestione e di controllo dei sistemi produttivi e dei processi;

Ingegneria meccanica:

ha la finalità di approfondire le conoscenze teoriche e pratiche ai fini di una appropriata progettazione degli impianti meccanici, dei sistemi di produzione industriale e di controllo della medesima produzione;

Ingegneria delle strutture:

ha come finalità quella di sviluppare gli studi relativi alla verifica, alla progettazione, alla manutenzione e alla gestione di strutture civili e industriali, con particolare riguardo alle problematiche connesse alla realizzazione di strutture in zona sismica;

Ingegneria dei trasporti:

ha come finalità quella di sviluppare le conoscenze volte alla pianificazione, progettazione, costruzione e gestione dei sistemi

delle infrastrutture viarie e dei trasporti (strade ed autostrade, ferrovie e metropolitane, aeroporti, autoporti e centri intermodali, etc.) anche attraverso l'applicazione di idonei criteri di sicurezza sia in fase di progetto che di esercizio.

L'attività relativa alle suddette aree di ricerca è sviluppata all'interno del DICAR attraverso gli approcci metodologici dei docenti dello stesso DICAR afferenti a gruppi di ricerca usualmente caratterizzati da un settore scientifico-disciplinare (SSD) di riferimento. Detti SSD, come anzi detto, afferiscono alle aree CUN 08 e 09. In definitiva, pertanto, i gruppi di ricerca afferiscono ai seguenti SSD:

Area 08 - Ingegneria civile ed architettura

ICAR/01 IDRAULICA
ICAR/02 COSTRUZIONI IDRAULICHE E MARITTIME E IDROLOGIA
ICAR/03 INGEGNERIA SANITARIA - AMBIENTALE
ICAR/04 STRADE, FERROVIE E AEROPORTI
ICAR/05 TRASPORTI
ICAR/06 TOPOGRAFIA E CARTOGRAFIA
ICAR/07 GEOTECNICA
ICAR/08 SCIENZA DELLE COSTRUZIONI
ICAR/09 TECNICA DELLE COSTRUZIONI
ICAR/10 ARCHITETTURA TECNICA
ICAR/11 PRODUZIONE EDILIZIA
ICAR/12 TECNOLOGIA DELL'ARCHITETTURA
ICAR/14 COMPOSIZIONE ARCHITETTONICA E URBANA
ICAR/17 DISEGNO
ICAR/18 STORIA DELL'ARCHITETTURA
ICAR/19 RESTAURO
ICAR/20 TECNICA E PIANIFICAZIONE URBANISTICA
ICAR/21 URBANISTICA
ICAR/22 ESTIMO

Area 09 - Ingegneria industriale e dell'informazione

ING-IND/08 MACCHINE A FLUIDO
ING-IND/09 SISTEMI PER L'ENERGIA E L'AMBIENTE
ING-IND/12 MISURE MECCANICHE E TERMICHE
ING-IND/13 MECCANICA APPLICATA ALLE MACCHINE
ING-IND/14 PROGETTAZIONE MECCANICA E COSTRUZIONE DI MACCHINE
ING-IND/16 TECNOLOGIE E SISTEMI DI LAVORAZIONE
ING-IND/21 METALLURGIA
ING-IND/22 SCIENZA E TECNOLOGIA DEI MATERIALI
ING-IND/27 CHIMICA INDUSTRIALE E TECNOLOGICA
ING-IND/35 INGEGNERIA ECONOMICO-GESTIONALE

Al DICAR afferisce anche un docente del SSD M-GGR02- Geografia Economico-Politica.

5. Valutazione della Qualità della Ricerca (VQR) - triennio 2011-2014

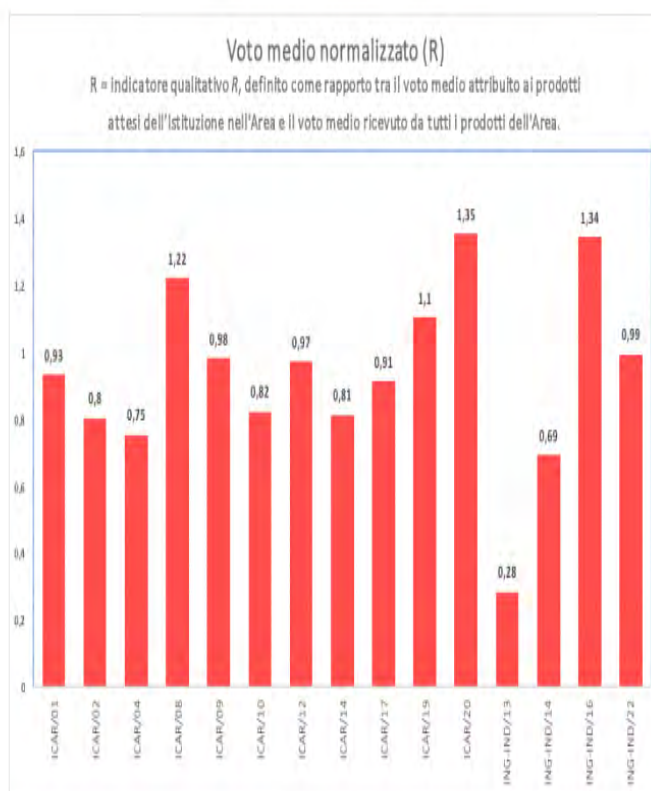
Ai fini della VQR, il DICAr può essere suddiviso in tre componenti. Infatti, come anzi detto, al suo interno sono presenti tre aree CUN:

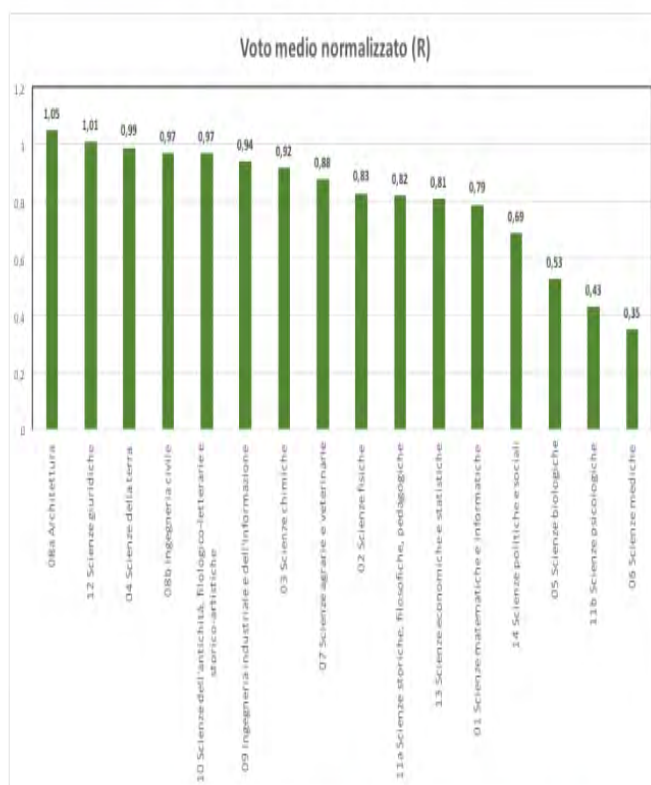
area 08-A	Ingegneria civile ed architettura	non bibliometrica
area 08-B		bibliometrica
area 09	Ingegneria industriale e dell'informazione	bibliometrica

In esito alla valutazione, le varie aree si sono classificate come segue:

Aree CUN		R	Posizione ¹	IRD1
Area 8a	DICAr - Catania	0.96	24 su 51	2.12
	SSD Siracusa	1.5	1 su 51	0.26
Area 08b	DICAr - Catania	1	28 su 56	2.01
Area 09	DICAr - Catania (ex DII)	0.89	36 su 47	0.54

¹ La posizione è stata ricavata dalla classe dimensionale omogenea





Area	Ateneo	Dipartimento	somma punteggi (v)	# prodotti attesi (n)	voto medio (I=v/n)	R
1	Catania	Ingegneria Industriale (Dii)	2,8	6	0,47	0,77
3	Catania	Ingegneria Industriale (Dii)	3,9	8	0,49	0,65
9	Catania	Ingegneria Industriale (Dii)	33,3	58	0,57	0,89
8a	Catania	Struttura didattica speciale di Architettura	4,2	6	0,70	1,50
8a	Catania	Ingegneria civile e architettura (DICAR)	34,8	78	0,45	0,96
8b	Catania	Ingegneria civile e architettura (DICAR)	36	57	0,63	1,00

Di seguito sono riportati i voti medi normalizzati riportati dai singoli SSD. Segue una analisi della valutazione dei prodotti, limitata ai SSD visibili, ossia limitata ai SSD per i quali sono stati conferiti più di dieci prodotti. Dall'analisi dei dati sopra riportati, emergono criticità a punti di forza del sistema.

Punti di forza:	<ul style="list-style-type: none"> Diversi SSD hanno valutazioni maggiori rispetto alla media nazionale La percentuale di lavori di qualità limitata è molto contenuta (2%)
Punti di debolezza:	<ul style="list-style-type: none"> La percentuale di prodotti mancanti o non valutabile è ancora elevata (24%); L'analisi è limitata, in termini di visibilità, a 17 SSD



6. Attività di terza missione

Il Dicar sviluppa una intensa attività di terza missione svolta soprattutto come attività convenzionata.

Di seguito si riportano le attività più recenti svolte dai diversi gruppi riportati in funzione del proprio SSD di appartenenza.

Area 08 - Ingegneria civile ed architettura

ICAR/01 IDRAULICA

*Piano regionale delle coste Predisposto per la tutela e la difesa dei litorali;
Valutazione del rischio idraulico e individuazione delle relative misure di mitigazione;
studi idraulico-marittimi a supporto della progettazione di opere marittimo-costiere;
studi sulla idro-morfodinamica costiera; impatti di opere costiere sui litorali;
modellazione fisica a supporto della progettazione di opere idrauliche e marittime;
indagini di campo con natante strumentato;
attività nell'ambito del presidio partecipativo del Patto di Fiume Simeto (dal 2015);*

ICAR/02 COSTRUZIONI IDRAULICHE E MARITTIME E IDROLOGIA

*Sviluppo di sistemi per il monitoraggio e la modellazione di eventi idrogeologici estremi,
valutazione del rischio di alluvione e identificazione di misure di mitigazione, sviluppo di
sistemi di monitoraggio idromorfologico dei corsi d'acqua, verifiche idrologico-idrauliche
di corsi d'acqua e di manufatti, analisi del rischio idraulico connesso alle dighe, metodi di
modellazione e ottimizzazione dei sistemi di distribuzione idrica e controllo delle perdite
idriche, recupero e utilizzo delle acque meteoriche, modellistica per la valutazione e la
mitigazione del rischio residuale di allagamento in ambito urbano, razionalizzazione dei
sistemi di raccolta e smaltimento di acque meteoriche e acque usate, metodologie per la
gestione sostenibile dei deflussi urbani.*

ICAR/03 INGEGNERIA SANITARIA - AMBIENTALE

*Rilievo e verifica delle caratteristiche delle acque reflue ospedaliere
Monitoraggio meteorologico ed ambientale*

ICAR/04 STRADE, FERROVIE E AEROPORTI

*Convenzioni con Enti locali per la valutazione delle caratteristiche delle pavimentazioni
stradali
Wiki Roads Maps: Sturt Up MIUR
Safety performance of 2+1 roads in Poland – Cracow University of Technology
Bike safety – Fulbright N. Stamatiadis - University of Kentucky
Sustainable Pavement Maintenance – Tirocinio PhD Brunella Capace presso Dynatest
(Danimarca)
Mobilità STA docenti presso Szechenyistvan University, Győr (HU)*

ICAR/05 TRASPORTI

*redazione del Piano Generale del Traffico Urbano (PGTU)
redazione della scheda grandi progetti e analisi costi-benefici di una tratta di linea
metropolitana di Catania
sistema di pianificazione dell'accessibilità e della sosta di una Azienda Ospedaliera*

ICAR/06 TOPOGRAFIA E CARTOGRAFIA

*Monitoraggio di frane
Realizzazione di piattaforme GIS
Sistemi di rilievo e monitoraggio dei centri storici*

ICAR/07 GEOTECNICA

Studio del processo di consolidazione dei materiali utilizzati per vasche di colmata

Comportamento statico e sismico di opere in terra rinforzata con pannello di facciata rigido
Studio di approfondimento del progetto e della esecuzione di opere relative a tratte di metropolitana

ICAR/08 SCIENZA DELLE COSTRUZIONI

Partecipazione al progetto "Valutazione delle Alternative "End-of-Waste", nei settori dell'Ingegneria Civile e Ambientale, delle Ceneri Vulcaniche dell'Etna - VALICA-ETNA". Prosecuzione attività di ricerca avviata e conclusa nell'ambito del Progetto POR 2007-2013 ATTIVITÀ DI SVILUPPO SPERIMENTALE FINALIZZATA ALLA RIDUZIONE DEL RISCHIO SISMICO NELLA SICILIA ORIENTALE, Gruppo di Lavoro su "Miscelazione e riuso del materiale proveniente dalle demolizioni".

Progetto FIR dal titolo ' LA VULNERABILITA' SISMICA DEGLI EDIFICI STORICI IN AGGREGATO: NUOVE METODOLOGIE NEGLI APPROCCI SPEDITIVI E DI MODELLAZIONE STRUTTURALE'

Progetto RELUIS: Linea isolamento sismico, Linea calcestruzzo armato, Linea Murature

1. Convenzione conto terzi per l'ingegnerizzazione del brevetto di un isolatore sismico sferico dinamico a scorrimento di proprietà della società INNTECH s.r.l

2. Contributo liberale alla ricerca ANCE CATANIA dal titolo: ADEGUAMENTO SISMICO DEGLI EDIFICI ESISTENTI IN CALCESTRUZZO ARMATO"

3. Convenzione interna all'università per la consulenza al progetto di isolamento sismico dell'edificio denominato Palazzo Boscarino di proprietà dell'Università

ICAR/09 TECNICA DELLE COSTRUZIONI

Valutazione delle condizioni statiche e del rischio sismico di edifici

Attività di consulenza alla progettazione ed esecuzione delle opere relative ad alcune tratte della Ferrovia Circumetnea

ICAR/10 ARCHITETTURA TECNICA

Valutazione del comportamento di un sistema di consolidamento murario in FRP in tipi murari etnei

Analisi delle prestazioni di pitture termoceramiche in area mediterranea

Studio finalizzato alla progettazione di edifici passivi in laterizio in clima Mediterraneo

ICAR/11 PRODUZIONE EDILIZIA

Prodotti per il restauro, il recupero e la manutenzione edile (azienda nazionale)

Guglielmino Group.

Azienda per la produzione di intonaci naturali, cocchiopesto per pavimentazioni, blocchi laterizi, mattoni pressati, etc.(azienda nazionale)

Sicilcanne. Lavorazioni di canne per l'edilizia (azienda locale)

ICAR/17 DISEGNO

Accordo di Scuole a Rete Diculther DIGITAL CULTURAL HERITAGE, ARTS AND HUMANITIES SCHOOL

Accordo di collaborazione internazionale con il centro CVAST dell'Università della South Florida allo scopo di facilitare la cooperazione accademica e di ricerca tra le parti contraenti

Processi di ricerca e formazione congiunti rivolti a: - recupero urbano e restauro e valorizzazione dei centri storici; - indagini su siti archeologici ed emergenze significative come prioritarie nella lettura del territorio; - sperimentazioni nel campo della comunicazione di massa, con la progettazione, pianificazione e produzione di prodotti che caratterizzano il settore grafico, editoriale e della stampa

Rilievi edifici storici e/o monumentali

Rilievi beni paesaggistici

ICAR/20 TECNICA E PIANIFICAZIONE URBANISTICA e ICAR/21 URBANISTICA

Pianificazione urbanistica comunale

Pianificazione territoriale paesaggistica

Pianificazione di area vasta (regionale, provinciale e metropolitana)

Ricerca-Azione Partecipata per il governo del Territorio

Area 09 - Ingegneria industriale e dell'informazione

ING-IND/08 MACCHINE A FLUIDO e ING-IND/09 SISTEMI PER L'ENERGIA E L'AMBIENTE

Sistemi innovativi per la produzione di biocombustibili

Consulenza per il Provveditorato Generale delle OO. PP. Nel settore "Energia e Impianti"

Materiali innovativi per turbine eoliche

Fondazione Carlo Alberto Tregua (Sistemi Innovativi per la Produzione di Biocombustibili)

Consulenza scientifica nel settore "Energia e Impianti" per il Provveditorato Generale delle OO.PP. della Sicilia e della Calabria del Ministero delle Infrastrutture e Trasporti.

Assessorato Industria – Regione Siciliana (Patto dei Sindaci)

Provincia Regionale di Catania (Efficientamento Energetico del Sistema Edificio-Impianti)

Istituto Polimeri – CNR Catania (Materiali innovativi per turbine eoliche)

Istituto Motori – CNR Napoli (Motori a Combustione Interna);

ENEL – Centrale Termoelettrica a Ciclo Combinato Gas-Vapore -Archimede ; Priolo Gargallo;

Centrale di Produzione dell'Energia mediante Sistema Termodinamico a Sali Fusi;

Priolo Gargallo; ESSO – Raffineria di Augusta (Fluidodinamica linee trasferimento greggio);

E.S.P.I. Impianto di Termovalorizzazione e trattamento Rifiuti Speciali (Ottimizzazione processi di combustione rifiuti).

ING-IND/13 MECCANICA APPLICATA ALLE MACCHINE

analisi multibody per grandi riflettori dispiegabili in orbita;

sistemi robotici per il monitoraggio del mare

robotica parallela e applicazioni industriali

Euromecc - studio di un rotismo epicicloidale per una macchina impastatrice.

All'interno di progetti europei transfrontalieri banditi dalla Regione Sicilia si sono sviluppate collaborazioni con enti quali ISPRA, ARPA Sicilia, AMP Plemmirio, AMP Pelagie.

Thales Alenia Space - forze density modificato per un grande riflettore dispiegabile a geometria asimmetrica.

ING-IND/14 PROGETTAZIONE MECCANICA E COSTRUZIONE DI MACCHINE

Trasferimento tecnologico sulle proprietà meccaniche di manufatti in vetroresina;

Collaborazione su integrità strutturale e frattura termomeccanica su componenti elettronici

Collaborazione e trasferimento tecnologico su problemi strutturali in ambito petrolchimico e manutenzione di impianti industriali

Trasferimento tecnologico con aziende produttrici di strumenti per odontoiatria

Trasferimento tecnologico con aziende produttrici di strumenti per ortopedia

Trasferimento tecnologico con case automobilistiche nazionali

Collaborazione con il Prof. P. Verleysen, University of Ghent (Belgio): mobilità studenti(soggiorno trimestrale del dottorando R. Barbagallo), ricerca congiunta su metodi di caratterizzazione elastoplastica avanzata; Cotutoraggio di articoli già presentati ed in corso di presentazione.

Collaborazione il con Prof. E. Cadoni, SUPSI – Lugano (Svizzera): mobilità studenti(soggiorno trimestrale tesista M Lafico), ricerca congiunta su dinamica ed alte velocità di deformazione nei metalli; Cotutoraggio di articoli già presentati ed in corso di presentazione.

Berkeley National Laboratory Molecular Foundry.

Collaborazioni con il Prof. David Taylor, Trinity College di Dublino (Irlanda): mobilità Erasmus per tirocinio su biomimetica.

ING-IND/16 TECNOLOGIE E SISTEMI DI LAVORAZIONE

Ottimizzazione servizi sanitari

Ottimizzazione dei processi di produzione

ING-IND/21 METALLURGIA

ING-IND/22 SCIENZA E TECNOLOGIA DEI MATERIALI

Realizzazione prototipi mediante tecniche di manifattura additiva FDM e InkJet

Realizzazione pezzi in compositi

Campionature di compound polimerici mediante estrusione e stampaggio per iniezione

Caratterizzazione termomeccanica di materiali polimerici

Caratterizzazione microscopica combinata con analisi chimica EDX e WDX

Caratterizzazione delle superfici con XPS

Collaborazione con l'azienda Connora Technology (USA) nell'ambito dello sviluppo della tecnologia delle resine epossidiche riciclabili. La collaborazione ha dato luogo alla pubblicazione di articoli congiunti.

Collaborazione con il Prof.Ciobanu (Technical University of Iasi, Romania). Si è attivato un programma Erasmus

Collaborazione con il Prof.Ziegmann (Technical University of Clausthal, DE). La collaborazione ha dato luogo a diverse pubblicazioni

ING-IND/27 CHIMICA INDUSTRIALE E TECNOLOGICA

Caratterizzazione termica di materiali (Analisi TGA, DSC)

Caratterizzazione spettroscopica di materiali (FT-IR)

Prove di calcinazione in muffola su materiali edili

Collaborazione con l'Università di Craiova (Romania) avente come tematica "Caratterizzazione e Capacità Termica di serie omologhe di composti organici". Tale collaborazione ha portato alla pubblicazione di alcuni articoli su riviste ISI.

Collaborazione con il gruppo di Ricerca della Clausthal University of Technology (Germany)→ avente come tematica "Preparazione e Caratterizzazione Termo-Meccanica di Blende Polimeriche e Materiali Lignocellulosici". Tale collaborazione ha portato alla pubblicazione di alcuni articoli su riviste ISI.

Collaborazione con la Technical University di Amburgo, DE, sulla tematica delle miscele→ polimeriche modificate con additivi naturali (i.e. Lignina e cellulosa). Tale collaborazione ha portato alla pubblicazione di alcuni articoli su riviste ISI.

ING-IND/35 INGEGNERIA ECONOMICO-GESTIONALE

aspetti comportamentali nella gestione delle scorte aziendali

Tra le attività di terza missione, un ruolo importante è rivestito dal Museo della Rappresentazione-Casa della Città (Responsabile scientifico la prof.ssa M.T. Galizia). Tale struttura, recentemente riconsegnata al DICAR dall'Ateneo, ha sede presso la prestigiosa Villa Zingali-Tetto in via Etnea a Catania, e comprende, tra l'altro, i progetti di archivio dell'architetto Francesco Fichera e le incisioni di Giovan Battista Piranesi.

In occasione della VII Giornata Nazionale degli Archivi di Architettura, in attesa dell'inaugurazione ufficiale della struttura che avrà luogo il prossimo settembre 2017, nei giorni 22-25 maggio 2017 è stata data la possibilità agli studiosi interessati di prendere visione dell'architettura di interni, degli arredi e degli allestimenti del novecento italiano proposti da Fichera e da Lanzerotti (vedere brochure dell'evento di seguito riportata).



VII GIORNATA NAZIONALE DEGLI ARCHIVI DI ARCHITETTURA

Architettura degli interni, arredi e allestimenti del
Novecento italiano. Fichera e Lanzerotti a Catania

20 maggio 2017

sabato
ore 10

Visita guidata di alcune opere di Francesco Fichera a Catania
testimonianze della sua attività in ambito privato e pubblico



MUSEO DELLA RAPPRESENTAZIONE

22-25 maggio 2017

da lunedì a giovedì
ore 10-13 16-19

mostra di disegni originali del Fondo Fichera

allestita in alcuni spazi visitabili del Museo della Rappresentazione del DICAR
– villa Zingali Tetto (Paolo Lanzerotti 1931) –

L'inaugurazione ufficiale del museo avrà luogo nel mese di luglio 2017

Per la visita la prenotazione è obbligatoria.
email: museorappresentazione@unicat.it
Il luogo di incontro sarà comunicato agli iscritti.
La visita guidata e l'ingresso al museo sono gratuiti



DICAR
Dipartimento Ingegneria Civile e Architettura

DIRETTORE
Enrico Foti

RESPONSABILE SCIENTIFICO
Mariateresa Galizia

Museo della Rappresentazione
Catania, via Etna 742
Info: tel. +393387505515

7. Spin off

Nel Dipartimento di Ingegneria Civile ed Architettura è attivo uno Spin Off accademico denominato Spin Tech.

La Spin Tech è attiva dal 2008 (delibera del Senato Accademico del 17.03.2008) su proposta del prof. G. Cicala.

Inizialmente attivata presso il DMFCI la Spin Tech opera oggi presso i locali del DICAR.

Le attività della Spin Tech sono focalizzate sullo sviluppo di prototipi in materiale composito, nonché, sullo sviluppo di nuovi dispositivi e tecnologie di produzione. Recentemente, per esempio, ha sviluppato un prototipo di turbina per il recupero di energia dal moto ondoso. Questo prototipo è stato realizzato con tecniche avanzate di manifattura additiva con le tecniche di rinforzo utilizzando preimpregnati in fibra di carbonio. Inoltre, nell'ambito di un progetto POR, ha fornito il supporto per il design e lo sviluppo di un prototipo in plastica per un urinometro da utilizzare nei presidi ospedalieri. Anche in questo caso sono state utilizzate tecniche avanzate di prototipazione rapida in materiale plastico.

Negli ultimi anni la Spin Tech ha chiuso in attivo il proprio bilancio.

8. Linee prioritarie di ricerca che il DICAr intende sviluppare nell'ambito del piano triennale 2016-2018

Nonostante la buona valutazione del DICAr in termini di VQR 2011-2014, si vuole cogliere l'opportunità offerta dal presente piano triennale della ricerca al fine di migliorare ulteriormente le performance dello stesso DICAr. In particolare, si intendono concentrare le risorse finanziarie che saranno erogate dall'Ateneo nell'ambito del presente piano triennale al fine di sviluppare solo alcuni argomenti specifici di ricerca. Tali argomenti vengono sinotticamente qui di seguito descritti con riferimento ad ogni singolo SSD.

Area 08 - Ingegneria civile ed architettura

ICAR/01 IDRAULICA

- Sviluppo di modelli numerici dei moti transitori con cavitazione
- Idrodinamica e dispersione in strati limite turbolenti
- Idro-morfodinamica costiera, anche in presenza di strutture e di vegetazione
- Modellazione sperimentale e numerica dell'interazione tra onde e correnti di gravità in ambiente costiero
- Analisi dell'influenza dell'Information & Communication Technology sulla gestione dei sistemi d'approvvigionamento idrico in ambito urbano
- Studio della disponibilità energia del moto ondoso e dispositivi per l'estrazione dell'energia del moto ondoso
- Valutazione e mitigazione del rischio di alluvione e di colate detritiche anche mediante lo sviluppo di sistemi integrati per il monitoraggio e l'early warning

ICAR/02 COSTRUZIONI IDRAULICHE E MARITTIME E IDROLOGIA

- Sviluppo di modelli statistico-probabilistici per l'analisi dei processi idrologici
- Analisi e monitoraggio di eventi idrologici estremi in uno scenario di cambiamento climatico
- Gestione sostenibile di sistemi idrici complessi
- Monitoraggio e previsione di eventi di frane superficiali
- Metodologie per l'ottimizzazione funzionale, economica ed energetica delle reti di distribuzione idrica e per la riduzione delle perdite
- Modellistica mono e bidimensionale per lo studio degli allagamenti in ambito urbano ed extraurbano e per l'analisi degli effetti e delle criticità degli interventi di mitigazione
- Modellazione e valutazione delle misure per il drenaggio urbano sostenibile, con recupero e utilizzo di acque meteoriche
- Metodologie di analisi del rischio idraulico connesso alle dighe e degli interventi per il miglioramento della sicurezza

ICAR/03 INGEGNERIA SANITARIA - AMBIENTALE

- Sorgenti di inquinamento, monitoraggio e modellazione di inquinanti in sistemi naturali ed ingegnerizzati
- Analisi e mitigazione del rischio sanitario-ambientale connesso ad eventi di origine naturale o antropica
- Progettazione, gestione e verifiche di funzionalità e prestazione dei processi e degli impianti di trattamento e di recupero di acque, suoli, effluenti gassosi e rifiuti
- Tecnologie convenzionali ed innovative di bonifica dei siti inquinati
- Formazione, controllo e rimozione di inquinanti in aria, acqua o suolo
- Pianificazione, gestione, trattamento, recupero e valorizzazione dei rifiuti

- Sistemi innovativi per il controllo e l'efficientamento di processi di trattamento di aria, acqua o suolo
- Valutazione dell'impatto ambientale e della sostenibilità di opere civili ed industriali

ICAR/04 STRADE, FERROVIE E AEROPORTI

- Comportamento dell'utente e sicurezza stradale
- Innovazione tecnologica per la gestione delle infrastrutture di trasporto progetto di intersezioni e tronchi stradali in base a parametri prestazionali
- Manutenzione sostenibile di pavimentazioni stradali
- Monitoraggio di sovrastrutture ferroviarie con tecniche innovative
- Database per la condivisione di dati sulla manutenzione stradale

ICAR/05 TRASPORTI

- Reti multi-layer ed efficienza dei processi decisionali
- Efficienza energetica attraverso la pianificazione del territorio e dei trasporti
- Sistemi dinamici di infomobilità multimodale
- Pianificazione dei trasporti, partecipazione pubblica e metodi di supporto alle decisioni
- Monitoraggio, stima e previsione del traffico e dei suoi impatti con tecnologie ITS
- Analisi multicriteria e GIS per la pianificazione dei trasporti
- Sostenibilità dei sistemi portuali in ambito urbano
- Public participation in port planning
- Staff mobility teaching on AHP
- Mobility management di ateneo
- Integrazione dei servizi di infomobilità e sistemi di supervisione del traffico
- Servizi di mobilità a domanda basati sul ride-sharing dinamico.
- Economia del mare

ICAR/06 TOPOGRAFIA E CARTOGRAFIA

- algoritmi di classificazione delle immagini multispettrali
- raddrizzamento di immagini ed estrazione di elementi geometrici
- interferometria SAR da satellite e da sistemi
- rilievo con scanner laser terrestre e modellazione geometrica 3D delle intersezioni stradali ai fini delle verifiche di visibilità
- esplorazione di aree di interesse archeologico, attraverso immagini multispettrali e termiche, per il riconoscimento di elementi murari interrati
- applicazione della tecnica SFM in ambito archeologico per la modellazione dell'esistente e l'applicazione di tecniche di reverse engineering
- monitoraggio di frane
- applicazioni GIS alla gestione di emergenze (propagazione di incendi boschivi, diffusione di inquinanti, dissesto idrogeologico)

ICAR/07 GEOTECNICA

- Resistenza passiva in campo tridimensionale
- Modelli di calcolo per il dimensionamento di paratie a mensola e ancorate in campo elastoplastico
- Caratterizzazione geotecnica dei terreni in campo statico e dinamico
- Modellazione costruttiva avanzata dei terreni
- Caratterizzazione geotecnica dei terreni
- Resistenza a trazione di radici di piante autoctone per la stabilizzazione dei pendii
- Prove sperimentali su modelli a scala ridotta per la valutazione della resistenza passiva in campo tridimensionale

- Risposta sismica locale ed effetti di sito, microzonizzazione sismica, liquefazione dei terreni e lateral spreading
- Fondazioni e gallerie in ambito urbano
- Risposta sismica locale
- Effetti dell'interazione statica e dinamica terreno-strutture
- Modellazione numerica di sistemi accoppiati terreno-struttura

ICAR/08 SCIENZA DELLE COSTRUZIONI

- Meccanica Computazionale dei solidi e delle strutture. Sviluppo di metodologie innovative nell'ambito dell'analisi isogeometrica
- Studio di metamateriali e strutture adattive.
- Studio teorico e sperimentale di sistemi di rinforzo fibrinforzati per costruzioni in c.a. e murarie
- Studi sull' utilizzo di materiali di scarto e di materiali naturali nella produzione di elementi per l'edilizia
- Modelli di travi con discontinuità: identificazione del danno strutturale
- Tecniche di adeguamento sismico tradizionali e innovative
- Studi sulla vulnerabilità di edifici esistenti
- Il collasso progressivo e metodi di stima della robustezza degli edifici

ICAR/09 TECNICA DELLE COSTRUZIONI

- Adeguamento sismico di edifici esistenti
- Tecniche innovative e metodi di progetto per la protezione sismica degli edifici di nuova costruzione
- Problematiche di modellazione non lineare di edifici in c.a. o acciaio
- Metodi statici non lineari per la previsione della risposta sismica di sistemi strutturali
- Metodi di progetto di strutture controventate in acciaio
- Verifica di elementi in c.a. soggetti a taglio e momento flettente

ICAR/10 ARCHITETTURA TECNICA

- Didattica sostenibile con territorio e arte
- Evoluzione dei tipi edilizi
- Procedimenti costruttivi antichi
- Ricerca/azione per la salvaguardia ambientale
- Materiali e tecniche costruttive tradizionali
- Nuove metodologie per la conoscenza del costruito storico
- Metodologie innovative per la riqualificazione energetica dell'edilizia
- Indagini tecnico-costruttive regole esecutive per il recupero dei centri storici della Sicilia orientale
- Indagini costruzione in legno X-Lam per l'emergenza
- Sostenibilità energetica in edilizia
- Storia delle costruzioni
- Tecnologie innovative per l'edilizia
- Valutazione vulnerabilità sismica dei centri urbani
- Impiego della pietra naturale per murature armate e precomprese
- Analisi prestazioni involucri innovativi per nuove costruzioni e per recupero esistente
- Recupero e conservazione del patrimonio edilizio esistente
- Tecniche costruttive e materiali tradizionali
- Involucro edilizio e sostenibilità energetica e ambientale
- Moduli edilizi trasferibili in legno
- Accessibilità e abbattimento delle barriere architettoniche in edifici pubblici

- Architettura sostenibile e risparmio energetico
- Innovazione tecnologica in edilizia
- Recupero e riqualificazione patrimonio edilizio esistente
- Integrazione architettonica di sistemi per la produzione di energia da fonti rinnovabili
- Tecnica e costruzione degli impianti termali romani in Sicilia
- Recupero e Conservazione del patrimonio costruito
- Riqualificazione energetica del patrimonio costruito
- Innovazione tecnologica e sostenibilità ambientale

ICAR/11 PRODUZIONE EDILIZIA

- L'autocostruzione come processo edilizio sostenibile
- Pianificazione della prevenzione sismica
- La durabilità di materiali e di componenti in edilizia
- Studi per moduli abitativi da destinare ai migranti
- Materiali e tecnologie per l'edilizia sostenibile
- Studi sperimentali per la realizzazione di mattoni in calce-canna e cemento-canna
- Valutazione degli effetti dell'umidità sull'aderenza delle fasce in fibra di carbonio
- Materiali e tecnologie
- Riqualificazione edilizia
- Processi costruttivi per autocostruzione e auto recupero
- Vulnerabilità sismica edifici

ICAR/12 TECNOLOGIA DELL'ARCHITETTURA

- Progettazione ambientale
- Difesa del paesaggio

ICAR/14 COMPOSIZIONE ARCHITETTONICA E URBANA

- Le direzioni dell'architettura contemporanea;
- Architettura e paesaggio
- Architettura e le altre arti
- Infrastrutture e smart cities
- Gli elementi della progettazione architettonica
- L'architettura su suolo vulcanico
- I dispositivi mnestici nell'architettura dello spazio pubblico
- Il rapporto tra l'architettura progettata e quella realizzata

ICAR/17 DISEGNO

- Protocolli infografici per il rilievo, la riqualificazione e la gestione del patrimonio architettonico
- Approcci computazionali knowledge-based e flussi di lavoro innovativi per la creazione di librerie semantiche 3D
- Musei virtuali e crowdsourcing di collezioni museali
- Ricostruzione 3D in archeologia
- Rilievo e analisi dell'architettura e dell'archeologia attraverso la sperimentazione delle attuali tecnologie di rilievo digitale

ICAR/20 TECNICA E PIANIFICAZIONE URBANISTICA

- Pianificazione urbanistico-territoriale per l'efficienza energetica della città
- Conservazione e valorizzazione degli spazi aperti nei contesti metropolitani
- Servizi ecosistemici
- Infrastruttura verde urbana e territoriale
- Nature Based Solutions per i contesti urbani contemporanei
- Sistemi Informativi Geografici per la pianificazione territoriale

- Processi innovatori di Ricerca-Azione Partecipata per il governo del Territorio alla scala comunale e di area vasta
- Pratiche partecipative nelle azioni territoriali per lo sviluppo delle aree interne
- Paesaggio e sviluppo locale
- Nuovi livelli di governance alla scala intermedia

ICAR/21 URBANISTICA

- Pianificazione urbanistica e sostenibilità
- Rigenerazione urbana
- Strumenti di pianificazione innovativi e progetto urbano

ICAR/22 ESTIMO

- Modelli di valutazione economica delle risorse ambientali e paesaggistiche
- Metodologie economico-estimative a supporto degli interventi di governo del territorio, in ambito urbano e rurale
- Ricerche sui modelli di consumo dei beni industriali in Italia e all'estero e sviluppo di specifici piani di marketing
- Web-marketing e e-commerce: opportunità e limiti delle ICTs per la valorizzazione e la promozione del territorio e delle risorse locali
- Marketing territoriale
- Valutazioni economico-estimative dell'impiego di fonti di energia rinnovabili in particolari contesti ambientali e paesaggistici
- Applicazione MCDA a specifiche problematiche ambientali, in particolare alla fruizione dei parchi naturali, di Siti di Importanza Comunitaria e di parchi urbani
- Applicazione della Social Network Analysis a problematiche di integrazione di nuove forme di verde urbano e di agricoltura nelle politiche di rigenerazione sociale di aree urbane degradate

Area 09 - Ingegneria industriale e dell'informazione

ING-IND/08 MACCHINE A FLUIDO

- progettazione fluidodinamica di turbine eoliche
- turbine a gas
- motori a combustione interna
- sistemi di propulsione ibrida
- modelli matematici sulle proprietà termodinamiche dei gas
- Progettazione aerodinamica di gallerie del vento

ING-IND/09 SISTEMI PER L'ENERGIA E L'AMBIENTE

- Impianti e macchine eoliche
- Fonti di energia rinnovabile
- Processi di combustione
- sistemi di propulsione ibrida
- progettazione gestione ed ottimizzazione di macchine a fluido, impianti energetici, componenti ed impianti oleodinamici e pneumatici
- progettazione ed ottimizzazione di impianti di processo e piping industriale
- studi di fattibilità, progettazione e collaudo di sistemi ed impianti avanzati con tecnologie eco-compatibili (fotovoltaico, eolico, minidraulica, impianti maremotore e solare termodinamico)
- termovalorizzazione e gassificazione di scarti e rifiuti industriali ed urbani, produzione di biocombustibili per alimentazione mci stazionari ottimizzati per produzione di energia.

ING-IND/12 MISURE MECCANICHE E TERMICHE

- Misura della coppia torcente e dell'angolo di rottura al variare della geometria e della temperatura di lavoro degli strumenti canalari
- Misura della rottura per fatica degli strumenti endodontici
- Effetto delle tipologie di filler sulla risposta elettrica degli elastomeri
- Caratterizzazione meccanica di elastomeri leggermente anisotropi mediante differenti tecniche di test

ING-IND/13 MECCANICA APPLICATA ALLE MACCHINE

- Cimenatica, dinamica di meccanismi rigidi e flessibili
- Analisi multybody per grandi riflettori dispiegabili in orbita
- Sistemi robotici per il monitoraggio del mare
- Robotica parallela ed applicazioni industriali

ING-IND/14 PROGETTAZIONE MECCANICA E COSTRUZIONE DI MACCHINE

- Caratterizzazione meccanica di materiali (metallici, plastici, compositi, elastomeri) in campo statico e dinamico (anche abasso LCF o elevatissimo numero di cicli VHCF)
- Metodi sperimentali per la caratterizzazione avanzata di materiali e strutture in campo statico e dinamico
- Modelli di elastoplasticità e danno duttile per metalli
- Dinamica ed impatti ad alti strainrates su materiali strutturali
- Biomimetica
- Biomeccanica
- Design for Assembly; LCC, LCA
- Fatica dei materiali: metodi accelerati per la determinazione della vita a fatica (termografia, smorzamento, emissione acustica, isteresi)
- Effetti della frequenza di carico sul campo termico e sull'affidabilità dei parametri energetici
- Transizione termo-elastoplastica nelle prove statiche e correlazione col limite di fatica
- Meccanica della frattura
- Test biassiali, planari, bulge test
- D.I.C., metodi ottici per l'analisi delle deformazioni
- Metodi termografici per la Thermal Stress Analysis
- Biomeccanica ortopedica: fissatori per ossa lunghe e rachide, sistemi di stabilizzazione del rachide
- Biomeccanica dentistica: caratterizzazione di strumenti endodontici in condizioni statiche e di fatica, test su bytes in condizioni dinamiche
- Tribologia su tessuti biologici ed elastomeri
- Caratterizzazione viscoelastica di polimeri elettroattivi
- Strutture adattive e smartmaterials per applicazioni aeronautiche
- Caratterizzazione e modelli predittivi termomeccanici per l'elettronica di potenza
- Metodi per la valutazione della temperatura dei denti di coppie di ruote ingrananti
- Ergonomia nella progettazione meccanica
- Progettazione per i requisiti di prodotto (Design for X)
- Integrazione delle tecniche DFMA (Design for Manufacture and Assembly) nella progettazione di prodotto
- Metodi e strumenti per la progettazione per l'assemblaggio e il disassemblaggio
- Integrazione dell'ottimizzazione dell'efficienza di assemblaggio con l'analisi delle criticità ergonomiche
- Metodi strutturati per la selezione ottima dei materiali

- Gestione del problema di selezione multiobiettivo-multivincolo mediante algoritmi genetici
- Integrazione dei requisiti ambientali nella selezione ottima dei materiali
- Progettazione per i requisiti ambientali di prodotto (Product Design for Environment)
- Metodi e strumenti per la progettazione eco-sostenibile
- Simulazione dell'impatto del ciclo di vita
- Progettazione per il recupero e il riciclo

ING-IND/22 SCIENZA E TECNOLOGIA DEI MATERIALI

- Materiali compositi ecocompatibili
- Materiali nanostrutturati
- Materiali polimerici innovativi
- Sviluppo di tecniche di prototipazione rapida
- Sviluppo di membrane per il trattamento acque ed aria

ING-IND/27 CHIMICA INDUSTRIALE E TECNOLOGICA

- Cinetiche di processi chimici
- Sintesi di nanomateriali ibridi
- Analisi Termica
- Ricerca applicata
- Sviluppo di modelli cinetici per la previsione di vita media dei materiali
- Sintesi e caratterizzazione termica e spettroscopica di sistemi nanomolecolari per applicazioni industriali

ING-IND/35 INGEGNERIA ECONOMICO-GESTIONALE

- Supply Chain and Inventory Management
- Modelling and simulation
- Human experimentation in operations management
- Operational Data Exchange
- Behavioural Operations
- Logisticsinfrastructures
- Spare part Supply chain
- Health care operations and management
- Public sector management and public procurement
- Manufacturing in high cost countries and reshoring

9. Miglioramento della performance della ricerca

Sulla base del Piano della Ricerca 2016-2018 elaborato dall'Ateneo, per la prima annualità l'Amministrazione ha assegnato al DICAR € 254.309,05, da destinare ad attività volte a migliorare la performance della ricerca a livello nazionale e internazionale.

In esito a quanto deliberato nell'adunanza del Consiglio di Dipartimento (CdD) del DICAR del 06/07/2017, tale somma sarà erogata per il miglioramento delle performance della ricerca del DICAR attraverso due misure:

• mobilità in ingresso di ricercatori stranieri	€ 24.309,05
• finanziamento di progetti di ricerca	€ 230.000,00

Le modalità con cui le suddette somme saranno distribuite sono meglio descritte nel prosieguo.

9.1. Mobilità in ingresso di ricercatori stranieri

Per quanto concerne la mobilità in ingresso, le somme saranno prioritariamente destinate a docenti stranieri che svolgeranno un periodo di almeno un mese presso l'Università di Catania. A tal fine ciascun ricercatore straniero potrà ricevere un contributo, che sarà stabilito dal Direttore in base al periodo di permanenza presso il DICAR ed al Paese di provenienza del ricercatore stesso, fino a un massimo di € 6.000,00 e fino al raggiungimento del budget assegnato alla misura.

9.2. Finanziamento di Progetti di Ricerca

Per la prima annualità, le risorse economiche destinate a tale fine e complessivamente pari a € 230.000,00 verranno assegnate tenendo conto dei seguenti criteri:

- potranno essere finanziati solamente i progetti, presentati da docenti del DICAR entro il termine del 30 settembre 2017, che risultino coerenti con le linee di ricerca prioritarie preventivamente individuate (vedere paragrafo 8);
- il contributo sarà proporzionale al numero di docenti del DICAR che partecipano al progetto;
- il progetto potrà essere presentato da singoli docenti o da gruppi e dovrà essere redatto secondo quanto previsto di seguito;
- ciascun docente può partecipare ad un solo progetto;
- i progetti presentati da gruppi di ricerca composti da almeno tre componenti interni al DICAR e coordinati da un ricercatore, saranno premiati con una quota pari al 5% in più di quella che spetterebbe sulla base del solo numero dei componenti;
- sono esclusi dal contributo i docenti che dispongono già di risorse economiche pari ad almeno € 100.000, provenienti da avanzi su progetti di ricerca.

9.2.2 Predisposizione dei progetti di ricerca per l'anno 2016

I progetti di ricerca devono presentare i seguenti contenuti:

- 1) dati anagrafici dei richiedenti
- 2) numero delle pubblicazioni di eccellenza di ciascun richiedente al momento della presentazione dell'istanza;
- 3) titolo del progetto di ricerca;
- 4) descrizione sintetica;

- 5) risultati e prodotti di ricerca attesi;
- 6) modalità di impiego della risorsa economica assegnata;
- 7) responsabile scientifico;
- 8) eventuali ulteriori componenti del gruppo di ricerca non afferenti ai ruoli del DICAr.

Con l'espressione "pubblicazioni di eccellenza" (punto 2) si intende quanto segue.

- Classe bibliometrica: riviste classificate Scopus (Q1 o Q2).
- Classe non bibliometrica: articoli pubblicati su riviste appartenenti alla classe A o su collane riconosciute e ritenute di rilievo scientifico dalla comunità di riferimento.

La durata del progetto è fissata in un anno.

Una commissione composta da tre docenti, appositamente designata dal CdD valuterà la legittimità delle istanze ed attribuirà le risorse ai gruppi.

9.2.3 Valutazione del miglioramento della performance della ricerca

A conclusione dell'annualità, verrà effettuata un'attività di monitoraggio per verificare il miglioramento della performance della ricerca del Dipartimento, a livello nazionale e internazionale. Tale valutazione verrà condotta da un'apposita commissione nominata dal CdD, coadiuvata dall'International Advisory Board. La commissione provvederà a richiedere, entro il termine fissato dal CdD, a tutti i destinatari del contributo, eventualmente raccolti in gruppi, una relazione con i seguenti contenuti:

1. numero delle pubblicazioni di eccellenza di ciascun richiedente al momento della conclusione della ricerca;
2. descrizione sintetica di eventuali ulteriori risultati e prodotti di ricerca.

Qualora lo ritenesse necessario, la commissione può decidere le modalità per effettuare un controllo dei dati forniti.

Sulla base delle relazioni pervenute, la commissione redigerà una graduatoria valutando l'incremento del numero di pubblicazioni di eccellenza di ciascun docente.

I lavori della commissione saranno sottoposti al Consiglio di Dipartimento per l'approvazione.

9.3 Assegnazione delle risorse per gli anni 2017 e 2018

Per gli anni 2017 e 2018 le risorse economiche verranno distribuite considerando tre quote:

- quota ordinaria, pari al 50% del budget diviso il numero dei docenti del DICAr;
- quota aggiuntiva I pari al 25% del budget diviso il numero dei docenti del DICAr che hanno incrementato di 1 il numero delle loro pubblicazioni di eccellenza;
- quota aggiuntiva II pari al 25% del budget diviso il numero di docenti del DICAr che hanno incrementato di 2 il numero delle loro pubblicazioni di eccellenza.

A tutti i docenti attivi verrà attribuita la quota ordinaria.

A tutti i docenti che hanno incrementato di 1 il numero delle loro pubblicazioni di eccellenza verrà attribuita l'ulteriore quota aggiuntiva I.

A tutti i docenti che hanno incrementato di 2 il numero delle loro pubblicazioni di eccellenza verrà attribuita l'ulteriore quota aggiuntiva II.

10. Commissione di valutazione dei progetti del DICAr e International Advisory Board

La Commissione di valutazione dei progetti sarà composta da almeno tre docenti del DICAr rappresentativi delle tre aree CUN presenti nello stesso DICAr.

La Commissione di valutazione dei progetti sarà composta da almeno tre docenti del DICAr rappresentativi delle tre aree CUN presenti nello stesso DICAr.

L'Advisory Board sarà costituito da quattro docenti esterni al DICAr che non abbiano avuto rapporti di collaborazione con docenti dello stesso DICAR (che non presentino, per esempio, pubblicazioni comuni con docenti del DICAr). Nella fattispecie sono stati individuati i seguenti professori di cui si allegano i relativi curricula: - Prof.ssa Paola Malanotte-Rizzoli; - Prof. Josè Maria Alsina Torrent; - Prof. Pierfrancesco Cacciola; - Prof. Athanasios Loukas.

Curriculum Vitae

José María Alsina Torrent

Name: : José María Alsina Torrent
Profession : Lecturer
Fields of expertise : Coastal Engineering, Coastal Sediment transport and Morphodynamics, Coastal hydrodynamics
Present Employer : Imperial College London
Address : Fluid Mechanics Section
Department of Civil and Environmental Engineering
Imperial College London
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Nationality : Spanish
Year of Birth : 1976

Key qualifications

Dr. Jose M. Alsina is a Lecturer at the Fluid Mechanics Section, Department of Civil and Environmental Engineering at the Imperial College London. He is specialized in the fields of Coastal Engineering, sediment transport and morphodynamics, with more than 10 years of research experience in the United Kingdom, Spain, Australia and Italy. Most of his research contributions, performed by means of experimental and numerical modelling, are in the field of sediment transport. He has participated in seven EU funded research projects. He acts as a reviewer for the Journal of Waterways Ports Coasts, A.S.C.E. Coastal Engineering and Ocean Engineering. He is lecturing the courses of "Fluid Mechanics" and "Coastal Engineering" in the Civil Engineering undergraduate programme and "Transport Processes", "Coastal Processes" and "Energy Systems" in the MSc Engineering Fluid Mechanics for the Offshore, Coastal and Built Environments at Imperial College London.

Education

2001-2005 earned his PhD from the Universitat Politècnica de Catalunya (Barcelona, Spain).
PhD Thesis: "Development of a Morphodynamic numerical model. Application to Low Crested Structures impact assessment" at the Laboratory of Maritime Engineering (LIM), Universidad Politècnica de Cataluña, supervised by Joan Pau Sierra and Agustín Sánchez-Arcilla.

1994-1999 Degree in Marine Science (Oceanography, 5 years degree). Universidad de Las Palmas, (ULPGC), Canary Islands, Spain.

Professional experience

- 2013 - present Lecturer in the Fluid Mechanics section, Department of Civil and Environmental Engineering at Imperial College London
- 2011 - 2012 Marie Curie Post-doctoral Research Scholar at the Università Politecnica delle Marche, Italy.
- 2008 - 2010 “Juan de la Cierva” Post-doctoral Research Scholar at the Laboratory of Maritime Engineering (LIM), Universidad Politécnica de Cataluña, Spain.
- 2006-2008 Post-doctoral Research Scholar at the Coastal Engineering Research Centre, University of Queensland, Australia.
- 2005-2006 Post-doctoral Research Scholar at the Laboratory of Maritime Engineering (LIM), Universidad Politécnica de Cataluña, Spain.
- 2001-2005 Graduate Research Assistant at the Laboratory of Maritime Engineering (LIM), Universidad Politécnica de Cataluña, Spain.

Research funding:

- 2017-2021 Tracking Of Plastic In Our Seas (TOPIOS). Unión Europea, ERC-STG. Co-Investigador (PI: Erick van Sabille), contract number ERC-2016-STG-715386 (199,000 Euros, my submodule).
- 2017-2018 Influence of Storm sequencing and beach REcovery on Sediment transport and beach resilience (RESIST). Principal investigator (PI). Access project under the HYDRALAB+ network, Contract no. 654110 (RII3). (109.000 Euros)
- 2012 CoSSedM: Coupled High Frequency Measurement of Swash Sediment Transport and Morphodynamic. Principal investigator (PI). Access project under the HYDRALAB-IV network, Contract no. 261520 (RII3). (86.835 Euros)
- 2009 BOB: Dune Overwash and Breaching. Access project within the HYDRALAB-III framework
- 2009 SUSCO: Swash Under Storm Conditions. Access project within the HYDRALAB-III framework (81.690 Euros)
- 2006-2010 SANDS: Scaling Analysis and New Instrumentation for Dynamic Bed Tests. Funded by the EU under the HYDRALAB-III framework.
- 2001-2004 DELOS: Environmental Design of Low Crested Coastal Defence Structures. Funded by the EU, Program EESD, Ref. EVK-2000-22038.
- 2002-2004 ECOSUD: Estuaries and Coastal Areas. Basis and Tools for a more Sustainable Development. Funded by the EU, Program INCO, Ref. ICA4-2001-10027.

Grant and Awards:

- 2013 Kevin Stark Memorial Award for Excellence in Coastal and Ocean Engineering for the work entitled *Impact of beach scraping on near shore sediment transport and bar migration* and presented at the Coasts & Ports 2013 Conference.
- 2011-2012. Marie Curie intra-European Fellowship for Career Development (FP7-IEF), Grant Agreement n° PIEF-GA-2009-252374.
- 2009-2011. "Juan de la Cierva" post-doctoral grant; from the Spanish Education Ministry. Grant n° 38948.
- 2006-2008. Mobility Post-doctoral grant from the Spanish Education Ministry to develop a research project in international research centres.
- 2001-2005. "Formación de Profesorado Universitario" (Formation of University Lecturers) FPU grant from the Spanish Education Ministry. This grant is focused to research career development. Grant n°: AP2000-2848.

Membership

Engineering Professors' Council member. This is the representative body for Engineering in UK higher education

Publications

Refereed papers

1. **Alsina, J.M.**, Padilla, E., and Cáceres, I., 2016. Sediment transport and beach profile evolution induced by bi-chromatic wave groups with different group periods. *Coastal Engineering*, 114, 325-340.
2. Cáceres, I. and **Alsina, J.M.**, 2015. Suspended sediment transport and beach dynamics induced by monochromatic, long waves and wave groups. *Coastal Engineering*, 108, 36-55.
3. van der Zanden, J., **Alsina, J.M.**, Cáceres, I., Buijsrogge, R., and Ribberink, J.S.. 2015. Bed level motions and sheet flow processes in the swash zone: Observations with a new conductivity-based measuring technique (CCM+). *Coastal Engineering*, 105, 47-65.
4. Manca, E., Cáceres, I., **Alsina, J.M.**, Stratigaki, V., Townend, I. and Amos, C.L. 2012 Wave energy and wave-induced flow reduction by *Posidonia oceanica* seagrass. *Continental Shelf Research*, 50-51, 100-116.
5. Mattioli, M., **Alsina, J.M.**, Mancinelli, A., Miozzi, M. and Brocchini, M., 2012. Experimental investigation of the nearbed dynamics around a submarine pipeline laying on different types of seabed: The interaction between turbulent structures and particles. *Advances in Water Resources*, 48, 31-46.
6. **Alsina, J.M.**, Cáceres, I., Brocchini, M. and Baldock, T., 2012. An experimental study on the effect of different swash zone morphological conditions on the migration of a surf zone sand bar. *Coastal Engineering*, 68, 31-43.
7. Cáceres, I. and **Alsina, J.M.**, 2012. An event by event analysis on suspended sediment concentration in the swash zone. *Continental Shelf Research*, 41, 61-76.
8. Vicinanza, D., Baldock, T. E., Contestabile, P., **Alsina, J.M.** Cáceres, I., Brocchini, M., Conley, D., Andersen, T.L., Frigaard, P. and Ciavola, P. 2011. Swash Zone response under grouping storm conditions. *Journal of Hydraulic Research*, 49 (S1), 55-63.
9. **Alsina, J.M.** and Cáceres, I., 2011. Sediment suspension events in the inner surf and swash zone. Measurements in large-scale and high-energy wave conditions. *Coastal Engineering*, 58 (8): 657-670.
10. Baldock, T. E., **Alsina, J.M.**, Cáceres, I. Vicinanza, D., Contestabile, P., Power, H., P. and Sánchez-arcilla, A., 2011. Large scale experiments in beach profile evolution and sediment transport induced by long waves, wave group and random waves. *Coastal Engineering*, 58 (2): 214-227.

11. Barnes, M. P., O'Donoghue, T., **Alsina, J.M.** and Baldock, T. E., 2009. Direct bed shear stress measurements in bore-driven swash. *Coastal Engineering*, 56, 853-867.
12. **Alsina, J.M.**, Cáceres, I., Sospedra, J. and Baldock, T. E., 2009. Lagrangian modelling of suspended sediments in the swash zone. *Journal of Coastal Research*, SI 56(II), 1716-1720.
13. Cáceres, I., **Alsina, J.M.**, and Sánchez-Arcilla, A., 2009. Mobile bed experiments focused to study the swash zone evolution. *Journal of Coastal Research*, SI 56, 1736-1740
14. **Alsina, J.M.**, Falchetti, S. and Baldock, T.E., 2009. Measurements and modelling of the advection of suspended sediment in the swash zone by solitary waves. *Coastal Engineering*, 56(5-6): 621-631.
15. González-Marco, D., Bolaños, R., **Alsina, J.M.**, Sánchez-Arcilla, A., 2008. Implications of nearshore processes on the significant wave height probability distribution. *J. Hydraulic Research*, 46, 303-314.
16. Baldock, T. E., Kudo, A., Guard, P. A., **Alsina, J.M.** and Barnes, M. P., 2008. Lagrangian measurements and modelling of fluid advection in the inner surf and swash zone. *Coastal Engineering*, 55(10) 791-799.
17. **Alsina, J.M.**, Baldock, T. E., 2007. Improved representation of breaking wave energy dissipation in parametric wave transformation models. *Coastal Engineering*, 54, 765-769.
18. **Alsina, J. M.**, Sánchez-Arcilla, A., Gironella X., Baldock, T. E. 2007. Design of scaled movable bed experiments using numerical models. *Journal of coastal Research*. SI 50 (ICS 07), 379-383.
19. Sierra, J. P., Gironella, X., Sánchez-Arcilla, A., Sospedra, J. and **Alsina, J.M.** 2007. Hybrid modeling of scouring - deposition in front of a coastal structure. *Journal of coastal Research*. SI 50 (ICS 07), 364-368.
20. **Alsina, J.M.**, Sierra, J. P., González-Marco, D., Cáceres, I. And Sánchez-Arcilla, A., Comparative study of the hydro-morphodynamic behaviour of emerged and submerged structures. *Ingeniería Hidráulica en México*, XXII, num2, 2007 (in Spanish).
21. Baldock, T. E. and **Alsina, J. M.**, 2005. On the transport of suspended sediment by a swash event on a plane beach, by D. Pritchard and A.J. Hogg. Discussion. *Coastal Engineering*, 52, 811-814.
22. Sanchez-Arcilla, A., Sierra, J. P., Caceres, I., Gonzalez, D., **Alsina, J. M.**, Montoya, F., Galofre, J., 2004. Beach dynamics in the presence of a Low Crested Structure. The Altafulla case. *Journal of Coastal Research*, SI 39 (ICS 2004), pp 759-764.
23. Sierra, J. P.; Mösso, C.; **Alsina, J. M.**; Sánchez-Arcilla, A., Berdala, E.2003 Hydro-morphodynamic modelling of a multi-barred longshore uniform beach. *Ingeniería Hidráulica en México*, Vol. XX (2), pp. 19-35 (in Spanish).

Proceedings in Conferences:

1. Alsina, J.M., Caceres, I., van der Zanden, J., Ribberink, J.S. and Baldock, T.E., 2014. Large scale experiments on beach evolution induced by bichromatic wave groups with varying group period. *Proceedings International Conference in Coastal Engineering*. Seoul, Korea.
2. van der Zanden, J., **Alsina, J.M.**, Cáceres, I., Buijsrogge, R.H., and Ribberink, J.S., 2013. New CCM technique for sheet flow measurements and its first application in swash zone experiments. *Proc. 6th International Short Course/Conference on Applied Coastal Research*, 4-7 June, Lisbon, Portugal.
3. Baldock, T.E., and **Alsina J.M.**, 2013. Impact of beach scraping on near shore sediment transport and bar migration. *Proc. Coasts & Ports 2013 Conference*. 11-13, September. Sydney, Australia.
4. **Alsina, J.M.**, Caceres, I., Brocchini, M. and Baldock, T. E., 2011. Influence of swash zone morphology on offshore bar migration. *Proc. Coastal Sediments, 2011*. Miami, USA.
5. Baldock, T. E., **Alsina, J. M.**, Caceres, I., Manoonvoravong, P. and Pham, Kim Son, 2011. Influence of surf-beat on beach morphology and sediment transport. In: Eric M. Valentine, *Proceedings of the 34th IAHR World Congress. 34th IAHR World Congress, 33rd Hydrology and Water Resources Symposium and 10th Conference on Hydraulics in Water Engineering*, Brisbane, Australia, (973-980). 26 June-1 July 2011.

6. Manca, E., Cáceres, I., **Alsina, J.**, Stratigaki, V., Prinos, P., Losada, I., Lara, J., et al., 2009. Effect of a Posidonia seagrass meadow on waves: flume experiments at full scale. In G. Di Carlo, A. Calladine, & A. Zuljevic (Eds.), Proceedings of the Mediterranean Seagrass Workshop 09, Hvar, Croatia, 2009 (pp. 32–32). Presented at the Mediterranean Seagrass Workshop 2009 (MSW-09), MSW09 Committees.
7. **Alsina, J.M.**, Sánchez-Arcilla, A. and Cáceres, I., 2009. Suspended sediment fluxes in the inner surf and swash zone. Large scale data under erosive wave conditions. *Proc. Coastal Dynamics*, Tokyo, Japan.
8. Barnes, M. E., **Alsina, J.M.**, Baldock, T. E., 2008. Lagrangian modelling and direct bed shear stress measurement in the swash zone. *Proc. 31st Int. Conf. Coastal Engineering*. Hamburg, Germany, pp 1509-1520.
9. Baldock, T. E., Kim Son, P., Manoonvoravong, P., Barnes, M. P., **Alsina, J.M.**, 2007. Probabilistic-deterministic modelling of swash zone morphology. *Proc. Coastal Sediments*, New Orleans, USA.
10. González-Marco, D., **Alsina, J.M.**, Sánchez-Arcilla, A., Mendoza, T. E., 2006. The relative importance of runup and setup on beach flooding. *Proc. 30th Int. Conf. on Coastal Engineering*, ASCE, San Diego, USA, 1373-1385.
11. **Alsina, J.M.**, Baldock, T. E., Hughes, M. E., Weir, F., Sierra, J. P., 2005. Sediment transport numerical modelling at the swash zone. *Coastal Dynamics 2005*, Barcelona (Spain), April 4-8, 2005.
12. Cáceres, I., **Alsina, J.M.**, González, D., Sánchez-Arcilla, A., Sierra, J. P., 2005. Coastal Dynamics around a submerged barrier. *Coastal Dynamics 2005*, Barcelona (Spain), April 4-8, 2005.
13. Sánchez-Arcilla, A., **Alsina, J.M.**, Cáceres, I., González, D., Sierra, J. P., Peña, C., 2004. Morphodynamics on a beach with a submerged detached breakwater. To appear in: *Proc. 29th Int. Conf. on Coastal Engineering*, ASCE, Lisbon, Portugal.
14. Sánchez-Arcilla, A., Sierra, J. P., Cáceres, I., González, D., **Alsina, J.M.**, Montoya, F., 2004. Beach dynamics in the presence of a low-crested structure. The Altafulla case. *Proc. 8th International Coastal Symposium (ICS2004)* March 2004, Santa Catarina, Brazil.
15. **Alsina, J.M.**, Cáceres, I., Sanchez-Arcilla, A., González, D., Sierra, J. P., Montoya, F., 2003. Morphodynamics in the neighbourhood of a submerged breakwater. 3rd IAHR Symposium on River, Coastal and Estuarine Morphodynamics, A. Sánchez-Arcilla & A. Bateman (Eds). Proceedings RCEM 2003, ISBN 90-805649-6-6, pp. 1018-1028.
16. **Alsina, J.M.**, Sánchez-Arcilla, A., González, D., Cáceres, I., Sierra, J. P., 2003. Low Crested Structures and Medium Term Morphodynamics. In: VII Jornadas Españolas de Puertos y Costas. May 2003, Almería, Spain (in Spanish).
17. Cáceres, I., Sánchez-Arcilla, A., **Alsina, J.M.**, González, D., Sierra, J. P., 2003. The Role of the Mass Flux and Overtopping in the Functional Design of Low Crested Structures. In: VII Jornadas Españolas de Puertos y Costas. May 2003, Almería, Spain (in Spanish).
18. Mösso, C., Sierra, J. P., González, D., **Alsina, J.M.**, Cáceres, I., Sánchez-Arcilla, A., 2003. Low Crested Structures at the Spanish coast as alternative to conventional structures: Inventory and functional analysis.
19. **Alsina, J.M.**, Sánchez-Arcilla, A., González, D., Cáceres, I., Sierra, J. P., Mösso, C., 2002. Morphodynamic modelling of bottom evolution around a Low Crested Structure in the Catalan coast. 2002. Med And Black Sea Beaches, Kusadasy, Turkey 2002.

CURRICULUM VITAE ET STUDIORUM
OF
PIERFRANCESCO CACCIOLA

PERSONAL DETAILS

- Nationality: Italian (EU) Citizen
- Date of birth: October 30, 1973
- Place of birth: Messina, Italy
- Address: 24 Brunswick place, F3, Hove
East Sussex, BN3 1DG, UK
- E-Mail: p.cacciola@brighton.ac.uk
- Telephone numbers +44 (0)79 51898453 (mobile), +44 (0) 1273 642277 (office)

CURRENT POSITION

- Principal Lecturer in Civil Engineering (Structural Design), School of Environment and Technology, University of Brighton
- Head of the Division of the Built Environment and Civil Engineering

EDUCATION

- PhD. in Structural Engineering. University of Catania, Italy (2002)
Final dissertation: Stochastic analysis of structures with passive control systems (in italian)
- MEng (equiv: 5 years course) in Civil-Structural Engineering., University of Messina, Italy (1998) “Laurea in Ingegneria Civile indirizzo Strutture”
Final dissertation: Stochastic seismic analysis of structures consistent with a given response spectrum (in italian)

TEACHING ACTIVITY

- Structural and Stress Analysis I
- Dynamics of Structures
- Random Vibrations of Structures

ADMINISTRATIVE ACTIVITIES

- Head of the Division of the Built Environment and Civil Engineering (Sept 2016 -)
- Interim Head of the School of Environment and Technology (Feb 2016- August 2016)
- Head of the Division of the Built Environment and Civil Engineering (Sept 2014- Feb 2016)
- Led the successful accreditation of the Civil Engineering Programmes March 2013
- Leader for the development and validation of new courses in BEng and MEng Civil Engineering with Construction Management, and MEng Civil with Environmental Engineering, December 2012
- Course Leader: Civil Engineering Programmes (2013-2014)
- Course Leader: Civil Engineering Programmes Level 6 and 7 (2012-2013)
- Course Leader: Civil Engineering Programmes Level 5 (2010-2012)

RESEARCH ACTIVITY

Dr. Cacciola currently works/worked with various national and international research groups including: Columbia University (NY), Rice University (Houston), EDF (Electricité de France, Paris), University of Nice (France), University of Bristol (UK), University of Messina (Italy). His main research outputs have been published in leading international journals, books, and in various national and international conferences as described in the “Publications” section.

- Research Topics
 - a) *Stochastic Modelling of the Seismic Action*
 - b) *Deterministic and Stochastic vibrations of linear and non-linear systems*
 - c) *Structural identification and health monitoring of vibrating structures*
 - d) *Computational Mechanics and Re-analysis techniques*
 - e) *Vibration Control of Existing Structures*
- Visiting Professor: Stochastic ground motion modeling, University of Nice, France, October 2013 and December 2105
- Adjunct Researcher: Generation of seismic signals and spatial variability, Laboratoire de Mécanique des Structures (LAMSID/EDF/CNRS), Clamart, France, June-August 2009

- Research Fellowship: Modeling cyclic behavior of soils via Finite Element codes, University of Messina -2007-2009
- Research Fellowship: Theoretical and experimental analysis of structures under random loadings, University of Messina, 2002-2006
- Visiting Researcher: Department of Civil and Environmental Engineering, Rice University, Houston, Texas (USA) Jan.-July 2003
- Theme Leader of the Research Group: Ground, Water and Structural Engineering at the University of Brighton – Sept 2010- Feb 2016

- Selected Research Projects (as PI or project partner)
 - *Assessing effect of Local SubSoil VARIability and Uncertainty in SSI, NUGENIA+, FP7 European project “co-funded € 90,000 (Co-PI), April 2015-September 2016.*
 - *Vibrating Barriers for the control of seismic waves (ViBa), 1st January 2013-31st December 2014, £117000. (PI), EPSRC*
 - *Academic Network for Disaster Resilience to Optimise Educational Development, granted by the EU’s Lifelong Learning programme (€536,467, 2012-2015) (project partner)*
 - *Modélisation Probabiliste des Phénomènes Naturels (MODNAT) granted by l’Agence Nationale de la Recherche (ANR), France, 1st October 2012 – 31st December 2015 (project partner).*
 - *Dynamics of Structures Laboratory Early Career Research grant (ECRRIF), School of Environment and Technology, £20,000, 2011, (PI).*
 - *Shake Table facility, Early Career Research grant (ECRRIF), School of Environment and Technology, £20,000, 2009, (PI).*

Participation in projects as Ph.D. student and/or research fellow (selective list):

- “Models and Methods for the Deterministic and Stochastic Dynamic Analysis of structures” (Modelli e metodi per l’analisi dinamica deterministica ed aleatoria delle strutture), COFIN 2007, National Advisor: Prof. Fabrizio Vestroni, Università degli Studi di Roma “La Sapienza”.(61000 euros)
- “Deterministic and Stochastic Methods for the analysis and identification of vibrating structures” (Metodi deterministici e probabilistici per l’analisi e l’identificazione di strutture in campo dinamico), COFIN 2005, National Advisor: Prof. Fabrizio Vestroni, Università degli Studi di Roma “La Sapienza”.(69000 euros)
- “Deterministic and Stochastic Methods for the analysis, control and reliability of structures” (Metodi deterministici e probabilistici per l’analisi il controllo e la sicurezza di strutture), COFIN 2003, National advisor: Prof. Fabrizio Vestroni, Università degli Studi di Roma “La Sapienza”.(70100 euros)
- “Dynamic behavior of structures; analysis and experiments” (Comportamento dinamico delle strutture: analisi e sperimentazione), COFIN 2001, National advisor Prof. Fabrizio Vestroni, Università degli Studi di Roma “La Sapienza”.(82633 euros)
- “Dynamic response of slender structures under natural and simulated loadings” (Risposta dinamica di strutture flessibili sotto l’azione di forze naturali e artificiali), COFIN 1999, National Advisor: Prof. Fabrizio Vestroni, Università degli Studi di Roma “La Sapienza”.(79018 euros)

Reviewer activities

- Reviewer for Engineering and Physical Sciences Research Council (EPSRC)
- Reviewer for grant applications in the field of Civil Engineering submitted to the Scientific Committee of the Ministry of education and science of the Republic of Kazakhstan.

- Reviewer for the Journals (*selective list*): Advances in Engineering Software, Communication in Numerical Methods in Engineering, Computers and Structures, IEEE Transactions on Signal Processing, International Journal of Nonlinear Mechanics, International Journal of Structural Engineering and Mechanics, Soil Dynamics and Earthquake Engineering, Probabilistic Engineering Mechanics, Journal of Engineering Mechanics (ASCE), Journal of Vibration and Acoustics (ASME), Engineering and Structures, Bulletin of the Seismological society of America, Earthquake Engineering and Structural Dynamics.

PHD SUPERVISION AND EXTERNAL EXAMINER

Completion

- Laura D'Amico (2013-2017) : Stochastic analysis and design of the Vibrating Barriers under simulated Ground Motion processes. – Lead Supervisor

Ongoing

- Spyridon Paschalis (2013 -) : Earthquake strengthening and retrofitting of concrete structures using UHPFRC– Co-Supervisor (Dissertation submitted. Viva scheduled on 24th July 2017)
- Mohammed Kadhim Haloob AL-Majidi (2013-) : Development of fiber reinforced Geopolymer Concrete FRGC cured under ambient temperature for structural applications. Submission expected June 2017 – Co-Supervisor
- Baiee Ameer Tuama (2014-) :Strength and durability of an improved textile cementitious-based strengthening technique for upgrading reinforced concrete structures. RPA approved – Co-Supervisor.
- Azzam Ahmed Hassan Hadi (2014-): The effect of supplementary cementitious micro and Nano materials (SCMNM) on the durability of concrete – Co-Supervisor.
- Johan Coronado (October 2015-): “Study of site-city interaction under earthquake induced ground motion. Lead Supervisor.

Dr Cacciola acted as external examiner for 7 PhD candidates at the Univeristy of Messina in Italy (Feb 2017), and as external reviewer of a PhD dissertation entitled “The effects of intensity and frequency contents of seismic motions on the nonlinear dynamic response of structures” at the University of Bucharest in 2012. He also acted as external examiner for two PhD candidates in 2014 at the University of Bristol on “Dynamic Structure-Soil-Structure Interaction” and at the University of East London on “Seismic correction in the wavelet domain” respectively. Dr Cacciola also served as internal reader for the PhD Dissertation of Emanuele Sozzi on “Low-cost disinfection and physico-chemical treatment of highly contaminated wastewater in emergency settings”.

ACTIVITY WITH INDUSTRY – NON ACADEMIC STAKEHOLDERS

- Invited speaker (March 2017) at the M.E.CI (one the largest Construction Fair in Italy) Erba, Milan. Development of Vibrating Barriers for seismic protection. The seminar led CPD credits scheme for chartered status qualification for practitioners.
- Dr Cacciola acted in 2016 as one of the two structural engineering expert who has judged the suitability of the British Airways I360 for the submission to the Guinness World record as the most slender tower in the world. Record achieved by the I360.
- Invited speaker at the Institution of Engineers (ICE- IStructE equivalent) in Messina branch: Vibration Control of structures through the Vibrating barrier (ViBA), 4th January 2016 – The seminar was attended by more than 340 professional civil engineers and offered by the institution as CPD scheme for their chartered status qualification.
- Since 2015- Module leader and module developer of Application of Design module for MEng Civil Engineering. The module is delivered by Mott Mac Donald (lead consultancy firm in the UK and worldwide) and represent one of the strongest links of Civil Engineering courses with Industry.
- Dr Cacciola established for the first time in 2014 the Industrial Advisory Board for Civil Engineering at the University of Brighton.
- Numerical investigation to optimize the characteristics of V-Tec system. V-Tec 2013: Innovation Voucher TSB, V-TEC GB Ltd (Co-PI) , £ 5,000
- Modelling and experimental tests of a sandwich structure, Consultancy at the University of Brighton, 2012-2013 (£4000 +VAT), (PI)
- Calibration of Finite Element models of a set of structural sandwich elements through numerical and experimental tests, Consultancy at the University of Brighton, June-December 2011 (£3000 +VAT), (PI)
- Determination of structural parameters of EPS, GRC specimens and Sandwich Beams, Consultancy at the University of Brighton, March-May 2011 (£2500 +VAT), (PI)

HONOURS AND AWARDS

- The research led by Dr Cacciola on Vibrating Barriers inspired a motion for a European Parliament resolution on the importance of the building sector in relation to seismic activity: “whereas at the Built Environment and Civil Engineering Department of the University of Brighton, the ViBa vibrating barrier has been invented, an instrument which absorbs the impact of an earthquake by 40-80% and can be inserted into existing buildings without modifying them” (B8-0964/2015).
- The research led by Dr Cacciola on “Assessing effect of Local SubSoil VARIability and Uncertainty in SSI” has been mentioned in the UK Civil Nuclear Landscape survey by the Nuclear Innovation Research Office UK (<http://www.nirab.org.uk/our-work/publications/>).
- Member of the Editorial Board of the International Journal Mathematical Problems in Engineering: 2015-

- Member of the Editorial Board of the Challenge Journal of structural mechanics: 2015-
- Member of the Editorial Board of the Cogent Engineering: 2015-
- Invited speaker, Vibration control of buildings through Vibrating barriers, 23rd November 2016, University College of London, UCL, London
- Invited speaker: Vibration control of buildings through Vibrating barriers, 4th February 2016, City University of London, London, UK
- Invited Speaker: Vibration control of structures through the vibrating barrier (*ViBa*), December 2015, University of Nice, Sophia Antipolis, Nice, France
- Invited speaker, *Vibration control of structures through the vibrating barrier (ViBa), Webinar, 29th October 2015, University of Palermo , Palermo, Italy*
- Member of the Editorial Board: "*The Fifteenth International Conference on Civil, Structural and Environmental Engineering Computing (CC2015)*" Prague, 1-4 September, 2015
- Member of the Scientific Committee of "*The Seventh international Conference on Computational Stochastic Mechanics*", Santorini, Greece, June 15-18 2014
- Member of the Editorial Board: "*The Twelfth International Conference on Computational Structures Technology (CST2014)*" Naples, Italy, 2-5 September, 2014
- Invited speaker: Stochastic ground motion modelling for the seismic analysis of structures, University of Nice, Sophia Antipolis, Nice, France, 28th October 2013,
- Member of the Editorial Board: "*The Fourteenth International Conference on Civil, Structural and Environmental Engineering Computing*" Cagliari, Italy, 3-6 September, 2013
- Member of the Editorial Board: "*The Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing*" Chania, Crete, Greece, 6-9 September, 2011
- Invited speaker : Stochastic ground motion modelling for the seismic analysis of structures: a review, The Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing, Chania, Crete, Greece, 6-9 September 2011
- Invited speaker : On the modelling of seismic signals through the theory of stochastic processes 'Neural data analysis: Learning From Other Disciplines' Workshop 21st - 23rd September 2010, Newcastle University, UK
- Member of the Scientific Committee of "*The Sixth international Conference on Computational Stochastic Mechanics*", Rhodes (Rodos), Greece, June 13-16, 2010
- Member of the Editorial Board: "*The Twelfth International Conference on Civil, Structural and Environmental Engineering Computing*" Funchal, Madeira, Portugal 1-4 September 2009
- Invited speaker : Recent advances in the stochastic modelling of the seismic action and evaluation of the structural response, EDF, Clamart, Paris, June, 2009
- Member of the Editorial Board: "*The Eleventh International Conference on Civil, Structural and Environmental Engineering Computing*" St. Julians, Malta, 18-21 September 2007
- Member of Research Strategy Committee of the School of Environment and Technology 2010-2016
- *The Young Researcher Fellowship Award for exemplary research in computational mechanics?* at the Massachusetts Institute of Technology, Cambridge, Massachusetts, U.S.A. June, 17, 2003

■ Journal Articles

- [1] Tombari A, Zentner I and Cacciola P Sensitivity of the stochastic response of structures coupled with vibrating barriers, *Probabilistic Engineering Mechanics*, 44, 183-193, 2016.
- [2] Cacciola P and Tombari A. Vibrating Barrier: a novel device for the passive control of structures under ground motion, *Proceedings of the Royal Society A*, 2015
- [3] Cacciola P, Garcia Espinosa M, Tombari A. Vibration control of piled-structures through structure-soil-structure-interaction. *Soil Dynamics and Earthquake Engineering*. 2015 77:47–57.
- [4] Cacciola, P., D'Amico, L. and Zentner, I. New insights in the analysis of the structural response to response-spectrum-compatible accelerograms *Engineering Structures*, 78. pp. 3-16. ISSN 0141-0296, 2014.
- [5] Cacciola P. and Zentner I., Generation of response-spectrum-compatible artificial earthquake accelerograms with random joint time-frequency distributions, *Probabilistic Engineering Mechanics*, 28, 52-58, 2012
- [6] Cacciola P., Muscolino G., Versaci C., Deterministic and stochastic seismic analysis of buildings with uncertain-but-bounded mass distribution, *Computers and Structures* , 89(21-22) pp 2028-2036, 2011.
- [7] Cacciola P., Maugeri N., Muscolino G., Structural identification through the measure of deterministic and stochastic time-domain dynamic response, *Computers and Structures*, 89 (19-20), 1812-1819, 2011.
- [8] Cacciola P and Deodatis G, A method for generating fully non-stationary and spectrum-compatible ground motion vector processes. *Soil Dynamics and Earthquake Engineering*, 31(3), 351-360, 2011.
- [9] Cacciola P., and Muscolino G., Reanalysis techniques in stochastic analysis of linear structures under stationary multi-correlated input *Probabilistic Engineering Mechanics*, 26 (1). pp. 92-100, 2011.
- [10]Cacciola P., A stochastic approach for generating spectrum compatible fully nonstationary earthquakes *Computers and Structures*, 88 (15-16). pp. 889-901, 2010
- [11]Cacciola P., and Muscolino G., Stochastic analysis of large structural systems under fully non-stationary input *IOP Conference Series. Materials Science and Engineering*, 10 (012201). Online Journal. , 2010
- [12]Cacciola P., Maugeri N., Muscolino G., A modal correction method for non-stationary random vibrations of linear systems, *Probabilistic Engineering Mechanics*, 22, 170-180, 2007
- [13]Benfratello S., Cacciola P., Impollonia N., Masnata A., Muscolino G., Numerical and experimental verification of a technique for locating a fatigue crack on beams vibrating under Gaussian excitation, *Engineering Fracture Mechanics*, 74, 2992-3001, 2007
- [14]Spanos P.D., Koutsos A.and Cacciola P., Steady-State Dynamic Response of Preisach Hysteretic Systems, *Journal of Vibrations and Acoustics*, 128(2), 244-250, 2006
- [15]Cacciola P., Colajanni P., Muscolino G., A modal approach for the evaluation of the response sensitivity of structural systems subjected to non-stationary random process, *Computer Methods in Applied Mechanics and Engineering* , 194, 4344-4361, 2005
- [16]Cacciola P., Impollonia N., Muscolino G., A dynamic reanalysis technique for general structural modifications under deterministic or stochastic input, *Computers and Structures*, 86, 1076-1085, 2005
- [17]Spanos P. D., Cacciola P. and Redhorse J., Random vibration of SMA systems via Preisach formalism, *Nonlinear Dynamics*, 36, 405–419, 2004.
- [18]Spanos P. D., Cacciola P., Muscolino G., Stochastic averaging of Preisach hysteretic systems, *Journal of Engineering Mechanics (ASCE)*, 130(11), pp. 1257-1267, 2004.
- [19]Cacciola P., Colajanni P., Muscolino G., Combination of Modal Responses Consistent with Seismic Input Representation, *Journal of Structural Engineering (ASCE)*, 130(1), pp. 47-55, 2004.

- [20] Cacciola P., Impollonia N., Muscolino G., Crack detection and location in a damaged beam vibrating under white noise, *Computer and Structures*, 81, 1773-1783, 2003.
- [21] Muscolino G., Ricciardi G., Cacciola P., Monte Carlo Simulation in the stochastic analysis of non-linear systems under external stationary Poisson white noise input, *International Journal of Nonlinear Mechanics*, 38, (8), 1269-1283, 2003.
- [22] Cacciola P., Muscolino G., Dynamic response of a rectangular beam with a known non-propagating crack of certain or uncertain depth, *Computers and Structures*, 80, (27-30) 2387-2396. 2002.

- Book chapters/sections

- [23] P. Cacciola, and L. D'Amico, (2015) Response-Spectrum-Compatible Ground Motion Processes In: Beer, M., Kougoumtzoglou, I.A., Patelli, E. and Au, I., eds. *Encyclopedia of Earthquake Engineering*, Springer, Berlin Heidelberg, pp. 1-27. ISBN 9783642361975
- [24] P. Cacciola, *Stochastic ground motion modelling for the seismic analysis of structures: a review*, Civil-Comp ed., Computational Technology Reviews, vol. 4, pp. 65-91, 2011.
- [25] P. Cacciola and G. Muscolino, Stochastic seismic analysis of large linear structural systems under fully non-stationary spectrum compatible ground motion In: *Computational Mechanics in Stochastic Dynamics*. Springer, pp. 89-109, 2011
- [26] P. Cacciola and G. Muscolino, Stochastic Seismic Analysis in the Messina strait area, *Earthquakes from the knowledge to the practice: Messina experience*, Patron ed., pp. 237-248 (in italian), 2010
- [27] P. Cacciola, P. Colajanni, A. Recupero, New advances in seismic analysis of structures, *Earthquakes from the knowledge to the practice: Messina experience*, Patron ed., pp. 201-218 (in italian), 2010
- [28] G. Muscolino and P. Cacciola, Re-Analysis Techniques in Structural Dynamics, *Progress in Computational Structures Technology*, Ed. by B.H.V. Topping and C.A. Mota Soares, pp. 31-58. Saxe-Coburg Publications, Stirling, Scotland, 2004
- [29] P. Cacciola, "On the free vibrations of classically and non-classically damped systems", in G. Muscolino, *Dynamics of Structures*. McGraw-Hill, 2002 p. 126-131 (in italian).
- [30] P. Cacciola, (a cura di) "On the modeling of the seismic action and seismic response of sdof systems", in G. Muscolino, *Dynamics of Structures*. McGraw-Hill, 2002 p. 521-537 (in italian).
- [31] P. Cacciola, A. Sofi, "Elements of Kronecker Algebra", in G. Muscolino, *Dynamics of Structures*. McGraw-Hill, 2002 p. 593-614 (in italian).

- Conference Contributions:

- International Conferences

- [32] A. Tombari, M. Garcia Espinosa, L. D'Amico, N.A. Alexander, P. Cacciola, Vibration Control Of A Cluster Of Buildings Through The Vibrating Barrier, 16th World Conference on Earthquake Engineering, 16WCEE 2017, Santiago Chile, January 9th to 13th 2017.
- [33] P. Cacciola, A. Tombari and I. Zentner, Vibration Control of an Industrial Building through the Vibrating Barrier, SECED 2015 Conference: Earthquake Risk and Engineering towards a Resilient World, Cambridge UK 9-10 July 2015
- [34] P. Cacciola, and A. Tombari (2014) Vibration Control of Structures through Structure-Soil-Structure-Interaction In: *Proceedings of the 9th International Conference on Structural Dynamics*, EURO DYN 2014, Porto, Portugal, 30 June - 2 July 2014.
- [35] L. D'Amico, A. Tombari and P. Cacciola, Sensitivity of the stochastic response of structures protected by the vibrating barrier control device, *Computational Stochastic Mechanics – Proc. of the 7th International Conference (CSM-7)* G. Deodatis and P.D. Spanos (eds.) Santorini, Greece,

June 15-18, 2014.

- [36] A. Tombari, I. Zentner and P. Cacciola, Non stationary stochastic analysis of the structure soil structure interaction, Computational Stochastic Mechanics – Proc. of the 7th International Conference (CSM-7) G. Deodatis and P.D. Spanos (eds.) Santorini, Greece, June 15-18, 2014.
- [37] I. Zentner, L. D'Amico and P. Cacciola (2014) Simulation of non stationary ground motion compatible with NGA-spectra In: Safety, Reliability, Risk and Life-Cycle Performance of Structures & Infrastructures, New York, USA, 16-20 June 2013.
- [38] P. Cacciola, L. D'Amico and I. Zentner (2014) Seismic response of structural systems to response-spectrum-compatible accelerograms: A comparative study In: Safety, Reliability, Risk and Life-Cycle Performance of Structures & Infrastructures, New York.
- [39] L. D'Amico, I. Zentner and P. Cacciola. Simulation of spectral-acceleration correlated and response-spectrum-compatible ground motion accelerograms, 15th world conference on earthquake engineering, WCEE, Lisbon, 24-28 September 2012.
- [40] P. Cacciola, Simulation of high variable random processes through the spectral-representation based approach, 5th International Conference on Reliable Engineering Computing (REC 2012), Brno, Czech Republic, 13-15 June 2012
- [41] P. Cacciola and P. Vachaviolos, Time-Domain Identification of Structural Parameters using Shaking Table Tests, The Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing, Chania, Crete, Greece, 6-9 September 2011.
- [42] I. Zentner, F. Poirion, P. Cacciola, Simulation of seismic ground motion time histories from data using a non Gaussian stochastic model, 11th International Conference on Applications of Statistics and Probability in Civil Engineering, ICASP11, 2011, August 1-4, ETH Zurich, Switzerland
- [43] G. Muscolino, P. Cacciola, On the integral and differential evaluation of non-geometric spectral moments, 8th International Conference on Structural Dynamics, EURO DYN 2011, Leuven, Belgium, 4-6 July 2011
- [44] P. Cacciola and I. Zentner Generation of artificial earthquake accelerograms compatible with mean and mean \pm standard deviation response spectra, In: Deodatis G. and Spanos P.D., eds. Computational Stochastic Mechanics – Proc. of the 6th International Conference (CSM-6), Rhodos, Greece, June 13-16, 2010.
- [45] P. Cacciola, and G. Muscolino, (Stochastic seismic analysis of structural systems vibrating under spectrum compatible excitations In: COMPDYN 2009. pp. 1-13, 2009
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- [47] G. Biondi, P. Cacciola, and E. Cascone, (2009) Evaluation of amplification factors of soft soils through seismic response analyses In: Performance-Based Design in Earthquake Geotechnical Engineering. Taylor & Francis Group, London, UK, pp. 437-444. ISBN 9780415556149
- [48] P. Cacciola, G. Biondi, and E. Cascone, Site response analysis using the Preisach formalism In: The Twelfth International Conference on Civil, Structural and Environmental Engineering Computing. Civil-Comp Press, Stirling, Scotland, UK, pp. 1-16. (2009)
- [49] P. Cacciola, N. Maugeri, G. Muscolino, A method for the deterministic and stochastic time domain identification of structures, *The Ninth International Conference on Computational Structures Technology*, Athens, Greece, 2-5 September 2008.
- [50] P. Cacciola, N. Maugeri, G. Muscolino, Stochastic Seismic Analysis In The Messina Strait Area. *MERCEA 08*, Reggio Calabria, Italy, 8-11 July 2008.
- [51] P. Cacciola, G. Muscolino and G. Ricciardi, Two stage quasi-moment neglect closure method in the non-linear stochastic dynamics, *International Symposium on Recent Advances in Mechanics, Dynamical Systems and Probability Theory MDP - 2007* Palermo, June 3-6, 2007
- [52] P. Cacciola, P. Colajanni, B. Potenzzone, Combination Coefficients for modal pushover analysis, *10th International Conference on Application of Statistics and Probability in Civil Engineering (ICASP10)*, 31 luglio- 3 agosto 2007, Tokyo.

- [53]P.Cacciola, Evolutionary power spectral densities compatible with a given response spectrum, *The Eleventh International Conference on Civil, Structural and Environmental Engineering Computing*, St. Julians, Malta, 18-21 September 2007
- [54]P.Cacciola, C. Floris, Random dynamics of externally prestressed bridges, *The Third International Conference on Structural Engineering, Mechanics and Computation*, (SEMC 2007), Cape Town, South Africa 10-12 September 2007
- [55]P. Cacciola, A method for generating fully nonstationary spectrum-compatible earthquakes, *Fifth International Conference on Computational Stochastic Mechanics*, 21-23/06/2006, Rhodes (Rodos), Greece – June 21-23, 2006.
- [56]P. Cacciola, F. Giacobbe and G. Muscolino, A method for the dynamic re-analysis of nonlinear systems, *The Eighth International Conference on Computational Structures Technology*, 12-15/9/2006, Las Palmas de Gran Canaria
- [57]P.D.Spanos, A.Kontsos and P.Cacciola, Steady-State Dynamic Response of Preisach Hysteretic Systems, Proceedings of IDETC/CIE 2005, *ASME 2005 International Design Engineering Technical Conference & Computers and Information in Engineering Conference*, 24-28, September 2005, Long Beach, California, USA
- [58]P. Cacciola, N. Maugeri, G. Muscolino, A modal correction method for non-stationary random response of large FE systems, *Eurodyn 2005*, Paris, France 4-7 September, 2005.
- [59]P.D. Spanos, P. Cacciola, G. Muscolino, Solutions of Fokker Plank equations for randomly excited oscillations with Preisach model of Hysteresis, *9th International Conference on Structural Safety and Reliability (ICOSSAR)*, Rome, Italy, 19-23 June, 2005.
- [60]S. Benfratello, P. Cacciola, N. Impollonia, A. Masnata, G. Muscolino, Crack identification in a beam by measure of the response to White Noise, *11th International Conference on Fracture*, Turin, Italy, 20-25 March, 2005.
- [61]P. Cacciola and P. D. Spanos, Stochastic averaging for Shape Memory Alloys with Preisach Hysteresis Representation, *International Conference Of Influence Of Traditional Mathematics And Mechanics On Moderne Science And Technology*. 24-28 May, Messini, Greece, 2004
- [62]P. Cacciola, P. Colajanni, G. Muscolino, Sensitivity of seismically excited structural systems by modal analysis, *Ninth International Conference on Applications of statistics and Probability in Civil Engineering*, San Francisco, California, USA, 6-9 July 2003.
- [63]P. Cacciola, N. Impollonia, G. Muscolino, A reanalysis technique for structures under white noise excitation, *Second M.I.T. Conference on Computational Fluid and Solid Mechanics*, Cambridge, Massachusetts, USA 17-20 June 2003
- [64]P. Cacciola, G. Muscolino, A Dynamic Reanalysis Technique for Modifications of Structural Components, *The Sixth International Conference on Computational Structures Technology*, Prague, Czech Republic, 4-6 September 2002.
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- [68]P. Cacciola, N. Impollonia, G. Muscolino, Stochastic seismic analysis of R-FBI isolation system, *First M.I.T. Conference on Computational Fluid and Solid Mechanics*, Cambridge, Massachusetts, USA 11-15 June 2001
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- [70]P. Cacciola, G. Muscolino, G. Ricciardi, MCS in the pdf evaluation of non-linear systems under Poisson white noise input, *International Conference on Monte Carlo Simulation*, in Monte

Carlo, Princip.of Monaco, 18-21 June 2000.

[71]P. Cacciola, G. Muscolino, A. Sofi, Dynamic analysis of non-linear structures by modal superposition approach, IMAC-XVIII Conference on Structural Dynamic, San Antonio, Texas 7-10 Feb, 2000

- Italian Conferences

[72]P.Cacciola, N.Maugeri, G.Muscolino, Stationary and non-stationary spectrum compatible ground motion models in the stochastic seismic analysis of structures, XIII Congresso Nazionale "L'ingegneria Sismica in Italia", Bologna, 2009

[73]P.Cacciola, G.Deodatis, A method for generating fully nonstationary ground motion vector processes, *Meccanica Stocastica '08*, Convegno Nazionale del Gruppo AIMETA di Meccanica Aleatoria e Affidabilità Strutturale, Cefalù, 11 - 12 giugno 2008

[74]P.Cacciola, N.Maugeri, G.Muscolino, Identificazione strutturale utilizzando misure delle statistiche del processo risposta, *Meccanica Stocastica '08*, Convegno Nazionale del Gruppo AIMETA di Meccanica Aleatoria e Affidabilità Strutturale, Cefalù, 11 - 12 giugno 2008

[75]P. Cacciola, P. Colajanni, B. Potenzione, Analisi pushover multimodale: influenza del comportamento isteretico e delle caratteristiche dell'input nella combinazione dei contributi modali., *XII Congresso Nazionale "L'ingegneria Sismica in Italia"*, Pisa 10-14 giugno 2007

[76]P. Cacciola, N. Maugeri, G. Muscolino, Correzione Modale Per Sistemi Composti Da Sottostrutture Soggetti ad Accelerazione Spettrocompatibile, *Meccanica Stocastica '04*, Convegno Nazionale del Gruppo AIMETA di Meccanica Aleatoria e Affidabilità Strutturale, Pantelleria, 31 maggio - 1 giugno 2004

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[78]P.Cacciola, P. Colajanni e G. Muscolino, L'influenza del fattore di picco nella combinazione dei massimi modali, *XI Congresso Nazionale "L'ingegneria Sismica in Italia"*, Genova 25-29 gennaio 2004

[79]P. Cacciola, N. Impollonia, A. Masnata, G. Muscolino, Indagini teoriche e sperimentali per l'identificazione del crack in travi soggette a rumore bianco, *AIMETA '03 - XV Congresso AIMETA di Meccanica Teorica e Applicata*, Ferrara 9-12 settembre 2003.

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[81]P. Cacciola, G. Muscolino, Analisi sismica aleatoria di strutture dotate di isolatori ad attrito (R-FBI), *X Congresso Nazionale "L'ingegneria Sismica in Italia"*, (ANIDIS) Potenza-Matera 9-13 settembre 2001

[82]P. Cacciola, P. Colajanni, G. Muscolino, Combinazione dei massimi modali coerente con lo spettro di potenza spettrocompatibile, *IX Convegno nazionale "L'ingegneria sismica in Italia"* (ANIDIS), Torino 20-23 settembre 1999

■ Thesis

- Ph.D. Thesis: *Stochastic analysis of structures with passive control systems*, University of Catania, Italy (2002) (in italian)

- M.Sc. Thesis: *Stochastic seismic analysis of structures consistent with a given response spectrum*, University of Messina, Italy (1998) (in italian)

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EDUCATION

- 1978 Ph.D., Physical Oceanography, Scripps Institution of Oceanography,
University of California, Dissertation: "Solitary Rossby Waves Over Variable
Relief and Their Stability Properties"
- 1968 Ph.D., Physics, University of Padua, Italy, "summa cum laude"
Dissertation: "Quantum-mechanical structure of biologically important
molecules. Investigation of the complex molecules of nucleic acids"
- 1963 B.S., Physics and Mathematics, Lyceum "Benedetti," Venice, Italy;
with highest honors

EMPLOYMENT

- 1997 - 2009 MIT Director of the Joint Program in Oceanography and Ocean
Engineering between M.I.T. and the Woods Hole Oceanographic
Institution (WHOI)
- 1992- Professor of Physical Oceanography, M.I.T., Cambridge, Massachusetts
- 1987-1992 Associate Professor of Physical Oceanography with tenure, M.I.T.,
Cambridge, Massachusetts
- 1985-1987 Associate Professor of Oceanography, M.I.T., Cambridge, Massachusetts
- 1981-1985 Assistant Professor of Oceanography, M.I.T., Cambridge, Massachusetts
- 1978-1980 Cecil and Ida Green Scholar at the Institute of Geophysics and Planetary
Physics, University of California at San Diego
(when on leave of absence from Italy)
- 1976-1981 Senior Scientist (tenured) at the "Istituto Dinamica Grande Masse," CNR,
Venice, Italy

- 1972-1976 Research Associate at the “Istituto Studio Dinamica Grande Masse,”
CNR, Venice, Italy
- 1971-1972 Post-doctoral Research Associate at the “Istituto Studio Dinamica Grande
Masse,” CNR, Venice, Italy
- 1970-1971 Post-doctoral fellowship at the “Istituto Studio Dinamica Grande Masse,”
Italian National Research Council (CNR), Venice, Italy
- 1969 Post-doctoral fellowship of the Italian National Council at the University

PROFESSIONAL OUTSIDE ACTIVITIES

- 2008 - 2009 Member of the Awards Nomination Committee of the American
Meteorological Society**
- 2006-2009 Member of the Committee on Strategic Advice to the US “Climate
Change Science Program Committee” of the National Research
Council- National Academies**
- 2006-2007 Chair of the Scientific Program Committee of the XXIV General
Assembly of the International Union of Geodesy and Geophysics**
- 2005-2008 Member of the Advisory Board (CAB) of the Community Climate
System Model (CCSM) of the National Center for Atmospheric
Research**
- 2005-2006 Member of the Panel on “Climate Variability and Change” of the
National Academies**
- Sept. 20-22, 2005 Invited speaker at the 75th Anniversary of Woods Hole
Oceanographic Institution**
- 2005-2008 Affiliate Scientist at the National Center for Atmospheric Research**
- 2002-2004 Member of the Advisory Committee for Geosciences (AC/GEO) of the
National Science Foundation
- 2000-2003 Editor of the General Circulation and Modeling section of the Journal of
Geophysical Research-Oceans
- 2000-2001 Chair of the UCAR Member’s Nominating Committee
- 2000 Member of the Nominating Committee for the 2001 positions of
President and Counselors of the American Meteorological Society
- 1999-2003 President of the International Association for the Physical Sciences of the
Ocean (IAPSO)

- 1999-2005 Institutional Trustee of the University Corporation for Atmospheric Research (UCAR)
- 1999-2000 Member of the UCAR Committee for the search for new Director of NCAR (National Center for Atmospheric Research)
- 1998 Chair of the UCAR Review Team of the Center for Climate Prediction of the National Centers for the Environmental Prediction (NCEP)
- 1998- 1999 Member of the Advisory Panel of the Scientific Computing Division of the National Center for Atmospheric Research (NCAR)
- 1997 Chair of the External Review Committee of the Laboratory for Hydrospheric Sciences, Goddard Space Flight Center
- 1997 Member of the Nominating Committee for the 1999 positions of President and Counselors of the American Meteorological Society
- 1996-Present Member of the Advisory Panel to the Consorzio Venezia Nuova, Venice, Italy for the construction of the mobile gates in the Venice Lagoon
- 1996-1997 Member of the Panel of Experts nominated by the Department of the Environment, Italian Government, Rome, to advise on the Flood Problem of Venice and the Construction of the Gates to the Venice Lagoon
- 1995-1999 Deputy Secretary General of the International Association for the Physical Sciences of the Ocean (IAPSO)
- 1995-1998 Member of the Advisory Panel for the National Centers for Environmental Prediction (NCEP) of UCAR
- 1993-1998 Member of the Earth Science Council of the Universities Space Research Association (USRA)
- 1989-1998 Member of the Scientific Advisory Committee (SAC) of the Climate Systems Modeling Project (CSMP) of the University Corporation for Atmospheric Research (UCAR)
- 1983-1998 Co-chairperson of the International Program P.O.E.M. (Physical Oceanography of the Eastern Mediterranean), sponsored by UNESCO and IOC.
- 1992-1994 Member of the Outfall Monitoring Task Force for the Boston Harbor-Commonwealth of Massachusetts.
- 1991-1992 Member of the Search Committee for the Director of INO (Institute of Naval Oceanography) and the Navier-Stokes Chair at INO.

- 1991-1992 Member of the Standing Advisory Committee of INO (Institute of Naval Oceanography)
- 1989-1993 Member of the Steering and Advisory Committee for UCAR (University of Corporation for Atmospheric Research) post-doctoral program in oceanographic modelling
- 1989-1992 Member of the Advisory Panel for the Marine Center Project on coastal water quality of the Sea Grant Program of MIT
- 1991-1992 President of the Italian Commission for Competition and Assignment of 11 University Chairs in Physics of the Earth all over Italy
- 1987-1990 Member of the Advisory Panel for Ocean Sciences Research of the National Science Foundation
- 1987-1990 Member of the American Meteorological Society Committee on Atmospheric and Oceanic Waves and Stability
- 1987-1990 Member of the Steering and Advisory Committee for the UCAR (University Corporation for Atmospheric Research) Visiting Scientist Program in Meteorology
- 1985-1989 Member of the “Working Group on Numerical Modelling” of WOCE
- 1984-1988 President of the Committee of Physical Oceanography, Commission Internationale Exploration Scientifique de la Mer Mediterranee (CIESM), Monte Carlo, Monaco.
- 1980 Scientific Secretary of the 1st International Summer School “E. Fermi” in “Topics in Ocean Physics,” Varenna, Italy, of the Italian Physical Society.
- 1980 Organizer and Scientific Coordinator of the COSPAR/SCOR/IUCRM Symposium, “Oceanography from Space,” sponsored by CNR of Italy, In Venice, 26-30 May.
- 1979-1982 Principal Investigator of YINAMG (Yugoslavian-Italian Northern Adriatic Modeling Group) in the International Program of Scientific Cooperation between Italy and Yugoslavia.
- 1977 Scientific Coordinator and Principal Investigator of 1978 Northern Adriatic test-site in the EURASEP program for the calibration of NIMBUS-7 satellite (CZCS sensor).
- 1972-1974 Chief Scientist during oceanographic campaigns in the Adriatic Sea on oceanographic ships of the Italian National Research Council: ADRIATIC I - January-February, 1972, ADRIATIC II - July-August 1973, ADRIATIC III - November 1974.

M.I.T. ACTIVITIES

1. **Member of the MIT Committee for the search of the Dean of the School of Science, 2006-2007.**
2. **Member of the Faculty Advisory Committee for the search of the MIT President, 2003-2004.**
3. **Associate Chair of the MIT Faculty, 2003 – 2005**
4. Member of the Committee on the MIT Sea Grant College Program, 1998-2001.
5. Chair of the Committee of Undergraduate Performance (CAP), 1997-2000.
6. **MIT Director of the Joint MIT/WHOI Program, 1997- 2009**
7. Member of “Committee on Women Faculty,” School of Science, MIT-Dean’s appointment, 1995-2000.
8. Chair of JCPO 1995-1997.
9. Member of the Joint Committee for Physical Oceanography, (JCPO), 1985-1997.
10. Undergraduate Committee of Dept. of Earth, Atmospheric & Planetary Sciences, Chair, 1989-1992.
11. Affirmative Action Committee - Dept. of Earth, Atmospheric & Planetary Sciences (chairperson) 1984-1987.
12. Student Research Fund Committee - Dept. of Earth, Atmospheric & Planetary Sciences, 1983-86.
13. Member of the Foreign Scholarship Committee, MIT (Presidential appointment) 1984-1988.

HONORS

Recipient of the Recognition Award from the Prime Minister of the Italian Government for the contribution to the IPCC report winner of the 2007 Nobel Prize for Peace

Fellow of the American Geophysical Union, 2006
Fellow of the American Meteorological Society, 2002

Winner of the 1998 Masi of the Italian government for excellence in environmental sciences

Editor's Award from the American Meteorological Society as best reviewer of the *Journal of Physical Oceanography*, 1992

Cecil and Ida Green Scholar, Institute of Geophysics and Planetary Physics, Scripps Institution of Oceanography, 1978-1980

PROFESSIONAL SOCIETY MEMBERSHIPS

American Physical Society

American Geophysical Union

American Meteorological Society

Oceanography Society

European Geophysical Society

Commission Internationale Exploration Scientifique Mer Mediterranee
(President of the Committee of Physical Oceanography, 1984-1988)

Italian Physical Society

REFEREED PUBLICATIONS IN ENGLISH

126. H.Chen, J.Wei, P.Tkalich and **P.Malanotte-Rizzoli**, “ The various components of the Circulation in the Singapore Strait region: tidal, wind and eddy-driven circulations and their relative importance “, submitted to the Proceedings of the 20th *International Offshore and Polar Engineering Conference (ISOPE)*, 2010
125. J.Wei, H.Zheng, H.Chen, B.H.Ooi, M.H.Dao, W.Cho, **P.Malanotte-Rizzoli**,P.Tkalich and N.M. Patrikalakis, “Multi-layer model simulation and data assimilation in the Serangoon Harbor of Singapore”, submitted to the Proceedings of the 20th *International Offshore and Polar Engineering Conference (ISOPE)*, 2010
124. B.H.Ooi, H.Zheng, K.P.Yue, H.Kurniawati, P.Sundarambal, M.H.Dao, K.A.P.Roopsekhar, J.Wei, W.Cho, P.Tkalich, **P.Malanotte-Rizzoli** and N.M.Patrikalakis, “Case study of phytoplankton blooms in Serangoon Harbor of Singapore”, submitted to the Proceedings of the 20th *International Offshore and Polar Engineering Conference (ISOPE)*, 2010
123. P.Tkalich, P.Vethamony, M.T.Babu, **P.Malanotte-Rizzoli** , “ Sea level anomalies in the Singapore Strait due to storm surges of the South China Sea: the monsoon regime “, submitted to *J.Marine Systems*, 2010
122. A.Bergamasco and **P.Malanotte-Rizzoli**, “ The circulation of the Mediterranean Sea: a historical review of experimental investigations”, in press in *Advances in Oceanography and Limnology*, 2010
121. J.Wei and **P.Malanotte-Rizzoli**, “Validation and application of an Ensemble Kalman Filter in the Selat Pauh in Singapore”, *Ocean Dynamics*, DOI 10.1007/s10236-009-0253-y, 2009

120. Ooi, B.H., H.Zheng, H.Kurniawati, W.Cho, M.H.Dao, J.Weij, P.Zemskyy, P.Tkalich, **P.Malanotte-Rizzoli**, N.M.Patrikalakis, “ Multi-Vehicle Oceanographic Feature Exploration”, Proceedings of the 19th *International Offshore and Polar Engineering Conference (ISOPE)*, vol.2, 669-676, 2009
119. C.Chen, **P.Malanotte-Rizzoli**, J.Weij, R.C.Beardsley, Z.Lai, P.Xue, S.-J.Lyu,Q.Xu,J.Qi and G.Cowles, “Validation of Kalman filters for coastal ocean problems: an experiment with FVCOM”, *J.Geophys.Res.*, doi:10.1029/2007JC004548, 2009
118. E.Urban,B.Sundby, **P.Malanotte-Rizzoli** and J.Melillo , “Dynamics of Semi-Enclosed Ecosystems: Introduction”, in “*Watersheds, Bays and Bounded Seas*”, Island Press, 1-8, 2008
117. P. M. S. Monteiro, A. K. van Der Plas, G. W. Bailey, **P. Malanotte-Rizzoli**, C. M. Duncombe Rae, D. Byrnes, G. Pitcher, P. Florenchie, P. Penven, J. Fitzpatrick and H. U. Lass, “Low Oxygen Water (LOW) forcing scales amenable to forecasting in the Benguela ecosystem,” in *The Benguela: Predicting a Large Marine Ecosystem*, Elsevier Publishing Company, O’Toole, Shannon, Moloney, **Malanotte-Rizzoli**, Hempel and Woods, eds., 295-308, 2006.
- 116.P.Lionello-, **P. Malanotte-Rizzoli**, R. Boscolo, P. Alpert, V. Artale, L. Li, J.Luterbacher, W. May, R. Trigo, M. Tsimplis, U. Ulbrich, and E. Xoplai, “The Mediterranean climate: an overview of the main characteristics and issues,” in *Mediterranean Climate Variability*, Elsevier Publishing Company Oceanographic Series, P. Lionello, P. Malanotte-Rizzoli and R. Boscolo, eds, 1-25, 2006.
115. M. N. Tsimplis, V. Zervakis, S. A. Josey, E. Peneva, M. V. Struglia, E. Stanev, P. Lionello, **P. Malanotte-Rizzoli**, V. Artale, A. Theocharis, E. Tragou and T. Oguz, “Changes in the oceanography of the Mediterranean Sea and their link to climate variability,” in *Mediterranean Climate Variability*, Elsevier Publishing Company Oceanographic Series, P. Lionello, P. Malanotte-Rizzoli and R. Boscolo, eds, 227-282, 2006.
114. V. Artale, S. Calmanti, **P. Malanotte-Rizzoli**, G. Pisacane, V. Rupolo and M. Tsimplis, “The Atlantic and Mediterranean sea as a connected system,” in *Mediterranean Climate Variability*, Elsevier Publishing Company Oceanographic Series, P. Lionello, **P. Malanotte-Rizzoli**, and R. Boscolo, eds, 283-323, 2006.
113. M. Jochum and **P. Malanotte-Rizzoli**, 2005: “Reply to L. Hua's Comment on ‘A new theory for the generation equatorial subsurface countercurrents’,” *J. Phys. Oceanogr.*, 35, 1497-1500, 2005.
112. J. Kröger, A. J. Busalacchi, J. Ballabrera-Poy, **P. Malanotte-Rizzoli**, “Decadal variability of shallow cells and equatorial sea surface temperature in a numerical model of the Atlantic,” *J. Geophys. Res.*, 110, C12003, doi:10.1029/2004JC002703, 2005.
111. M. Jochum, R. Murtugudde, R. Ferrari and **P. Malanotte-Rizzoli**, “The impact of horizontal resolution on the tropical heat budget in an Atlantic ocean model,” *J. Climate*, 18, 841-851, 2005

110. M. Jochum, R. Murtugudde, **P. Malanotte-Rizzoli**, and A.J. Busalacchi, "Internal Variability of the Tropical Atlantic Ocean," American Geophysical Union for a Geophysical Monograph, "Ocean-Atmosphere Interaction and Climate Variability," edited by C. Wang, S.-P. Xie, and J.A. Carton, 181-188, 2004.
109. M. Jochum and **P. Malanotte-Rizzoli**, "A new theory for the generation of the Equatorial Subsurface Countercurrents," *J. Phys. Oceanogr.*, 34, 755-771, 2004.
108. M. Jochum, **P. Malanotte-Rizzoli** and A. Busalacchi, "Tropical instability waves in the Atlantic Ocean," *Ocean Modeling*, 7, 145-163, 2004.
107. **P. Malanotte-Rizzoli** et al., The LIWEX Group, "The Levantine Intermediate Water Experiment (LIWEX) Group: Levantine Basin – A laboratory for multiple water mass formation processes." *J. Geophys. Res.*, 108, C9, 8101, doi: 10.1029/2002JC001643, 2003.
106. T. Oguz, T. Cokacar, **P. Malanotte-Rizzoli**, and H. Ducklow, "Climate warming and accompanying changes in the ecological regime of the Black Sea during 1990s," *Global Biogeochemical Cycles*, 17, 3, 1088, doi: 10.1029/2003GB002031, 2003.
105. X. Zang and **P. Malanotte-Rizzoli**, "A comparison of assimilation results from the Ensemble Kalman filter and the Reduced-Rank Extended Kalman filter," *Nonlinear Processes in Geophysics*, vol. 10, no. 6, 477-491, 2003.
104. M. Buehner, **P. Malanotte-Rizzoli**, A.J. Busalacchi, and T. Inui, "Estimation of the Tropical Atlantic Circulation from Altimetry data using a Reduced-Rank Stationary Kalman filter," in *Interhemispheric water exchanges in the Atlantic Ocean*, G.G. Goni and P. Malanotte-Rizzoli, eds., Elsevier Oceanographic Series, vol. 68, 49-92, 2003.
103. M. Jochum and **P. Malanotte-Rizzoli**, "The flow of AAIW across the equator," in *Interhemispheric water exchanges in the Atlantic Ocean*, G.G. Goni and P. Malanotte-Rizzoli, eds., Elsevier Oceanographic Series, vol. 68, 193-212, 2003.
102. M. Jochum and **P. Malanotte-Rizzoli**, "On the generation of North Brazil Current Rings," *J. Mar. Res.*, 61, 147-173, 2003.
101. M. Buehner and **P. Malanotte-Rizzoli**, "Reduced-rank Kalman Filters applied to an idealized model of the wind-driven ocean circulation," *J. Geophys. Res.*, 108, no. C6, 3192, 10.1029/2001JC00873, 2003.
100. T. Oguz, **P. Malanotte-Rizzoli**, H.W. Ducklow, and J.W. Murray, "Interdisciplinary studies in integrating the Black Sea Biogeochemistry and Circulation Dynamics," *Oceanography*, 15, 4-11, 2002.
99. Solovev, M., P.H. Stone, **P. Malanotte-Rizzoli**, "Assessment of mesoscale eddy parameterizations for a single basin coarse resolution ocean model," *J. Geophys. Res.*, 107, C9, DOI 10.1029/2001JC001032, 2002.

98. T. Inui, A. Lazar, **P. Malanotte-Rizzoli**, and A.J. Busalacchi, "Wind stress effects on the Atlantic subtropical-tropical circulation," *J. Phys. Oceanogr.*, 32, 2257-2276, 2002.
97. Lazar, A., T. Inui, A.J. Busalacchi, **P. Malanotte-Rizzoli**, L. Wang, and R. Murtugudde, "Seasonality of the ventilation of the tropical Atlantic," *J. Geophys. Res.*, 107(0), 10.1029/2000JC000667, 2002.
96. A. Mahadevan, J. Lu, S.P. Meacham, and **P. Malanotte-Rizzoli**, "The predictability of large-scale wind-driven flows," *Nonlinear Processes in Geophysics*, 8, 449-465, 2001.
95. M. Jochum and **P. Malanotte-Rizzoli**, "On the influence of the meridional overturning circulation on the tropical-subtropical pathways," *J. Phys. Oceanogr.*, 31, 1313-1323, 2001.
94. T. Oguz, **P. Malanotte-Rizzoli**, and H.W. Ducklow, "Simulations of phytoplankton seasonal cycle with multi-level and multi-layer physical-ecosystem models: the Black Sea example," *Ecological Modelling*, 144, 295-314, 2001.
93. T. Oguz, H.W. Ducklow, J.E. Purcell, and **P. Malanotte-Rizzoli**, "Modeling the response of top-down control exerted by gelatinous carnivores on the Black Sea pelagic food web," *J. Geophys. Res.*, 106, 4543-4564, 2001.
92. T. Oguz, H.W. Ducklow, **P. Malanotte-Rizzoli**, "Modeling distinct vertical biogeochemical structure of the Black Sea: dynamical coupling of the oxic, suboxic and anoxic layers," *Global Biogeochemical Cycles*, 14, 1331-1352, 2000.
91. **P. Malanotte-Rizzoli**, R.E. Young, K. Hedstrom, H. Arango, and D.B. Haidvogel, "Water mass pathways between the subtropical and tropical ocean in a climatological simulation of the North Atlantic ocean circulation," *Dyn. Atmos. Oceans*, 32, 331-372, 2000.
90. D.B. Haidvogel, H. Arango, K. Hedstrom, A. Beckmann, **P. Malanotte-Rizzoli**, and S. Shchepetkin, "Model evaluation experiments in the North Atlantic basin: simulations in non-linear terrain following coordinates," *Dyn. Atmos. Oceans*, 32, 239-282, 2000.
89. E. Napolitano, T. Oguz, **P. Malanotte-Rizzoli**, A. Yilmaz, and E. Sansone, "Simulations of biological production in the Rhodes and Ionian basins of the Eastern Mediterranean," *J. Marine Systems*, 24, 277-298, 2000.
88. S. Jiang, P.H. Stone, and **P. Malanotte-Rizzoli**, "An assessment of the GFDL Ocean Model with Coarse Resolution. Part I. Annual mean climatology," *J. Geophys. Res.*, 104, 25,623-25,645, 1999.
87. S. Jiang and **P. Malanotte-Rizzoli**, "On the predictability of regional oceanic jet stream: the impact of model errors at the inflow boundary," *J. Marine Res.*, 57, 641-669, 1999.
86. **P. Malanotte-Rizzoli**, B.B. Manca, M. Ribera d'Alcalà, A. Theocharis, S. Brenner, G. Budillon, and E. Ozsoy, "The Eastern Mediterranean in the 80's and in the 90's: the big transition in the intermediate and deep circulations," *Dyn. Atmos. Oceans*, 29, 365-395, 1999.

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84. T. Oguz, H.W. Ducklow, **P. Malanotte-Rizzoli**, J. Murray, V.I. Vedernikov, and U. Unluata, "A physical-biochemical model of plankton productivity and nitrogen cycling in the Black Sea," *Deep-Sea Research I*, 46, 4, 597-636, 1999.
83. Bergamasco, A., T. Oguz and **P. Malanotte-Rizzoli**, "Modeling dense water mass formation and winter circulation in the Northern and Central Adriatic Sea," *J. Mar. Systems*, 20, 1-4, 125-134, 1999.
82. S. Marullo, R. Santoleri, **P. Malanotte-Rizzoli**, and A. Bergamasco, "The sea surface temperature fields in the Eastern Mediterranean from AVHRR data. Part II: Interannual variability," *J. Mar. Systems*, 20, 1-4, 83-112, 1999.
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80. T. Oguz, H.W. Ducklow, **P. Malanotte-Rizzoli**, and J. Murray, "Simulations of the Black Sea Pelagic Ecosystem by one-dimensional vertically resolved physical-biochemical models," *Fisheries Oceanography*, GLOBEC Special Issue, 7 (3/4) 300-304, 1998.
79. L. Yu and **P. Malanotte-Rizzoli**, "Inverse modeling of seasonal variability in the North Atlantic Ocean," *J. Phys. Oceanogr.*, 28, 902-922, 1998.
78. **P. Malanotte-Rizzoli** et al., "A synthesis of the Ionian Sea hydrography, circulation and water mass pathways during POEM Phase I," *Progr. in Oceanography*, 39, 153-204, 1997.
77. **P. Malanotte-Rizzoli** and R.E. Young, "Gulf Stream system assimilation experiments: a sensitivity study," *J. Atmos. Ocean. Techn.*, 14, 1392-1408, 1997.
76. T. Oguz, **P. Malanotte-Rizzoli**, and H. Ducklow. "Towards coupling a three-dimensional general circulation model with a biochemical model of nutrient cycling and bacteria-plankton dynamics in the Black Sea," *Sensitivity of North Sea, Baltic Sea and Black Sea Anthropogenic and Climate Changes*, E. Ozsoy and A. Mikaelyan, eds., NATO ASI Series Vol. 27, Kluwer Academic Publishers, 469-485, 1997.
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73. L. Yu and **P. Malanotte-Rizzoli**, "Analysis of the North Atlantic climatologies using a combined OGCM/adjoint approach," *J. Mar. Res.*, 54, 867-913, 1996.
72. T. Oguz, H. Ducklow, **P. Malanotte-Rizzoli**, S. Tugrul, N.P. Nezlin, and U. Unluata, "Simulation of annual plankton productivity cycle in the Black Sea by a one-dimensional physical-biological model," *J. Geophys. Res.*, Vol. 101, 16, 585-16, 599, 1996.
71. T. Oguz and **P. Malanotte-Rizzoli**, "Seasonal variability of wind and thermohaline driven circulation in the Black Sea: Modeling studies," *J. Geophys. Res.*, Vol. 101, 16, 551-16, 569, 1996.
70. **P. Malanotte-Rizzoli**, I. Fukumori, and R.E. Young, "A methodology for the construction of a hierarchy of Kalman filter/smoothers for nonlinear primitive equation models," *Modern Approaches to Data Assimilation in Ocean Modeling*, P. Malanotte-Rizzoli, ed., Elsevier Publishing Co., pp. 297-317, 1996.
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68. S.R. Jayne, N.G. Hogg, and **P. Malanotte-Rizzoli**, "Recirculation gyres forced by a beta plane jet," *J. Phys. Oceanogr.*, 26, 492-504, 1996.
67. P. Bogden, **P. Malanotte-Rizzoli**, and R. Signell, "Open-ocean boundary conditions from interior data: local and remote forcing of Massachusetts Bay," *J. Geophys. Res.*, 101, 6,487-6,500, 1996.
66. **P. Malanotte-Rizzoli** and R.E. Young, "Assimilation of global versus local datasets into a regional model of the Gulf Stream system. Part I: Data effectiveness," *J. Geophys. Res.*, 100, 24,773-24,796, 1995.
65. **P. Malanotte-Rizzoli**, N.G. Hogg, and R.E. Young, "Stochastic wave radiation by the Gulf Stream: Numerical Experiments," *Deep Sea Res.*, 42, 389-423, 1995.
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62. T. Oguz, **P. Malanotte-Rizzoli**, and D. Aubrey, "Wind and thermohaline circulation of the Black Sea driven by yearly climatological forcing," *J. Geophys. Res.*, 100, 6845-6863, 1995.
61. Fukumori and **P. Malanotte-Rizzoli**, "An approximate Kalman filter for ocean data assimilation: a reduced-dimension, static, linearized Kalman filter," *J. Geophys. Res.*, 100, 6777-6793, 1995.

60. **P. Malanotte-Rizzoli**, "The Gulf Stream System: Dynamics and modeling," in *The Oceans: Physiochemical Dynamics and Resources*, S.K. Majumdar, E.W. Miller, G.S. Forbes, R.F. Schmalz, eds., The Pennsylvania Academy of Science, Chapter 7, 108-123, 1994.
59. D. Chester, **P. Malanotte-Rizzoli**, J. Lynch, and C. Wunsch, "The eddy radiation field of the Gulf Stream as measured by ocean acoustic tomography," *Geophys. Res. Lett.*, 21, 181-184, 1994.
58. **P. Malanotte-Rizzoli**, "Data assimilation: Fundamentals, global and Mediterranean examples," in *Ocean Processes in Climate Dynamics: Global and Mediterranean Examples*, P. Malanotte-Rizzoli and A.R. Robinson, eds., Kluwer Publishing Co., 323-354, 1994.
57. **P. Malanotte-Rizzoli**, "Modeling the general circulation of the Mediterranean," in *Ocean Processes in Climate Dynamics: Global and Mediterranean Examples*, NATO/ASI Proceedings, P. Malanotte-Rizzoli and A.R. Robinson, eds., Kluwer Publishing Co., 307-321, 1994.
56. Bergamasco, **P. Malanotte-Rizzoli**, W.C. Thacker, and R.B. Long, "The seasonal steady circulation of the Eastern Mediterranean determined with the adjoint method," in *Topical Studies in Oceanography: Physical Oceanography of the Eastern Mediterranean Sea*, Vol. 40, no. 6, special issue of Deep Sea Research, 1269- 1298, 1993.
55. K. Haines, **P. Malanotte-Rizzoli**, and M. Morgan, "Persistent jetstream intensifications: a comparison between theory and data," *J. Atmos. Sci.*, 50, 145-154, 1993.
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53. **P. Malanotte-Rizzoli** and R.E. Young, "How useful are localized clusters of traditional oceanographic measurements for data assimilation?," *Dyn. Atmos. Oceans*, 17, 23-62, 1992.
52. The P.O.E.M. Group, A.R. Robinson and **P. Malanotte-Rizzoli** et al., "General circulation of the Eastern Mediterranean," *Earth Science Reviews*, 32, 285-309, 1992.
51. **P. Malanotte-Rizzoli**, "Planetary waves in the ocean and atmosphere," in *Encyclopedia of Earth System Science, Encyclopedia of Earth Science*, Academic Press, W.A. Nieremberg, ed., Vol. 3, 609-616, 1992.
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14. P. Malanotte-Rizzoli and G. Halikas, "Remote sensing and ocean modeling an application to the Adriatic Sea," XVIII International Symposium on Space, pp. 291-300, Rome, Italy, 1978.

REFEREE FOR:

Dynamics of Atmospheres and Oceans

Deep-Sea Research

Journal of Marine Research

Journal of Physical Oceanography

Journal of Geophysical Research

Journal of the Atmospheric Sciences

Tellus

National Science Foundation

National Oceanic Atmospheric Administration

National Aeronautics Space Administration

Courses Taught

Italy:

Physical Oceanography, Istituto Studio Dinamica Grandi Masse, Venice, Italy, and University of Padua, Padua, Italy, 1978, 1979, 1980.

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M.I.T.

- 19.76 Dynamical Oceanography, 1981-1983 (G)
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- 12.24 Topics in the Physics of Atmospheres and Oceans, 1984-1986 (G)
- 12.21 Physics of the Oceans, 1985-1989 (U)
- 12.93 Numerical Methods in Meteorology & Physical Oceanography, 1986-1988 (G)
- 12.790 Introduction to Observational Physical Oceanography, 1987-1989 (G)
- 12.003 Introduction to Meteorology and Physical Oceanography, 1990- (U)
- 12.S11 Freshman Seminar, Physics of the Oceans, 1990-1992 (U)
- 12.801 Steady Circulation of the Oceans, 1991-1993 (G)
- 12.803 Quasi-balanced Circulation in Oceans and Atmospheres, 1995-1998
- 12.802 Waves in the Ocean and Atmosphere, 1997-2001
- 12.S.54 Freshman Seminar, The role of the ocean in Global Change, 1993-to present (U)
- 12.801 Steady Circulation of the Oceans, 2003-2005 (G)
- 12.950 Equatorial Oceanography, 2003 (G)
- 12.802 Waves in the Ocean and Atmosphere, 2006-2008 (G)

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Coherent structures in a baroclinic atmosphere
- Kevin Speer, MS in Oceanography, finished December 1985
The influence of geothermal sources on deep ocean temperature, salinity, and flow fields
- Paul Hancock, MS in Meteorology, finished May 1986
An observational study of blocking with regard to the theory of coherent structures in a baroclinic atmosphere
- Elizabeth Welsh, MS in Oceanography, finished May 1986
The relationship of topographic waves on the continental rise to Gulf Stream fluctuations
- M. Ross Vennell, Ph.D. in Oceanography, finished July 1989
The influence of a steady baroclinic deep ocean on the shelf
- David Chester, MS in Oceanography, finished May 1988
Acoustic tomography in the straits of Florida
- Xiaoming Wang, Ph.D. in Oceanography, finished August 1992
Interaction of an eddy with a continental slope
- David Chester, Ph.D. in Oceanography, finished January 1993
A tomographic view of the Gulf Stream southern recirculation gyre at 38°N, 55°W
- James R. Gunson, MS in Oceanography, finished April 1993
Time-dependent assimilation of CTD data into an open ocean Rossby wave model
- Antonietta Capotondi, finished February 1993
Assimilation of altimeter data in a quasi-geostrophic model of the Gulf Stream System: a dynamical perspective
- Kirill Pankratov, Ph.D. in Oceanography, finished January 1994
Influence of topography on the dynamics of baroclinic oceanic eddies
- Eric Won, MS in Oceanography, finished June 1994
Sensitivity of a general circulation inverse model to sub-grid scale parameterization coefficients
- James Gunson, Ph.D. in Oceanography, finished July 1995
Estimating open-ocean boundary conditions: sensitivity studies

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Diagnosis of physical and biological controls on phytoplankton distribution in the Gulf of Maine-Georges Bank region

Mikhail Solovev, Ph.D. in Oceanography, finished July 1999
Assessment of mesoscale eddy parameterizations for coarse resolution ocean models

Ashwini Deshpande, MS in Oceanography, finished June 2000
Edge analysis of seasonal variability in chlorophyll maps of the Black Sea.

Markus Jochum, Ph.D. in Oceanography, finished March 2002.
On the pathways of the return flow of the Meridional Overturning Circulation in the tropical Atlantic.

Sarah L. Russell, Ph.D. in Oceanography, Finished February 2003
Shelf Currents, Ice and Wind: a Numerical Modeling Study.

Baylor Fox-Kemper, Ph.D. in Oceanography, Finished June 2003
Eddies and Friction: Removal of Vorticity from the Wind-Driven gyre.

Jinbo Wang , MS in Oceanography, Finished September 2008
*On the warm bias along the South-West African coast in coupled models:
 An oceanic perspective*

Jinbo Wang, started Fall 2005

Wilken-Jon von Appen, started Fall 2007

Martha Buckley, started Fall 2005

Member of the Ph.D. Thesis Committees for:

Oceanography

Bruce Cornuelle, finished 1983

Rui Xin Huang, finished 1984

Stephen Meacham, finished 1984

Melinda Hall, finished 1985

Leslie Rosenfield, finished 1985

Paola Cessi, finished 1987

Eli Tziperman, finished 1987

Sophie Wacogne, finished 1988

Kevin Speer, finished 1988

Jack Barth, finished 1988

Wendy Smith, finished 1988

Stephen Rintoul, finished 1988

Lorenzo Polvani, finished 1988

Joyce Fredrerik, finished 1988

Tamara Wood, finished 1988 (MS)
Richard Signell, finished 1989
Elise Ralph, finished 1991 (MS)
Alison Macdonald, finished 1991 (MS)
Rebecca Schudlich, finished 1991
Changsheng Shen, finished 1992
Susan Wijffels, finished 1993
Cecilia Mauritzen, finished 1993
Martha O'Neil, finished 1993
Anand Gnanadesikan, finished 1994
Elise Ralph, finished 1994
Edward Dever, finished 1994
Ari Epstein, finished 1995
Alison Macdonald, finished 1995
Bingjian Ni, finished 1996
James Pringle, finished 1998
Steven Jayne, finished 1999
David Sutherland, finished 2007
Natalia Beliakova, finished 1999
Sandra Werner, finished 1999
Michael Chechelnitzsky, finished 1999
Albert Fisher, finished 2000
Linda Rasmussen, finished 2003
Rachel Stanley, finished 2007
Vikram Khade, finished 2008
Adel Ahanin, finished 2008
Jonathan Moskaitis, finished 2009

Meteorology

Richard Deininger, finished 1983
V. Krishnamurthy, finished 1985
Peter Neilley, finished 1990
Robert Black, finished 1990
Nilton Renno, finished 1992
Michael Morgan, finished 1993

Geophysics

V. Zlotnicky, finished 1983

Ocean Engineering

Richard Pawlowicz, finished August 1993

Postdoctoral Fellows

Stephen Meacham, 1984-1985
Roberta Young, 1985-1986
Dong Shan Ko, 1987-1989
Keith Haines, 1988-1990
Louise Perkins, 1988-1990

Philip Bogden, 1992-1994
Lisan Yu, 1993-1996
Julia Levin, 1995-1997
Shi Jiang, 1994-1998
Tomoko Inui, 1998-2001
Jingxi Lu, 1999-2000
Mark Buehner, 2000-2002
Xiaoyun Zang, 2001-2003
Markus Jochum, 2002-2004
Sang Jin Lyu, 2003-2005
Jun Wei, 2006 –2009
Haoliang Chen, 2008-
Danya Xu, 2008-

Research Scientist

Roberta Young, 1986-1998
Jun Wei, 2009-

Visiting Scientists

Andrea Bergamasco, 1987, 1988, 1990, 1991, 1992, 1993, 1994, 1997
Piero Lionello, 1988-1989
Salvatore Mazzola, 1993-1994
Temel Oguz, 1993-1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002
Maurizio Ribera, 1996-1997
Ernesto Napolitano, 1996, 1997, 1998, 2000
Gianmaria Sannino, 2004, 2005
Alessandro dell'Aquila, 2007
Sandro Calmanti, 2007

CURRICULUM VITAE

ATHANASIOS LOUKAS

**Professor of Hydrology and Water Resources
Department of Civil Engineering
University of Thessaly
38334 Volos**

Visiting Professor

**Department of Civil and Environmental Engineering
Colorado State University**

**Laboratoire d'étude des Transferts en Hydrologie et Environnement
Physique, Ingénierie, Terre, Environnement, Mécanique
Joseph Fourier Université-Grenoble I**

March 2017

I.1. PERSONAL

Name: Athanasios Loukas
Birth Date: 4th December 1964
Birth Place: Thessaloniki
Marital Status: Widowed with one child
Home Address: 75 Mitropolitou Grigoriou Str.
38334 Volos, Greece
Office Address: Department of Civil Engineering
University of Thessaly
Pedion Areos
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Office fax: +30-24210 74169

I.2. EDUCATION**a) The University of British Columbia, 1991-1994**

Ph.D. in Hydrology and Water Resources

Supervisor: Dr. Michael C. Quick, Professor

Ph.D. Dissertation Title: Mountain Precipitation Analysis for the Estimation of Flood Runoff in Coastal British Columbia.

b) The University of British Columbia, 1989-1991

M.A.Sc. in Hydrology and Water Resources

Supervisor: Dr. Michael C. Quick, Professor

M.A.Sc. Thesis Title: Analysis of the Response and the Rainfall Distribution in a Mountainous Watershed.

c) Aristotle University of Thessaloniki, 1983-1988

Diploma in Rural and Surveying Engineering (Dipl. Eng.)

Supervisor: Dr. Panagiotis Tolikas, Associate Professor

Dipl. Eng. Thesis Title: Simplified Techniques for the Solution of Horizontal Soil Moisture Transfer in Unsaturated Porous Media

I.3. SCHOLARSHIPS AND ACADEMIC PRIZES**1) Postgraduate Studies**

- University of British Columbia Graduate Fellowship, 1989-1994
- Scholarship of the Scientific Program of N.A.T.O., 1989-1991
- Scholarship of Public Benefit Foundation "Alexander S. Onassis", 1989-1990
- Earl R. Peterson Memorial Scholarship in Civil Engineering, 1991
- Scholarship of the Scientific Program of N.A.T.O., 1991-1994

2) Undergraduate Studies

- Scholarship of Greek State Scholarships Foundation, 1984-1988
- Scholarship of K. Velliou-Baronou Foundation, 1984-1988
- Academic Prize of Workers Centre, 1984-1988
- Academic Prize of Technical Chamber of Greece, 1988

3) Professional Academic Period

- Fulbright Foundation Research Scholar Scholarship, Colorado State University, Department of Civil and Environmental Engineering, 2013
- Joseph Fourier University, Laboratoire d'étude des Transferts en Hydrologie et Environnement (LTHE), Invited Researcher (Professor 1st class), 2013

I. 4. TEACHING AND RESEARCH EXPERIENCE

1) Professor, Department of Civil Engineering, University of Thessaly, 2011 – today

- Teaching Courses: Hydrology, Dams and Reservoirs, Applications of Hydrosystems Simulation (post-graduate course), Risk Analysis and Decision Making in Water Resources Systems (post-graduate course), Floods (post-graduate course), Forecasting of Hydrohazards (post-graduate course).

2) Visiting Professor, Department of Rural and Surveying Engineering, Aristotle University of Thessaloniki, 2015-today

- Teaching Courses: Hydrology and Open Channel Hydraulics

3) Associate Professor, Department of Civil Engineering, University of Thessaly, 2005 – 2011

- Teaching Courses: Hydrology, Stochastic Hydrology, Dams and Reservoirs, Applications of Hydrosystems Simulation (post-graduate course), Risk Analysis and Decision Making in Water Resources Systems (post-graduate course), Floods (post-graduate course), Forecasting of Hydrohazards (post-graduate course), Droughts (post-graduate course).

4) Sessional Lecture / Assistant Professor / Associate Professor (under contract), Department of Civil Engineering, University of Thessaly, 1997 - 2005

- Teaching Courses: Hydrology, Hydrology II, River Training and Engineering, Geodesy I, Geodesy II, Surveying Practice, History of Technology.

5) Sessional Associate Professor (under contract), Department of Agriculture Plant Production and Rural Environment, University of Thessaly, 2004 - 2005

- Teaching Course: Surveying

6) Sessional Assistant Professor (under contract), Department of Agriculture Animal Production and Water Environment, University of Thessaly, 2003 - 2004

- Teaching Courses: Surveying and Cartography, Sustainable Water Resources Management

7) Sessional Assistant Professor (under contract), Department of Management of Rural Environment and Natural Resources, University of Thessaly, 1998 - 2003

- Teaching Courses: Hydrology, Water Resources Management, Climatic Variability and Natural Resources, Natural Environmental Hazards, Erosion and Protection of Land Resources – Sedimentation, Applications of New Technologies in the Development and Planning of Rural Environment, Surveying and Cartography, Waste Water Disposal and Protection of Water Environment

8) Scientific Associate (under contract), Department of Civil Works, Technological Educational Institution of Larisa, 1997 - 2000

- Teaching courses: Hydrodynamic Works – Dams and Reservoirs

9) Teaching Personnel (under contract), 1996-1998

- 1st Institute of Professional Education of Thessaloniki, 1996- 1998: Teaching courses of professional specialization «Expert in Geographical Information Systems».

- Military School of Air Force, 1996- 1998: Teaching courses: Surveying, Surveying and Mapping.

10) Post Doctoral Research Associate, Department of Civil Engineering, University of British Columbia, 1994 - 1995

11) Teaching Assistant, Department of Civil Engineering, University of British Columbia, 1989-1995

- Teaching the laboratory sessions of courses: Hydraulics of Open and Closed Conduits, Fluid Mechanics, Surveying.

I. 5. SUPERVISION OF PHD DISSERTATIONS MASTER AND DIPLOMA THESES

Main supervisor of seven (7) Ph.D. Dissertations and twenty (20) Master Theses. Member of supervisory committee of fifteen (15) Ph.D. Dissertations and ten (10) Master Theses.

Main supervisor of twenty two (22) Diploma Theses.

I. 6. ACADEMIC ADMINISTRATIVE EXPERIENCE

- 1) **Dean of the School Engineering, University of Thessaly, 2015-today**
- 2) **Chairman of the Civil Engineering Department, University of Thessaly, 2008 – 2012**
- 3) **Director (Greek side) of the common Greek-French Postgraduate Studies Program “Management of Hydrometeorological Hazards-HYDROHASARDS”, 2010 – today**
- 4) **Director of Hydrology and Aquatic Systems Analysis, 2008-today**
- 5) **Member of the University of Thessaly Senate, 2008-2012; 2015-today**
- 6) **Member of University of Thessaly committees, such as Strategic Development Committee, Committee of European Programs and International Affairs (Erasmus), University of Thessaly Property Management Company S.A. among others, 2008-today**
- 7) **Academic Departmental Coordinator of Erasmus+ program, 2006-today**

I. 7. PROFESSIONAL EXPERIENCE

- 1) **Administrative and Financial Director and Project Manager, Program of Elective Studies «Management of Rural Environment and Natural Resources», University of Thessaly, 1998 – 2003**
- 2) **Professional Engineering Consultant, Thessaloniki, 1996 – 2005**
 - Scientific Associate-Consultant in: a) fifteen (15) hydrological and hydraulic projects (study and design of dams, design of urban water supply and waste water networks, river training, etc.), b) fourteen (14) environmental impact studies, c) six (6) surveying studies.

I. 8. PARTICIPATION IN RESEARCH AND EDUCATIONAL PROJECTS

- 1) “Management Plans of Flood Risks for River Basins in Thessaly and Epirus Regions, Greece”, Special Secretariat of Water, Ministry of Environment and Climate Change, Consortium J. Karavokyris and Associates Consulting Engineers S.A. Scientific Responsible: Prof. A. Loukas. Budget: 100,000 € (2015-2017).
- 2) “Evaluation of Alternative Scenarios of Irrigation Withdrawals from Pinios River for the LALR Pinios-Pumping Station B”, Region of Thessaly, Coordinator: K. Iakovakis, Scientific Responsible: Prof. A. Loukas, Budget: 10,000 € (2014).
- 3) “MATHematical Modeling of Microcystis aeruginosa as a KEy-player in Lakes under REconstruction (LAKEREMAKE)”, Greek Ministry of Education – G.S.R.T., Action ARISTEIA II, Coordinator: Ass. Prof. Ch. Laspidou, Budget: 200,000 € (2014-2016) (<http://www.lakeremake.uth.gr/>).
- 4) “Contemporary Environmental and Technological Applications for the Monitoring, Management and Evaluation of Water Resources Systems” – Long Life Education Programme for Updating Knowledge of University Graduates (PEGA), Ministry of Education and Religious Affairs-Project: 144_20_1.2_2. Coordinator: Prof. A. Loukas, Budget: 235,000 € (2013-2015). (<http://www.edulll.gr/?p=21645>).
- 5) “Assessment of EUROpean AGRiculture WATER use and trade under climate change (EURO-AGRIWAT)” – COST Action ES1106. National Representative (2012-2016).
- 6) “Development of an Integrated Water Resources Environmental and Socioeconomic Modeling System – Application of the System to the Restored Lake Karla (DIWRESMSARLKT)”. Greek Ministry of Education. Program Archimedes III, Coordinator: Prof. N. Samaras, Budget: 100,000 € (2012-2014).
- 7) “Development of an Integrated System for the Water Resources Quality and Quantity Monitoring and Management of Agricultural Watersheds Under Climate Change Conditions. Application to Lake Karla Watershed (HYDROMENTOR)”, General Secretariat for Research and Technology. National Action “Cooperation”, Coordinator: Prof. A. Loukas, Budget: 450,000 € (2011-2014).
- 8) “European procedures for flood frequency estimation (FloodFreq)” – COST Action ES0901. National Representative (2010-2013).
- 9) “Climate Change Effects Estimation on Hydrometeorological Data in Thessaly, Epirus and West Sterea Ellada”, Special Secretariat of Water, Ministry of Environment and Climate Change,

- Consortium J. Karavokyris and Associates Consulting Engineers S.A. Scientific Responsible: Assoc. Prof. N. Mylopoulos. Budget: 58,000 € (2011)
- 10) “Agricultural Innovations in Mediterranean Regions (NOVAGRIMED)” – Interreg IV MED programme. Scientific Responsible: Conseil Régional Provence-Alpes-Côte d'Azur Provence - Alpes - Côte d'Azur (France). Budget: 1,850,000 € (2009-2011).
 - 11) “Sustainable Use of Irrigation Water in the Mediterranean Region (SIRRIMED)” – FP7-KBBE-2009-3 – Proposal Reference Number: FP7-245159. Scientific Responsible: Dr. Juan José Alarcón, Budget: 4,050,000 € (2010-2013).
 - 12) “Reconnaissance Study of Land Subsidence in Karla Municipality”. Municipality of Karla. Scientific Responsible: Assoc. Prof. A. Loukas, Budget: 10,000 € (2010).
 - 13) “An Exercise to assess research needs and policy choices in areas of drought (XERICHORE)” 7th Framework Program - FP7-ENV-2007-1 (ENV.2007.1.3.3.3.) Grant agreement no.: 211837. Scientific Responsible: Dr. Anil Markandya, Budget: 1,800,000 € (2008-2010).
 - 14) “Reconnaissance Study of Dam and Reservoir Development in the Position of Gavroneri Stomiou”. Municipality of Evrimenon. Scientific Responsible: Assoc. Prof. N. Mylopoulos, Budget: 12,000 € (2009).
 - 15) “OpenMI-Life”. EC Life – Environment Program. Scientific Responsible: Dr. R. Moore, Budget: 4,000,000 € (2006-2009).
 - 16) “The Water Diversion from Acheloos River in the Perspective of Integrated Water Resources Management of Thessaly”. Regional Municipality Union of Thessaly. Scientific Responsible and Project Lead Partner: Ass. Prof. N. Mylopoulos. Budget: 35,400 €. (2003-2005).
 - 17) “Database Development of Surface Water and Groundwater Measurements and Evaluation of Reclamation Works in Thessaly”. Regional Development Fund of Thessaly. Scientific Responsible: Prof. Y. Mylopoulos. Budget: 120,000 €. (2003-2005).
 - 18) “DEMONstration of Earth observation Technologies in Routine irrigation advisory services (DEMETER)”. 5th Framework, Energy, Environment and Sustainable Development, RTD Network Program. Scientific Responsible: Dr. Alfonso Calera Belmonte. Budget: 2,800,000 € (2002-2005).
 - 19) “Program of Elective Studies – Management of Rural Environment and Natural Resources”. Greek Ministry of Education and Religious Affairs. Scientific Responsible: Prof. N.R. Dalezios. Budget: 1,000,000 €. (2002-2005).
 - 20) “Network of Study and Research for Water Resources with Applications in Cyprus and Greece”. Greek General Secretariat of Research and Technology. Scientific Responsible for Greece: Ass. Prof. E. Sidiropoulos. Budget: 18,000 €. (2002-2003).
 - 21) “Project for the Training of Elementary and High School Teachers in Environmental Education ” Greek Ministry of Education and Religious Affairs. Scientific Responsible: Prof. N.R. Dalezios. Budget: 300,000 €. (1999-2001).
 - 22) “Program of Elective Studies – Management of Rural Environment and Natural Resources”. Greek Ministry of Education and Religious Affairs. Scientific Responsible: Prof. N.R. Dalezios. Budget: 900,000 €. (1998-2000).
 - 23) “Adaptation of the UBC Watershed System for Water Quality Modelling and Use with Meteorological Forecast Models”. British Columbia Science Council. Scientific Responsible: Dr. J. David Cattanaach, B.C. Hydropower Authority. Budget: 240,000 CAD\$ (1995-1996).
 - 24) “Hydrologic Simulation Model Development for the Sooke Lake Watershed” (Greater Victoria Water District). Scientific Responsible: Prof. M.C. Quick. Budget: 65,000 CAD\$ (1995).

I. 9. MEMBER OF SCIENTIFIC COMMITTEES EDITORIAL BOARDS AND ORGANISATIONS

- Editor-in-Chief of *European Water* (2013-)
- Associate Editor of *European Water* (2010-2013)
- Associate Editor of *Water* (2009-)
- Member of Editorial Board of *Scientific Review Engineering and Environmental Sciences* (2013-)

- Associate Editor-in-Chief of *Journal of Spatial Hydrology* (2007-2010)
- Guest Editor of *Natural Hazards and Earth System Sciences (NHESSE-EGU)* for the special issue “Diagnosis, modelling and forecasting of meteorological and hydrological hazards produced by extreme weather and climate change”
- Guest Editor of *Hydrological Processes* for the special issue “S138 Climate Change, Land Cover Dynamics and Eco-Hydrology of the Nile River Basin”
- Guest Editor of *Natural Hazards and Earth System Sciences (NHESSE-EGU)* for the special issue “Extreme Events Induced by Weather and Climate Change: Evaluation, Forecasting and Proactive Planning”
- Guest Editor of *Natural Hazards and Earth System Sciences (NHESSE-EGU)* for the special issue “Assessment and Forecasting of Disaster Risk and Proactive Planning of Extreme Hydrometeorological Events”
- Guest Editor of *Natural Hazards and Earth System Sciences (NHESSE-EGU)* for the special issue “Advanced methods for flood estimation in a variable and changing environment”

- Reviewer of IPCC Special Report “Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)” and Abstract for Policymakers (SPM) and IPCC Assessment Report – AR5
- Reviewer of research proposals in the areas of *Water Resources Management and Management of Natural Hazards, Directorate General XII, Science, Research and Development*.
- Reviewer of research proposals in the areas of Environment and Water Resources for National Greek and Cyprian Calls

- Member: Technical Chamber of Greece, Greek Union of Rural and Surveying Engineers, International Association of Hydrological Science (IAHS), European Geophysical Union (EGU), Greek Association of Water Resources Management (Elected officer 2005-today), European Water Resources Association (EWRA), Greek Laboratory Network for Hydrology and Environmental Water Resources Management “HydroMedon” (Secretary 2008-today), Global Nest
- National Representative in COST 719 – The Use of Geographic Information Systems in Climatology and Meteorology
- National Representative in COST ES0901 – National Procedures for Flood Frequency Analysis (FloodFreq)
- National Representative in COST ES1106 - Assessment of EUROpean AGRiculture WATER use and trade under climate change (EURO-AGRIWAT)
- National Representative in COST CA 15206 - Payments for Ecosystem Services (Forests for Water) (PES)

- Regular reviewer of scientific journals: *Journal of Hydrology, Journal Physics and Chemistry of the Earth, Natural Hazards and Earth System Sciences, Hydrology and Earth System Sciences, Water Resources Management, Hydrological Processes, Journal of Theoretical and Applied Climatology, Journal of River Basin Management, Sensors, Forest and Agricultural Meteorology, Hydrology Research, Climate Change, Agricultural Water Management, Annals of the American Association of Geographers*

- Organizer and member of organizing and scientific committees of international conferences

I. 10. RESEARCH INTERESTS

Random listing of research interests of Dr. Athanasios Loukas:

- Hydrologic simulation of watersheds with conceptual and stochastic models,
- Methodologies for the runoff estimation in ungauged watersheds,
- Methodologies for the estimation and study of floods and droughts,
- Impacts of climate change on hydrological processes, extremes and water resources,

- Integrated water resources management,
- Applications of G.I.S. and Remote Sensing in hydrology and water resources management,
- Impacts of land use changes on water resources,
- Mountain hydrology,
- Temporal and spatial distribution of hydrometeorological parameters,
- Design and simulation of water works operation,
- Watershed water quality simulation,
- Natural environmental hazards and their impacts.

II. 1. PUBLICATIONS

A. Dissertation and Theses

- A.1. **Loukas, A.** (1988). “*Simplified Techniques for the Solution of Horizontal Soil Moisture Transfer in Unsaturated Porous Media*”. Dipl. Eng. Thesis, Aristotle University of Thessaloniki, Greece, 131 pp. (in Greek)
- A.2. **Loukas, A.** (1991). “*Analysis of the Response and the Rainfall Distribution in a Mountainous Watershed*”. M.A.Sc. Thesis, University of British Columbia, Canada, 159 pp.
- A.3. **Loukas, A.** (1994). “*Mountain Precipitation Analysis for the Estimation of Flood Runoff in Coastal British Columbia*.” Ph.D. Dissertation, University of British Columbia, Canada, 321 pp.

B. Papers in International Refereed Journals

- B.1. **Loukas, A.** and M.C. Quick (1993). “Hydrologic Behaviour of a Mountainous Watershed.” *Canadian Journal of Civil Engineering*, **20**(1), pp. 1-8.
- B.2. **Loukas, A.** and M.C. Quick (1993). “Rain Distribution in a Mountainous Watershed.” *Nordic Hydrology*, **24**(4), pp. 225-242.
- B.3. **Loukas, A.** and M.C. Quick (1994). “Precipitation Distribution in Coastal British Columbia.” *Water Resources Bulletin*, **30**(4), pp. 705-727.
- B.4. **Loukas, A.** and M.C. Quick (1995). “Comparison of Six Extreme Flood Estimation Techniques for Ungaged Watersheds in Coastal British Columbia.” *Canadian Water Resources Journal*, **20**(1), pp. 17-30.
- B.5. **Loukas, A.** and M.C. Quick (1995). “Spatial and Temporal Distribution of Storm Precipitation in Southwestern British Columbia.” *Journal of Hydrology*, **174**, pp. 37-56.
- B.6. **Loukas, A.** and M.C. Quick (1995). “24-hour Design Storm for Coastal British Columbia.” *ASCE Journal of Hydraulic Engineering*, **121**(12), pp. 889-899.
- B.7. **Loukas, A.** and M.C. Quick (1996). “Physically-Based Estimation of Lag Time for Forested Mountainous Watersheds.” *IAHS Hydrological Sciences Journal*, **41**(1), pp. 1-19.
- B.8. **Loukas, A.**, M.C. Quick and S.O. Russell (1996). “A Physically-Based Stochastic-Deterministic Procedure for the Estimation of Flood Frequency.” *Water Resources Management*, **10**, pp. 415-437.
- B.9. **Loukas, A.** and M.C. Quick (1996). “The Effect of Climate Change on Hydrologic Regime of Two Climatically Different Watersheds.” *ASCE Journal of Hydrologic Engineering*, **1**(2), pp. 77-87.
- B.10. **Loukas, A.** and M.C. Quick (1999). “The Effect of Climate Change on Floods in British Columbia.” *Nordic Hydrology*, **30**(3), pp. 231-256.
- B.11. **Loukas, A.**, L. Vasiliades and N.R. Dalezios (2000). “Flood Producing Mechanisms Identification in Southern British Columbia, Canada” *Journal of Hydrology*, **227**(1-4), pp. 218-235.
- B.12. **Loukas, A.** and N.R. Dalezios (2000). “Response Time of Forested Mountainous Watersheds in Humid Regions.” *Nordic Hydrology*, **31**(3), pp. 149-168.
- B.13. Dalezios, N.R., **A. Loukas**, L. Vasiliades and E. Liakopoulos (2000). “Severity-Duration-Frequency Analysis of Droughts and Wet Periods in Greece.” *IAHS Hydrological Sciences Journal*, **45**(5), pp. 751-770.
- B.14. **Loukas, A.**, L. Vasiliades, N.R. Dalezios and C. Domenikiotis (2001). “Rainfall Frequency Mapping for Greece.” *Physics and Chemistry of the Earth-Part B-Hydrology, Oceans & Atmosphere*, **26**(9), pp.669-674.
- B.15. Dalezios, N.R., C. Domenikiotis, **A. Loukas**, S.T. Tzortzios and C. Kalaitzidis (2001). “Cotton Yield Estimation Based on NOAA/AVHRR Produced NDVI”, *Physics and Chemistry of the Earth-Part B-Hydrology, Oceans & Atmosphere*, **26**(3), pp.247-251.
- B.16. Domenikiotis, C., N.R. Dalezios, **A. Loukas** and M. Karteris (2002). “Agreement Assessment of NOAA/AVHRR NDVI with Landsat TM NDVI for Mapping Burned Forested Areas.” *International Journal of Remote Sensing*, **23**(20), pp. 4235-4246.
- B.17. **Loukas, A.** (2002). “Flood Frequency Estimation by a Derived Distribution Procedure.” *Journal of Hydrology*, **255**(1-4), pp. 69-89.

- B.18. **Loukas, A.**, L. Vasiliades and N.R. Dalezios (2002). "Potential Climate Change Impacts on Flood Producing Mechanisms in Southern British Columbia, Canada Using the CGCMa1 Simulation Results." *Journal of Hydrology*, **259** (1-4), pp. 163-188.
- B.19. **Loukas, A.**, L. Vasiliades and N.R. Dalezios (2002). "Hydroclimatic Variability of Regional Droughts in Greece Using the Palmer Moisture Anomaly Index." *Nordic Hydrology*, **35**(5), pp. 425-442.
- B.20. **Loukas, A.**, L. Vasiliades, and N.R. Dalezios, (2002). "Climatic Impacts on the Runoff Generation Processes in British Columbia, Canada". *Hydrology and Earth System Sciences*, **6**(2), 211-227.
- B.21. Dalezios, N.R., **A. Loukas**, and D. Bampzelis, (2002). "Spatial Variability of Reference Evapotranspiration in Greece". *Physics and Chemistry of the Earth*, **27**(23-24), 1031-1038.
- B.22. Dalezios, N.R., **A. Loukas**, and D. Bampzelis, (2002). "Universal Kriging of Hail Impact Energy in Greece". *Physics and Chemistry of the Earth*, **27**(23-24), 1039-1043.
- B.23. Dalezios, N.R., **A. Loukas**, and D. Bampzelis, (2002). "Assessment of NDVI and Agrometeorological Indices for Major Crops in Central Greece". *Physics and Chemistry of the Earth*, **27**(23-24), 1025-1029.
- B.24. Dalezios, N.R., **A. Loukas**, and D. Bampzelis, (2002). "The role of Agrometeorological and Agrohydrological Indices in the Phenology of Wheat in Central Greece". *Physics and Chemistry of the Earth*, **27**(23-24), 1019-1023.
- B.25. Domenikiotis C., **A. Loukas**, and N.R. Dalezios, (2003). "The Use of NOAA/AVHRR Satellite Data for the Monitoring and Assessment of Forest Fires and Floods." *Natural Hazards and Earth System Sciences*, **3**(1), 115-128.
- B.26. **Loukas, A.**, L. Vasiliades, and N.R. Dalezios, (2004). "Climate Change Implications on Flood Response of a Mountainous Watershed". *Water Air and Soil Pollution: Focus*, **4**(4-5), 331-347.
- B.27. **Loukas, A.**, and L. Vasiliades, (2004). "Probabilistic Analysis of Drought Spatiotemporal Characteristics in Thessaly region, Greece". *Natural Hazards and Earth System Sciences*, **4**, 719-731.
- B.28. **Loukas, A.**, L. Vasiliades, C. Domenikiotis, and N.R. Dalezios, (2005). "Basin-wide actual evapotranspiration estimation using NOAA/AVHRR satellite data". *Physics and Chemistry of the Earth*, **30**(1), 69-79.
- B.29. **Loukas, A.**, N. Mylopoulos and L. Vasiliades, (2007). "A Modeling System for the Evaluation of Water Resources Management Scenarios in Thessaly, Greece". *Water Resources Management*, **21**(10), 1673-1702.
- B.30. **Loukas, A.**, L. Vasiliades and J. Tzabiras (2007). "Evaluation of Climate Change on Drought Impulses in Thessaly, Greece" *European Water*, **17/18** (1), 17-28.
- B.31. **Loukas, A.**, L. Vasiliades and J. Tzabiras (2008). "Climate Change Effects on Drought Severity" *Advances in Geosciences*, **17**, 23-29.
- B.32. Mylopoulos, N., E. Kolokytha, **A. Loukas** and Y. Mylopoulos (2009). "Agricultural and Water Resources Development in Thessaly, Greece in the framework of new European Union Policies." *International Journal of River Basin Management*, **7**(1), 73-89.
- B.33. Vasiliades, L. and **A. Loukas** (2009). "Hydrological Response to Meteorological Drought Using the Palmer Drought Indices in Thessaly, Greece" *Desalination*, **237** (1-3), 3-21.
- B.34. Vasiliades, L., **A. Loukas** and G. Patsonas (2009). "Evaluation of a Statistical Downscaling Procedure for the Estimation of Climate Change Impacts on Droughts" *Natural Hazards and Earth Systems Sciences*, **9**, 879-894.
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II. 2. CITATIONS

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