

# **Academic Research on Regional Sustainability 2017**

Land, River and Climate Impact

Kunming City, China  
18 – 20 August 2017

**Editors:**

**Peng Liu  
Feng Jie Cen  
Henry Zhang**

ISBN: 978-1-5108-5120-7

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2017) by Aussino Academic Publishing House  
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact Aussino Academic Publishing House  
at the address below.

Aussino Academic Publishing House  
14 Union St  
Riverwood, NSW 2210  
Australia

Phone: 61 29 584 8084

aaph\_sydney@hotmail.com

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: curran@proceedings.com  
Web: www.proceedings.com

# Table of Content

<b>Foreword</b> .....	I
<b>Conference Committee</b> .....	II
<b>Keynote Speaker</b> .....	III
 <b>Chapter One: Land Planning and Building Structure</b>	
The Experiment and Research of Yunnan Laterite's Shear Strength under Function of Dry-Wet Cycle <i>Peng LIU, Chong LIU, Limin KANG, Lulu JI</i> .....	1
Classification Code: 481.4 Geophysical Prospecting	
One-Dimensional Soil Temperature Assimilation Experiment based on Unscented Particle Filter and Common Land Model <i>Xiaolei FU, Baoming JIN, Xiaolei JIANG, Cheng CHEN</i> .....	7
Classification Code: 483.1 Soil & Soil Mechanics	
Research on Land Use Changes in Panjin City Basing on Remote Sensing Data <i>Hua DING, Ruren LI, Xin WANG, Yumei LIU, Lishuang SUN</i> .....	12
Classification Code: 454.2 Environmental Impact & Protection	
Application of the Coupled Eulerian-Lagrangian Finite Element Method on Piezocone Penetration Test in Clays <i>Sen ZHANG, Jiangtao YI</i> .....	17
Classification Code: 472 Ocean Engineering	
The Characteristic Analysis on Galloping of Conductor under Extreme Cold Condition in Arctic <i>Xueping ZHAN, Bin LIU, Yuming DONG, Caolan LIU</i> .....	22
Classification Code: 443 Meteorology	
Restoration of Ecological Infrastructure in Rural Areas after Earthquake – A Case Study from Dujiangyan, Sichuan Province <i>Fei FU</i> .....	27
Classification Code: 484.1 Earthquake Measurement & Analysis	
The Researches on I-beam of different web's shapes <i>Chao SHUANG, Donghua ZHOU</i> .....	32
Classification Code: 408 Structural Design	
Influence of Different Shank Distribution on Slip in Composite Beams <i>Bin DUAN, Donghua ZHOU, Yong LUO</i> .....	38
Classification Code: 408 Structural Design	
A New Method for Calculating The Critical Force of Irregular Frames - The Axial Force Area Ratio Method <i>Shuwei LAN, Donghua ZHOU</i> .....	44
Classification Code: 408 Structural Design	
The Research of United Energy Dissipated Design of Buckling Restrained Braces and Viscous Dampers for Frame Structure In High Seismic Region <i>Shuwei LAN, Donghua ZHOU</i> .....	50
Classification Code: 408 Structural Design	
Study on the Influence of Step Changed Spacing of Shear Stud Connector on the Behavior of Continuous Composite Beams <i>Yong LUO, Donghua ZHOU, Bin DUAN</i> .....	58
Classification Code: 408 Structural Design	
Ground Movement of Shallow Buried Ellipse Cavity in a Layered Half-space Impacted by SH Wave <i>Yuanbo ZHAO, Hui QI</i> .....	62
Classification Code: 484.1 Earthquake Measurements & Analysis	

## Chapter Two: Water Resources and Works

Contrastive Analysis of Key Transport Indexes between Jiaxing and Other Cities in Yangtze River Delta <i>Zhaorong WU, Dongming ZHANG</i> .....	68
Classification Code: 434 Water Transportation	
A Moving Wave Generating-Absorbing Boundary based on OpenFOAM <i>Jiawen SUN, Dongxu WANG</i> .....	77
Classification Code: 471.4 Seawater, Tides & Waves	
Study on Farmland Water Network Protection from the Perspective of Ecological Infrastructure <i>Shuaijun ZHANG, Fei FU, Jingyu ZHAO</i> .....	83
Classification Code: 444 Water Resources	
Research on Evaluation and Control of Karst Water Resources in a Certain Tunnel of Dalian Subway <i>Guangqiang WANG</i> .....	89
Classification Code: 444 Water Resources	
Study on Calculation Method of Water Resources Supply and Demand Balance in Plain River Network Area <i>Xia WU, Luguang LIU, Zulian ZHANG, Honglin GUAN, Wei DONG, Jian WANG</i> .....	94
Classification Code: 446.1 Water Supply Systems	
Calculation of Water Environmental Capacity in the Lower Reaches of the Lancang River Basin <i>Jian TANG, Wenliang ZHAI, Huiqun CAO</i> .....	103
Classification Code: 444 Water Resources	
A Two-Dimensional Hydrodynamic Numerical Model Applied on Layout of Fishway Entrance and Its Optimizations <i>Zhixin GUAN, Xuezhu LIU, Guangyou MO, Boya LIU</i> .....	108
Classification Code: 440 Water and Waterworks Engineering	
Experimental Investigation on Water Exchange Performance Through A Hollow Buoy Driven by Wave Overtopping <i>Zegao YIN, Huan ZHANG, Liu YANG, Chengyan GAO, Hui XU</i> .....	115
Classification Code: 471.4 Seawater, Tides & Waves	
Shell Structure Water Cellar's Rapid Construct Technology <i>Wenxian ZHUANG, Deqing YIN, Shufa CHEN</i> .....	120
Classification Code: 446 Waterworks	

## Chapter Three: Hydraulic Development and Dam Construction

Research on the Middle and Lower Reaches of the Yangtze River and Lake's Hydrological Alterations Based on RVA <i>Wei GUO, Gaohong XU, Jun SHAO, Jianping BING, Xi CHEN</i> .....	125
Classification Code: 441 Dams and Reservoirs; Hydro Development	
A Preliminary Investigation of Numerical Model For Dam Break Wave Flume <i>Cheng CHEN, Xiaolei FU, Pu XU</i> .....	133
Classification Code: 441.1 Dams	
The Safety Assessment of an Earth Core Dam Base on In-situ Measurement and Back Analysis <i>Min HE, Jingjing KUANG, Xiaoguang ZHAO</i> .....	138
Classification Code: 441.1 Dams	
Dynamic Stability Analysis of Arch Dam Abutment Based on Strength Reduction Method <i>Shanshan LU, Xin SHI</i> .....	143
Classification Code: 441.1 Dams	
Effect of Water Diversion from The Yangtze River to Chang Lake on Hydrodynamic Characteristics and Water Quality of Chang Lake <i>Yan LI, Honglin GUAN, Yan WANG</i> .....	146
Classification Code: 441 Dams and Reservoirs; Hydro Development	

3D Finite Element Analysis of Yixing CFRD Built on Inclined Mountain Slope <i>Dawei SUN, Liang ZHANG, Huiqing YAO, Kangping WANG</i> .....	157
<b>Classification Code: 481.1.1 Geomorphology</b>	

## **Chapter Four: Waste Water Processing**

An Implicit Matrix-free Hydrodynamic Model for River and Urban Drainage System <i>Haijun YU, Yuyan FAN, Tianqi AO, Jianming MA</i> .....	163
<b>Classification Code: 452.2 Sewage Treatment</b>	

Experiment and Numerical Simulation on Seepage Failure of Sand Caused by Leakage of Underground Water Pipe <i>Xilin CUI, Gaoliang TAO, Jin LI</i> .....	172
<b>Classification Code: 446 Waterworks</b>	

Game Analysis of Water Pollution Control in China's Watershed <i>Shuwen LI</i> .....	178
<b>Classification Code: 453 Water Pollution</b>	

Simulation on Change Law of Runoff, Sediment and Non-point Source Nitrogen and Phosphorus Discharge under Different Land uses Based on SWAT Model: A Case Study of Er hai Lake Small Watershed <i>Xiaoxia TONG, Yuanlai CUI, Manyu CHEN, Bo HU, Wensheng XU</i> .....	185
<b>Classification Code: 453.1 Water Pollution Sources</b>	

## **Chapter Five: Natural Disaster and Environment Impact**

Dynamic Analysis Model of Rubber Bearing Based on Geometric Nonlinearity <i>Zhidan LIN, Xin LI</i> .....	195
<b>Classification Code: 484.3 Earthquake Resistance</b>	

Research on Applicability Analysis of Drought Index in Liaoning Area <i>Xin WANG, Hua DING, Lishuang SUN, Ruren LI, Yumei LIU</i> .....	201
<b>Classification Code: 443 Meteorology</b>	

Calculation Model of Priority Generation Considered of Low-carbon Energy Saving <i>Hua ZHONG, Zhiwei YING, Chunyi CHEN, Dunnan LIU, Weihua WENG</i> .....	207
<b>Classification Code: 451.2 Air Pollution Control</b>	

Study on Rural Ecological Conservation and Health Care Plan to Respond Aging Population <i>Jingyu ZHAO, Fei FU</i> .....	214
<b>Classification Code: 454.2 Environment Impact &amp; Protection</b>	

Study on Rainfall-runoff Process of the Lower Plain Areas with Multi-level Drainage System <i>Fengyan WU, Honglin GUAN, Xia WU</i> .....	220
<b>Classification Code: 444 Water Resources</b>	

Hydrodynamic Numerical Simulation on Baimao shoal Section of Yangtze River under the Impact of Typhoon Winnie <i>Shuo LIU, Sudong XU, Kai YIN, Ke YANG, Wending WANG</i> .....	226
<b>Classification Code: 443 Meteorology</b>	

## **Chapter Six: Costal and Ocean Property Research**

Experimental Study on The Characteristics of Sandstone in Process of Acid Corrosion <i>Runke HUO, Shuguang LI, Fei HAN, Jing LI</i> .....	232
<b>Classification Code: 471.4 Seawater, Tides &amp; Waves</b>	

Effect of Aspect Ratio on Hydrodynamic Performance of High Lift Otter Board in Trawl Fisheries <i>Jian LIU, Hongliang HUANG, Shuai CHEN</i> .....	237
<b>Classification Code: 471.5 Sea as Source of Minerals &amp; Food</b>	

Seasonal Variations of Cu and the Mechanisms in Jiaozhou Bay <i>Dongfang YANG, Jun DING, Haixia LI, Longlei ZHANG, Qi WANG</i> .....	245
Classification Code: 482 Mineralogy	

**Author Index**

**About Publisher**