PQSCITECH (ProQuest Science & Technology)

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Subject Coverage

- Aerospace engineering
- AIDS & cancer research
- Agrology
- Amino acids, peptides & proteins
- Animal behaviour
- Automotive engineering
- Bacteriology
- Bioengineering
- Biological membranes
- Biotechnology (agricultural, medical, environmental, marine & pharmaceutical)
- Business and industry news
- Calcium & calcified tissue
- Chemoreception
- Civil engineering
- Computers and information systems
- Condensed matter physics
- Earthquake engineering
- Ecology
- Electronics and communication
- Entomology
- Environmental engineering
- Forensic engineering
- Genetics (plant, animal, & human)
- Health & safety science
- Human genome research
- Human population & natural resource management
- Immunology
- Management issues
- Mechanical engineering
- Metallurgy and materials science
- Microbiology
- Molecular biology
- Mycology
- Neurosciences
- Nucleic acids
- Oncogenes & growth factors
- Protozoology
- Risk assessment
- Toxicology
- Virology
- Zoology

File Type

Bibliographic

Features

Thesaurus	None		
Alerts (SDIs)	Monthly		
CAS Registry Number® Identifiers	☐	SLART	☑
Keep & Share	☑	Structures	☐

Record Content

- Bibliographic information, indexing, and abstracts.

File Size

- More than 36 million records (01/2026)

Coverage

1962-present

Updates

Monthly

Language

English

Database Producer

ProQuest LLC
789 E. Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346
USA
Phone: +1 734 761 4700
www.proquest.com

Sources

- Journals, Patents (until 2016), Conferences, Books

User Aids

- Online Helps (HELP DIRECTORY lists all help messages available)
- STNGUIDE

Cluster

- AEROTECH
- AGRICULTURE
- ALLBIB
- AUTHORS
- BIOSCIENCE
- BUSINESS
- CHEMENG
- CHEMISTRY
- COMPANIES
- COMPUTER
- CONSTRUCTION
- COPRSOURCE
- ELECTRICAL
- ENVIRONMENT
- FUELS
- GEOSCIENCE
- HEALTH
- HPATENTS
- HUMANITIES
- MATERIALS
- MEDICINE
- MEETINGS
- METALS
- MOBILITY
- NPS
- PATENTS
- PHARMACOLOGY
- PHYSICS
- POLYMERS
- RFTOOLS
- SAFETY
- TOXICOLOGY

STN Database Cluster information

Search and Display Field Codes

Fields that allow left truncation are indicated by an asterisk (*).

General Search Fields

Search Field Name	Search Code	Search Examples	Display Codes
Basic Index* (contains single words from the abstract (AB), controlled term (CT), title (TI) and uncontrolled terms (UT) fields)	None or /BI	S INDUSTRIAL MEASUREMENT S MANAGEMENT(L)TEAM S ?SPECTRA?	AB, CT, TI, UT
Abstract*	/AB	S MULTISENSOR/AB	AB
Accession Number	/AN	S 2004000021/AN	AN
Alloy Indexing Term **(6)**	/ALI	S ALUSTAR/ALI	ALI
Author (includes inventor)	/AU	S MAN, ?/AU S MAN C S/AU	AU
Availability **(1,7)**	/AV	S BRITISH LIBRARY	AV
Classification Code **(2,6)**	/CC	S AIRCRAFT COMMUNICATIONS/CC	CC
Classification Code Alloy **(2,6**)	/CCA	S MANGANESE STEELS/CCA	CCA
Corporate Source (incl. author's affiliation) **(2,6)**	/CS	S MANCHESTER AIRPORT/CS	CS
Controlled Term	/CT	S ANAEROBIC DIGESTION/CT	CT
Controlled Word	/CW	S MANGANESE/CW	CT
Digital Object Identifier	/FTDOI (or /DOI)	S HTTPS://DOI.ORG/10.1515/NTREV-2025-0231/FTDOI	FTDOI, SO
Document Number	/DN	S 100014/DN	DN
Document Type (code and text)	/DT (or /TC)	S CONFERENCE ARTICLE/DT S CA/DT	DT
Entry Date **(3)**	/ED	S ED>28 JUL 2012	ED
E-mail Address **(2,6)**	/EML	S MANEY@MANEY.CO.UK/EML	EML, SO
Field Availability	/FA	S AB/FA	FA
File Segment **(6)**	/FS	S AH/FS AND L1 S METADEX?/FS AND L2	FS
International Standard (Document) Number (ISBN and ISSN)	/ISN	S 0945-0084/ISN	ISN, SO
Inventor **(6)**	/IN	S NELSON ADAM/IN	IN
Journal Title	/JT	S ARCHITECTURAL DESIGN/JT	JT, SO
Language (ISO code and text)	/LA	S L1 NOT ENGLISH/LA	LA
Meeting Date **(3,4,6)**	/MD	S MD=JAN 2012	MD, SO
Meeting Location **(2,4,6)**	/ML	S AACHEN/ML	ML, SO
Meeting Organization **(2,4,6)**	/MO	S BIOCHEMICAL SOCIETY/MO	MO, SO
Meeting Title (includes meeting date and location) **(6)**	/MT	S MICROOPTICS CONFERENCE/MT	MT, SO
Meeting Year **(3,4,6)**	/MY	S MY=2010	MY, SO
Note **(6)**	/NTE	S PAPER PRESENTED/NTE	NTE
Number of Report **(6)**	/NR	S 1251/NR	NR
Patent Assignee **(2,6)**	/PA	S BASF/PA	PA
Patent Country **(5,6)**	/PC	S US/PC	PI
Patent Number **(5,6)**	/PN	S US239/PN	PI
Physical Properties	/PHP	S DEN/PHP (5A) PLATINUM	AB, TI
Publication Date (3)	/PD	S JAN 2001-MAY 2001/PD	PD, SO
Publication Year **(3)**	/PY	S PY>=1999	PY, SO
Publisher	/PB	S DOBBS/PB	PB, SO
Publisher Item Identifier	/PUI	S SNDE1743/PUI	PUI

Search and Display Field Codes (cont'd)

Search Field Name	Search Code	Search Examples	Display Codes
Reference Count **(3,6)**	/REC (or /RE.CNT)	S REC=5	REC, SO
Source (contains journal titles, other higher-level titles, publisher and place of publication, meeting information collation information (volume, issue, pages), ISSN, ISBN, patent and application information, reference count, and publication year, URL and email addresses) **(6)**	/SO	S FOUNDRYMAN/SO AND 1999/SO S ELSEVIER/SO S MATERIALS/SO AND 230/SO S ICPJ 2012/SO S EUROPEAN PATENT/SO S EP00325S1/SO	SO
Summary Language (ISO code and text) **(6)**	/SL	S DA/SL	SL
Title*	/TI	S GAS NITRIDING/TI	TI
Update Date **(3)**	/UP	S UP>JULY 2012	ED
Uniform Resource Locator **(2)**	/URL	S CAMBRIDGE/URL	URL, SO
Word Count, Title **(3)**	/WC.T	S WC.T<10 AND L1	WC.T

(1) Field available for file segment LISA only.
(2) Search with implied (S) proximity is available in this field.
(3) Numeric search field that may be searched using numeric operators or ranges.
(4) Field available for file segment CPI only.
(5) Patent Numbers are standardized for CA, GB, and US patents.
(6) Field available until 2016.
(7) Field available until 2015.

Property Fields[(1)]

In PQSCITECH a numeric search for a specific set of physical properties (/PHP) is available within the title and abstract fields. The numeric values are not displayed as single fields, but highlighted within the hit displays.

Use EXPAND/PHP to search for all available physical properties. A search with the respective field codes will be carried out in the abstract and title fields. The /PHP index contains a complete list of codes and related text for all physical properties available for numeric search.

Field Code	Property	Unit	Symbol	Search Examples
/AOS	Amount of substance	Mol	mol	S 10 /AOS
/BIR	Bit Rate	Bit/Second	bit/s	S 8000-10000/BIR
/BIT	Stored Information	Bit	Bit	S BIT > 3 MEGABIT
/CAP	Capacitance	Farad	F	S 1-10 MF/CAP
/CATA	Catalytic Activity	Katal	kat	S 1-1000/CATA
/CDN	Current Density	Ampere/Square Meter	A/m^2	S CDN>10 A/M**2
/CMOL	Molarity, Molar Concentration	Mol/Liter	mol/L	S UREA/BI (S) 8/CMOL
/CON	Conductance	Siemens	S	S 1S-3/CON
/DB	Decibel	Decibel	dB	S DB>50
/DEG	Degree	Degree	°	S CYLINDER/BI (S) 45/DEG
/DEN (/C)	Density (Mass Concentration	Kilogram/Cubic Meter	kg/m^3	S 5E-3-10E-3/DEN
/DEQ	Dose Equivalent	Sievert	Sv	S 100/DEQ
/DOA	Dosage	Milligram/Kilogram/Day	mg/kg/day	S 300/DOA
/DOS (/LD50)	Dosage	Milligram/Kilogram	mg/kg	S DOS>0.8
/DV	Viscosity, dynamic	Pascal * Second	Pa * s	S DV>5000

Property Fields [(1)] (cont'd)

Field Code	Property	Unit	Symbol	Search Examples
/ECH (/CHA)	Electric Charge	Coulomb	C	S 0.0001-0.001/ECH
/ECO (/ECND)	Electrical Conductivity	Siemens/Meter	S/m	S ECO>800 S/M (15A) AQUEOUS
/ELC (/ECC)	Electric Current	Ampere	A	S 1-10/ELC
/ELF (/ECF)	Electric Field	Volt/Meter	V/m	S 200/ELF
/ENE	Energy	Joule	J	S HEAT (15A) 4 JOULE - 3000 JOULE /ENE
/ERE (/ERES)	Electrical Resistivity	Ohm * Meter	Ohm * m	S ERE>0.1
/FOR	Force	Newton	N	S 50 N /FOR
/FRE (/F)	Frequency	Hertz	Hz	S OSCILLAT?/BI (S) 1- 3/FRE
/IU	International Unit	none	IU	S IU>1000 (P) VITAMIN A
/KV	Viscosity, kinematic	Square Meter/Second	m^2/s	S POLYSILOXANE/BI (10A) 2-5000 CST/KV
/LEN (/SIZ)	Length, Size	Meter	m	S 1-4/LEN
/LUME	Luminous Emittance Illuminance	Lux	lx	S 10-50/LUME
/LUMF	Luminous Flux	Lumen	Lm	S LUMF>1000
/LUMI	Luminous Intensity	Candela	cd	S LUMI<4
/M	Mass	Kilogram	kg	S ALLOY/BI (30A) 1E-10-1E-5/M
/MCH	Mass to Charge Ratio	none	m/z	S MCH=1
/MFD (/MFS)	Magnetic Flux Density	Tesla	T	S MFD>102
/MFR (/MFL)	Mass Flow Rate	Kilogram/Second	kg/s	S MFR<0.1
/MFST	Magnetic Field Strength	Ampere/Meter	A/m	S MFST/PHP
/MM (/MW, /MOM)	Molar Mass	Gram/Mol	g/mol	S 2000-3000 G/MOL/MM
/MOLS	Molality of Substance	Mol/Kilogram	mol/kg	S 01.-10 MOL/KG/MOLS
/MVR	Melt Volume Rate, Melt Flow Rate	none	g/10 min	S 3/MVR
/PER	Percent (Proportionality)	none	%	S POLYMER?/AB (5A) 4/PER
/PHV (/PH)	pH Value	pH	pH	S 7.4-7.6/PHV
/POW (/PW)	Power	Watt	W	S "HG-XE-?"/BI (S) 100-200 WATT/POW
/PPM	Parts per million	Ppm	ppm	S 100 PPM /PPM (10A) ADDITIVE/BI
/PRES (/P)	Pressure	Pascal	Pa	S (VACUUM (5A) DISTILL?)/BI (S) 1000-1100/PRES
/RAD	Radioactivity	Becquerel	Bq	S RAD/PHP
/RES	Electrical Resistance	Ohm	Ohm	S SENSOR /BI (S) 10- 100/RES
/RI	Refractive Index	none		S 3-4/RI
/RSP	Rotational Speed	Revolution/Minute	rpm	S 2 RPM - 100 RPM /RSP (S) ENGINE/BI
/SAR	Area /Surface Area	Square Meter	m^2	S PLATE/BI (S) 10 M**2 - 100 M**2 /SAR
/SOL (/SLB)	Solubility	Gram/100 gram	g/100 g	S SOL>20 G/100G (5A) WATER
/SSAM	Specific Surface Area, Mass	Square Meter/ Kilogram	m2/kg	S 9/SSAM
/STSC	Surface Tension, Spring Constant	Joule /Square Meter	J/m^2	S 60 J/M**2/STSC
/TCO (/TCND)	Thermal Conductivity	Watt/Meter * Kelvin	W/m * K	S 1/TCO (S) HEAT?
/TEMP (/T)	Temperature	Kelvin	K	S 20-25/TEMP
/TEX	Tex	Gram/Kilometer	g/km	S 1-5/TEX
/TIM	Time	Second	s	S ?INCUB?/BI (10A) 50 S - 150 S /TIM

Property Fields (1) (cont'd)

Field Code	Property	Unit	Symbol	Search Examples
/VEL (/V)	Velocity	Meter per Second	m/s	S REDUC?/BI (S) 1E-3-5E-3/VEL
/VELA	Velocity, angular	Radian/Second	rad/s	S VELA>10
/VLR	Volumetric Flow Rate	Cubic Meter/Second	m^3/s	S 1 M**3/S - 2 M**3/S /VLR (S) ABRASIVE
/VOL	Volume	Cubic Meter	m^3	S 1E-8-2E-8/VOL.EX
/VOLT	Voltage	Volt	V	S BATTERY/BI (10A) 1E-3 V <VOLT<9E-3 V

(1) Exponential format is recommended for the search of particularly high or low values, e.g., 1.8E+7 or 1.8E7 (for 18000000) or 9.2E-8 (for 0.000000092).

DISPLAY and PRINT Formats

Any combination of formats may be used to display or print answers. Multiple codes must be separated by spaces or commas, e.g., D L1 1-5 TI AU. The fields are displayed or printed in the order requested.

Hit-term highlighting is available for all fields. Highlighting must be ON during SEARCH to use the HIT, KWIC, and OCC formats.

Format	Content	Examples
AB	Abstract	D TI AB
ALI **(5)**	Alloy Indexing Term	D ALI
AN	Accession Number	D 1-5 AN
AU	Author	D AU TI
AV **(1, 6)**	Availability	D AV
CC **(5)**	Classification Code	D CC
CCA **(5)**	Classification Code Alloy	D CCA
CS **(5)**	Corporate Source	D CS
CT	Controlled Term	D CT
DN	Document Number	D DN
DT (TC)	Document Type	D DT
ED	Entry Date	D ED
EML **(2, 5)**	E-mail Address	D EML
FA	Field Availability	D FA
FTDOI (DOI) **(2)**	Digital Object Identifier	D FTDOI
IN **(5)**	Inventor	D IN
ISN **(2)**	International Standard (Document) Number	D ISN
JT **(2)**	Journal Title	D JT
LA	Language	D LA TI
MD **(2, 3, 5)**	Meeting Date	D MD
ML **(2, 3, 5)**	Meeting Location Title	D ML
MO **(2, 3, 5)**	Meeting Organizer	D MO
MT **(2, 5)**	Meeting Title	D MT
MY **(2, 3, 5)**	Meeting Year	D MY
NTE	Note	D NTE
NR	Number of Report	D NR
PA **(5)**	Patent Assignee	D PA
PB **(2)**	Publisher	D PB
PD **(2)**	Publication Date	D PD
PI (PN) **(5)**	Patent Information	D PI
PUI	Publisher Item Identifier	D PUI
PY **(2)**	Publication Year	D PY
REC (RE.CNT) **(2, 5)**	Reference Count	D REC
SL **(5)**	Summary Language	D SL
SO	Source	D SO
TI	Title	D TI 1-3

DISPLAY and PRINT Formats (cont'd)

Format	Content	Examples
UP **(2)** URL **(2)** UT WC.T **(2)**	Update Date Uniform Resource Locator Uncontrolled Term Word Count, Title	D UP D URL D UT D WC.T
ABS ALL DALL IALL BIB IBIB IND SCAN **(4)** TRIAL (TRI, SAM, SAMPLE, FREE)	AN, AB AN, DN, TI, AU, IN, CS, PA, PI, NR, SO, NTE, PUI, DT, FS, LA, SL, AV, ED, AB, CC, CT, UT, ALI, CCA ALL, with delimiter for post processing ALL, indented with text labels AN, DN, TI, AU, IN, CS, PA, PI, NR, SO, NTE, PUI, DT, FS, LA, SL, AV, ED (BIB is the default) BIB, indented with text labels AN, CC, CT, ALI, CCA, UT TI, CC, CT (random display without answer numbers) AN, TI, CC, CT, ALI, CCA, UT	D ABS D 1-3 ALL D DALL D IALL D 8 BIB D IBIB D IND D SCAN D TRI
HIT KWIC OCC	Hit term(s) and field(s) Up to 50 words before and after hit term(s) (KeyWord-In-Context) Number of occurrences of hit term(s) and field(s) in which they occur	D HIT D KWIC D OCC

(1) Field available for file segment LISA only.
(2) Custom display only.
(3) Field available for file segment CPI only.
(4) SCAN must be specified on the command line, i.e., D SCAN or DISPLAY SCAN.
(5) Field available until 2016.
(6) Field available until 2015.

SELECT, ANALYZE, and SORT Fields

The SELECT command is used to create E-numbers containing terms taken from the specified field in an answer set.
The ANALYZE command is used to create an L-number containing terms taken from the specified field in an answer set.
The SORT command is used to rearrange the search results in either alphabetic or numeric order of the specified field(s).

Field Name	Field Code	ANALYZE/ SELECT (1)	SORT
Abstract	AB	Y	N
Alloy Indexing Term **(6)**	ALI	Y	Y
Accession Number	AN	Y	Y
Author	AU	Y	Y
Citation	CIT (RE)	Y **(2,3)**	N
Classification Code **(6)**	CC	Y	Y
Classification Code Alloy **(6)**	CCA	Y	Y
Controlled Term	CT	Y	Y
Corporate Source **(6)**	CS	Y	Y
Digital Object Identifier	FTDOI (DOI)	N	Y
Document Number	DN	Y	Y
Document Type	DT (TC)	Y	Y
E-mail Address **(6)**	EML	Y	Y
Entry Date	ED	Y	Y
Field Availability	FA	Y	N
Inventor **(6)**	IN	Y	Y
International Standard (Document) Number	ISN	Y **(4)**	Y
International Standard Book Number	ISBN	N	Y
International Standard Serial Number	ISSN	N	Y
Journal Title	JT	Y	Y
Language	LA	Y	Y
Meeting Date **(6)**	MD	Y	Y
Meeting Location **(6)**	ML	Y	Y
Meeting Organizer **(6)**	MO	Y	N
Meeting Title **(6)**	MT	Y	Y
Meeting Year **(6)**	MY	Y	Y
Note **(6)**	NTE	Y	Y
Number of Report **(6)**	NR	Y	Y
Occurrence Count of Hit Terms	OCC	N	Y
Patent Assignee **(6**)	PA	Y	Y
Patent Country **(6)**	PC	Y	Y
Patent Number **(6)**	PN (PI)	Y	Y
Publication Date	PD	Y	Y
Publication Year	PY	Y	Y
Publisher	PB	Y	Y
Publisher Item Identifier	PUI	Y	Y
Reference Count **(6)**	REC (RE.CNT)	Y	Y
Source	SO	Y **(5)**	Y
Summary Language **(6)**	SL	Y	Y
Title	TI	Y (default)	Y
Uncontrolled Term	UT	Y	Y
Uniform Resource Locator	URL	Y	Y
Update Date	UP	Y	Y
Word Count, Title	WC.T	Y	Y

(1) HIT may be used to restrict terms extracted to terms that match the search expression used to create the answer set, e.g., SEL HIT TI.
(2) SELECT or ANALYZE HIT are not valid with this field.
(3) SELECT or ANALYZE CIT allows you to extract the reference from the source documents in this file and have them automatically converted to a citation format for searching in the SCISEARCH file. SEL or ANALYZE CIT extracts first author, publication year, volume, first page, with a truncation symbol and with /RE appended to the terms created by SELECT.
(4) Selects or analyzes ISSN and ISBN with /ISN appended to the terms created by SELECT.
(5) Selects or analyzes ISSN and ISBN with /SO appended to the terms created by SELECT.
(6) Field available until 2016.

Sample Records

DISPLAY ALL OF PATENT

AN 2012:265427 PQSCITECH
DN 16501995
TI Method of triggering a transfer of data stored in a database
IN Degraeve, Michel
PA Mobile2Web (US) S.A. (Luxembourg, LU)
PI US 43284 20120327
SO Application Information: 13/019,894, 2 Feb. 2011
DT Patent
FS Mechanical & Transportation Engineering Abstracts (MT); METADEX (MD); ANTE: Abstracts in New Technologies and Engineering (AN); Aerospace & High Technology Database (AH)
LA English
ED Entered STN: 11 Jun 2012
Last updated on STN: 11 Jun 2012
AB A method of sending data stored in a database from a sender to a recipient, which are mobile phone users, in relationship with a manager that defines a managing software application, wherein database and the manager are in connection with a website, involves entering into a connection between the sender and the manager. The sender enters into the connection with the manager and provides sender identification to the manager. Further, the method involves transferring an identifier to the manager, wherein the sender transfers the identifier that comprises at least a recipient's mobile phone number. Further, the method involves associating an e-mail address or a URL address with the identifier by the manager.
CC 61 Design Principles (MT); 71 General and Nonclassified (MD); Yes (AN); 99 General (AH)
CT Cell phones; Databases; Electronic mail; Joints; Software

DISPLAY IBIB OF JOURNAL

ACCESSION NUMBER: 2012:244916 PQSCITECH
DOCUMENT NUMBER: 16086305
TITLE: Comparison of performance and combustion parameters in a heavy-duty diesel engine fueled with iso-butanol/diesel fuel blends
AUTHOR(S): Ozsezen, Ahmet Necati; Turkcan, Ali; Sayin, Cenk; Canakci, Mustafa
CORPORATE SOURCE: Department of Automotive Engineering Technology, Kocaeli University, Izmit 41380, Turkey
SOURCE: Energy Exploration & Exploitation [Energy Explor. Exploit.]. Vol. 29, no. 5, pp. 525-541. Oct 2011.
ISSN: 0144-5987
DOI: 10.1260/0144-5987.29.5.525
Published by: Multi-Science Publishing Co. Ltd., 5 Wates Way Brentwood Essex CM15 9TB United Kingdom
URL (Document): http://multi-science.metapress.com/link.asp?target=contributi on&; id=H3475114LU446520
PUBL. ITEM IDENTIFIER: H3475114LU446520
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: Mechanical & Transportation Engineering Abstracts (MT); Environmental Engineering Abstracts (EN); Electronics and Communications Abstracts (EA); CSA / ASCE Civil Engineering Abstracts (CE)
LANGUAGE: English
SUMMARY LANGUAGE: English
ENTRY DATE: Entered STN: 11 Jun 2012
Last updated on STN: 11 Jun 2012

DISPLAY ALL OF BOOK

AN 2012:180886 PQSCITECH
DN 13451814
TI Mixing in Stratified Parallel flows and Implications for Mixing Efficiency
AU Mashayek, A; Peltier, W R
CS Physics, University of Toronto, Toronto, Ontario, ON, Canada
EMAIL: amashaye@atmosp.physics.utoronto.ca
SO Proceedings from the 2010 AGU Ocean Sciences Meeting. [np]. 22-26 Feb 2010.
Published by: American Geophysical Union, 2000 Florida Ave., N.W. Washington DC 20009 USA, [URL:http://www.agu.org]
Conference: 2010 Ocean Sciences Meeting, Portland, OR (USA), 22-26 Feb 2010
NTE Abstracts Available
DT Conference; Book; Short Communication
FS Oceanic Abstracts; ASFA 2: Ocean Technology Policy & Non-Living Resources
LA English
ED Entered STN: 11 Jun 2012
Last updated on STN: 11 Jun 2012
AB The focus of our study is on the efficiency of the mixing process in stratified shear layers. Certain areas of the oceans including the equatorial Pacific are known to be largely subjected to shear mixing. We investigate the transition process through which a two dimensional KelvinHelmhlotz (KH) instability becomes turbulent. KH billows are known to undergo merging processes. The braid region of the primary KH wave is also susceptible to a secondary shear instability which can happen before, during, or after the merging process. The KH billows are also known to be susceptible to three dimensional convective instabilities occurring in the outer regions of their billows in which isopycnals overturn which provides a fast route to turbulent collapse. Occurrence of the latter instability may eliminate the possibility of the merging and secondary shear instabilities by quickly destroying the laminar structure of the two dimensional billow dominated flow. We investigate the possibility of occurrence of these three instabilities in the Reynolds and Prandtl (Re-Pr) number space using a theoretical approach. A map is provided which determines the dominant instability in different zones of Re-Pr space and identifies the regions of possible coexistence of multiple instabilities. The map is developed on a theoretical basis and is tested against high resolution two and three dimensional direct numerical simulations (DNS). As each of the instabilities have their specific implications on the mixing efficiency, the map allows identification of the appropriate value for the mixing efficiency based on the ambient physical properties of the flow. It also enables a prediction to be made on a priori grounds of the structures that will characterize the turbulent flow once transition has occurred.
CC Q2 02284 Hydrodynamics, wave, current and ice forces; O 2010 Physical Oceanography
CT Billows; Mixing processes; Overturn; Physical properties; Turbulent flow

DISPLAY ALL OF JOURNAL AS OF 2017

AN 2017:4 PQSCITECH
DN 1862691639
TI Simulating ozone dry deposition at a boreal forest with a multi-layer canopy deposition model
AU Zhou, Putian ; Ganzeveld, Laurens ; Uellar Rannik; Zhou, Luxi ; Gierens, Rosa ; Taipale, Ditte ; Mammarella, Ivan ; Boy, Michael ; Zhou, Putian ; Ganzeveld, Laurens ; Uellar Rannik; Zhou, Luxi ; Gierens, Rosa ; Taipale, Ditte ; Mammarella, Ivan ; Boy, Michael
SO Atmospheric Chemistry and Physics, Vol. 17, No. 2, pp. 1361-1379, 20170115 E-ISSN: 1680-7324
DOI: 10.5194/acp-17-1361-2017
Published by: Copernicus GmbH, Katlenburg-Lindau

PUI CPCGACPP20170101SIMULATINGOZONEDRYDEPOSITIONAT
DT Journal; Article
LA English
ED Entered STN: 6 Feb 2017
Last updated on STN: 6 Feb 2017
AB A multi-layer ozone(O₃) dry deposition model has been implemented into SOSAA (a model to Simulate the concentrations of Organic vapours, Sulphuric Acid and Aerosols) to improve the representation of O₃ concentration and flux within and above the forest canopy in the planetary boundary layer. We aim to predict the O₃ uptake by a boreal forest canopy under varying environmental conditions and analyse the influence of different factors on total O₃ uptake by the canopy as well as the vertical distribution of deposition sinks inside the canopy. The newly implemented dry deposition model was validated by an extensive comparison of simulated and observed O₃ turbulent fluxes and concentration profiles within and above the boreal forest canopy at SMEARII (Station to Measure Ecosystem-Atmosphere Relations II) in Hyytiaelae, Finland, in August2010. In this model, the fraction of wet surface on vegetation leaves was parametrised according to the ambient relative humidity(RH). Model results showed that when RH was larger than 70% the O₃ uptake onto wet skin contributed ~ 51% to the total deposition during nighttime and ~ 19% during daytime. The overall contribution of soil uptake was estimated about 36%. The contribution of sub-canopy deposition below 4.2m was modelled to be ~ 38% of the total O₃ deposition during daytime, which was similar to the contribution reported in previous studies. The chemical contribution to O₃ removal was evaluated directly in the model simulations. According to the simulated averaged diurnal cycle the net chemical production of O₃ compensated up to ~ 4% of dry deposition loss from about 06:00to 15:00LT. During nighttime, the net chemical loss of O₃ further enhanced removal by dry deposition by a maximum ~ 9%. Thus the results indicated an overall relatively small contribution of airborne chemical processes to O₃ removal at this site.