



UNIVERSITAT POLITÈCNICA  
DE CATALUNYA



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# **Estudi comparatiu de la publicació científica de la UPC i l'Escola de Camins vs. altres universitats d'àmbit internacional (1998-2008)**

**Biblioteca Rector Gabriel Ferraté  
Escola Tècnica Superior d'Enginyers de Camins,  
Canals i Ports de Barcelona**

Barcelona, 2010

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(1998-2008)

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Canals i Ports de Barcelona

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# Estudi comparatiu de la publicació científica de la UPC i de l'Escola de Camins vs. altres universitats d'àmbit internacional (1998-2008)

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## 1. Introducció

### Objectiu i oportunitat

El present estudi sorgeix de la voluntat de l'Escola Tècnica Superior d'Enginyers de Camins, Canals i Ports de Barcelona (Escola de Camins) i de la seva biblioteca, la Biblioteca Rector Gabriel Ferraté (BRGF), per:

- conèixer i analitzar els indicadors relatius a la publicació científico-tècnica del PDI vinculat a l'Escola de Camins
- situar, partint d'aquests indicadors, la posició de l'Escola de Camins en un context de recerca competitiu a nivell estatal i internacional
- identificar les revistes on publiquen més habitualment els investigadors dels àmbits de l'enginyeria civil vinculats a l'Escola de Camins
- identificar la dinàmica de publicació a la UPC i a l'Escola en les revistes destacades per l'Escola de Camins.

El present estudi mostra així mateix, com els estudis bibliomètrics poden aportar dades d'utilitat per a l'avaluació i la visibilitat dels resultats de la recerca i poden constituir-se en eina d'anàlisi en la gestió de l'activitat acadèmica.

Igualment, es mostren algunes possibilitats que ofereix l'explotació avançada dels recursos d'informació documentals accessibles a través de les biblioteques UPC.

Sense que això disminueixi el seu valor, cal destacar que, ateses les pròpies característiques de les bases de dades utilitzades, aquest tipus d'estudis són per definició susceptibles de rebre interpretacions molt diverses quan s'entra en l'anàlisi excessivament detallada.

D'altra banda, cal tenir present, que dins l'àmbit de l'enginyeria civil les dinàmiques de publicació i les pautes de citació no són totalment homogènies, i es poden identificar especificitats puntuals en determinats camps de recerca.

Pel últim, els criteris usats han estat els més objectius i uniformitzadors possible però, cal igualment tenir en compte que els resultats indiquen només tendències, indicadors comparatius i distints pesos de les institucions en el camp de la recerca en enginyeria civil. No es pretén doncs arribar a interpretacions unívocues ni a la conclusió de que els resultats obtinguts són els únics possibles.

L'estructura de l'informe contempla:

- l'abast temàtic, geogràfic, cronològic i documental
- les fonts d'informació emprades
- la metodologia que s'ha utilitzat
- l'enunciat de dades bàsiques de les universitats analitzades
- l'anàlisi de dades quantitatives per institució i conjuntament
- l'anàlisi de dades de caire qualitatiu: quantitat de citacions rebudes per institució i conjuntament i índex H
- autors/articles més citats per a cada universitat
- revistes més recurrents a l'hora de publicar cada universitat i conjuntament
- conclusions



## Abast de l'estudi

### 1. Abast temàtic

L'informe es centra en la publicació científica especialitzada en l'àmbit temàtic propi de l'Escola de Camins: l'enginyeria civil.

### 2. Abast geogràfic

Es comparen indicadors bibliomètrics de la UPC i l'Escola de Camins, amb els d'altres universitats internacionals amb activitat de recerca notable en l'àrea de l'enginyeria civil. Les universitats seleccionades són universitats europees, dels Estats Units i Llatinoamèrica escollides per la seva presència a diferents xarxes i rànquings internacionals, així com les altres dues universitats estatals amb més presència en l'àmbit de la recerca en enginyeria civil: la Universidad Politécnica de Madrid (UPM) i la Universitat Politècnica de València (UPV).

Aquesta selecció ha estat definida per la pròpia Escola en funció de la voluntat de l'Escola de Camins de comparar-se amb institucions de primera línia a nivell internacional.

### 3. Abast documental

Des del punt de vista de la tipologia documental, només s'ha treballat amb informació referent a articles publicats a revistes, deixant de banda comunicacions a congressos o altres tipologies pròpies de la publicació científica.

### 4. Abast cronològic

Les referències analitzades corresponen a articles publicats entre l'1 de gener de 1998 i el 31 de desembre de 2008.

## Fonts d'informació

Les dades a partir de les quals s'ha elaborat l'estudi s'han extret de les bases de dades de Thomson-ISI: *Web of Science (WoS)*, *Journal Citation Reports (JCR)* i *Essential Science Indicators (ESI)*, totes tres abastament usades com a eina d'anàlisi bibliomètrica dins del món acadèmic.

Les xifres de professors de les universitats provenen de *The Europe World of Learning: the International Guide to the Academic World (WoL)* ed. 2003, [data de consulta: 25 març 2009]. En el cas de l'Escola de Camins, aquesta informació ha estat facilitada pel propi centre.

Per a la definició en aquest informe d'*enginyeria civil* s'han tingut en compte les definicions anglesa, castellana i catalana que ofereixen tant l'Enciclopèdia Britànica [*The New Encyclopædia Britannica* (Vol. 18, p. 416) ; data de consulta: 22 juny 2009], com aquestes tres versions de la *Wikipedia*:

- anglès	-	<a href="http://en.wikipedia.org">http://en.wikipedia.org</a>	-	<i>Civil engineering</i>
- castellà	-	<a href="http://es.wikipedia.org">http://es.wikipedia.org</a>	-	<i>Ingeniería civil</i>
- català	-	<a href="http://ca.wikipedia.org">http://ca.wikipedia.org</a>	-	<i>Enginyeria civil</i>

Per a la traducció de termes de l'anglès al català, sempre que ha estat possible, s'ha usat: *Diccionari d'enginyeria civil* / Enciclopèdia Catalana, Universitat Politècnica de Catalunya; direcció tècnica Rosa Mateu Martínez. Barcelona : Enciclopèdia Catalana, 2005.



## Metodologia

### 1. Recuperació dels articles de les especialitats de enginyeria civil

L'Enginyeria civil, tal i com la defineixen les eines de referència consultades, és una branca de l'enginyeria que aplica els coneixements de diferents àmbits del saber (matemàtiques, física, geologia, química, etc.) a temes tant diversos com les estructures, l'energia, la construcció, els transports, la hidrologia o la sanitat pública. La recuperació de revistes i articles al *WoS*, per tant, es fa molt difícil ja que caldria considerar desenes d'epígrafs diferents.

Com a alternativa, s'han definit quines eren les àrees temàtiques més significatives en funció de l'activitat de recerca de l'Escola de Camins i s'han identificat les revistes més importants per a cadascuna d'aquestes àrees. Aquesta detecció s'ha portat a terme en dues fases. En primer lloc, es van identificar les revistes recollides al *JCR* dins de cadascuna de les especialitats que podien relacionar-se directament amb *civil engineering* i s'obtingué una llista de 1007 títols de revista. Concretament, es van escollir aquestes 21 *Subject Categories* des d'on es van extreure els llistats inicials de revistes a analitzar:

- Mechanics
- Mathematics, Interdisciplinary Applications
- Engineering, Multidisciplinary
- Geosciences, Multidisciplinary
- Engineering, Civil
- Water Resources
- Materials Science, Multidisciplinary
- Environmental Sciences
- Computer Science, Interdisciplinary Applications
- Physics, Fluids & Plasmas
- Engineering, Geological
- Construction & Building Technology
- Mathematics, Applied
- Engineering, Environmental
- Engineering, Mechanical
- Oceanography
- Engineering, Ocean
- Mining & Mineral Processing
- Transportation Science & Technology
- Transportation
- Geology

Els primers resultats obtinguts amb aquest conjunt de 1007 revistes van mostrar que l'impacte de l'Escola de Camins en el conjunt de les publicacions de la UPC és relativament escàs, si s'agafa aquesta base de revistes. Només al voltant del 30% de les publicacions de la UPC corresponen a professors adscrits al centre.

Posteriorment, l'Escola de Camins –en un procés on hi han intervingut múltiples agents- va seleccionar un subconjunt de 217 revistes –v. *Annex 1-* que són les que s'han usat definitivament com a base per a l'estudi.





Per aconseguir el llistat definitiu de títols, l'Escola de Camins va reduir les 21 *Subject Categories* a les 6 que eren del seu interès analitzar -per tractar-se de les matèries més específicament relacionades amb l'enginyeria civil on els professors de l'Escola publicaven majoritàriament-: *Engineering, Civil, Engineering, Geological, Engineering, Multidisciplinary, Transportation, Transportation Science & Technology* i *Water Resources*.

A partir d'aquí es va fixar la llista definitiva de 217 revistes tenint només en compte tots els títols indexats com a *Engineering, Civil* o *Engineering, Multidisciplinary* o *Engineering, Geology* i les revistes indexades en primer lloc sota *Transportation, Transportation Science & Technology* o *Water Resources*.

Com es veurà, el 67.7% de les publicacions a les revistes finalment triades corresponen a l'Escola, de manera que aquestes revistes es poden considerar representatives de l'enginyeria civil.

Finalment, s'han executat cerques a WoS dels articles publicats a les revistes seleccionades, tot aplicant els límits cronològics i documentals descrits anteriorment. Com a resultat, s'han obtingut referències dels articles publicats en les especialitats pròpies de l'Escola de Camins, durant el període en el que se centra l'estudi.

## **2. Recuperació dels articles publicats per autors de cada universitat**

Una de les principals dificultats en l'elaboració d'estudis bibliomètrics prenent com a base WoS, és la manca generalitzada de normalització als noms d'autors i institucions. És important tenir en compte que *ISI Essential Science Indicators*, manté un llistat de formes normalitzades de noms d'institucions, però tot i així, les dades que apareixen als registres de les bases de dades Thomson-ISI, són les mateixes que els propis autors i editors van fer constar en els articles, tal i com aquests es van publicar originalment. Com a conseqüència, les institucions sovint apareixen consignades amb diverses variants dels seus noms, circumstància que complica en gran mesura la recuperació exhaustiva d'informació pertinent.

Per tal de donar una solució a aquest fet, i després d'examinar les especificitats de les institucions acadèmiques que s'analitzen, s'ha decidit aplicar una estratègia única i comuna en la construcció d'algorismes de cerca vàlida per a totes les universitats considerades. L'estratègia de cerca manté, com a principi bàsic, l'obtenció del màxim possible d'ítems per cadascuna de les institucions, sempre i quan no es trenqui la pertinença dels resultats, i considera tres aspectes:

- l'ús de variants dels noms que s'han tingut en compte són les següents:
  - forma normalitzada a *Essential Science Indicators*
  - sigles i abreviatures
  - variants en l'idioma/idiomes oficials
  - variants en anglès
  - altres formes alternatives no normalitzades
- la uniformització de l'estructura de l'algorisme sempre que ha estat possible
- el control dels resultats obtinguts mitjançant mostreigs significatius del conjunt de registres

Un cop executades les cerques, els resultats obtinguts s'han combinat amb els aconseguits en la cerca per títols de revista, que es descriu a l'apartat anterior. Com a resultat s'ha obtingut un llistat d'articles publicats en revistes de les especialitats JCR abans detallades, escrits per autors membres de cadascuna de les universitats contemplades a l'estudi.



### **3. Recuperació dels articles publicats per autors vinculats a l'Escola de Camins**

Un cop recuperats els articles dels autors UPC, l'obtenció dels articles amb professors vinculats a l'Escola de Camins s'ha realitzat introduint limitacions a l'algorisme de cerca a través dels camps *Address* i *Zip Code*. D'aquesta manera ha estat possible recuperar els registres que inclouen com a mínim l'adreça d'un autor al Campus Nord de la UPC. Com que no tots els autors/editors inclouen dades relatives a l'adreça, s'ha efectuat una posterior correcció combinant aquest algorisme, amb un altre que ha inclòs la forma normalitzada del nom dels autors vinculats a l'Escola de Camins.

Cal remarcar que la manca de normalització en els noms dels autors pot haver exclòs de l'equació de cerca formes alternatives, no indexades per *WoS*.

### **4. Anàlisi de citacions rebudes**

Les citacions rebudes constitueixen un indicador usat de forma comuna tant als estudis bibliomètrics com en la mesura de l'impacte de l'activitat de recerca.

Les dades s'han extret directament de *WoS*, fent servir la utilitat *Analyze Results*, que elabora rànquings d'autors amb més quantitat de publicació, títols de revista on més es publica, etc., i la utilitat *Citation Report*, que genera un recompte de citacions en dos gràfics: un per a la quantitat d'articles publicats per any, i un per al nombre de vegades que aquests articles han estat citats.

Al costat de les dades corresponents al nombre de cites rebudes per cada institució, s'inclou l'índex  $H^1$  de tot el conjunt d'articles publicats durant el període estudiat. Es proporcionen també els índex  $H$  del primer i de l'últim any d'aquest període.

### **5. Articles més citats de cada universitat i revistes on més publiquen**

Les dades recollides en aquests dos apartats han estat extretes de *WoS* a través de la utilitat *Analyze Results*.

---

<sup>1</sup> L'*index H* és un indicador creat per Jorge Hirsch, de la Universitat de Califòrnia - San Diego, que determina el balanç entre les publicacions d'un científic o institució i la quantitat de citacions que aquestes publicacions reben



## 2. Taula de professors en les universitats

En aquest apartat es recull el nombre de professors a temps complet de cada universitat com a indicador de la magnitud de les institucions. Així mateix, s'inclou aquesta dada per a l'Escola de Camins.

Cal remarcar que s'ofereix la xifra corresponent al conjunt global de professors però no al subconjunt dedicat a la recerca en enginyeria civil.

Per aconseguir la màxima uniformització de les dades s'ha usat una única font, considerada com a recurs de referència principal per a aquest tipus d'informació a nivell internacional, *The Europe World of Learning: the International Guide to the Academic World* -<http://www.worldoflearning.com>-. En el cas de l'Escola de Camins, la dada ha estat facilitada pel propi centre.

Institució	# Professors
UPC - Universitat Politècnica de Catalunya <b>Escola de Camins</b>	2531 <b>215</b>
UNAM – Universidad Nacional Autónoma de México (Mèxic)	29979
USP – Universidade de São Paulo (Brasil)	4953
UPM - Universidad Politécnica de Madrid	3300
UIUC - University of Illinois at Urbana-Champaign (Estats Units d'Amèrica)	2848
UFRJ – Universidade Federal do Rio de Janeiro (Brasil)	2477 <sup>2</sup>
UPV - Universitat Politècnica de València	2401
TAMU - Texas A&M University (Estats Units d'Amèrica)	2327
University of California Berkeley (Estats Units d'Amèrica)	1852
UTL - Universidade Técnica de Lisboa (Portugal)	1833
Standford University (Estats Units d'Amèrica)	1749
Imperial College London (Regne Unit)	1180
ENPC / LCPC - École Nationale des Ponts et Chaussées / Laboratoire Central des Ponts et Chaussées (França) <sup>3</sup>	1100 (ENPC – 300 i LCPC – 800)
ETHZ - Swiss Federal Institute of Technology Zurich (Suïssa)	356
TU Delft - Technische Universiteit Delft (Holanda)	240
EPFL - École Polytechnique Fédérale de Lausanne (Suïssa)	240 <sup>4</sup>

<sup>2</sup> Dada estreta del web de la pròpia Universitat <<http://www.ufrj.br/>>, ja que no apareix a *The Europe World of Learning*

<sup>3</sup> Aquestes 2 institucions sovint treballen conjuntament; ambdues formen part del CNRS però no s'ha inclòs aquesta institució a la cerca ja que, donat el seu abast estatal, distorsionava els resultats

<sup>4</sup> L'EPFL apareix a la font d'informació consultada, *The Europe World of Learning*, però les dades que s'hi recullen semblen no seguir els mateixos criteris que en la resta de casos



### 3. Gràfics i dades d'articles publicats

Es recull a continuació el nombre d'articles publicats per cada institució entre 1998 i 2008, en total i any a any, així com un gràfic comparatiu d'aquesta dada a nivell de totes les institucions.

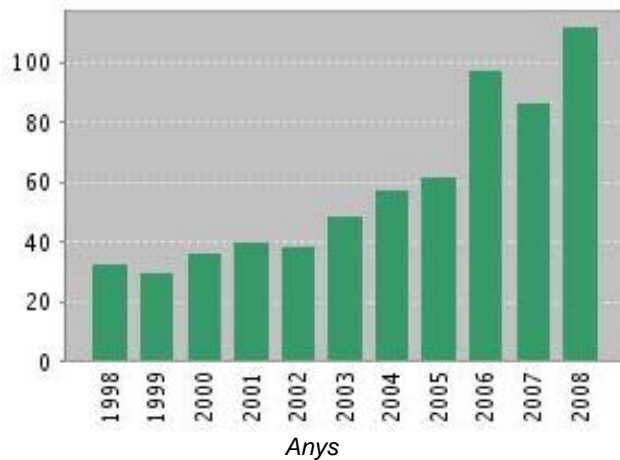
S'acaba amb la comparació d'àmbit estatal UPC vs. UPM i UPV.

#### 3.1. Gràfics i dades d'articles publicats per universitats<sup>5</sup>

##### 3.1.1. UPC - Universitat Politècnica de Catalunya

Total d'articles publicats: **645**

# Articles

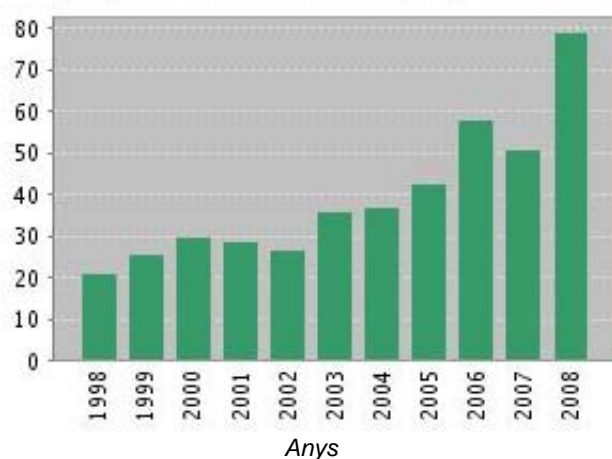


Any	# Articles
1998	31
1999	32
2000	32
2001	42
2002	42
2003	43
2004	55
2005	69
2006	94
2007	83
2008	122
<b>Total</b>	<b>645</b>

##### 3.1.1.1. Escola de Camins

Total d'articles publicats: **437**

# Articles



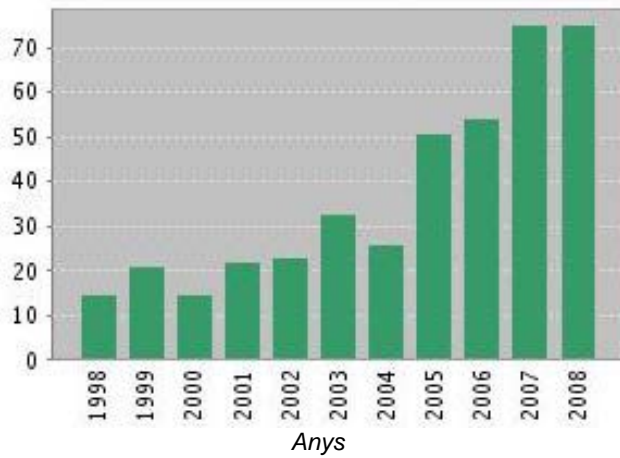
Any	# Articles
1998	21
1999	26
2000	30
2001	29
2002	27
2003	36
2004	37
2005	43
2006	58
2007	51
2008	79
<b>Total</b>	<b>437</b>

<sup>5</sup> Bases de dades consultades el 14 de febrer de 2010



### 3.1.2. EPFL – École Polytechnique Fédérale de Lausanne

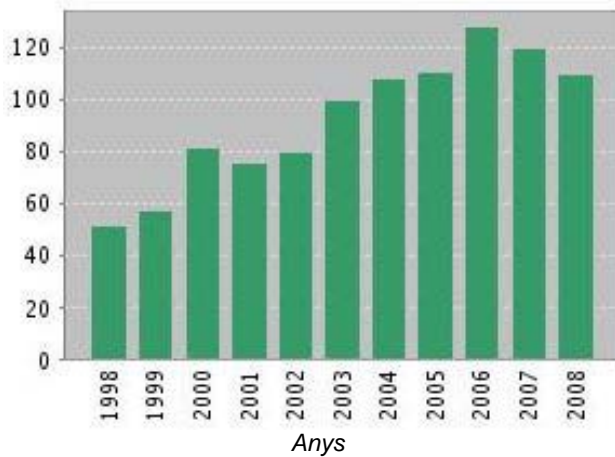
# Articles



Total d'articles publicats:  
**410**

### 3.1.3. Imperial College London

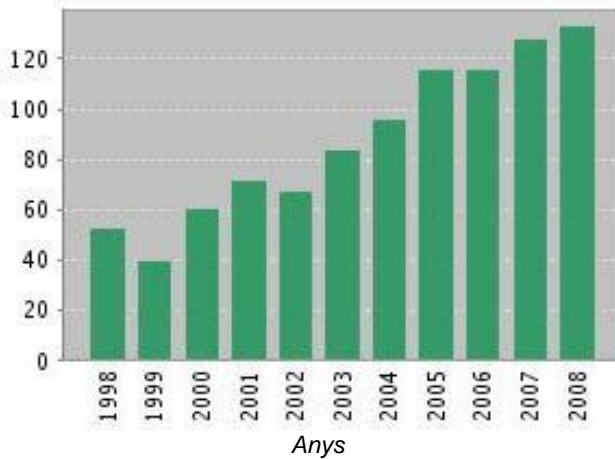
# Articles



Total d'articles publicats:  
**1025**

### 3.1.4. TUDelft - Technische Universiteit Delft

# Articles

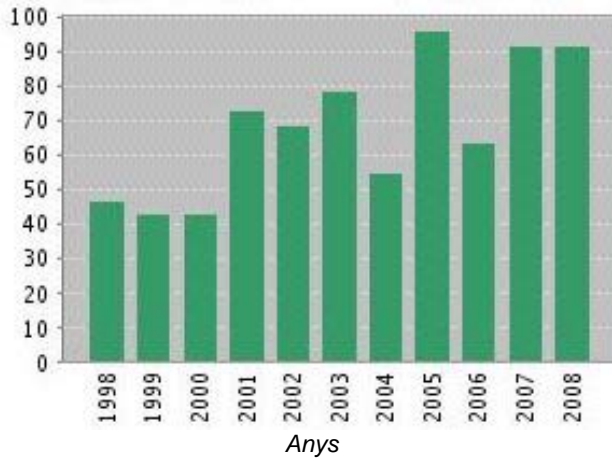


Total d'articles publicats:  
**967**



### 3.1.5. ETHZ – Swiss Federal Institute of Technology Zurich

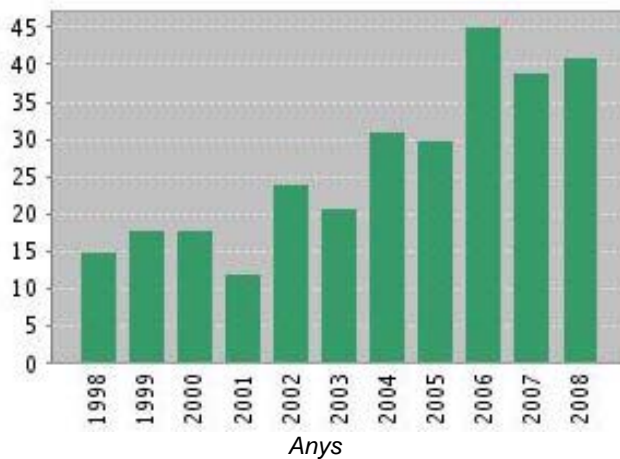
# Articles



Total d'articles publicats:  
**753**

### 3.1.6. ENPC / LCPC – École Nationale des Ponts et Chaussées / Laboratoire Central des Ponts et Chaussées

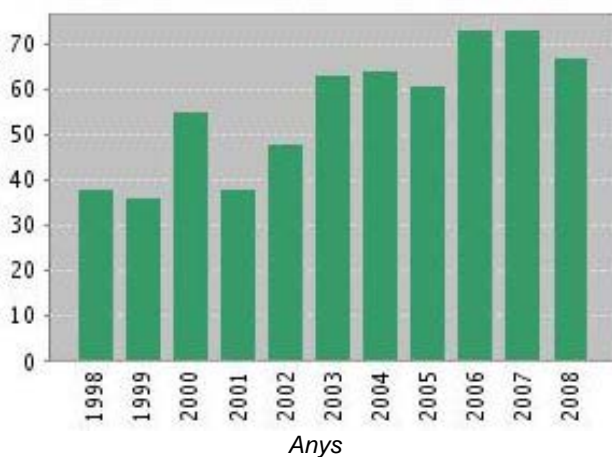
#Articles#



Total d'articles publicats:  
**294**

### 3.1.7. Stanford University

# Articles

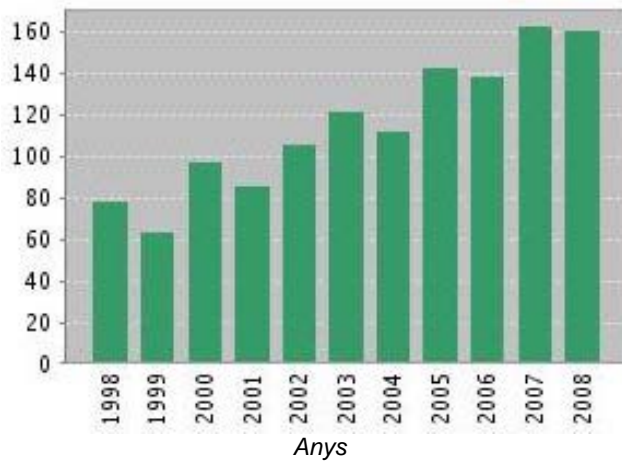


Total d'articles publicats:  
**616**



### 3.1.8. TAMU - Texas A&M University

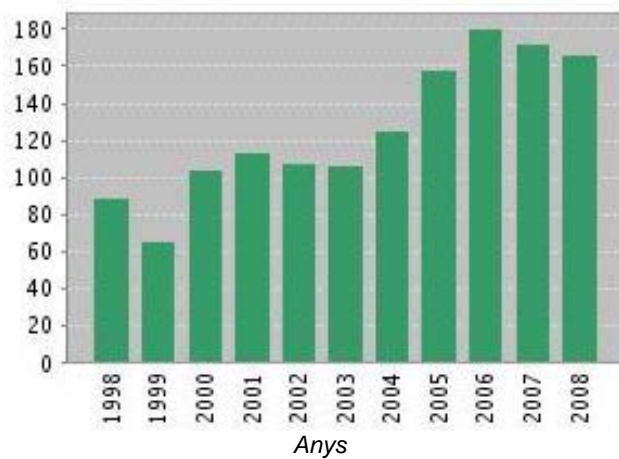
# Articles



Total d'articles publicats:  
**1274**

### 3.1.9. UI - University of Illinois

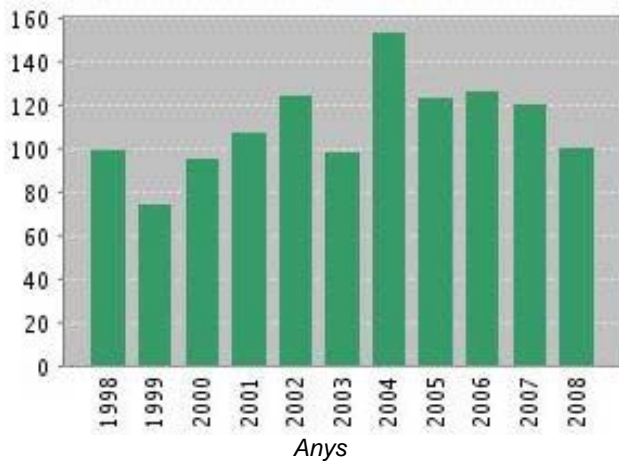
# Articles



Total d'articles publicats  
**1390**

### 3.1.10. University of California Berkeley

# Articles

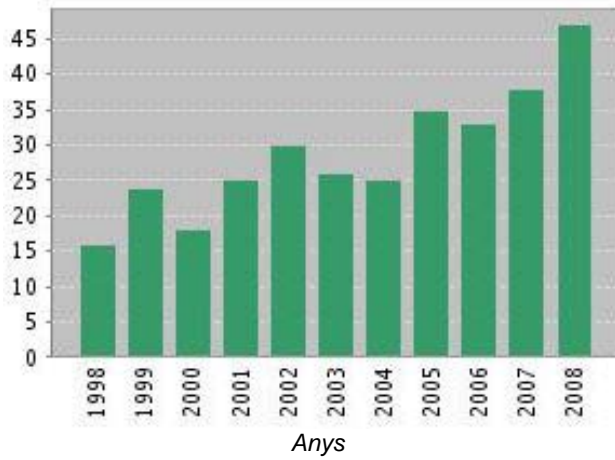


Total d'articles publicats:  
**1230**



### 3.1.11. UNAM – Universidad Nacional Autónoma de México

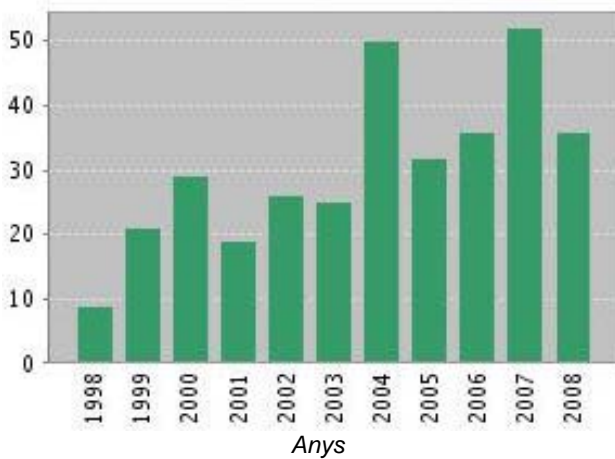
# Articles



Total d'articles publicats:  
**317**

### 3.1.12. UFRJ – Universidade Federal do Rio de Janeiro

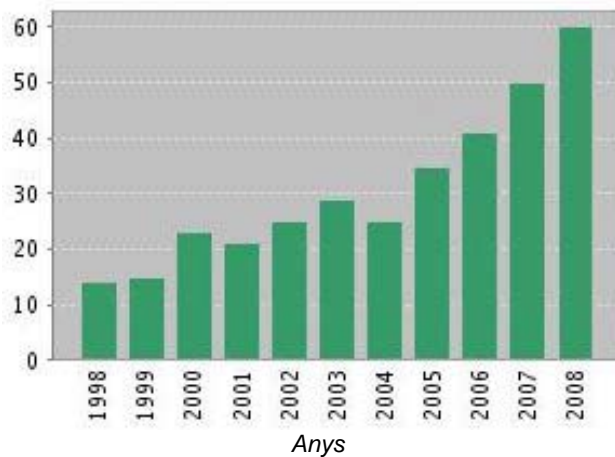
# Articles



Total d'articles publicats:  
**335**

### 3.1.13. USP - Universidade de São Paulo

# Articles



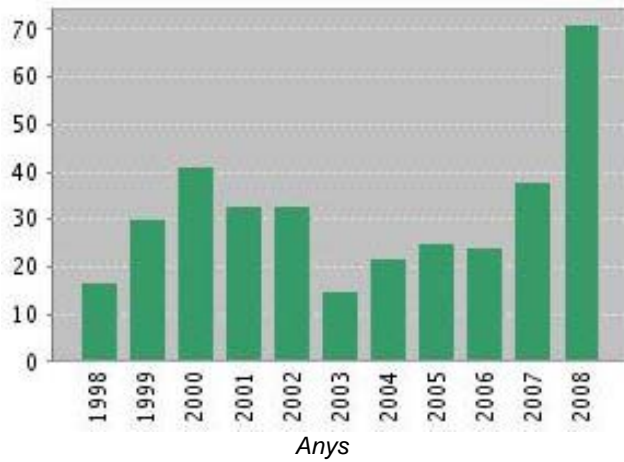
Total d'articles publicats:  
**286**





### 3.1.14. UTL - Universidade Técnica de Lisboa

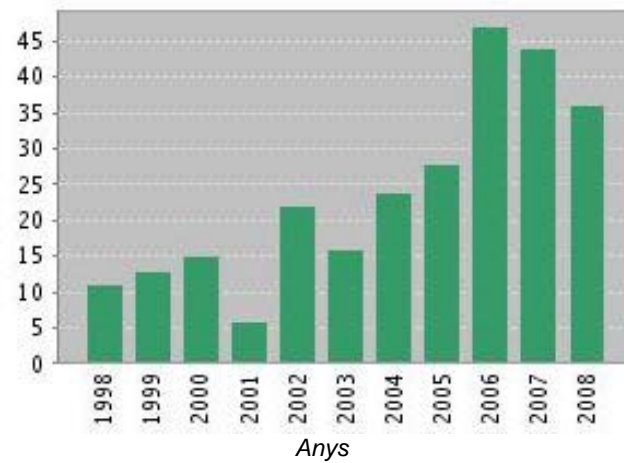
# Articles



Total d'articles publicats:  
**349**

### 3.1.15. UPM - Universidad Politécnica de Madrid

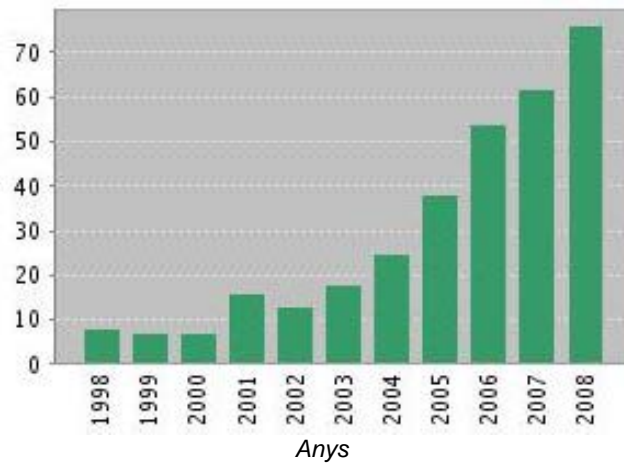
# Articles



Total d'articles publicats:  
**262**

### 3.1.16. UPV - Universitat Politècnica de València

# Articles



Total d'articles publicats:  
**324**

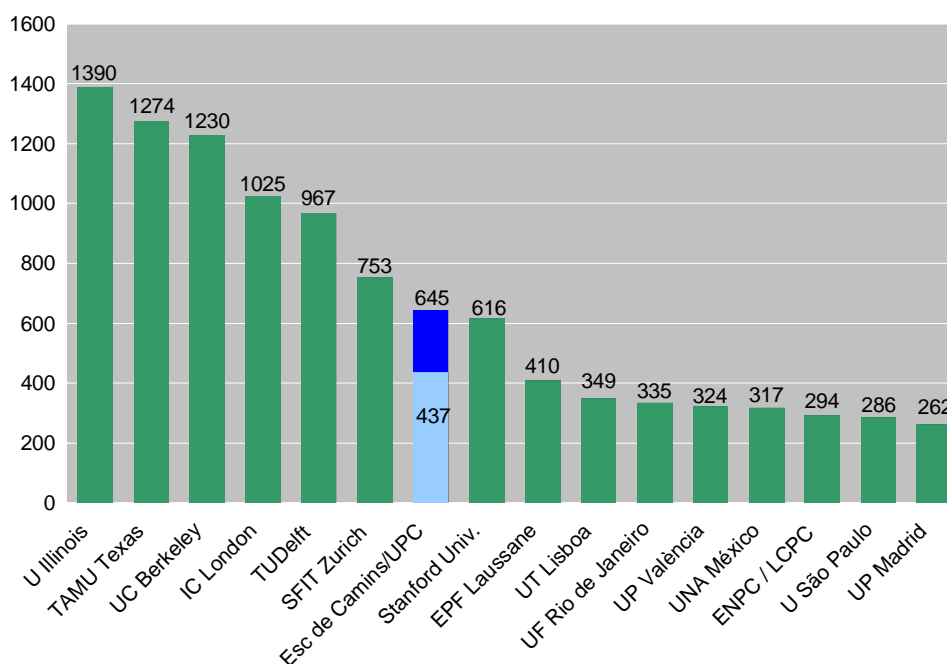


## 3.2. Gràfics i taula comparatius de quantitat de publicació científica

### 3.2.1. Gràfic i taula global 1998-2008

Es destaca en color blau fosc en el gràfic la columna relativa a la producció UPC -645 articles-, i dins d'aquesta s'ha marcat –en color més clar– la xifra corresponent a publicacions que compten amb un o més professors assignats a l'Escola de Camins - 437 articles; el 67,75 % de la producció UPC-, independentment de que també hi participin altres professors de la UPC o de qualsevol altra institució.

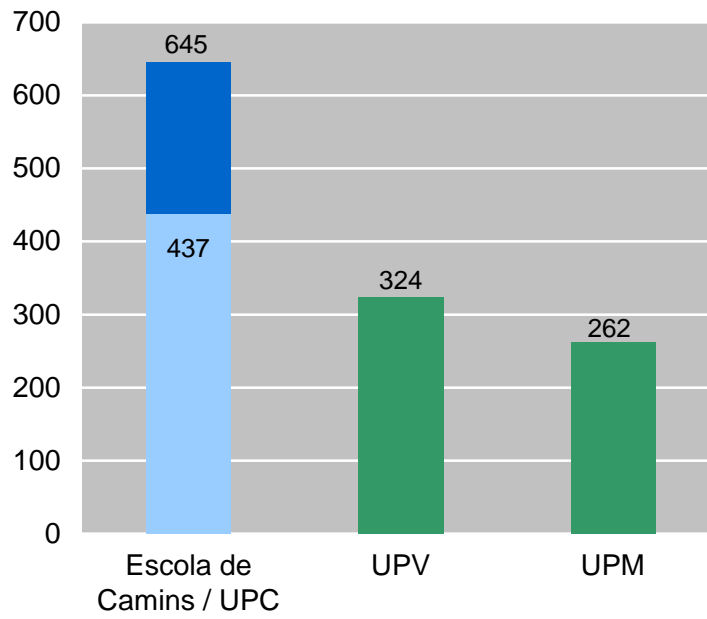
Aquesta distinció gràfica serà utilitzada en la totalitat de l'estudi.



Institució	Producció 1998-2008	Posició
UI - University of Illinois at Urbana-Champaign	1390	1
TAMU - Texas A&M University	1274	2
University of California Berkeley	1230	3
Imperial College London	1025	4
TU Delft - Technische Universiteit Delft	967	5
ETHZ - Swiss Federal Institute of Technology Zurich	753	6
UPC - Universitat Politècnica de Catalunya	645	7
<b>-Escola de Camins-</b>	<b>-437-</b>	<b>-8-</b>
Stanford University	616	8
EPFL - École Polytechnique Fédérale de Lausanne	410	9
UTL - Universidade Técnica de Lisboa	349	10
UFRJ – Universidade Federal do Rio de Janeiro	335	11
UPV - Universitat Politècnica de València	324	12
UNAM – Universidad Nacional Autónoma de México	317	13
ENPC / LCPC – École Nationale des Ponts et Chaussées / Laboratoire Central des Ponts et Chaussées	294	14
USP – Universidade de São Paulo	286	15
UPM - Universidad Politècnica de Madrid	262	16



### 3.2.2. Gràfic UPC vs. UPM i UPV 1998-2008





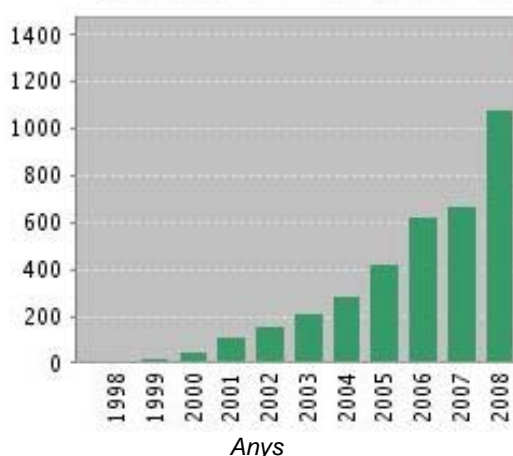
## 4. Gràfics i dades de citacions rebudes

Es detalla aquí el nombre de referències rebudes pels articles publicats per cada institució entre 1998 i 2008, així com altres dades d'interès -mitjana de citacions per ítem i índex H-. També s'inclou el gràfic comparatiu d'aquesta dada a nivell de totes les institucions i la comparació d'àmbit estatal UPC vs. UPM i UPV.

### 4.1. Gràfics i dades de citacions rebudes per universitats<sup>6</sup>

#### 4.1.1. UPC - Universitat Politècnica de Catalunya

# Citacions



Total d'articles publicats: **645**

Quantitat de citacions rebudes: **5.216<sup>7</sup>**

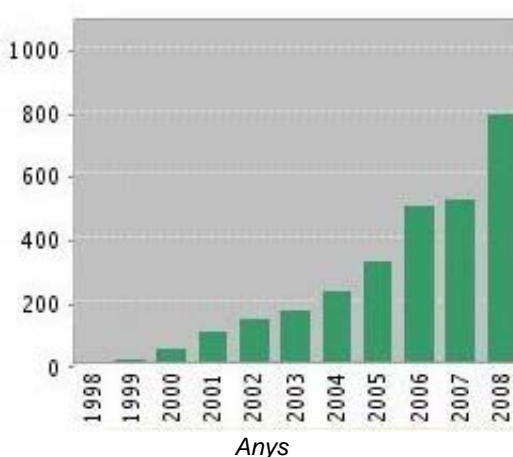
Mitjana de citacions per ítem: **8.09**

Índex H:

- primer any: **11**
- últim any: **6**
- període 1998-2008: **30**

#### 4.1.1.1. Escola de Camins

# Citacions



Total d'articles publicats: **437**

Quantitat de citacions rebudes: **3.992**

Mitjana de citacions per ítem: **9.14**

Índex H:

- primer any: **11**
- últim any: **5**
- període 1998-2008: **28**

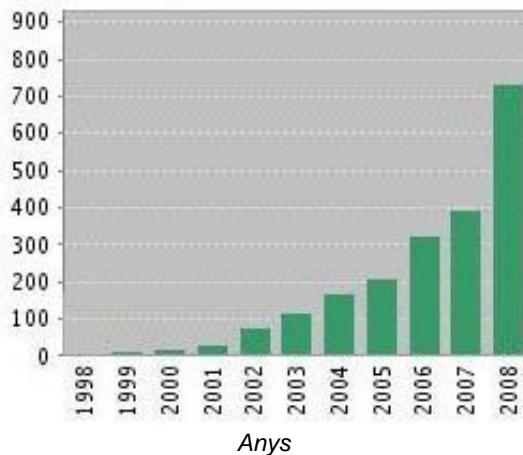
<sup>6</sup> Bases de dades consultades el 14 de febrer de 2010. S'inclouen, per tant, les cites rebudes pels articles durant l'any 2009 i part del 2010

<sup>7</sup> El nombre total de citacions correspon al període 1998 – [part de] 2010 i, per tant, no es correspon exactament amb la gràfica



#### 4.1.2. EPFL – École Polytechnique Fédérale de Lausanne

# Citacions



Total d'articles publicats: **410**

Quantitat de citacions rebudes:  
**3064**

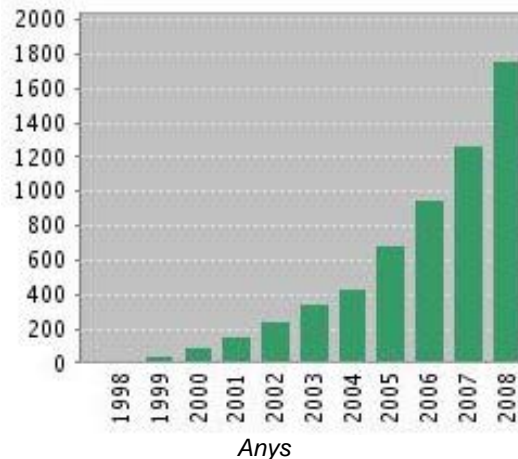
Mitjana de citacions per ítem:  
**7.47**

Índex H:

- primer any: **9**
- últim any: **6**
- període 1998-2008: **24**

#### 4.1.3. Imperial College London

# Citacions



Total d'articles publicats: **1025**

Quantitat de citacions rebudes:  
**8121**

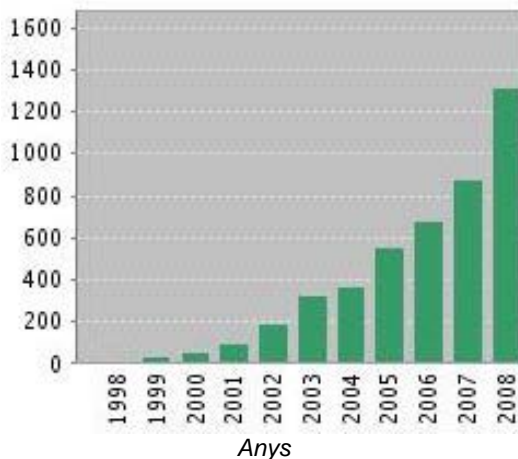
Mitjana de citacions per ítem:  
**7.92**

Índex H:

- primer any: **14**
- últim any: **7**
- període 1998-2008: **35**

#### 4.1.4. TUDelft - Technische Universiteit Delft

# Citacions



Total d'articles publicats: **967**

Quantitat de citacions rebudes:  
**6249**

Mitjana de citacions per ítem:  
**6.46**

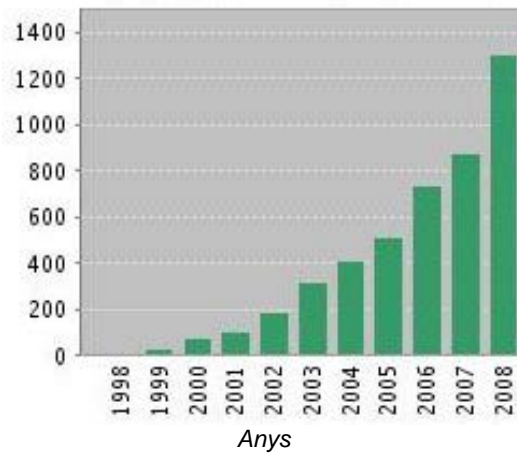
Índex H:

- primer any: **13**
- últim any: **5**
- període 1998-2008: **32**



#### 4.1.5. ETHZ – Swiss Federal Institute of Technology Zurich

# Citacions



Total d'articles publicats: **753**

Quantitat de citacions rebudes:  
**6131**

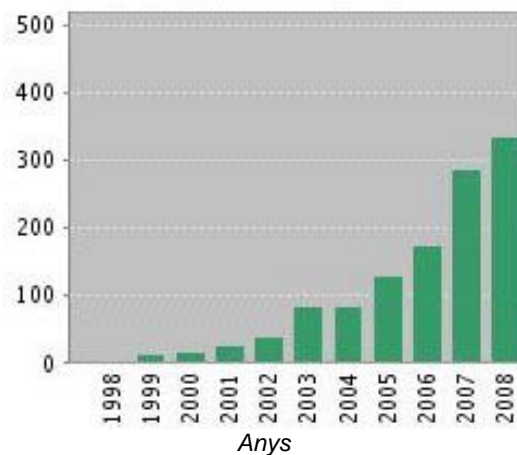
Mitjana de citacions per ítem:  
**8.14**

Índex H:

- primer any: **15**
- últim any: **5**
- període 1998-2008: **33**

#### 4.1.6. ENPC / LCPC – École Nationale des Ponts et Chaussées / Laboratoire Central des Ponts et Chaussées

#Articles



Total d'articles publicats: **294**

Quantitat de citacions rebudes:  
**1742**

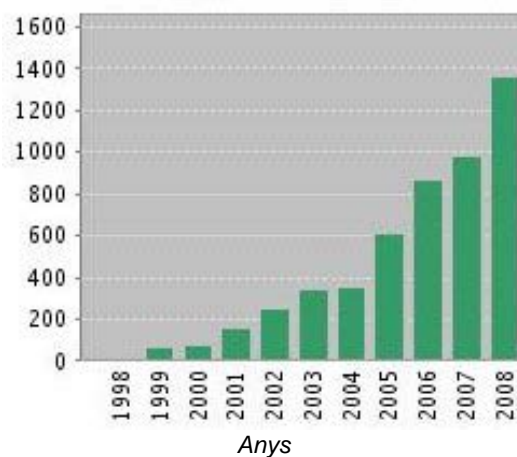
Mitjana de citacions per ítem:  
**5.93**

Índex H:

- primer any: **6**
- últim any: **5**
- període 1998-2008: **18**

#### 4.1.7. Stanford University

# Articles



Total d'articles publicats: **616**

Quantitat de citacions rebudes:  
**6777**

Mitjana de citacions per ítem:  
**11.00**

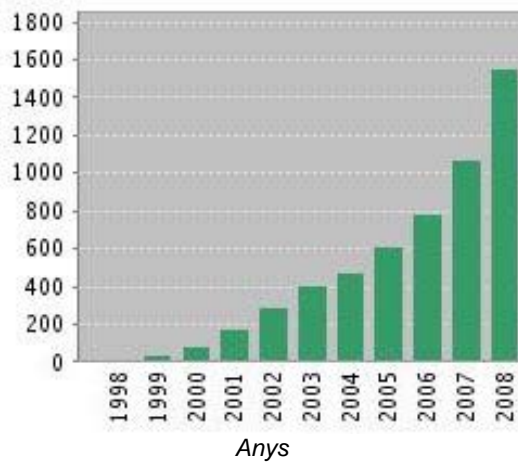
Índex H:

- primer any: **14**
- últim any: **6**
- període 1998-2008: **37**



#### 4.1.8. TAMU - Texas A&M University

# Citacions



Total d'articles publicats: **1274**

Quantitat de citacions rebudes:  
**7441**

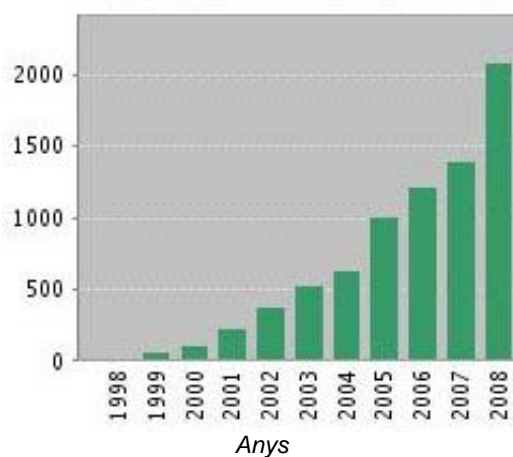
Mitjana de citacions per ítem:  
**5.84**

Índex H:

- primer any: **16**
- últim any: **6**
- període 1998-2008: **34**

#### 4.1.9. UI - University of Illinois

# Citacions



Total d'articles publicats: **1390**

Quantitat de citacions rebudes  
**10274**

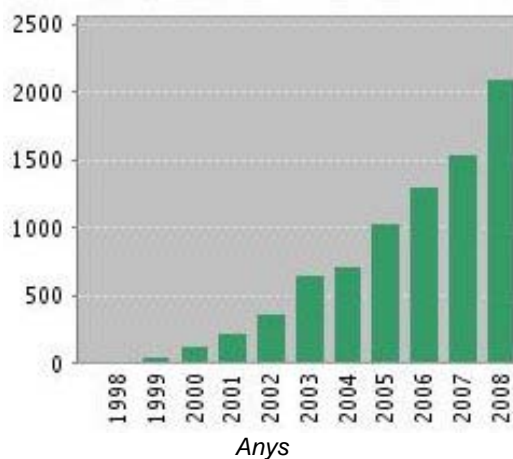
Mitjana de citacions per ítem:  
**7.39**

Índex H:

- primer any: **20**
- últim any: **7**
- període 1998-2008: **38**

#### 4.1.10. University of California Berkeley

# Citacions



Total d'articles publicats: **1230**

Quantitat de citacions rebudes:  
**10884**

Mitjana de citacions per ítem:  
**8.85**

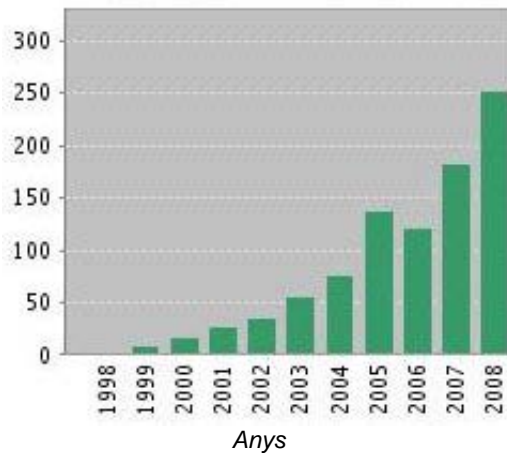
Índex H:

- primer any: **23**
- últim any: **7**
- període 1998-2008: **40**



#### 4.1.11. UNAM – Universidad Nacional Autónoma de México

# Citacions



Total d'articles publicats: **317**

Quantitat de citacions rebudes: **1256**

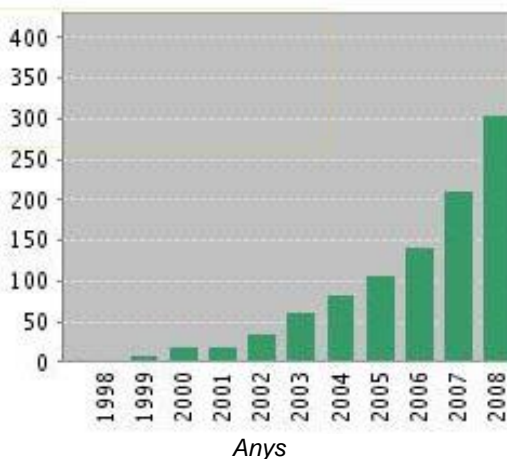
Mitjana de citacions per ítem: **3.96**

Índex H:

- primer any: **7**
- últim any: **3**
- període 1998-2008: **17**

#### 4.1.12. UFRJ – Universidade Federal do Rio de Janeiro

# Citacions



Total d'articles publicats: **335**

Quantitat de citacions rebudes: **1450**

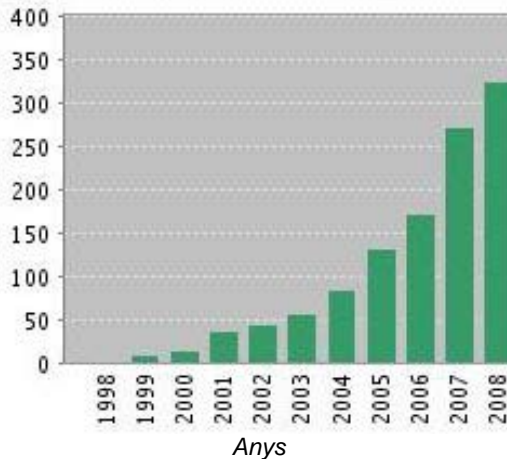
Mitjana de citacions per ítem: **4.33**

Índex H:

- primer any: **4**
- últim any: **3**
- període 1998-2008: **15**

#### 4.1.13. USP - Universidade de São Paulo

# Citacions



Total d'articles publicats: **286**

Quantitat de citacions rebudes: **1598**

Mitjana de citacions per ítem: **5.59**

Índex H:

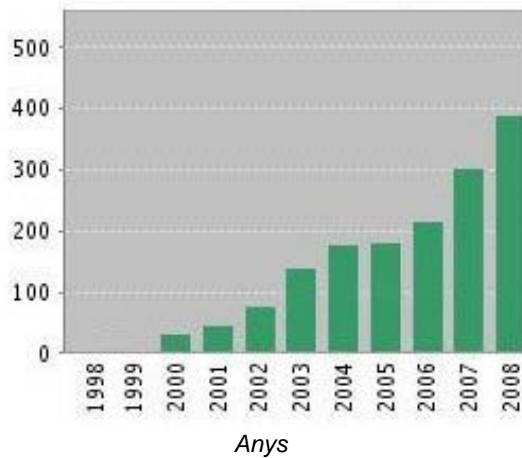
- primer any: **6**
- últim any: **5**
- període 1998-2008: **18**





#### 4.1.14. UTL - Universidade Técnica de Lisboa

# Citacions



Total d'articles publicats: **349**

Quantitat de citacions rebudes:  
**2154**

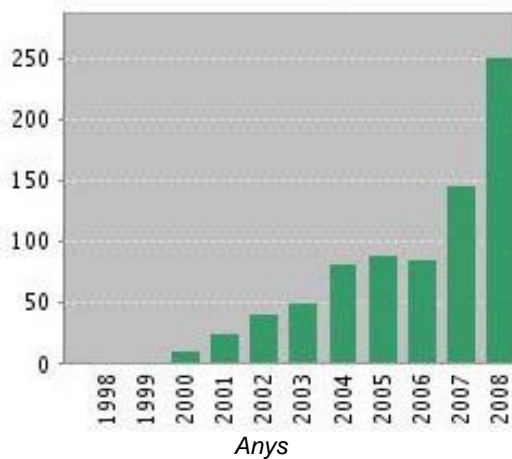
Mitjana de citacions per ítem:  
**6.17**

Índex H:

- primer any: **8**
- últim any: **5**
- període 1998-2008: **20**

#### 4.1.15. UPM - Universidad Politécnica de Madrid

# Citacions



Total d'articles publicats: **262**

Quantitat de citacions rebudes:  
**1095**

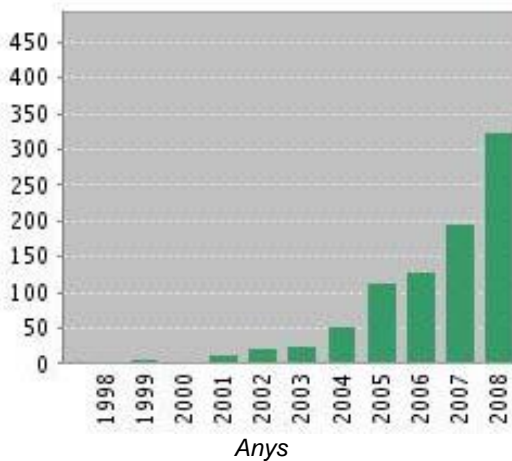
Mitjana de citacions per ítem:  
**4.18**

Índex H:

- primer any: **3**
- últim any: **2**
- període 1998-2008: **14**

#### 4.1.16. UPV - Universitat Politècnica de València

# Citacions



Total d'articles publicats: **324**

Quantitat de citacions rebudes:  
**1401**

Mitjana de citacions per ítem:  
**4.32**

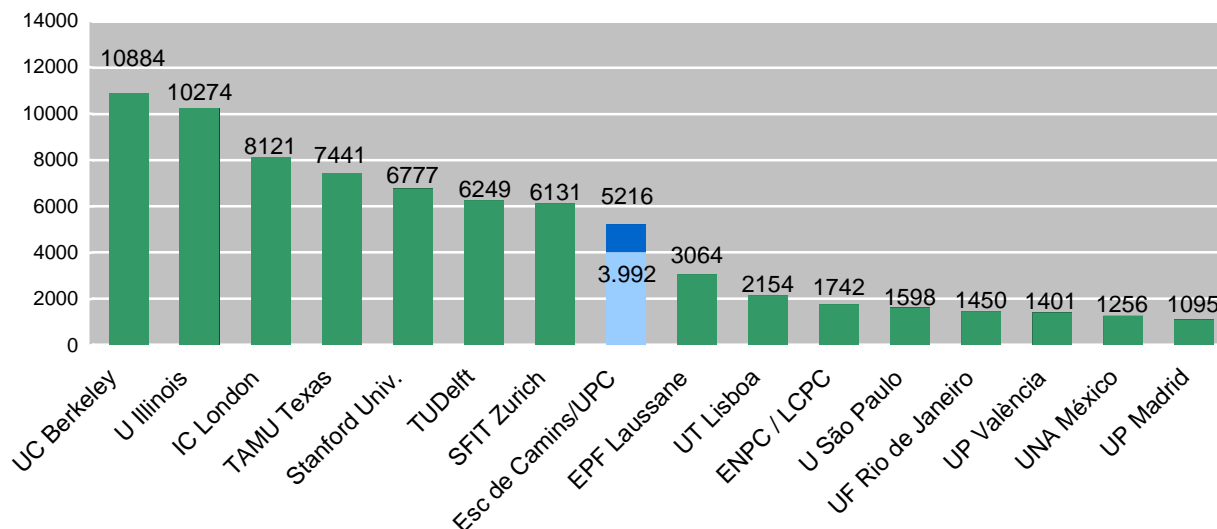
Índex H:

- primer any: **5**
- últim any: **4**
- període 1998-2008: **15**



## 4.2. Gràfics i taula comparatius de les citacions a la publicació científica<sup>8</sup>

### 4.2.1. Gràfic i taula global 1998-2008

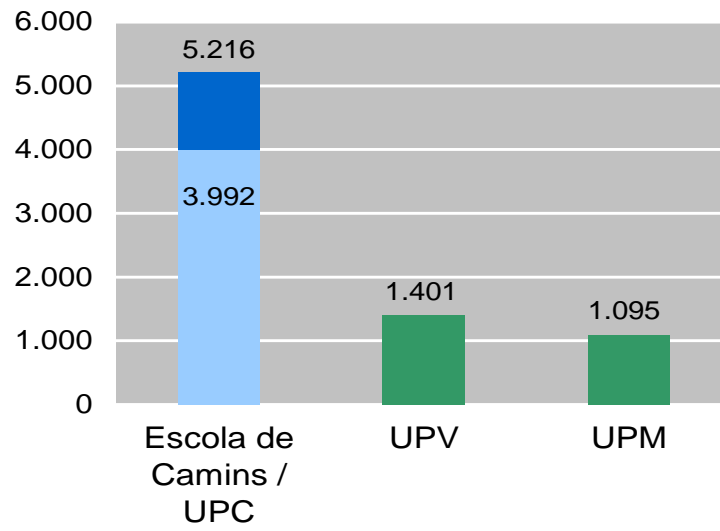


Institució	Total citacions rebudes 1998-2008	Posició
University of California Berkeley	10884	1
UIUC - University of Illinois at Urbana-Champaign	10274	2
Imperial College London	8121	3
TAMU - Texas A&M University	7441	4
Standford University	6777	5
TUDelft - Technische Universiteit Delft	6249	6
ETHZ - Swiss Federal Institute of Technology Zurich	6131	7
UPC - Universitat Politècnica de Catalunya	5216	8
<b>-Escola de Camins-</b>	<b>-3992-</b>	<b>-8-</b>
EPFL - École Polytechnique Fédérale de Lausanne	3064	9
UTL - Universidade Técnica de Lisboa	2154	10
ENPC / LCPC – École nationale des ponts et chaussées / Laboratoire Central des Ponts et Chaussées	1742	11
USP – Universidade de São Paulo	1598	12
UFRJ – Universidade Federal do Rio de Janeiro	1450	13
UPV - Universitat Politècnica de València	1401	14
UNAM – Universidad Nacional Autónoma de México	1256	15
UPM - Universidad Politècnica de Madrid	1095	16

<sup>8</sup> Bases de dades consultades el 14 de febrer de 2010. S'inclouen, per tant, les cites rebudes pels articles durant l'any 2009 i part del 2010



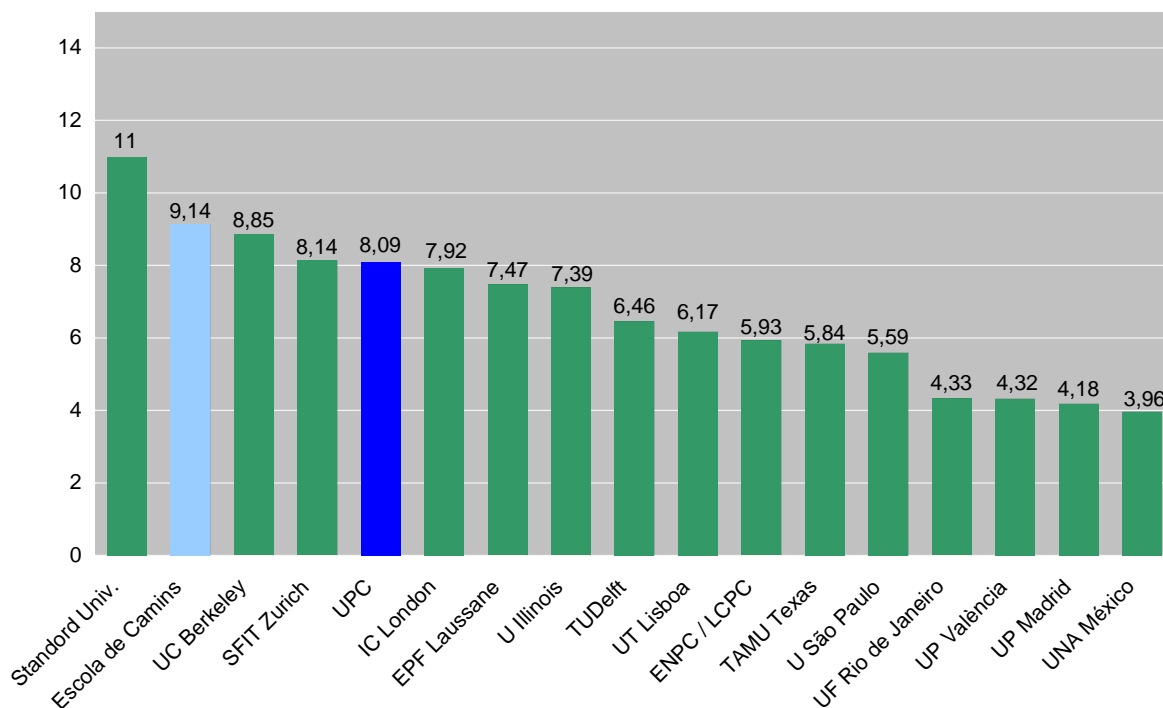
#### 4.2.2. Gràfic UPC vs. UPM i UPV 1998-2008





### 4.3. Gràfics i taula comparatius de la mitjana de citacions rebudes

Per a major claretat en la presentació, en el següent gràfic s'utilitzen dues barres diferents per a la UPC –blau més fosc– i l'Escola de Camins –blau més clar–.



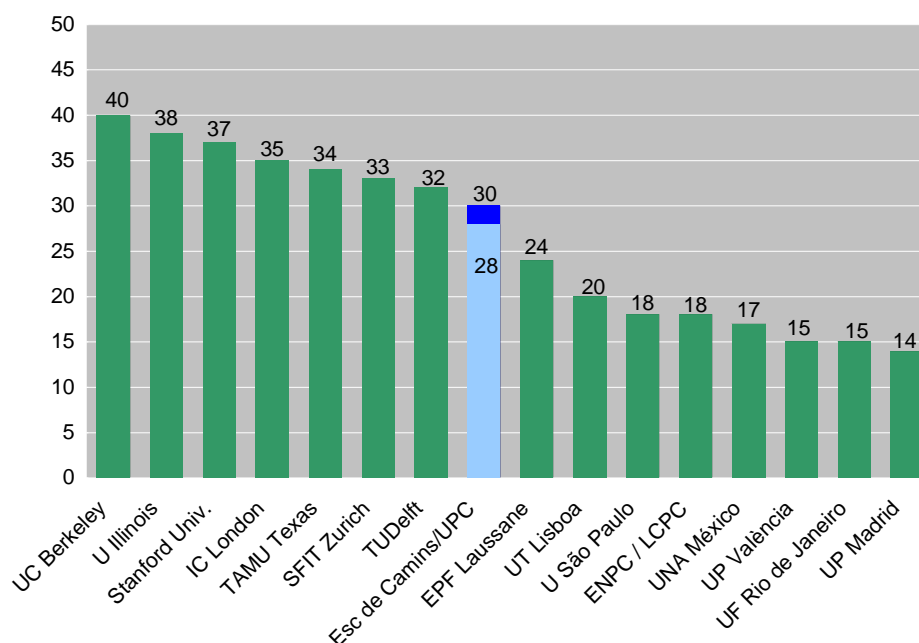
Institució	Taula de la mitjana de citacions 1998-2008	Posició
Standford University	11.00	1
<b>Escola de Camins</b>	<b>9.14</b>	<b>2</b>
University of California Berkeley	8.85	3
ETHZ - Swiss Federal Institute of Technology Zurich	8.14	4
UPC - Universitat Politècnica de Catalunya	8.09	5
Imperial College London	7.92	6
EPFL - École Polytechnique Fédérale de Lausanne	7.47	7
UIUC - University of Illinois at Urbana-Champaign	7.39	8
TU Delft - Technische Universiteit Delft	6.46	9
UTL - Universidade Técnica de Lisboa	6.17	10
ENPC / LCPC – École nationale des ponts et chaussées / Laboratoire Central des Ponts et Chaussées	5.93	11
TAMU - Texas A&M University	5.84	12
USP – Universidade de São Paulo	5.59	13
UFRJ – Universidade Federal do Rio de Janeiro	4.33	14
UPV - Universitat Politècnica de València	4.32	15
UPM - Universidad Politècnica de Madrid	4.18	16
UNAM – Universidad Nacional Autónoma de México	3.96	17



#### 4.4. Gràfic i taula comparatius de l'índex H

Es comparen a continuació els índex H per al conjunt d'articles en el període estudiat i institució a institució.

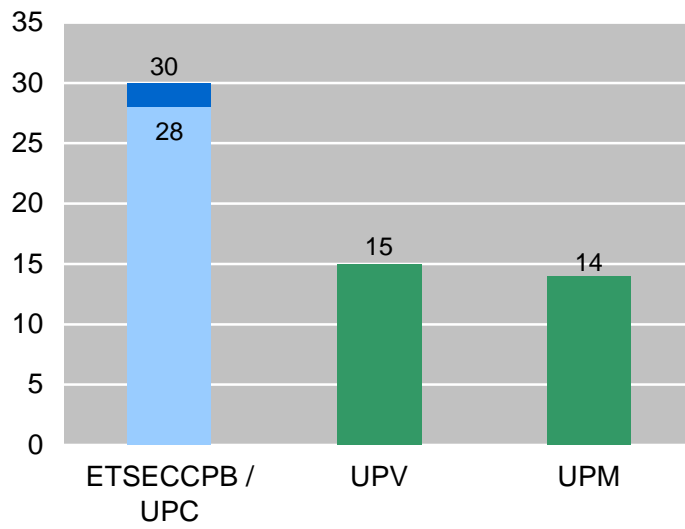
##### 4.4.1 Gràfic i taula global de l'índex H 1998-2008



Institució	Taula de la mitjana de l'índex H 1998-2008	Posició
University of California Berkeley	40	1
UIUC - University of Illinois at Urbana-Champaign	38	2
Stanford University	37	3
Imperial College London	35	4
TAMU - Texas A&M University	34	5
ETHZ - Swiss Federal Institute of Technology Zurich	33	6
TU Delft - Technische Universiteit Delft	32	7
UPC - Universitat Politècnica de Catalunya	30	8
<b>-Escola de Camins-</b>	<b>28</b>	<b>-8-</b>
EPFL - École Polytechnique Fédérale de Lausanne	24	9
UTL - Universidade Técnica de Lisboa	20	10
USP - Universidade de São Paulo	18	11
ENPC / LCPC - École nationale des ponts et chaussées / Laboratoire Central des Ponts et Chaussées	18	12
UNAM - Universidad Nacional Autónoma de México	17	13
UPV - Universitat Politècnica de València	15	14
UFRJ - Universidade Federal do Rio de Janeiro	15	15
UPM - Universidad Politécnica de Madrid	14	16



#### 4.4.2. Gràfic UPC vs. UPM i UPV sobre l'índex H 1998-2008





## 5. Articles més citats 1998-2008

Institució a institució, es detalla a continuació la llista dels 10 articles més referenciats durant el període de temps que abasta l'informe. Per a la UPC es recullen els 20 primers articles indexats al WoS.

### 5.1. UPC - Universitat Politècnica de Catalunya

Es destaquen en negreta aquells articles amb un o més autors amb assignació a l'Escola de Camins. S'observa que, dels 20 títols recollits, 18 pertanyen a aquesta categoria. Això representa un 90% del total dels articles esmentats.

Tot i així, cal aclarir que algun dels professors marcats com a Escola de Camins no estan actualment assignats a l'Escola –se'ls destaca en negreta perquè quan es van publicar els articles recollits sí que ho estaven-.

#	Article / Autor	Revista	# Citacions <sup>9</sup>
1.	<b>Comparison of some finite element methods for solving the diffusion-convection-reaction equation</b> Author(s): Codina R	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 156 Issue: 1-4 Pages: 185-210. APR 14 1998	99
2.	<b>An elasto-plastic model for unsaturated soil incorporating the effects of suction and degree of saturation on mechanical behaviour</b> Author(s): Gallipoli D, Gens A, Sharma R, Vaunat J	GEOTECHNIQUE Volume: 53 Issue: 1 Pages: 123-135. FEB 2003	74
3.	<b>Stabilization of incompressibility and convection through orthogonal subscales in finite element methods</b> Author(s): Codina R	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 190 Issue: 13-14 Pages: 1579-1599. 2000	65
4.	<b>Enrichment and coupling of the finite element and meshless methods</b> Author(s): Huerta A, Fernandez-Mendez S	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 48 Issue: 11 Pages: 1615-1636. AUG 20 2000	64
5.	<b>Stabilized finite element approximation of transient incompressible flows using orthogonal subscales</b> Author(s): Codina R	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 191 Issue: 39-40 Pages: 4295-4321. 2002	62
6.	<b>Modeling of non-isothermal multi-component reactive transport in field scale porous media flow systems</b> Author(s): Xu TF, Samper J, Ayora C, Manzano M, Custodio E	JOURNAL OF HYDROLOGY Volume: 214 Issue: 1-4 Pages: 144-164. JAN 1999	57
7.	Experimental design of Fenton and photo-Fenton reactions for the treatment of cellulose bleaching effluents Author(s): Torrades F, Perez M, Mansilla HD, Peral J	CHEMOSPHERE Volume: 53 Issue: 10 Pages: 1211-1220. DEC 2003	54

<sup>9</sup>.- Bases de dades consultades durant el 14 de febrer de 2010: S'inclouen, per tant, les cites rebudes pels articles durant l'any 2009 i part del 2010



#	Article / Autor	Revista	# Citacions
8.	<b>Modelling the mechanical behaviour of expansive clays</b> Author(s): Alonso EE, Vaunat J, Gens A	ENGINEERING GEOLOGY Volume: 54 Issue: 1-2 Pages: 173-183. SEP 1999	53
9.	<b>Mechanical behaviour of heavily compacted bentonite under high suction changes</b> Author(s): Lloret A, Villar MV, Sanchez M, Gens A, Pintado X, Alonso EE	GEOTECHNIQUE Volume: 53 Issue: 1 Pages: 27-40. FEB 2003	52
10.	<b>A stabilized finite element method for incompressible viscous flows using a finite increment calculus formulation</b> Author(s): Onate E	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 182 Issue: 3-4 Pages: 355-370. 2000	52
11.	<b>Water permeability, water retention and microstructure of unsaturated compacted Boom clay</b> Author(s): Romero E, Gens A, Lloret A	ENGINEERING GEOLOGY Volume: 54 Issue: 1-2 Pages: 117-127. SEP 1999	50
12.	<b>The meshless finite element method</b> Author(s): Idelsohn SR, Onate E, Calvo N, Del Pin F	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 58 Issue: 6 Pages: 893-912. OCT 14 2003	47
13.	<b>Impact of imperfect rainfall knowledge on the efficiency and the parameters of watershed models</b> Author(s): Andreassian V, Perrin C, Michel C, Usart-Sanchez I, Lavabre J	JOURNAL OF HYDROLOGY Volume: 250 Issue: 1-4 Pages: 206-223. SEP 1 2001	46
14.	<b>On the calculation of deflections in structural stainless steel beams: an experimental and numerical investigation</b> Author(s): Mirambell E, Real E	JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH Volume: 54 Issue: 1 Pages: 109-133. APR 2000	45
15.	<b>A stabilized finite element method for generalized stationary incompressible flows</b> Author(s): Codina R	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 190 Issue: 20-21 Pages: 2681-2706. 2001	44
16.	<b>Analysis of a full scale in situ test simulating repository conditions</b> Author(s): Gens A, Garcia-Molina AJ, Olivella S, Alonso EE, Huertas F	INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS Volume: 22 Issue: 7 Pages: 515-548. JUL 1998	44
17.	<b>Monte Carlo techniques in computational stochastic mechanics</b> Author(s): Hurtado JE, Barbat AH	ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING Volume: 5 Issue: 1 Pages: 3-29. 1998	43
18.	Removal of lead(II) and cadmium(II) from aqueous solutions using grape stalk waste Author(s): Martinez M, Miralles N, Hidalgo S, Fiol N, Villaescusa I, Poch J	JOURNAL OF HAZARDOUS MATERIALS Volume: 133 Issue: 1-3 Pages: 203-211. MAY 20 2006	42
19.	<b>Using Global Positioning System techniques in landslide monitoring</b> Author(s): Gili JA, Corominas J, Rius J	ENGINEERING GEOLOGY Volume: 55 Issue: 3 Pages: 167-192. FEB 2000	42
20.	<b>Micromechanical analysis of quasi-brittle materials using fracture-based interface elements</b> Author(s): Carol I, Lopez CM, Roa O	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 52 Issue: 1-2 Pages: 193-215. SEP 10 2001	41





### 5.1.1. Escola de Camins

Molts dels professors de l'Escola publiquen no només en revistes directament vinculades a l'enginyeria civil, sinó també en revistes d'àrees científiques més bàsiques. Aquestes revistes no es poden incloure en aquest estudi perquè deixaria de ser representatiu de l'enginyeria civil. Tanmateix, són indicatives de la diversitat de la recerca a l'Escola i, a títol informatiu, s'inclou la taula següent amb la llista dels articles que han estat publicats en el període 1998-2008 i han rebut com a mínim 50 citacions, independentment de la revista on han aparegut.

#	Article / Autor	Revista	# Citacions <sup>10</sup>
1.	Stability and mobility of defect clusters and dislocation loops in metals Author(s): Osetsky YN, Bacon DJ, Serra A, et al.	JOURNAL OF NUCLEAR MATERIALS Volume: 276 Pages: 65-77 Published: JAN 1 2000	102
2.	Comparison of some finite element methods for solving the diffusion-convection-reaction equation Author(s): Codina R	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 156 Issue: 1-4 Pages: 185-210 Published: APR 14 1998	99
3.	Hotspot volcanism close to a passive continental margin: The Canary Islands Author(s): Carracedo JC, Day S, Guillou H, Badiola ER, Canas JA, Torrado FJP	GEOLOGICAL MAGAZINE Volume: 135 Issue: 5 Pages: 591-604 Published: SEP 1998	82
4.	Microplane model M4 for concrete. I: Formulation with work-conjugate deviatoric stress Author(s): Bazant ZP, Caner FC, Carol I, Adley MD, Akers SA	JOURNAL OF ENGINEERING MECHANICS-ASCE Volume: 126 Issue: 9 Pages: 944-953 Published: SEP 2000	79
5.	An elasto-plastic model for unsaturated soil incorporating the effects of suction and degree of saturation on mechanical behaviour Author(s): Gallipoli D, Gens A, Sharma R, Vaunat J	GEOTECHNIQUE Volume: 53 Issue: 1 Pages: 123-135 Published: FEB 2003	74
6.	An evaluation of Jacob's method for the interpretation of pumping tests in heterogeneous formations Author(s): Meier PM, Carrera J, Sanchez-Vila X	WATER RESOURCES RESEARCH Volume: 34 Issue: 5 Pages: 1011-1025 Published: MAY 1998	72
7.	On matrix diffusion: formulations, solution methods and qualitative effects Author(s): Carrera J, Sanchez-Vila X, Benet I, Medina A, Galarza G, Guimera J	HYDROGEOLOGY JOURNAL Volume: 6 Issue: 1 Pages: 178-190 Published: JUN 1998	67
8.	Stabilization of incompressibility and convection through orthogonal subscales in finite element methods Author(s): Codina R	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 190 Issue: 13-14 Pages: 1579-1599 Published: 2000	65
9.	Enrichment and coupling of the finite element and meshless methods Author(s): Huerta A, Fernandez-Mendez S	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 48 Issue: 11 Pages: 1615-1636 Published: AUG 20 2000	64

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11.	Strong discontinuities and continuum plasticity models: the strong discontinuity approach Author(s): Oliver J, Cervera M, Manzoli O	INTERNATIONAL JOURNAL OF PLASTICITY Volume: 15 Issue: 3 Pages: 319-351 Published: 1999	59
12.	A mathematical formulation for reactive transport that eliminates mineral concentrations Author(s): Saaltink MW, Ayora C, Carrera J	WATER RESOURCES RESEARCH Volume: 34 Issue: 7 Pages: 1649-1656 Published: JUL 1998	59
13.	One-dimensional atomic transport by clusters of self-interstitial atoms in iron and copper Author(s): Osetsky YN, Bacon DJ, Serra A, Singh BN, Golubov SI	PHILOSOPHICAL MAGAZINE Volume: 83 Issue: 1 Pages: 61-91 Published: JAN 1 2003	58
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15.	Atomic structure of dislocation cores in GaN Author(s): Bere A, Serra A	PHYSICAL REVIEW B Volume: 65 Issue: 20 Article Number: 205323 Published: MAY 15 2002	53
16.	Modelling the mechanical behaviour of expansive clays Author(s): Alonso EE, Vaunat J, Gens A	ENGINEERING GEOLOGY Volume: 54 Issue: 1-2 Pages: 173-183 Published: SEP 1999	53
17.	Shape memory in Cu-based alloys: phenomenological behavior at the mesoscale level and interaction of martensitic transformation with structural defects in Cu-Zn-Al Author(s): Lovey FC, Torra V	PROGRESS IN MATERIALS SCIENCE Volume: 44 Issue: 3 Pages: 189-289 Published: 1999	53
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19.	From continuum mechanics to fracture mechanics: the strong discontinuity approach Author(s): Oliver J, Huespe AE, Pulido MDG, Chaves E	ENGINEERING FRACTURE MECHANICS Volume: 69 Issue: 2 Pages: 113-136 Published: JAN 2002	52



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21.	On the discrete constitutive models induced by strong discontinuity kinematics and continuum constitutive equations Author(s): Oliver J	INTERNATIONAL JOURNAL OF SOLIDS AND STRUCTURES Volume: 37 Issue: 48-50 Pages: 7207-7229 Published: NOV-DEC 2000	52
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23.	The oxidative dissolution mechanism of uranium dioxide. I. The effect of temperature in hydrogen carbonate medium Author(s): De Pablo J, Casas I, Gimenez J, Molera M, Rovira M, Duro L, Bruno J	GEOCHIMICA ET COSMOCHIMICA ACTA Volume: 63 Issue: 19-20 Pages: 3097-3103 Published: OCT 1999	52
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25.	The characteristic-based-split procedure: An efficient and accurate algorithm for fluid problems Author(s): Zienkiewicz OC, Nithiarasu P, Codina R, Vazquez M, Ortiz P	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN FLUIDS Volume: 31 Issue: 1 Pages: 359-+ Published: SEP 15 1999	50
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2.	Edge stabilization for Galerkin approximations of convection-diffusion-reaction problems. Burman E, Hansbo P	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 193 Issue: 15-16 Pages: 1437-1453 Published: 2004	63
3.	Exact energy and momentum conserving algorithms for general models in nonlinear elasticity. Gonzalez O	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 190 Issue: 13-14 Pages: 1763-1783 Published: 2000	54
4.	A Newton method using exact jacobians for solving fluid-structure coupling. Fernandez MA, Moubachir M	COMPUTERS & STRUCTURES Volume: 83 Issue: 2-3 Pages: 127-142 Published: JAN 2005	48
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6.	A supercapacitor-based energy-storage system for elevators with soft commutated interface. Rufer A, Barrade P	IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS Volume: 38 Issue: 5 Pages: 1151-1159 Published: SEP-OCT 2002	42
7.	Water table fluctuations in the riparian zone: comparative results from a pan-European experiment. Burt TP, Pinay G, Matheson FE, et al.	JOURNAL OF HYDROLOGY Volume: 265 Issue: 1-4 Pages: 129-148 Published: AUG 30 2002	41
8.	A monolithical fluid-structure interaction algorithm applied to the piston problem. Blom FJ	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 167 Issue: 3-4 Pages: 369-391 Published: DEC 21 1998	39
9.	Thermo-plasticity of clays: An isotropic yield mechanism. Laloui L, Cekerevac C	COMPUTERS AND GEOTECHNICS Volume: 30 Issue: 8 Pages: 649-660 Published: 2003	36
10.	Adaptive finite elements for a linear parabolic problem. Picasso M	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 167 Issue: 3-4 Pages: 223-237 Published: DEC 21 1998	33



### 5.3. Imperial College London

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2.	When can marine reserves improve fisheries management? . Hilborn R, Stokes K, Maguire JJ, et al.	Source: OCEAN & COASTAL MANAGEMENT Volume: 47 Issue: 3-4 Pages: 197-205 Published: 2004	101
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4.	Detailed physics, predictive capabilities and macroscopic consequences for pore-network models of multiphase flow . Blunt MJ, Jackson MD, Piri M, et al.	Source: ADVANCES IN WATER RESOURCES Volume: 25 Issue: 8-12 Pages: 1069-1089 Published: AUG-DEC 2002	90
5.	River flow prediction using artificial neural networks: generalisation beyond the calibration range . Imrie CE, Durucan S, Korre A	Source: JOURNAL OF HYDROLOGY Volume: 233 Issue: 1-4 Pages: 138-153 Published: JUN 12 2000	88
6.	Effect of shear displacement on the aperture and permeability of a rock fracture . Yeo IW, De Freitas MH, Zimmerman RW	Source: INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES Volume: 35 Issue: 8 Pages: 1051-1070 Published: DEC 1998	85
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2.	A new method for modelling cohesive cracks using finite elements Author(s): Wells GN, Sluys LJ	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 50 Issue: 12 Pages: 2667-2682 Published: APR 30 2001	175
3.	Development and validation of a three-dimensional morphological model Author(s): Lesser GR, Roelvink JA, van Kester JATM, et al.	COASTAL ENGINEERING Volume: 51 Issue: 8-9 Pages: 883-915 Published: OCT 2004	106
4.	Iterative image deformation methods in PIV Author(s): Scarano F	MEASUREMENT SCIENCE & TECHNOLOGY Volume: 13 Issue: 1 Pages: R1-R19 Published: JAN 2002	100
5.	Some recent issues in computational failure mechanics Author(s): de Borst R	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 52 Issue: 1-2 Pages: 63-95 Published: SEP 10 2001	65
6.	A simple model for turbulence induced flocculation of cohesive sediment Author(s): Winterwerp JC	JOURNAL OF HYDRAULIC RESEARCH Volume: 36 Issue: 3 Pages: 309-326 Published: 1998	65
7.	A consistent geometrically non-linear approach for delamination Author(s): Wells GN, de Borst R, Sluys LJ	INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 54 Issue: 9 Pages: 1333-1355 Published: JUL 30 2002	63
8.	Numerical simulation of 3D quasi-hydrostatic, free-surface flows Author(s): Casulli V, Stelling GS	JOURNAL OF HYDRAULIC ENGINEERING-ASCE Volume: 124 Issue: 7 Pages: 678-686 Published: JUL 1998	58
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10.	A unifying framework for watershed thermodynamics: balance equations for mass, momentum, energy and entropy, and the second law of thermodynamics Author(s): Reggiani P, Sivapalan M, Hassanizadeh SM	ADVANCES IN WATER RESOURCES Volume: 22 Issue: 4 Pages: 367-398 Published: DEC 11 1998	46



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2.	Comparative study on finite elements with embedded discontinuities Author(s): Jirasek M	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 188 Issue: 1-3 Pages: 307-330 Published: 2000	100
3.	Temporal evolution of clear-water pier and abutment scour Author(s): Oliveto G, Hager WH	Source: JOURNAL OF HYDRAULIC ENGINEERING-ASCE Volume: 128 Issue: 9 Pages: 811-820 Published: SEP 2002	58
4.	A wind tunnel study of organised and turbulent air motions in urban street canyons Author(s): Kastner-Klein P, Fedorovich E, Rotach MW	Source: JOURNAL OF WIND ENGINEERING AND INDUSTRIAL AERODYNAMICS Volume: 89 Issue: 9 Pages: 849-861 Published: JUL 2001	58
5.	A new control strategy for high-speed atomic force microscopy Author(s): Schitter G, Allgower F, Stemmer A	Source: NANOTECHNOLOGY Volume: 15 Issue: 1 Pages: 108-114 Published: JAN 2004	57
6.	The influence of EDDS on the uptake of heavy metals in hydroponically grown sunflowers Author(s): Tandy S, Schulin R, Nowack B	Source: CHEMOSPHERE Volume: 62 Issue: 9 Pages: 1454-1463 Published: MAR 2006	51
7.	Finite elements for elliptic problems with stochastic coefficients Author(s): Frauenfelder P, Schwab C, Todor RA	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 194 Issue: 2-5 Special Issue: Sp. Iss. SI Pages: 205-228 Published: 2005	50
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9.	Sources of pesticides in surface waters in Switzerland: pesticide load through waste water treatment plants-current situation and reduction potential Author(s): Gerecke AC, Scharer M, Singer HP, et al.	Source: CHEMOSPHERE Volume: 48 Issue: 3 Pages: 307-315 Published: JUL 2002	50
10.	Estimating unsaturated soil hydraulic parameters using ant colony optimization Author(s): Abbaspour KC, Schulin R, van Genuchten MT	Source: ADVANCES IN WATER RESOURCES Volume: 24 Issue: 8 Pages: 827-841 Published: AUG 2001	50



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2.	Fundamental considerations for the finite element analysis of shell structures Author(s): Chapelle D, Bathe KJ	COMPUTERS & STRUCTURES Volume: 66 Issue: 1 Pages: 19-36 Published: JAN 1998	86
3.	The relationship between suction and swelling properties in a heavily compacted unsaturated clay Author(s): Delage P, Howat MD, Cui YJ	ENGINEERING GEOLOGY Volume: 50 Issue: 1-2 Pages: 31-48 Published: SEP 1998	62
4.	Hydrological analysis of the river Aude, France, flash flood on 12 and 13 November 1999 Author(s): Gaume E, Livet M, Desbordes M, et al.	JOURNAL OF HYDROLOGY Volume: 286 Issue: 1-4 Pages: 135-154 Published: JAN 30 2004	38
5.	Micromechanics of saturated and unsaturated porous media Author(s): Chateau X, Dormieux L	INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS Volume: 26 Issue: 8 Pages: 831-844 Published: JUL 2002	34
6.	On the thermal consolidation of Boom clay Author(s): Delage P, Sultan N, Cui YJ	CANADIAN GEOTECHNICAL JOURNAL Volume: 37 Issue: 2 Pages: 343-354 Published: APR 2000	32
7.	Fresh concrete: A Herschel-Bulkley material Author(s): de Larrard F, Ferraris CF, Sedran T	MATERIALS AND STRUCTURES Volume: 31 Issue: 211 Pages: 494-498 Published: AUG-SEP 1998	31
8.	Nonlinear diffusion and discrete maximum principle for stabilized Galerkin approximations of the convection-diffusion-reaction equation Author(s): Burman E, Ern A	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 191 Issue: 35 Pages: 3833-3855 Published: 2002	26
9.	Numerical analysis of seismic wave amplification in Nice (France) and comparisons with experiments Author(s): Semblat JF, Duval AM, Dangla P	SOIL DYNAMICS AND EARTHQUAKE ENGINEERING Volume: 19 Issue: 5 Pages: 347-362 Published: JUL 2000	26
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## 5.7. Stanford University

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3.	Incremental dynamic analysis Author(s): Vamvatsikos D, Cornell CA	EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS Volume: 31 Issue: 3 Pages: 491-514 Published: MAR 2002	151
4.	Chemical control of nanotube electronics Author(s): Peng S, Cho KJ	NANOTECHNOLOGY Volume: 11 Issue: 2 Pages: 57-60 Published: JUN 2000	118
5.	Probabilistic basis for 2000 SAC Federal Emergency Management Agency steel moment frame guidelines Author(s): Cornell CA, Jalayer F, Hamburger RO, et al.	JOURNAL OF STRUCTURAL ENGINEERING-ASCE Volume: 128 Issue: 4 Pages: 526-533 Published: APR 2002	110
6.	Pros and cons of a pushover analysis of seismic performance evaluation Author(s): Krawinkler H, Seneviratna GDPK	ENGINEERING STRUCTURES Volume: 20 Issue: 4-6 Pages: 452-464 Published: APR-JUN 1998	108
7.	Design for variety: developing standardized and modularized product platform architectures Author(s): Martin MV, Ishii K	RESEARCH IN ENGINEERING DESIGN-THEORY APPLICATIONS AND CONCURRENT ENGINEERING Volume: 13 Issue: 4 Pages: 213-235 Published: NOV 2002	91
8.	A critical compilation of Henry's law constant temperature dependence relations for organic compounds in dilute aqueous solutions Author(s): Staudinger J, Roberts PV	CHEMOSPHERE Volume: 44 Issue: 4 Pages: 561-576 Published: AUG 2001	76
9.	Continuous/discontinuous finite element approximations of fourth-order elliptic problems in structural and continuum mechanics with applications to thin beams and plates, and strain gradient elasticity Author(s): Engel G, Garikipati K, Hughes TJR, et al.	COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 191 Issue: 34 Pages: 3669-3750 Published: 2002	75
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3.	The generalized finite element method Author(s): Strouboulis T, Copps K, Babuska I	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 190 Issue: 32-33 Pages: 4081-4193 Published: 2001	134
4.	On laminated composite plates with integrated sensors and actuators Author(s): Reddy JN	Source: ENGINEERING STRUCTURES Volume: 21 Issue: 7 Pages: 568-593 Published: JUL 1999	120
5.	Damage identification in beam-type structures: frequency-based method vs mode-shape-based method Author(s): Kim JT, Ryu YS, Cho HM, et al.	Source: ENGINEERING STRUCTURES Volume: 25 Issue: 1 Pages: 57-67 Published: JAN 2003	78
6.	Numerical implementation of a shape memory alloy thermomechanical constitutive model using return mapping algorithms Author(s): Qidwai MA, Lagoudas DC	Source: INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 47 Issue: 6 Pages: 1123-1168 Published: FEB 28 2000	78
7.	A novel approach for broken-rotor-bar detection in cage induction motors Author(s): Milimonfared J, Kelk HM, Nandi S, et al.	Source: IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS Volume: 35 Issue: 5 Pages: 1000-1006 Published: SEP-OCT 1999	78
8.	The generalized finite element method: an example of its implementation and illustration of its performance Author(s): Strouboulis T, Copps K, Babuska I	Source: INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 47 Issue: 8 Pages: 1401-1417 Published: MAR 20 2000	70
9.	Fully nonlinear 3-D numerical wave tank simulation Author(s): Celebi MS, Kim MH, Beck RF	Source: JOURNAL OF SHIP RESEARCH Volume: 42 Issue: 1 Pages: 33-45 Published: MAR 1998	64
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3.	Impact-induced delamination of composites: a 2D simulation Author(s): Geubelle PH, Baylor JS	Source: COMPOSITES PART B-ENGINEERING Volume: 29 Issue: 5 Pages: 589-602 Published: 1998	123
4.	Silicon-based molecular nanotechnology Author(s): Hersam MC, Guisinger NP, Lyding JW	Source: NANOTECHNOLOGY Volume: 11 Issue: 2 Pages: 70-76 Published: JUN 2000	118
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6.	Axially loaded concrete-filled steel tubes Author(s): Schneider SP	Source: JOURNAL OF STRUCTURAL ENGINEERING-ASCE Volume: 124 Issue: 10 Pages: 1125-1138 Published: OCT 1998	109
7.	Topology optimization of non-linear elastic structures and compliant mechanisms Author(s): Bruns TE, Tortorelli DA	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 190 Issue: 26-27 Pages: 3443-3459 Published: 2001	100
8.	Finite element evaluation of mixed mode stress intensity factors in functionally graded materials Author(s): Kim JH, Paulino GH	Source: INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 53 Issue: 8 Pages: 1903-1935 Published: MAR 20 2002	94
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## 5.10. University of California Berkeley

#	Article / Autor	Revista	# Citacions
1.	Biological applications of colloidal nanocrystals Author(s): Parak WJ, Gerion D, Pellegrino T, et al.	Source: NANOTECHNOLOGY Volume: 14 Issue: 7 Pages: R15-R27 Published: JUL 2003	261
2.	Liquefaction resistance of soils: Summary report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils Author(s): Youd TL, Idriss IM, Andrus RD, et al.	Source: JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING Volume: 127 Issue: 10 Pages: 817-833 Published: OCT 2001	202
3.	IAHS decade on Predictions in Ungauged Basins (PUB), 2003-2012: Shaping an exciting future for the hydrological sciences Author(s): Sivapalan M, Takeuchi K, Franks SW, et al.	Source: HYDROLOGICAL SCIENCES JOURNAL-JOURNAL DES SCIENCES HYDROLOGIQUES Volume: 48 Issue: 6 Pages: 857-880 Published: DEC 2003	155
4.	A modal pushover analysis procedure for estimating seismic demands for buildings Author(s): Chopra AK, Goel RK	Source: EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS Volume: 31 Issue: 3 Pages: 561-582 Published: MAR 2002	142
5.	Some traffic features at freeway bottlenecks Author(s): Cassidy MJ, Bertini RL	Source: TRANSPORTATION RESEARCH PART B-METHODOLOGICAL Volume: 33 Issue: 1 Pages: 25-42 Published: JAN 1999	93
6.	A critical evaluation of interlaboratory data on total, elemental, and isotopic carbon in the carbonaceous particle reference material, NIST SRM 1649a Author(s): Currie LA, Benner BA, Kessler JD, et al.	Source: JOURNAL OF RESEARCH OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY Volume: 107 Issue: 3 Pages: 279-298 Published: MAY-JUN 2002	84
7.	Effective bandwidth-based admission control for multiservice CDMA cellular networks Author(s): Evans JS, Everitt D	Source: IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY Volume: 48 Issue: 1 Pages: 36-46 Published: JAN 1999	83
8.	A real-time computer vision system for vehicle tracking and traffic surveillance Author(s): Coifman B, Beymer D, McLauchlan P, et al.	Source: TRANSPORTATION RESEARCH PART C-EMERGING TECHNOLOGIES Volume: 6 Issue: 4 Pages: 271-288 Published: AUG 1998	79
9.	Joint mixed logit models of stated and revealed preferences for alternative-fuel vehicles Author(s): Brownstone D, Bunch DS, Train K	Source: TRANSPORTATION RESEARCH PART B-METHODOLOGICAL Volume: 34 Issue: 5 Pages: 315-338 Published: JUN 2000	78
10.	Continuous/discontinuous finite element approximations of fourth-order elliptic problems in structural and continuum mechanics with applications to thin beams and plates, and strain gradient elasticity Author(s): Engel G, Garikipati K, Hughes TJR, et al.	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 191 Issue: 34 Pages: 3669-3750 Published: 2002	75



### 5.11. UNAM – Universidad Nacional Autónoma de México

#	Article / Autor	Revista	# Citacions
1.	Chemical functionalization of carbon nanotubes through an organosilane Author(s): Velasco-Santos C, Martinez-Hernandez AL, Lozada-Cassou M, et al.	Source: NANOTECHNOLOGY Volume: 13 Issue: 4 Pages: 495-498 Published: AUG 2002	75
2.	Influence of rainfall spatial variability on flood prediction Author(s): Arnaud P, Bouvier C, Cisneros L, et al.	Source: JOURNAL OF HYDROLOGY Volume: 260 Issue: 1-4 Pages: 216-230 Published: MAR 15 2002	34
3.	Site effects at Euroseistest - I. Determination of the valley structure and confrontation of observations with 1D analysis Author(s): Raptakis D, Chavez-Garcia FJ, Makra K, et al.	Source: SOIL DYNAMICS AND EARTHQUAKE ENGINEERING Volume: 19 Issue: 1 Pages: 1-22 Published: JAN 2000	29
4.	Estimation of strength-reduction factors for elastoplastic systems: A new approach Author(s): Ordaz M, Perez-Rocha LE	Source: EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS Volume: 27 Issue: 9 Pages: 889-901 Published: SEP 1998	28
5.	Site effects at Euroseistest - II. Results from 2D numerical modeling and comparison with observations Author(s): Chavez-Garcia FJ, Raptakis D, Makra K, et al.	Source: SOIL DYNAMICS AND EARTHQUAKE ENGINEERING Volume: 19 Issue: 1 Pages: 23-39 Published: JAN 2000	25
6.	The spectral element method for elastic wave equations - Application to 2-D and 3-D seismic problems Author(s): Komatitsch D, Vilotte JP, Vai R, et al.	Source: INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 45 Issue: 9 Pages: 1139-1164 Published: JUL 30 1999	25
7.	Anomalous stability behavior of a properly invariant constitutive equation which generalises fractional derivative models Author(s): Palade LI, Attane P, Huilgol RR, et al.	Source: INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE Volume: 37 Issue: 3 Pages: 315-329 Published: FEB 1999	25
8.	Geochemical evolution of groundwater beneath Mexico City Author(s): Edmunds WM, Carrillo-Rivera JJ, Cardona A	Source: JOURNAL OF HYDROLOGY Volume: 258 Issue: 1-4 Pages: 1-24 Published: FEB 28 2002	24
9.	Spin-polarized pumping in a double quantum dot Author(s): Cota E, Aguado R, Creffield CE, et al.	Source: NANOTECHNOLOGY Volume: 14 Issue: 2 Pages: 152-156 Published: FEB 2003	23
10.	Use of abstraction regime and knowledge of hydrogeological conditions to control high-fluoride concentration in abstracted groundwater: San Luis Potosi basin, Mexico Author(s): Carrillo-Rivera JJ, Cardona A, Edmunds WM	Source: JOURNAL OF HYDROLOGY Volume: 261 Issue: 1-4 Pages: 24-47 Published: APR 15 2002	23



## 5.12. UFRJ – Universidade Federal do Rio de Janeiro

#	Article / Autor	Revista	# Citacions
1.	Treatment and detoxification of a sanitary landfill leachate Author(s): Silva AC, Dezotti M, Sant'Anna GL	Source: CHEMOSPHERE Volume: 55 Issue: 2 Pages: 207-214 Published: APR 2004	48
2.	A linear theta method applied to 2D time-domain BEM Author(s): Yu GY, Mansur WJ, Carrer JAM, et al.	Source: COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING Volume: 14 Issue: 12 Pages: 1171-1179 Published: DEC 1998	35
3.	Phenol removal from high salinity effluents using Fenton's reagent and photo-Fenton reactions Author(s): Maciel R, Sant'Anna GL, Dezotti M	Source: CHEMOSPHERE Volume: 57 Issue: 7 Pages: 711-719 Published: NOV 2004	31
4.	Efficient use of airport capacity Author(s): Fernandes E, Pacheco RR	Source: TRANSPORTATION RESEARCH PART A-POLICY AND PRACTICE Volume: 36 Issue: 3 Pages: 225-238 Published: MAR 2002	31
5.	Time discontinuous linear traction approximation in time-domain BEM scalar wave propagation analysis Author(s): Mansur WJ, Carrer JAM, Siqueira EFN	Source: INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 42 Issue: 4 Pages: 667-683 Published: JUN 30 1998	27
6.	Ozonation and advanced oxidation technologies to remove endocrine disrupting chemicals (EDCs) and pharmaceuticals and personal care products (PPCPs) in water effluents Author(s): Esplugas S, Bila DM, Krause LGT, et al.	Source: JOURNAL OF HAZARDOUS MATERIALS Volume: 149 Issue: 3 Pages: 631-642 Published: NOV 19 2007	26
7.	Ozonation of a landfill leachate: evaluation of toxicity removal and biodegradability improvement Author(s): Bila DM, Montalvao AF, Silva AC, et al.	Source: JOURNAL OF HAZARDOUS MATERIALS Volume: 117 Issue: 2-3 Pages: 235-242 Published: JAN 31 2005	25
8.	Atmospheric BTX and polyaromatic hydrocarbons in Rio de Janeiro, Brazil Author(s): Fernandes MB, Brickus LSR, Moreira JC, et al.	Source: CHEMOSPHERE Volume: 47 Issue: 4 Pages: 417-425 Published: APR 2002	25
9.	Active control of axisymmetric shells with piezoelectric layers: a mixed laminated theory with a high order displacement field Author(s): Correia IFP, Soares CMM, Soares CAM, et al.	Source: COMPUTERS & STRUCTURES Volume: 80 Issue: 27-30 Pages: 2265-2275 Published: NOV 2002	24
10.	Bioremediation of a weathered and a recently oil-contaminated soils from Brazil: a comparison study Author(s): Trindade PVO, Sobral LG, Rizzo ACL, et al.	Source: CHEMOSPHERE Volume: 58 Issue: 4 Pages: 515-522 Published: JAN 2005	22



### 5.13. USP - Universidade de São Paulo

#	Article / Autor	Revista	# Citacions
1.	IAHS decade on Predictions in Ungauged Basins (PUB), 2003-2012: Shaping an exciting future for the hydrological sciences Author(s): Sivapalan M, Takeuchi K, Franks SW, et al.	Source: HYDROLOGICAL SCIENCES JOURNAL-JOURNAL DES SCIENCES HYDROLOGIQUES Volume: 48 Issue: 6 Pages: 857-880 Published: DEC 2003	155
2.	Second-order statistics for diversity-combining, techniques in Nakagami-fading channels Author(s): Yacoub MD, da Silva CRCM, Bautista JEV	Source: IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY Volume: 50 Issue: 6 Pages: 1464-1470 Published: NOV 2001	47
3.	Optimal design of periodic piezocomposites Author(s): Silva ECN, Fonseca JSO, Kikuchi N	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 159 Issue: 1-2 Pages: 49-77 Published: JUL 1 1998	38
4.	In situ thickness measurements of ultrathin multilayer polymer films by atomic force microscopy Author(s): Lobo RFM, Pereira-da-Silva MA, Raposo M, et al.	Source: NANOTECHNOLOGY Volume: 10 Issue: 4 Pages: 389-393 Published: DEC 1999	35
5.	The contribution of azo dyes to the mutagenic activity of the Cristais River Author(s): Umbuzeiro GDA, Freeman HS, Warren SH, et al.	Source: CHEMOSPHERE Volume: 60 Issue: 1 Pages: 55-64 Published: JUN 2005	30
6.	Formation energy of native defects in BN nanotubes: an ab initio study Author(s): Piquini P, Baierle RJ, Schmidt TM, et al.	Source: NANOTECHNOLOGY Volume: 16 Issue: 6 Pages: 827-831 Published: JUN 2005	27
7.	Optimization methods applied to material and flextensional actuator design using the homogenization method Author(s): Silva ECN, Nishiwaki S, Fonseca JSO, et al.	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 172 Issue: 1-4 Pages: 241-271 Published: APR 16 1999	27
8.	Multivariate analysis of photo-Fenton degradation of the herbicides tebuthiuron, diuron and 2,4-D Author(s): Paterlini WC, Nogueira RFP	Source: CHEMOSPHERE Volume: 58 Issue: 8 Pages: 1107-1116 Published: FEB 2005	25
9.	Overlapping of the devolatilization and char combustion stages in the burning of coal particles Author(s): Veras CAG, Saastamoinen J, Carvalho JA, et al.	Source: COMBUSTION AND FLAME Volume: 116 Issue: 4 Pages: 567-579 Published: MAR 1999	24
10.	Design of piezocomposite materials and piezoelectric transducers using topology optimization - Part I Author(s): Silva ECN, Fonseca JSO, de Espinosa FM, et al.	Source: ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING Volume: 6 Issue: 2 Pages: 117-182 Published: 1999	23



#### 5.14. Universidade Técnica de Lisboa

#	Article / Autor	Revista	# Citacions
1.	Virtual-flux-based direct power control of three-phase PWM rectifiers Author(s): Malinowski M, Kazmierkowski MP, Hansen S, et al.	Source: IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS Volume: 37 Issue: 4 Pages: 1019-1027 Published: JUL-AUG 2001	131
2.	Irrigation management under water scarcity Author(s): Pereira LS, Oweis T, Zairi A	Source: AGRICULTURAL WATER MANAGEMENT Volume: 57 Issue: 3 Pages: 175-206 Published: DEC 30 2002	61
3.	Modelling and design of adaptive composite structures Author(s): Correia VMF, Gomes MAA, Suleman A, et al.	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 185 Issue: 2-4 Pages: 325-346 Published: 2000	48
4.	Numerical simulation of a mild combustion burner Author(s): Coelho PJ, Peters N	Source: COMBUSTION AND FLAME Volume: 124 Issue: 3 Pages: 503-518 Published: FEB 2001	44
5.	Effects of time and channel geometry on scour at bridge abutments Author(s): Cardoso AH, Bettess R	Source: JOURNAL OF HYDRAULIC ENGINEERING-ASCE Volume: 125 Issue: 4 Pages: 388-399 Published: APR 1999	34
6.	Unsteady modelling of a piloted methane/air jet flame based on the Eulerian particle flamelet model Author(s): Coelho PJ, Peters N	Source: COMBUSTION AND FLAME Volume: 124 Issue: 3 Pages: 444-465 Published: FEB 2001	32
7.	First-order generalised beam theory for arbitrary orthotropic materials Author(s): Silvestre N, Camotim D	Source: THIN-WALLED STRUCTURES Volume: 40 Issue: 9 Pages: 755-789 Published: SEP 2002	30
8.	Proton and neutron sources using terawatt lasers Author(s): Mendonca JT, Davies JR, Eloy M	Source: MEASUREMENT SCIENCE & TECHNOLOGY Volume: 12 Issue: 11 Pages: 1801-1812 Published: NOV 2001	30
9.	Numerical modelling of mass transfer in slits with semi-permeable membrane walls Author(s): Geraldes V, Semiao V, Pinho MN	Source: ENGINEERING COMPUTATIONS Volume: 17 Issue: 2-3 Pages: 192-217 Published: 2000	28
10.	A numerical model of passive and active behavior of skeletal muscles Author(s): Martins JAC, Pires EB, Salvado R, et al.	Source: COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING Volume: 151 Issue: 3-4 Pages: 419-433 Published: JAN 20 1998	25





### 5.15. UPM - Universidad Politécnica de Madrid

#	Article / Autor	Revista	# Citacions
1.	Three-dimensional finite-element simulation of the dynamic Brazilian tests on concrete cylinders Author(s): Ruiz G, Ortiz M, Pandolfi A	Source: INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING Volume: 48 Issue: 7 Pages: 963-994 Published: JUL 10 2000	45
2.	Efficient ray-tracing acceleration techniques for radio propagation modeling Author(s): Agelet FA, Formella A, Rabanos JMH, et al.	Source: IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY Volume: 49 Issue: 6 Pages: 2089-2104 Published: NOV 2000	29
3.	Implementation of essential boundary conditions in a meshless method Author(s): Gavete L, Benito JJ, Falcon S, et al.	Source: COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING Volume: 16 Issue: 6 Pages: 409-421 Published: JUN 2000	28
4.	Multiagent architectures for intelligent traffic management systems Author(s): Hernandez JZ, Ossowski S, Garcia-Serrano A	Source: TRANSPORTATION RESEARCH PART C-EMERGING TECHNOLOGIES Volume: 10 Issue: 5-6 Pages: 473-506 Published: OCT-DEC 2002	27
5.	Model-based loss minimization for DC and AC vector-controlled motors including core saturation Author(s): Fernandez-Bernal F, Garcia-Cerrada A, Faure R	Source: IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS Volume: 36 Issue: 3 Pages: 755-763 Published: MAY-JUN 2000	26
6.	Size effect and boundary conditions in the Brazilian test: Experimental verification Author(s): Rocco C, Guinea GV, Planas J, et al.	Source: MATERIALS AND STRUCTURES Volume: 32 Issue: 217 Pages: 210-217 Published: APR 1999	25
7.	Fractal and multifractal analysis of pore-scale images of soil Author(s): Bird N, Diaz MC, Saa A, et al.	Source: JOURNAL OF HYDROLOGY Volume: 322 Issue: 1-4 Pages: 211-219 Published: MAY 15 2006	20
8.	Lewis number effect on the propagation of premixed laminar flames in narrow open ducts Author(s): Kurdyumov VN, Fernandez-Tarrazo E	Source: COMBUSTION AND FLAME Volume: 128 Issue: 4 Pages: 382-394 Published: MAR 2002	20
9.	Simulation of non-axisymmetric floating zone crystal growth under microgravity Author(s): Martinez I, Meseguer J, Perales JM	Source: MICROGRAVITY SCIENCE AND TECHNOLOGY Volume: 13 Issue: 2 Pages: 3-11 Published: 2002	19
10.	Improving the response of a wheel speed sensor using an adaptive line enhancer Author(s): Hernandez W	Source: MEASUREMENT Volume: 33 Issue: 3 Pages: 229-240 Published: APR 2003	17



## 5.16. UPV - Universitat Politècnica de València

#	Article / Autor	Revista	# Citacions
1.	An integrated optical interferometric nanodevice based on silicon technology for biosensor applications Author(s): Prieto F, Sepulveda B, Calle A, et al.	Source: NANOTECHNOLOGY Volume: 14 Issue: 8 Pages: 907-912 Published: AUG 2003	65
2.	Validation of a new method for the diagnosis of rotor bar failures via wavelet transform in industrial induction machines Author(s): Antonino-Daviu JA, Riera-Guasp M, Folch JR, et al.	Source: IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS Volume: 42 Issue: 4 Pages: 990-996 Published: JUL-AUG 2006	40
3.	Ozonisation coupled with biological degradation for treatment of phenolic pollutants: a mechanistically based study Author(s): Amat AM, Arques A, Beneyto H, et al.	Source: CHEMOSPHERE Volume: 53 Issue: 1 Pages: 79-86 Published: OCT 2003	40
4.	Reuse of wastewater of the textile industry after its treatment with a combination of physico-chemical treatment and membrane technologies Author(s): Bes-Pia A, Mendoza-Roca JA, Alcaina-Miranda MI, et al.	Source: DESALINATION Volume: 149 Issue: 1-3 Special Issue: Sp. Iss. SI Pages: 169-174 Published: SEP 10 2002	25
5.	Joint simulation of transmissivity and storativity fields conditional to steady-state and transient hydraulic head data Author(s): Franssen HJH, Gomez-Hernandez JJ, Capilla JE, et al.	Source: ADVANCES IN WATER RESOURCES Volume: 23 Issue: 1 Pages: 1-13 Published: SEP 15 1999	25
6.	Stochastic simulation of transmissivity fields conditional to both transmissivity and piezometric head data - 3. Application to the Culebra Formation at the Waste Isolation Pilot Plan (WIPP), New Mexico, USA Author(s): Capilla JE, Gomez-Hernandez JJ, Sahuquillo A	Source: JOURNAL OF HYDROLOGY Volume: 207 Issue: 3-4 Pages: 254-269 Published: JUN 25 1998	25
7.	Modelling of turbocharged diesel engines in transient operation. Part 2: wave action models for calculating the transient operation in a high speed direct injection engine Author(s): Payri F, Benajes J, Galindo J, et al.	Source: PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D-JOURNAL OF AUTOMOBILE ENGINEERING Volume: 216 Issue: D6 Pages: 479-493 Published: 2002	23
8.	Coupled inverse modelling of groundwater flow and mass transport and the worth of concentration data Author(s): Franssen HJH, Gomez-Hernandez J, Sahuquillo A	Source: JOURNAL OF HYDROLOGY Volume: 281 Issue: 4 Pages: 281-295 Published: OCT 20 2003	22
9.	Treatment of whey effluents from dairy industries by nanofiltration membranes Author(s): Alkhatim HS, Alcaina MI, Soriano E, et al.	Source: DESALINATION Volume: 119 Issue: 1-3 Pages: 177-183 Published: SEP 20 1998	22
10.	Effects of bensulfuron-methyl and cinosulfuron on growth of four freshwater species of phytoplankton Author(s): Sabater C, Cuesta A, Carrasco R	Source: CHEMOSPHERE Volume: 46 Issue: 7 Pages: 953-960 Published: FEB 2002	21



## 6. Revistes on més publiquen els professors

Les següents taules mostren, universitat a universitat, els títols de les revistes, indexades al *Web of Science*, on més publiquen els professors.

Per a cada institució es donen els 25 títols de revista on més publiquen els autors, excepte per a la UPC on es detallen els 50 títols de revista on més publiquen els autors.

S'acaba l'apartat amb la llista de les revistes que apareixen 10 o més vegades en aquestes taules i amb la llista unificada dels 25 títols de revista en els quals s'han publicat més articles sumant el conjunt de les universitats.

### 6.1. Taules de revistes amb major nombre d'articles per a cada universitat

#### 6.1.1. UPC - Universitat Politècnica de Catalunya

Revista	# Articles	% sobre el total (645)
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	90	13.9535 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	52	8.0620 %
CHEMOSPHERE	26	4.0310 %
JOURNAL OF HAZARDOUS MATERIALS	26	4.0310 %
COMPUTERS & STRUCTURES	21	3.2558 %
ENGINEERING GEOLOGY	21	3.2558 %
ENGINEERING STRUCTURES	21	3.2558 %
INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS	20	3.1008 %
JOURNAL OF HYDRAULIC RESEARCH	20	3.1008 %
GEOTECHNIQUE	19	2.9457 %
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY	18	2.7907 %
JOURNAL OF HYDROLOGY	16	2.4806 %
COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING	15	2.3256 %
COASTAL ENGINEERING	14	2.1705 %
TRANSPORTATION RESEARCH RECORD	14	2.1705 %
MEASUREMENT SCIENCE & TECHNOLOGY	13	2.0155 %
INGENIERIA HIDRAULICA EN MEXICO	11	1.7054 %
INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE	11	1.7054 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	11	1.7054 %
MATERIALS AND STRUCTURES	9	1.3953 %
ADVANCES IN WATER RESOURCES	8	1.2403 %
ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING	8	1.2403 %
ENGINEERING COMPUTATIONS	8	1.2403 %
JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH	8	1.2403 %
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	8	1.2403 %



Revista	# Articles	% sobre el total (645)
CANADIAN GEOTECHNICAL JOURNAL	6	0.9302 %
COMPUTERS AND GEOTECHNICS	6	0.9302 %
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS	6	0.9302 %
INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION	6	0.9302 %
PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-STRUCTURES AND BUILDINGS	6	0.9302 %
THIN-WALLED STRUCTURES	6	0.9302 %
COMBUSTION AND FLAME	5	0.7752 %
FIRE SAFETY JOURNAL	5	0.7752 %
CANADIAN JOURNAL OF CIVIL ENGINEERING	4	0.6202 %
COMPUTER APPLICATIONS IN ENGINEERING EDUCATION	4	0.6202 %
COMPUTER-AIDED CIVIL AND INFRASTRUCTURE ENGINEERING	4	0.6202 %
ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE	4	0.6202 %
JOURNAL OF EARTHQUAKE ENGINEERING	4	0.6202 %
JOURNAL OF WATERWAY PORT COASTAL AND OCEAN ENGINEERING-ASCE	4	0.6202 %
LANDSLIDES	4	0.6202 %
OCEAN & COASTAL MANAGEMENT	4	0.6202 %
PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-TRANSPORT	4	0.6202 %
STOCHASTIC ENVIRONMENTAL RESEARCH AND RISK ASSESSMENT	4	0.6202 %
WATER SA	4	0.6202 %
GEOTECHNICAL TESTING JOURNAL	3	0.4651 %
INTEGRATED COMPUTER-AIDED ENGINEERING	3	0.4651 %
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	3	0.4651 %
JOURNAL OF ELASTICITY	3	0.4651 %
QUALITY AND RELIABILITY ENGINEERING INTERNATIONAL	3	0.4651 %
STRUCTURAL SAFETY	3	0.4651 %



### 6.1.2. EPFL - Ecole Polytechnique Fédérale de Lausanne

Revista	# Articles	% sobre el total (410)
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	33	8.0488 %
ENERGY AND BUILDINGS	30	7.3171 %
NANOTECHNOLOGY	28	6.8293 %
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	22	5.3659 %
ADVANCES IN WATER RESOURCES	16	3.9024 %
CHEMOSPHERE	15	3.6585 %
JOURNAL OF HYDRAULIC RESEARCH	11	2.6829 %
JOURNAL OF HYDROLOGY	11	2.6829 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	11	2.6829 %
COMPOSITES PART B-ENGINEERING	10	2.4390 %
INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS	10	2.4390 %
JOURNAL OF COMPUTING IN CIVIL ENGINEERING	10	2.4390 %
MEASUREMENT SCIENCE & TECHNOLOGY	10	2.4390 %
TUNNELLING AND UNDERGROUND SPACE TECHNOLOGY	10	2.4390 %
CANADIAN JOURNAL OF CIVIL ENGINEERING	9	2.1951 %
COMPUTERS & STRUCTURES	9	2.1951 %
ADVANCED ENGINEERING INFORMATICS	8	1.9512 %
ENGINEERING STRUCTURES	8	1.9512 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	8	1.9512 %
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS	7	1.7073 %
TRANSPORTATION RESEARCH PART B-METHODOLOGICAL	7	1.7073 %
ACI STRUCTURAL JOURNAL	6	1.4634 %
JOURNAL OF COMPOSITES FOR CONSTRUCTION	6	1.4634 %
COMPUTERS AND GEOTECHNICS	5	1.2195 %
COLD REGIONS SCIENCE AND TECHNOLOGY	4	0.9756 %



### 6.1.3. Imperial College London

Revista	# Articles	% sobre el total (1025)
GEOTECHNIQUE	70	6.8293 %
JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH	54	5.2683 %
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	48	4.6829 %
CHEMOSPHERE	34	3.3171 %
ENGINEERING STRUCTURES	33	3.2195 %
JOURNAL OF HYDROLOGY	28	2.7317 %
TRANSPORTATION RESEARCH RECORD	28	2.7317 %
COMBUSTION AND FLAME	27	2.6341 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	27	2.6341 %
COMPUTERS & STRUCTURES	26	2.5366 %
JOURNAL OF EARTHQUAKE ENGINEERING	25	2.4390 %
MEASUREMENT SCIENCE & TECHNOLOGY	24	2.3415 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	20	1.9512 %
JOURNAL OF ENVIRONMENTAL ENGINEERING-ASCE	19	1.8537 %
PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-STRUCTURES AND BUILDINGS	19	1.8537 %
DESALINATION	17	1.6585 %
INTERNATIONAL JOURNAL OF PRESSURE VESSELS AND PIPING	17	1.6585 %
JOURNAL OF ENGINEERING MATHEMATICS	17	1.6585 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	17	1.6585 %
QUARTERLY JOURNAL OF ENGINEERING GEOLOGY AND HYDROGEOLOGY	17	1.6585 %
CANADIAN GEOTECHNICAL JOURNAL	15	1.4634 %
ATOMIZATION AND SPRAYS	14	1.3659 %
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART F-JOURNAL OF RAIL AND RAPID TRANSIT	14	1.3659 %
COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING	13	1.2683 %
JOURNAL OF HAZARDOUS MATERIALS	13	1.2683 %



#### 6.1.4. TUDelft - Technische Universiteit Delft

Revista	# Articles	% sobre el total (967)
TRANSPORTATION RESEARCH RECORD	106	10.9617 %
COASTAL ENGINEERING	52	5.3775 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	39	4.0331 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	35	3.6194 %
JOURNAL OF HYDROLOGY	32	3.3092 %
TRANSPORTATION PLANNING AND TECHNOLOGY	26	2.6887 %
ADVANCES IN WATER RESOURCES	22	2.2751 %
MATERIALS AND STRUCTURES	22	2.2751 %
MEASUREMENT SCIENCE & TECHNOLOGY	21	2.1717 %
DESALINATION	20	2.0683 %
JOURNAL OF HYDRAULIC RESEARCH	20	2.0683 %
COMPUTERS & STRUCTURES	19	1.9648 %
JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH	15	1.5512 %
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS	14	1.4478 %
JOURNAL OF HAZARDOUS MATERIALS	14	1.4478 %
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	14	1.4478 %
NANOTECHNOLOGY	14	1.4478 %
HYDROLOGICAL PROCESSES	13	1.3444 %
TRANSPORTATION RESEARCH PART B-METHODOLOGICAL	13	1.3444 %
GEOTECHNIQUE	12	1.2410 %
ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE	11	1.1375 %
INTERNATIONAL JOURNAL OF OFFSHORE AND POLAR ENGINEERING	11	1.1375 %
JOURNAL OF ENGINEERING MATHEMATICS	11	1.1375 %
SCIENCE AND ENGINEERING ETHICS	11	1.1375 %
TUNNELLING AND UNDERGROUND SPACE TECHNOLOGY	11	1.1375 %



### 6.1.5. ETHZ – Swiss Federal Institute of Technology Zurich

Revista	# Articles	% sobre el total (753)
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	66	8.7649 %
JOURNAL OF HYDROLOGY	44	5.8433 %
NANOTECHNOLOGY	40	5.3121 %
CHEMOSPHERE	32	4.2497 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	31	4.1169 %
HYDROLOGICAL PROCESSES	24	3.1873 %
ADVANCES IN WATER RESOURCES	22	2.9216 %
TRANSPORTATION RESEARCH RECORD	22	2.9216 %
MEASUREMENT SCIENCE & TECHNOLOGY	20	2.6560 %
COMPUTERS & STRUCTURES	18	2.3904 %
JOURNAL OF HYDRAULIC RESEARCH	17	2.2576 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	16	2.1248 %
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	15	1.9920 %
COMBUSTION AND FLAME	14	1.8592 %
MATERIALS AND STRUCTURES	14	1.8592 %
COMPOSITES PART B-ENGINEERING	12	1.5936 %
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS	12	1.5936 %
ENGINEERING GEOLOGY	10	1.3280 %
INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS	10	1.3280 %
ROCK MECHANICS AND ROCK ENGINEERING	10	1.3280 %
COMBUSTION SCIENCE AND TECHNOLOGY	9	1.1952 %
ENERGY AND BUILDINGS	9	1.1952 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	9	1.1952 %
TRANSPORTATION	9	1.1952 %
JOURNAL OF IRRIGATION AND DRAINAGE ENGINEERING-ASCE	8	1.0624 %





### 6.1.6. ENPC / LCPC – École Nationale des Ponts et Chaussées / Laboratoire Central des Ponts et Chaussées

Revista	# Articles	% sobre el total (294)
MATERIALS AND STRUCTURES	34	11.5646 %
INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS	19	6.4626 %
JOURNAL OF HYDROLOGY	15	5.1020 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	14	4.7619 %
COMPUTERS AND GEOTECHNICS	14	4.7619 %
TRANSPORTATION RESEARCH RECORD	13	4.4218 %
CANADIAN GEOTECHNICAL JOURNAL	12	4.0816 %
SOIL DYNAMICS AND EARTHQUAKE ENGINEERING	11	3.7415 %
ENGINEERING GEOLOGY	10	3.4014 %
ROAD MATERIALS AND PAVEMENT DESIGN	10	3.4014 %
GEOTECHNIQUE	9	3.0612 %
COMPUTERS & STRUCTURES	8	2.7211 %
CHEMOSPHERE	7	2.3810 %
TRANSPORTATION RESEARCH RECORD-SERIES	7	2.3810 %
BULLETIN OF EARTHQUAKE ENGINEERING	6	2.0408 %
HEAVY VEHICLE SYSTEMS-INTERNATIONAL JOURNAL OF VEHICLE DESIGN	6	2.0408 %
GEOTECHNICAL TESTING JOURNAL	5	1.7007 %
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	5	1.7007 %
SOILS AND FOUNDATIONS	5	1.7007 %
COLD REGIONS SCIENCE AND TECHNOLOGY	4	1.3605 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	4	1.3605 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	4	1.3605 %
MEASUREMENT SCIENCE & TECHNOLOGY	4	1.3605 %
STRUCTURAL ENGINEERING AND MECHANICS	4	1.3605 %
AUTOMATION IN CONSTRUCTION	3	1.0204 %



### 6.1.7. Stanford University

Revista	# Articles	% sobre el total (616)
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	53	8.6039 %
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS	44	7.1429 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	37	6.0065 %
COMBUSTION AND FLAME	36	5.8442 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	27	4.3831 %
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY	25	4.0584 %
ISSUES IN SCIENCE AND TECHNOLOGY	25	4.0584 %
INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION	22	3.5714 %
JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT-ASCE	20	3.2468 %
ADVANCES IN WATER RESOURCES	16	2.5974 %
AI EDAM-ARTIFICIAL INTELLIGENCE FOR ENGINEERING DESIGN ANALYSIS AND MANUFACTURING	16	2.5974 %
NANOTECHNOLOGY	16	2.5974 %
MEASUREMENT SCIENCE & TECHNOLOGY	14	2.2727 %
JOURNAL OF COMPUTING IN CIVIL ENGINEERING	13	2.1104 %
EARTHQUAKE SPECTRA	12	1.9481 %
HYDROLOGICAL PROCESSES	12	1.9481 %
JOURNAL OF HYDROLOGY	10	1.6234 %
ADVANCED ENGINEERING INFORMATICS	9	1.4610 %
JOURNAL OF ENVIRONMENTAL ENGINEERING-ASCE	9	1.4610 %
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	9	1.4610 %
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	8	1.2987 %
JOURNAL OF ENGINEERING EDUCATION	7	1.1364 %
ENGINEERING STRUCTURES	6	0.9740 %
IEEE JOURNAL OF OCEANIC ENGINEERING	6	0.9740 %
OPTIMIZATION AND ENGINEERING	6	0.9740 %



### 6.1.8. TAMU - Texas A&M University

Revista	# Articles	% sobre el total (1274)
TRANSPORTATION RESEARCH RECORD	286	22.4490 %
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS	47	3.6892 %
JOURNAL OF HYDROLOGY	43	3.3752 %
JOURNAL OF HAZARDOUS MATERIALS	41	3.2182 %
OCEAN ENGINEERING	38	2.9827 %
JOURNAL OF MATERIALS IN CIVIL ENGINEERING	36	2.8257 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	33	2.5903 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	32	2.5118 %
JOURNAL OF TRANSPORTATION ENGINEERING-ASCE	32	2.5118 %
JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION	30	2.3548 %
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	29	2.2763 %
JOURNAL OF HYDROLOGIC ENGINEERING	28	2.1978 %
CHEMOSPHERE	26	2.0408 %
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY	26	2.0408 %
INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE	25	1.9623 %
ENGINEERING STRUCTURES	21	1.6484 %
JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT-ASCE	20	1.5699 %
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	20	1.5699 %
NANOTECHNOLOGY	19	1.4914 %
ADVANCES IN WATER RESOURCES	18	1.4129 %
HYDROLOGICAL PROCESSES	18	1.4129 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	18	1.4129 %
AGRICULTURAL WATER MANAGEMENT	15	1.1774 %
COMPUTER-AIDED CIVIL AND INFRASTRUCTURE ENGINEERING	15	1.1774 %
INTERNATIONAL JOURNAL OF OFFSHORE AND POLAR ENGINEERING	14	1.0989 %



### 6.1.9. UI - University of Illinois at Urbana-Champaign

Revista	# Articles	% sobre el total (1390)
TRANSPORTATION RESEARCH RECORD	157	11.2950 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	88	6.3309 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	56	4.0288 %
COMBUSTION AND FLAME	52	3.7410 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	52	3.7410 %
JOURNAL OF ENVIRONMENTAL ENGINEERING-ASCE	45	3.2374 %
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	38	2.7338 %
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	37	2.6619 %
ENGINEERING STRUCTURES	32	2.3022 %
JOURNAL OF EARTHQUAKE ENGINEERING	32	2.3022 %
NANOTECHNOLOGY	32	2.3022 %
JOURNAL OF TRANSPORTATION ENGINEERING-ASCE	30	2.1583 %
JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT-ASCE	26	1.8705 %
JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT-ASCE	25	1.7986 %
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS	22	1.5827 %
COMBUSTION SCIENCE AND TECHNOLOGY	21	1.5108 %
ACI STRUCTURAL JOURNAL	20	1.4388 %
SCIENCE AND ENGINEERING ETHICS	17	1.2230 %
ADVANCES IN WATER RESOURCES	16	1.1511 %
JOURNAL OF ELASTICITY	16	1.1511 %
JOURNAL OF HYDROLOGY	15	1.0791 %
JOURNAL OF MATERIALS IN CIVIL ENGINEERING	15	1.0791 %
JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION	15	1.0791 %
JOURNAL OF COMPUTING IN CIVIL ENGINEERING	13	0.9353 %
CHEMOSPHERE	12	0.8633 %



### 6.1.10. University of California Berkeley

Revista	# Articles	% sobre el total (1230)
TRANSPORTATION RESEARCH RECORD	165	13.4146 %
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	67	5.4472 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	61	4.9593 %
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS	59	4.7967 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	53	4.3089 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	41	3.3333 %
TRANSPORTATION RESEARCH PART B-METHODOLOGICAL	38	3.0894 %
COMBUSTION AND FLAME	33	2.6829 %
JOURNAL OF HYDROLOGY	30	2.4390 %
JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT-ASCE	28	2.2764 %
EARTHQUAKE SPECTRA	27	2.1951 %
ENERGY AND BUILDINGS	24	1.9512 %
TRANSPORTATION RESEARCH PART A-POLICY AND PRACTICE	22	1.7886 %
CHEMOSPHERE	21	1.7073 %
NANOTECHNOLOGY	21	1.7073 %
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	20	1.6260 %
ADVANCES IN WATER RESOURCES	19	1.5447 %
ISSUES IN SCIENCE AND TECHNOLOGY	19	1.5447 %
ACI STRUCTURAL JOURNAL	16	1.3008 %
TRANSPORTATION RESEARCH PART C-EMERGING TECHNOLOGIES	16	1.3008 %
COMBUSTION SCIENCE AND TECHNOLOGY	15	1.2195 %
ENGINEERING STRUCTURES	14	1.1382 %
HYDROLOGICAL PROCESSES	14	1.1382 %
BUILDING AND ENVIRONMENT	12	0.9756 %
IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS	12	0.9756 %



### 6.1.11. UNAM – Universidad Nacional Autónoma de México

Revista	# Articles	% sobre el total (317)
INGENIERIA HIDRAULICA EN MEXICO	75	23.6593 %
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS	29	9.1483 %
SOIL DYNAMICS AND EARTHQUAKE ENGINEERING	20	6.3091 %
CHEMOSPHERE	14	4.4164 %
NANOTECHNOLOGY	12	3.7855 %
EARTHQUAKE SPECTRA	9	2.8391 %
ENGINEERING STRUCTURES	9	2.8391 %
JOURNAL OF EARTHQUAKE ENGINEERING	9	2.8391 %
ENGINEERING GEOLOGY	7	2.2082 %
MEASUREMENT SCIENCE & TECHNOLOGY	7	2.2082 %
OCEAN ENGINEERING	7	2.2082 %
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	6	1.8927 %
JOURNAL OF HYDROLOGY	6	1.8927 %
GEOTECHNIQUE	5	1.5773 %
CANADIAN GEOTECHNICAL JOURNAL	4	1.2618 %
HYDROLOGICAL SCIENCES JOURNAL-JOURNAL DES SCIENCES HYDROLOGIQUES	4	1.2618 %
ACI STRUCTURAL JOURNAL	3	0.9464 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	3	0.9464 %
INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE	3	0.9464 %
JOURNAL OF ENGINEERING MATHEMATICS	3	0.9464 %
JOURNAL OF HYDROLOGIC ENGINEERING	3	0.9464 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	3	0.9464 %
OCEAN & COASTAL MANAGEMENT	3	0.9464 %
ADVANCES IN WATER RESOURCES	2	0.6309 %
CANADIAN JOURNAL OF CIVIL ENGINEERING	2	0.6309 %



### 6.1.12. UFRJ – Universidade Federal do Rio de Janeiro

Revista	# Articles	% sobre el total (335)
COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING	27	8.0597 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	23	6.8657 %
INVERSE PROBLEMS IN SCIENCE AND ENGINEERING	23	6.8657 %
JOURNAL OF HAZARDOUS MATERIALS	23	6.8657 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	22	6.5672 %
ENGINEERING ANALYSIS WITH BOUNDARY ELEMENTS	19	5.6716 %
CHEMOSPHERE	17	5.0746 %
COMPUTERS & STRUCTURES	16	4.7761 %
OCEAN ENGINEERING	16	4.7761 %
MATERIALS AND STRUCTURES	10	2.9851 %
JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH	9	2.6866 %
CMES-COMPUTER MODELING IN ENGINEERING & SCIENCES	8	2.3881 %
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	8	2.3881 %
CANADIAN GEOTECHNICAL JOURNAL	7	2.0896 %
DESALINATION	7	2.0896 %
APPLIED MATHEMATICAL MODELLING	6	1.7910 %
ENGINEERING GEOLOGY	6	1.7910 %
STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION	6	1.7910 %
JOURNAL OF ELASTICITY	5	1.4925 %
STRUCTURAL ENGINEERING AND MECHANICS	4	1.1940 %
ADVANCED ENGINEERING INFORMATICS	3	0.8955 %
COMPUTER APPLICATIONS IN ENGINEERING EDUCATION	3	0.8955 %
GEOTECHNIQUE	3	0.8955 %
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	3	0.8955 %
JOURNAL OF HYDROLOGY	3	0.8955 %



### 6.1.13. USP - Universidade de São Paulo

Revista	# Articles	% sobre el total (286)
CHEMOSPHERE	20	5.9172 %
NANOTECHNOLOGY	17	5.0296 %
COMPUTERS & STRUCTURES	16	4.7337 %
ENGINEERING ANALYSIS WITH BOUNDARY ELEMENTS	14	4.1420 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	11	3.2544 %
MATHEMATICAL PROBLEMS IN ENGINEERING	11	3.2544 %
TRANSPORTATION RESEARCH RECORD	10	2.9586 %
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS	9	2.6627 %
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	9	2.6627 %
JOURNAL OF HYDROLOGY	9	2.6627 %
MATERIALS AND STRUCTURES	9	2.6627 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	8	2.3669 %
JOURNAL OF HAZARDOUS MATERIALS	8	2.3669 %
APPLIED MATHEMATICAL MODELLING	7	2.0710 %
COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING	7	2.0710 %
AGRICULTURAL WATER MANAGEMENT	6	1.7751 %
ENERGY AND BUILDINGS	6	1.7751 %
HYDROLOGICAL PROCESSES	6	1.7751 %
BUILDING AND ENVIRONMENT	5	1.4793 %
BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT	5	1.4793 %
GEOTECHNICAL TESTING JOURNAL	5	1.4793 %
MEASUREMENT SCIENCE & TECHNOLOGY	5	1.4793 %
ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING	4	1.1834 %
GEOTECHNIQUE	4	1.1834 %
JOURNAL OF ENVIRONMENTAL ENGINEERING-ASCE	4	1.1834 %





#### 6.1.14. Universidade Técnica de Lisboa

Revista	# Articles	% sobre el total (349)
OCEAN ENGINEERING	27	7.7364 %
AGRICULTURAL WATER MANAGEMENT	22	6.3037 %
COMPUTERS & STRUCTURES	22	6.3037 %
COASTAL ENGINEERING	18	5.1576 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	16	4.5845 %
JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH	13	3.7249 %
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	12	3.4384 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	11	3.1519 %
JOURNAL OF SHIP RESEARCH	11	3.1519 %
MEASUREMENT	11	3.1519 %
COMBUSTION SCIENCE AND TECHNOLOGY	9	2.5788 %
DESALINATION	9	2.5788 %
THIN-WALLED STRUCTURES	8	2.2923 %
ENGINEERING ANALYSIS WITH BOUNDARY ELEMENTS	7	2.0057 %
CHEMOSPHERE	6	1.7192 %
COMBUSTION AND FLAME	6	1.7192 %
ENGINEERING STRUCTURES	6	1.7192 %
MARINE STRUCTURES	6	1.7192 %
MATERIALS AND STRUCTURES	6	1.7192 %
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY	5	1.4327 %
INTERNATIONAL JOURNAL OF STRUCTURAL STABILITY AND DYNAMICS	5	1.4327 %
JOURNAL OF HYDRAULIC RESEARCH	5	1.4327 %
JOURNAL OF HYDROLOGY	5	1.4327 %
WATER RESOURCES MANAGEMENT	5	1.4327 %
CANADIAN GEOTECHNICAL JOURNAL	4	1.1461 %



### 6.1.15. UPM - Universidad Politécnica de Madrid

Revista	# Articles	% sobre el total (262)
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	16	6.1069 %
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	12	4.5802 %
JOURNAL OF WIND ENGINEERING AND INDUSTRIAL AERODYNAMICS	12	4.5802 %
COMBUSTION AND FLAME	11	4.1985 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	11	4.1985 %
DESALINATION	10	3.8168 %
INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION	10	3.8168 %
NANOTECHNOLOGY	8	3.0534 %
COMPUTERS & STRUCTURES	7	2.6718 %
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	7	2.6718 %
MATERIALS AND STRUCTURES	7	2.6718 %
BUILDING AND ENVIRONMENT	6	2.2901 %
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY	6	2.2901 %
OCEAN ENGINEERING	6	2.2901 %
TRANSPORTATION RESEARCH RECORD	6	2.2901 %
ENGINEERING STRUCTURES	5	1.9084 %
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART F-JOURNAL OF RAIL AND RAPID TRANSIT	5	1.9084 %
INGENIERIA HIDRAULICA EN MEXICO	4	1.5267 %
INTERNATIONAL JOURNAL OF VEHICLE DESIGN	4	1.5267 %
JOURNAL OF HYDROLOGY	4	1.5267 %
JOURNAL OF THE AUDIO ENGINEERING SOCIETY	4	1.5267 %
PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-TRANSPORT	4	1.5267 %
ROCK MECHANICS AND ROCK ENGINEERING	4	1.5267 %
COMBUSTION SCIENCE AND TECHNOLOGY	3	1.1450 %
ENERGY AND BUILDINGS	3	1.1450 %



### 6.1.16. UPV - Universitat Politècnica de València

Revista	# Articles	% sobre el total (324)
DESALINATION	56	17.2840 %
ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE	18	5.5556 %
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D-JOURNAL OF AUTOMOBILE ENGINEERING	18	5.5556 %
MEASUREMENT SCIENCE & TECHNOLOGY	15	4.6296 %
CHEMOSPHERE	13	4.0123 %
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	11	3.3951 %
INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION	10	3.0864 %
JOURNAL OF HYDROLOGY	8	2.4691 %
ENGINEERING STRUCTURES	7	2.1605 %
JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT-ASCE	7	2.1605 %
ATOMIZATION AND SPRAYS	6	1.8519 %
BUILDING AND ENVIRONMENT	6	1.8519 %
COMPUTERS & STRUCTURES	6	1.8519 %
IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY	6	1.8519 %
INGENIERIA HIDRAULICA EN MEXICO	6	1.8519 %
JOURNAL OF IRRIGATION AND DRAINAGE ENGINEERING-ASCE	6	1.8519 %
NOISE CONTROL ENGINEERING JOURNAL	6	1.8519 %
APPLIED MATHEMATICAL MODELLING	5	1.5432 %
INTERNATIONAL JOURNAL OF AUTOMOTIVE TECHNOLOGY	5	1.5432 %
INTERNATIONAL JOURNAL OF VEHICLE DESIGN	5	1.5432 %
JOURNAL OF TRANSPORTATION ENGINEERING-ASCE	5	1.5432 %
JOURNAL OF WATERWAY PORT COASTAL AND OCEAN ENGINEERING-ASCE	5	1.5432 %
COMPUTER APPLICATIONS IN ENGINEERING EDUCATION	4	1.2346 %
JOURNAL OF SURVEYING ENGINEERING-ASCE	4	1.2346 %
ADVANCES IN WATER RESOURCES	3	0.9259 %



## 6.2. Taula de coincidències de les revistes amb major presència en les llistes de publicacions amb més articles

Revista	# Aparicions en universitats distintes
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	16
JOURNAL OF HYDROLOGY	16
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	14
CHEMOSPHERE	13
COMPUTERS & STRUCTURES	11
ENGINEERING STRUCTURES	11
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	11
TRANSPORTATION RESEARCH RECORD	11
ADVANCES IN WATER RESOURCES	10
MEASUREMENT SCIENCE & TECHNOLOGY	10
NANOTECHNOLOGY	10

## 6.3. Taula unificada de revistes amb major presència en les llistes de publicacions amb més articles

Revista	# Articles	Factor d'impacte
TRANSPORTATION RESEARCH RECORD	814	0.259
COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING	507	2.129
INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING	358	2.229
JOURNAL OF HYDROLOGY	279	2.305
JOURNAL OF STRUCTURAL ENGINEERING-ASCE	245	0.789
CHEMOSPHERE	243	3.054
NANOTECHNOLOGY	207	3.446
JOURNAL OF HYDRAULIC ENGINEERING-ASCE	189	1.272
COMBUSTION AND FLAME	184	2.160
COMPUTERS & STRUCTURES	168	1.223
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING	164	0.849
ENGINEERING STRUCTURES	162	1.102
EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS	160	1.240
MEASUREMENT SCIENCE & TECHNOLOGY	133	1.493
JOURNAL OF HAZARDOUS MATERIALS	125	2.975
GEOTECHNIQUE	122	1.197
DESALINATION	119	1.155
MATERIALS AND STRUCTURES	111	0.892
INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES	110	1.031
ADVANCES IN WATER RESOURCES	107	2.235
JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH	99	0.841
INGENIERIA HIDRAULICA EN MEXICO	96	0.112
OCEAN ENGINEERING	94	0.857
JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT-ASCE	93	0.564
IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS	89	2.058



## 7. Conclusions

### ***Sobre les xifres bàsiques de les institucions***

- Les xifres sobre conjunt total de centres i departaments de cada universitat han estat obtingudes des de *The Europe World of Learning: the International Guide to the Academic World*. Malgrat que no se n'ha trobat cap altra de més qualitat, les limitacions de la font d'informació han impedit discriminar per a cada una de les universitats el pes específic que ocupen l'enginyeria civil dins el conjunt global de les institucions.
- La impossibilitat de comparar de manera fiable i uniforme les estructures orgàniques -i la quantitat de professors de cadascuna d'aquestes estructures- de les universitats analitzades ha impedit que es poguessin portar a terme comparacions complementàries d'interès, principalment relatives a la productivitat de les universitats/professors i a la ràtio de citacions per professor de cadascuna de les institucions.
- La conformació organitzativa i administrativa de École Nationale des Ponts et Chaussées / Laboratoire Central des Ponts et Chaussées (ENPC / LCPC), directament vinculada al l'organisme estatal Centre Nationale de la Recherche Scientifique (CNRS) impedeixen arribar a resultats mínimament fiables sobre la quantitat i incidència de la seva producció científica.  
Atès que molta de la recerca desenvolupada des de l'École i el Laboratoire de París queda, en el WoS, únicament assignada al CNRS, no és possible recuperar-la –si es recuperés com a CNRS també hi quedaria sumada la producció científica de la resta de centres francesos que hi són integrats-. Òbviament, aquest fet va en detriment de les xifres ENPC / LCPC.

### ***Sobre la base documental utilitzada per a l'estudi***

- La metodologia utilitzada, selecció de revistes *ad hoc*, impedeix considerar aquest estudi com un informe exhaustiu, a nivell d'àmbits temàtics propis de l'enginyeria civil. El que sí permet és obtenir una visió de la recerca en enginyeria civil a la UPC i l'Escola de Camins en els àmbits coberts per les revistes seleccionades.
- Sobre els mateixos àmbits esmentats en el paràgraf anterior, l'estudi ofereix també una visió comparativa amb les institucions amb les quals l'Escola de Camins li ha interessat comparar-se.

### ***Publicació d'articles***

- Les universitats amb estudis en enginyeria civil que, en el període abastat, han tingut una major producció científica a les categories estudiades són: University of Illinois, amb 1390 documents, Texas A&M, amb 1274 i la University of California Berkeley, amb 1230 documents.
- La UPC ocupa la posició número 7 en aquest rànquing.
- El personal docent i investigador vinculat a l'Escola de Camins concentra el 67.7% de l'autoria en la publicació a la UPC en les àrees estudiades. Per tant, la dinàmica de publicació del conjunt de professors vinculat a l'Escola és molt determinant per a la dinàmica global de la UPC.



- Del conjunt d'universitats politècniques de l'Estat espanyol, la UPC és la que presenta un major nombre de publicacions –un 49.7% superior a la UPV i un 59.3% superior a la UPM-.
- L'Escola de Camins per sí sola ha publicat, en les revistes estudiades a les bases de dades ISI-Thomson, i entre els anys 1998 i 2008, més que el conjunt de la UPV -113 articles més- i que el conjunt de la UPM -175 articles més.
- Des d'un punt de vista geogràfic, de les 4 universitats dels Estats Units estudiades, 3 ocupen els primers llocs en quant a producció d'articles. La primera universitat europea en aquest apartat és l'Imperial College London i apareix en el quart lloc. Mentre que la primera universitat llatinoamericana -Universidade Federal do Rio de Janeiro- no apareix fins l'onzè lloc.
- Hi ha una divisió clara en les tendències de publicació en el conjunt de les institucions des del punt de vista cronològic.

9 de les 16 universitats estudiades:

- École Polytechnique Fédérale de Lausanne
- Swiss Federal Institute of Technology Zurich
- Technische Universiteit Delft
- Texas A&M University
- Universidad Nacional Autónoma de México
- Universidade Técnica de Lisboa
- Universidade de São Paulo
- Universitat Politècnica de Catalunya / Escola de Camins
- Universitat Politècnica de València

mostren en general una corba ascendent fins a 2008 –amb una certa distorsió en el cas del Swiss Federal Institute of Technology Zurich-.

Mentre que un altre grup nombrós d'institucions:

- École Nationale des Ponts et Chaussées / Laboratoire Central des Ponts et Chaussées
- Imperial College London
- Stanford University
- Universidad Politécnica de Madrid
- University of California Berkeley
- University of Illinois

mostren una corba descendent aproximadament a partir de 2006 –en el cas de la University of California Berkeley el punt d'inflexió es produeix el 2004-.

La Universidade Federal do Rio de Janeiro presenta un dibuix poc definit.

### **Citacions rebudes**

- L'increment de les citacions rebudes és constant en totes les universitats estudiades durant el període 1998-2008. Això també és vàlid tant per a la UPC com per a l'Escola de Camins, en les quals, malgrat el descens de producció observat en el 2007, el creixement de citacions als seus articles continua presentant una corba clarament ascendent.
- Les universitats que han rebut més citacions són: University of California Berkeley amb 10884 citacions, la University of Illinois amb 10274 i l'Imperial College London amb 8121.



- Els cinc primers llocs del rànking estan ocupats per les cinc universitats de països angloparlants –les 4 universitats dels Estats Units estudiades, més l'Imperial College London-.
- Els professors vinculats a l'Escola de Camins reben el 76,5% del total de citacions de la UPC durant el període analitzat. Igual que passava amb la quantitat de publicació, la dinàmica de citacions rebudes pels articles vinculats a l'ETSECCPB és determinant per a la dinàmica global de la UPC.
- La UPC es troba a la posició 8 de 16 en del rànking de citacions.
- Els articles publicats per l'Escola de Camins reben una mitjana de 9.14 citacions per article. Això faria que l'Escola tingui la segona mitjana més alta de les universitats estudiades si la considerem aïlladament, només superada per la Stanford University amb 11 citacions per article. La UPC se situa en el seu conjunt en la cinquena posició d'aquest rànking.

La UPC és la universitat de l'Estat amb més citacions durant el període estudiat – un 79% superior a la UPM i un 73.1% superior a la UPV-.

La UPC ha rebut més citacions que la UPM i la UPV juntes, concretament, n'ha rebut 2720 més.

- La mitjana de citacions rebudes per article corresponent als autors vinculats a la UPC durant el període analitzat és superior a la mitjana de la UPM i la UPV. En el cas de la UPM, la UPC té una mitjana 3.9 punts per sobre. Pel que fa a la UPV, la diferència és de 3.7 punts. Si comparem l'Escola de Camins amb la resta d'universitats estatals, el resultat són encara més contrastats donat que la diferència entre l'ETSECCPB i la UPM és de 4,9 punts i amb la UPV de 4.8 punts. Això vol dir que els articles publicats pel PDI de l'Escola doblen sobradament la mitjana de citacions rebudes per article respecte a UPM i UPV.
- Les universitats amb un índex H més alt sobre el conjunt d'articles estudiats són: University of California Berkeley (40), University of Illinois (38), Stanford University (37) i Imperial College London (35).
- La UPC, amb un índex H 30 sobre aquest corpus d'articles, se situa en la banda mitja alta del rànking, 4 punts per darrera de la Texas A&M University (34). l'Escola de Camins té un índex H 28, la qual cosa significa que la pràctica totalitat dels articles -excepte 2- que contribueixen a l'índex H de la UPC, tenen com a autors professors l'Escola.

### **Autors i articles**

- L'article que ha rebut més citacions del conjunt de les 16 universitats està signat per investigadors de la Technische Universiteit Delft. El seu títol és *Design and performance of multicarrier CDMA system in frequency-selective Rayleigh fading channels*, publicat al 1999 a la revista *IEEE Transactions on Vehicular Technology*. Durant el període estudiat ha rebut 309 citacions.
- El segon i el tercer lloc del rànking de citacions l'ocupen respectivament articles signats per investigadors de la University of California Berkeley -261 citacions- i la Stanford University -242 citacions-.
- Entre els 20 articles de la UPC més citats, en només 2 no apareixen autors vinculats a l'Escola de Camins. Això significa que autors vinculats a l'Escola són presents al 90% de total dels articles d'aquesta llista.



## Revistes

- Només dos títols: *International Journal for Numerical Methods in Engineering* i *Journal of Hydrology* estan present en totes les taules de les revistes on més publiquen les 16 universitats analitzades.

Altres títols que apareixen molt freqüentment són *Computer Methods in Applied Mechanics and Engineering* -apareix 14 vegades-, *Chemosphere* -apareix 13 vegades- i *Computers & Structures, Engineering Structures, Journal of Structural Engineering-ASCE* i *Transportation Research Record* -apareixen 11 vegades-.

- Les tres revistes on més publiquen els professors del conjunt de les universitats són: *Transportation Research Record* -814 articles-, *Computer Methods in Applied Mechanics and Engineering* -507 articles- i *International Journal for Numerical Methods in Engineering* -358 articles-.
- Entre les estudiades, *Computer Methods in Applied Mechanics and Engineering* és amb molta diferència la revista preferida pels autors de la UPC / Escola de Camins a l'hora publicar: 90 articles -més del 13.9% del total- s'han publicat allí. *International Journal for Numerical Methods in Engineering* -52 articles-, *Chemosphere* i *Journal of Hazardous Materials* -26 articles cadascuna-, són altres títols de revistes pels quals els autors UPC / Escola de Camins mostren preferència a l'hora de publicar.

## Continuïtat de l'estudi

Aquest informe ofereix informació rellevant per als objectius previstos inicialment. Per aquest motiu la BRGF i l'Escola de Camins tenen la intenció de repetir-lo regularment com a observatori de la publicació científica directament lligada a l'Escola i, per extensió, a l'enginyeria civil en l'entorn UPC.

Així mateix, aquest estudi pot representar una plataforma per al desenvolupament d'estudis bibliomètrics més detallats en els camps d'interès de l'Escola de Camins.





## Annex 1

### Llista completa de les revistes usades per a l'estudi -ordre alfabètic de títols-

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- ACCIDENT ANALYSIS AND PREVENTION
- ACI STRUCTURAL JOURNAL
- ADVANCED ENGINEERING INFORMATICS
- ADVANCES IN STRUCTURAL ENGINEERING
- ADVANCES IN WATER RESOURCES
- AGRICULTURAL WATER MANAGEMENT
- AI EDAM-ARTIFICIAL INTELLIGENCE FOR ENGINEERING DESIGN ANALYSIS AND MANUFACTURING
- APPLIED MATHEMATICAL MODELLING
- ARCHIVES OF COMPUTATIONAL METHODS IN ENGINEERING
- ATOMIZATION AND SPRAYS
- AUTOMATION IN CONSTRUCTION
- BALTIC JOURNAL OF ROAD AND BRIDGE ENGINEERING
- BUILDING AND ENVIRONMENT
- BULLETIN OF EARTHQUAKE ENGINEERING
- BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT
- CANADIAN GEOTECHNICAL JOURNAL
- CANADIAN JOURNAL OF CIVIL ENGINEERING
- CHEMOSPHERE
- CIVIL ENGINEERING
- CIVIL ENGINEERING AND ENVIRONMENTAL SYSTEMS
- CMES-COMPUTER MODELING IN ENGINEERING & SCIENCES
- COASTAL ENGINEERING
- COASTAL ENGINEERING JOURNAL
- COLD REGIONS SCIENCE AND TECHNOLOGY
- COMBUSTION AND FLAME
- COMBUSTION EXPLOSION AND SHOCK WAVES
- COMBUSTION SCIENCE AND TECHNOLOGY
- COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING
- COMPOSITES PART B-ENGINEERING
- COMPUTER APPLICATIONS IN ENGINEERING EDUCATION
- COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING
- COMPUTER-AIDED CIVIL AND INFRASTRUCTURE ENGINEERING
- COMPUTERS & STRUCTURES
- COMPUTERS AND CONCRETE
- COMPUTERS AND GEOTECHNICS
- COMPUTERS, MATERIALS & CONTINUA
- DESALINATION
- DESIGN STUDIES
- EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS
- EARTHQUAKE ENGINEERING & STRUCTURAL DYNAMICS
- EARTHQUAKE SPECTRA
- EARTHQUAKE SPECTRA
- ENERGY AND BUILDINGS
- ENGINEERING ANALYSIS WITH BOUNDARY ELEMENTS
- ENGINEERING APPLICATIONS OF ARTIFICIAL INTELLIGENCE
- ENGINEERING COMPUTATIONS
- ENGINEERING GEOLOGY
- ENGINEERING OPTIMIZATION



- ENGINEERING STRUCTURES
- ENVIRONMENTAL & ENGINEERING GEOSCIENCE
- FIRE SAFETY JOURNAL
- FIRE TECHNOLOGY
- FORSCHUNG IM INGENIEURWESEN-ENGINEERING RESEARCH
- GEFÄHRSTOFFE REINHALTUNG DER LUFT
- GEOTECHNICAL TESTING JOURNAL
- GEOTECHNIQUE
- GEOTEXTILES AND GEOMEMBRANES
- GROUND WATER MONITORING AND REMEDIATION
- HEAVY VEHICLE SYSTEMS-INTERNATIONAL JOURNAL OF VEHICLE DESIGN
- HOUILLE BLANCHE
- HYDROLOGICAL PROCESSES
- HYDROLOGICAL SCIENCES JOURNAL-JOURNAL DES SCIENCES HYDROLOGIQUES
- IEEE JOURNAL OF OCEANIC ENGINEERING
- IEEE TRANSACTIONS ON INDUSTRY APPLICATIONS
- IEEE TRANSACTIONS ON INTELLIGENT TRANSPORTATION SYSTEMS
- IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY
- INDIAN JOURNAL OF ENGINEERING AND MATERIALS SCIENCES
- INGENIERIA HIDRAULICA EN MEXICO
- INSTRUMENTS AND EXPERIMENTAL TECHNIQUES
- INTEGRATED COMPUTER-AIDED ENGINEERING
- INTERNATIONAL JOURNAL FOR MULTISCALE COMPUTATIONAL ENGINEERING
- INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS
- INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING
- INTERNATIONAL JOURNAL OF AUTOMOTIVE TECHNOLOGY
- INTERNATIONAL JOURNAL OF ENGINEERING EDUCATION
- INTERNATIONAL JOURNAL OF ENGINEERING SCIENCE
- INTERNATIONAL JOURNAL OF HEAVY VEHICLE SYSTEMS
- INTERNATIONAL JOURNAL OF NONLINEAR SCIENCES AND NUMERICAL SIMULATION
- INTERNATIONAL JOURNAL OF OFFSHORE AND POLAR ENGINEERING
- INTERNATIONAL JOURNAL OF PRESSURE VESSELS AND PIPING
- INTERNATIONAL JOURNAL OF ROCK MECHANICS AND MINING SCIENCES
- INTERNATIONAL JOURNAL OF STRUCTURAL STABILITY AND DYNAMICS
- INTERNATIONAL JOURNAL OF TECHNOLOGY AND DESIGN EDUCATION
- INTERNATIONAL JOURNAL OF TRANSPORT ECONOMICS
- INTERNATIONAL JOURNAL OF VEHICLE DESIGN
- INTERNATIONAL JOURNAL OF WATER RESOURCES DEVELOPMENT
- INVERSE PROBLEMS IN SCIENCE AND ENGINEERING
- IRANIAN JOURNAL OF SCIENCE AND TECHNOLOGY TRANSACTION B-ENGINEERING
- IRRIGATION AND DRAINAGE
- IRRIGATION SCIENCE
- ISA TRANSACTIONS
- ISSUES IN SCIENCE AND TECHNOLOGY
- ITE JOURNAL-INSTITUTE OF TRANSPORTATION ENGINEERS
- JOURNAL OF ADVANCED TRANSPORTATION
- JOURNAL OF AEROSPACE ENGINEERING
- JOURNAL OF COLD REGIONS ENGINEERING
- JOURNAL OF COMPOSITES FOR CONSTRUCTION
- JOURNAL OF COMPUTING IN CIVIL ENGINEERING
- JOURNAL OF CONSTRUCTION ENGINEERING AND MANAGEMENT-ASCE
- JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH
- JOURNAL OF EARTHQUAKE ENGINEERING



- JOURNAL OF ELASTICITY
- JOURNAL OF ENERGY ENGINEERING-ASCE
- JOURNAL OF ENGINEERING DESIGN
- JOURNAL OF ENGINEERING EDUCATION
- JOURNAL OF ENGINEERING MATHEMATICS
- JOURNAL OF ENVIRONMENTAL AND ENGINEERING GEOPHYSICS
- JOURNAL OF ENVIRONMENTAL ENGINEERING-ASCE
- JOURNAL OF FIRE SCIENCES
- JOURNAL OF GEOPHYSICS AND ENGINEERING
- JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING
- JOURNAL OF HAZARDOUS MATERIALS
- JOURNAL OF HYDRAULIC ENGINEERING-ASCE
- JOURNAL OF HYDRAULIC RESEARCH
- JOURNAL OF HYDROINFORMATICS
- JOURNAL OF HYDROLOGIC ENGINEERING
- JOURNAL OF HYDROLOGY
- JOURNAL OF INDUSTRIAL AND MANAGEMENT OPTIMIZATION
- JOURNAL OF IRRIGATION AND DRAINAGE ENGINEERING-ASCE
- JOURNAL OF MANAGEMENT IN ENGINEERING
- JOURNAL OF MATERIALS IN CIVIL ENGINEERING
- JOURNAL OF MATERIALS SCIENCE & TECHNOLOGY
- JOURNAL OF PERFORMANCE OF CONSTRUCTED FACILITIES
- JOURNAL OF PROFESSIONAL ISSUES IN ENGINEERING EDUCATION AND PRACTICE
- JOURNAL OF RESEARCH OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
- JOURNAL OF SAFETY RESEARCH
- JOURNAL OF SHIP RESEARCH
- JOURNAL OF SOIL AND WATER CONSERVATION
- JOURNAL OF STRUCTURAL ENGINEERING-ASCE
- JOURNAL OF SURVEYING ENGINEERING-ASCE
- JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION
- JOURNAL OF THE AUDIO ENGINEERING SOCIETY
- JOURNAL OF THE CHINESE INSTITUTE OF ENGINEERS
- JOURNAL OF THE FRANKLIN INSTITUTE-ENGINEERING AND APPLIED MATHEMATICS
- JOURNAL OF THE URBAN PLANNING & DEVELOPMENT DIVISION-ASCE
- JOURNAL OF TRANSPORT ECONOMICS AND POLICY
- JOURNAL OF TRANSPORTATION ENGINEERING-ASCE
- JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT-ASCE
- JOURNAL OF WATER SUPPLY RESEARCH AND TECHNOLOGY-AQUA
- JOURNAL OF WATERWAY PORT COASTAL AND OCEAN ENGINEERING-ASCE
- JOURNAL OF WIND ENGINEERING AND INDUSTRIAL AERODYNAMICS
- LAKE AND RESERVOIR MANAGEMENT
- LANDSLIDES
- MARINE GEORESOURCES & GEOTECHNOLOGY
- MARINE STRUCTURES
- MATERIALS AND STRUCTURES
- MATHEMATICAL PROBLEMS IN ENGINEERING
- MEASUREMENT
- MEASUREMENT SCIENCE & TECHNOLOGY
- MEASUREMENT TECHNIQUES
- MICROGRAVITY SCIENCE AND TECHNOLOGY
- NANOTECHNOLOGY
- NAVAL ARCHITECT
- NAVAL ENGINEERS JOURNAL
- NETWORKS & SPATIAL ECONOMICS



- NOISE CONTROL ENGINEERING JOURNAL
- NORDIC HYDROLOGY
- OCEAN & COASTAL MANAGEMENT
- OCEAN ENGINEERING
- OPTIMIZATION AND ENGINEERING
- PETROPHYSICS
- POWER ENGINEERING
- PRECISION ENGINEERING-JOURNAL OF THE INTERNATIONAL SOCIETIES FOR PRECISION ENGINEERING AND NANOTECHNOLOGY
- PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-CIVIL ENGINEERING
- PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-GEOTECHNICAL ENGINEERING
- PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-MARITIME ENGINEERING
- PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-MUNICIPAL ENGINEER
- PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-STRUCTURES AND BUILDINGS
- PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-TRANSPORT
- PROCEEDINGS OF THE INSTITUTION OF CIVIL ENGINEERS-WATER MANAGEMENT
- PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D- JOURNAL OF AUTOMOBILE ENGINEERING
- PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART F- JOURNAL OF RAIL AND RAPID TRANSIT
- PROGRESS IN STRUCTURAL ENGINEERING AND MATERIALS
- QUALITY AND RELIABILITY ENGINEERING INTERNATIONAL
- QUARTERLY JOURNAL OF ENGINEERING GEOLOGY AND HYDROGEOLOGY
- RESEARCH IN ENGINEERING DESIGN-THEORY APPLICATIONS AND CONCURRENT ENGINEERING
- ROAD MATERIALS AND PAVEMENT DESIGN
- ROCK MECHANICS AND ROCK ENGINEERING
- RUSSIAN JOURNAL OF NUMERICAL ANALYSIS AND MATHEMATICAL MODELLING
- SADHANA-ACADEMY PROCEEDINGS IN ENGINEERING SCIENCES
- SAMPE JOURNAL
- SCIENCE AND ENGINEERING ETHICS
- SCIENCE IN CHINA SERIES E-TECHNOLOGICAL SCIENCES
- SMART STRUCTURES AND SYSTEMS
- SOIL DYNAMICS AND EARTHQUAKE ENGINEERING
- SOILS AND FOUNDATIONS
- STEEL AND COMPOSITE STRUCTURES
- STOCHASTIC ENVIRONMENTAL RESEARCH AND RISK ASSESSMENT
- STRUCTURAL AND MULTIDISCIPLINARY OPTIMIZATION
- STRUCTURAL CONTROL & HEALTH MONITORING
- STRUCTURAL DESIGN OF TALL AND SPECIAL BUILDINGS
- STRUCTURAL ENGINEERING AND MECHANICS
- STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL
- STRUCTURAL SAFETY
- STRUCTURE AND INFRASTRUCTURE ENGINEERING
- SURVEY REVIEW
- THIN-WALLED STRUCTURES
- TRANSPORT POLICY
- TRANSPORT REVIEWS
- TRANSPORTATION
- TRANSPORTATION JOURNAL
- TRANSPORTATION PLANNING AND TECHNOLOGY



- TRANSPORTATION RESEARCH PART A-POLICY AND PRACTICE
- TRANSPORTATION RESEARCH PART B-METHODOLOGICAL
- TRANSPORTATION RESEARCH PART C-EMERGING TECHNOLOGIES
- TRANSPORTATION RESEARCH PART D-TRANSPORT AND ENVIRONMENT
- TRANSPORTATION RESEARCH PART E-LOGISTICS AND TRANSPORTATION REVIEW
- TRANSPORTATION RESEARCH PART F: TRAFFIC PSYCHOLOGY AND BEHAVIOUR
- TRANSPORTATION RESEARCH RECORD
- TRANSPORTATION SCIENCE
- TRANSPORTMETRICA
- TUNNELLING AND UNDERGROUND SPACE TECHNOLOGY
- WATER INTERNATIONAL
- WATER QUALITY RESEARCH JOURNAL OF CANADA
- WATER RESOURCES MANAGEMENT
- WATER SA
- WIND AND STRUCTURES