

International Symposium on Erosion and Landscape Evolution 2011

(ISELE 2011)

**Anchorage, Alaska, USA
18-21 September 2011**

Editors:

**Dennis C. Flanagan
James C. Ascough II**

John L. Nieber

ISBN: 978-1-61839-796-6

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© (2011) by the American Society of Agricultural & Biological Engineers
All rights reserved.

Printed by Curran Associates, Inc. (2012)

For permission requests, please contact the American Society of Agricultural & Biological Engineers at the address below.

American Society of Agricultural
& Biological Engineers
2950 Niles Road
St. Joseph, MI 49085

Phone: (269) 429-0300
Fax: (269) 429-3852

hq@asabe.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Wind Erosion, Dust and Their Environmental Impacts: An Australian Perspective	1
<i>Grant McTainsh</i>	
Small Steps and Giant Leaps? Thoughts for the Future Based on a Decade of Progress in Understanding and Modelling Hydrologic and Erosion Processes.....	3
<i>John Wainwright</i>	
Research on Erosion and Landscape Evolution: Current Status and Future Prospects	5
<i>Desmond Eric Walling</i>	
Erosion Processes and Prediction in NW U.S. Forests	7
<i>William Elliot, Peter Robichaud, Randy Foltz</i>	
Streambank Erosion and Channel Evolution Processes in the Minnesota River Basin.....	16
<i>Christian Lenhart, John Nieber, Jason Ulrich, Bruce Wilson</i>	
Groundwater Seepage Mechanisms of Streambank Erosion and Failure	25
<i>Garey Fox, Glenn Wilson, Taber Midgley, Abdulsahib Almadhhachi, Rachel Carson</i>	
Quantifying Intrinsic and Extrinsic Factors Affecting Soil Erodibility	34
<i>S. Kossi Nouwakpo, C. Huang</i>	
Erosion as Affected by Soil Inherent Properties and Extrinsic Conditions	43
<i>Amrakh I Mamedov, Guy J Levy, C. Huang</i>	
Modified Shake Durability Test Applicability for Soil	52
<i>Jeffrey Keaton</i>	
Use of Tracer Minerals to Estimate Erosion in an Iranian Watershed.....	61
<i>Mohammad Reza Noura, Reza Moussavi Harami</i>	
Application of Updated Approaches for the Reclamation of Placer-mined Lands in the Harrison Creek Watershed near Central, Alaska	70
<i>Hans Arnett, Patrick McMahon</i>	
Analysis of <i>Escherichia Coli</i> within Sediment Basins on Active Construction Sites.....	79
<i>Elizabeth Tempel, Charles Privette III, Calvin Sawyer, John Hayes</i>	
Measurement of the Parameters Affecting the Formation and Breakage of Flocs	88
<i>Neha Bhadbhade, Jason Vogel, Daniel Storm, Billy Barfield, Aaron Mittlestet, Hayat Azawi, Karl Garbrecht, Alex Toberge</i>	
A Passive Flocculant Injection System for Sediment Control on Construction Sites.....	90
<i>Karl Garbrecht, Jason Vogel, Dan Storm, Billy Barfield</i>	
Accuracy and Precision of Portable Turbidity Meters.....	99
<i>Katherine Resler, Calvin Sawyer, Charles Privette III, John Hayes</i>	
A Natural Rainfall Plot Study to Determine the Effectiveness of Composts and Organic Amendments in Controlling Runoff and Erosion.....	108
<i>Lawrence Mark Risse, Xianben Zhu</i>	
A Global Approach to Prevent and Remediate Degradation and Desertification	116
<i>Coen Ritsema</i>	
Tools for Designing Post-mining Landscapes with Acceptable Erosion Risk and Discharges on the Receiving Environment	118
<i>Hwat Bing So, Ashraf Khalifa, Chris Carroll, Hossein Ghadiri, Bofu Yu</i>	
Monitoring of Dust Emission in Eastern Australia: Why Two Methods Are Better Than One	127
<i>J. Leys, S. Heidenreich, T. O'Loingsigh, C. Strong, Grant McTainsh</i>	
Comparisons of Measurements and Predictions of PM Concentrations and Emission Rates from a Wind Erosion Event	129
<i>Kori Moore, Michael Wojcik, Christian Marchant, Randal Martin, Richard Pfeiffer, John Prueger, Jerry Hatfield</i>	
Wind Erosion of Soils Burned by Wildfire	138
<i>Natalie Wagenbrenner, Matthew Germino, Brian Lamb, Randy Foltz, Peter Robichaud</i>	
Tracking Sources of Fugitive Dust at Nipomo Mesa, California	147
<i>Thomas Cahill, David Barnes, Roberto Velarde, Thomas Gill</i>	
Spatial Application of WEPS for Estimating Wind Erosion in the Pacific Northwest	156
<i>Jincheng Gao, Larry Wagner, Fred Fox, Serena Chung, Brian Lamb</i>	
Soil Property Effects on Wind Erosion of Organic Soils	165
<i>Ted Zobeck, Matthew Baddock, R. Scott Van Pelt, John Tatarko, Veronica Acosta-Martinez</i>	
An Assessment of the Impact of Retention Ponds for Sediment Trapping in the Ada Creek and Longwood Coves using Remotely Sensed Data and GIS Analysis	167
<i>Sudhanshu Panda, Richard Skarda, J. Sharma</i>	

Erosion Rates from Badlands National Park	176
<i>Larry Stetler, Rachel Benton, Matthew Weiler</i>	
Identifying Sources of Suspended Sediment using Radionuclides in an Agricultural Watershed in South Central Wisconsin.....	185
<i>Jasmeet Lamba, Anita Thompson, John Panuska, K. Karthikeyan</i>	
Measuring Erosion Rates at Plot Scales Using Photogrammetry	193
<i>Joseph Wagenbrenner, Peter Robichaud, Randy Foltz</i>	
Tools for Ephemeral Gully Erosion Research.....	195
<i>S. Kossi Nouwakpo, Chi-hua Huang</i>	
A Study of Physiographic and Geomorphic Relationships to Identify Erosion and Sedimentation Areas in the Ladiz Watershed, Zahedan, Eastern Iran	204
<i>Mohammad Reza Noura, Reza Moussavi Harami</i>	
75 Years of Wind Erosion Control: The History of Wind Erosion Prediction	213
<i>Michael Sporcic, Edward Skidmore</i>	
Overview of the Management Submodel in the Wind Erosion Prediction System	222
<i>Larry Wagner</i>	
WEPS NRCS Implementation Issues: Resolved	231
<i>Larry Wagner</i>	
Applications of WEPS and SWEEP to Non-Agricultural Lands.....	233
<i>John Tatarko, David Walker, Simon Van Donk</i>	
Incorporating the Wind Erosion Prediction System (WEPS) for Dust into a Regional Air Quality Modeling System.....	235
<i>Brian Lamb, Serena Chung, Joseph Vaughan, Jincheng Gao, Larry Wagner</i>	
Environmental Impacts from Wind Erosion of Abandoned Mine Lands	244
<i>Larry Stetler, James Stone</i>	
Probabilistic Soil Erosion Modeling Using the Erosion Risk Management Tool (ERMiT) After Wildfires	253
<i>Peter Robichaud, William Elliot, Joseph Wagenbrenner</i>	
Application Of The Water Erosion Prediction Project (WEPP) Model To Simulate Streamflow In A PNW Forest Watershed	262
<i>Anurag Srivastava, Mariana Dobre, Emily Bruner, William Elliot, Ina Miller, Joan Wu</i>	
Modeling and Prediction of Land Condition for Fort Riley Military Installation	271
<i>Heidi Howard, Guangxing Wang, Steve Singer, Alan Anderson</i>	
The Development and Evaluation of a Portable Rainfall Simulator Capable of Mimicking Variable Rainfall Patterns	280
<i>Jeffrey Layton Ullman, Brian William Bodah</i>	
Characterization of Soil Microtopography Effects on Runoff and Soil Erosion Rates under Simulated Rainfall	288
<i>Jan Vermang, L. Norton, Chi-hua Huang, Donald Gabriels</i>	
Sediment Transport in Shallow Overland Flow	297
<i>M. Suryadevara, M. Romkens, S. Prasad</i>	
Within-Storm Rainfall Distribution Effect on Soil Erosion Rate	306
<i>Syed Ahmed, Kevin Mackenzie, Bahram Gharabaghi, Ramesh P Rudra, Trevor Dickinson</i>	
Rainfall Intensity Effects on Runoff and Sediment Losses From a Colorado Alfisol.....	315
<i>C. Truman, James Ascough II, J. Davis</i>	
Internal Erosion During Soil Pipe flow: Role in Gully Erosion and Hillslope Instability	324
<i>Glenn Wilson, John Nieber, Roy Sidle</i>	
An Experimental Study of Gully Sidewall Expansion	333
<i>Robert Wells, Henrique Momm, Sean Bennett, Ronald Bingner, Seth Dabney</i>	
Gully Evolution in Agricultural Fields Using Ground-Based LiDAR	342
<i>Henrique Momm, Robert Wells, Ronald Bingner, Seth Dabney</i>	
Quantifying Fluvial Erosion Over Short Time Scales	350
<i>Theresa Wynn, Barbra Utley</i>	
Impacts of Chemical Fallow Practices in Conservation Tillage Management Systems on Runoff and Erosion in the Pacific Northwest	352
<i>Brian William Bodah, Jeffrey Layton Ullman, Donald McCool</i>	
Trap Efficiency for Road Storm Runoff Detention in Southern Appalachian Watersheds	360
<i>J. McFero Grace III</i>	
The Role of Biomass in Erosional and Soil Strength Influences Under Military Land Management	362
<i>Heidi Howard, Niels Svendsen, Timothy Cary, Daniel Koch, George Gertner, Philip Woodford, Robert Lacey, Alan Anderson, Andrew Fulton</i>	

Effect of Grazing Management and Buffer Strips on Erosion from Pastures	371
<i>Philip Moore, Dan Pote, David Brauer, John Pennington, Randy Raper</i>	
Assessment of Various Erosion and Sediment Control Practices within an Experimental Facility.....	373
<i>Joseph Monical, Rabin Bhattacharai, Prasanta Kalita, Heidi Howard, Niels Svendsen</i>	
Plastic Covered Cropping Systems: Runoff Patterns and Soil Erosion Rates.....	375
<i>Sebastian Arnhold, Christopher Shope, Bernd Huwe</i>	
Development and Validation of a Multi-Size Erosion-Deposition Model - GUSED.....	377
<i>Bofu Yu</i>	
Modeling the Reduction in Soil Loss due to Soil Armouring Caused by Rainfall Erosion.....	379
<i>Thomas Cochrane, Daniel Yoder, Dennis Flanagan, Seth Dabney, Paul Weber</i>	
A Saturation Excess Erosion Model.....	381
<i>S. Tilahun, R. Mukundan, B. Demisse, C. Guzman, B. Tarakegn, T. Engda, Z. Easton, A. Collick, A. Zegeye, E. Schneiderman, J.-Y. Parlange, T. Steenhuis</i>	
Scale and Land Use Effects on Simple Relationships Between Flow Velocity and Discharge Rate from Watersheds on the Loess Plateau, China	390
<i>Shumei Zhou, Tingwu Lei, David Nigel Warrington</i>	
Feasibility of Irregular-Slope Equation on Soil Loss Prediction for Grass Strips	399
<i>Chia-Chun Wu, Tsung-Wen Wang</i>	
Development of a Combined Wind and Water Erosion Model (WWEM) for the Object Modeling System.....	408
<i>James Ascough II, Dennis Flanagan, Clinton Truman, Olaf David</i>	
Integrating WEPP and a Pathogen Transport Model to Simulate Fate and Transport of Cryptosporidium and Rotavirus in Surface Flow	410
<i>Rabin Bhattacharai, Prasanta Kalita, Paul Davidson</i>	
Seasonal Change of WEPP Erodibility Parameters on a Fallow Plot	412
<i>Donald McCool, Shuhui Dun, Joan Wu, William Elliot</i>	
Environmental Evaluation of Flue Gas Desulfurization Gypsum as a BMP for Erosion Control.....	421
<i>L. Norton</i>	
Predictive Capability to Assess Military Training Impacts on Military Installation Streams Utilizing Remote Sensing.....	430
<i>Philip Woodford, Troy Livingston, Gilbert Malinga, Heidi Howard</i>	
Getting Results: Measuring Post-Wildfire Erosion Control Treatment Effectiveness	439
<i>Peter Robichaud, Robert Brown, Peter Wohlgemuth, Joseph Wagenbrenner</i>	
Screening Study of Select Cotton-based Hydromulch Blends Produced using the Cross-Linked Biofiber Process	441
<i>Bryan Scholl, Greg Holt, Chris Thornton</i>	
Engineered Log Jams Post Project Appraisal for Streambank Erosion and Salmonid Habitat in Washington State	450
<i>W. Barry Southerland, Frank Reckendorf, Dean Michael Renner</i>	
Assessing the Impact of Manure Application Method on Runoff Phosphorus using Controlled and Natural Rainfall	459
<i>Tamie Veith, Peter Kleinman, Francirose Shigaki, Lou Saporito, Douglas Beegle</i>	
Infiltration Process in Gravelly-soil Slopes as Affected by Storm Patterns	468
<i>Chia-Chun Wu, Yu-Ting Chan, Chen-Han Wang</i>	
Building Process-Based Understanding For Improved Adaptation And Management.....	477
<i>Erin Brooks, Jan Boll</i>	
Modelling the Impacts of Climate Change on Future Rates of Soil Erosion: Addressing Key Limitations	486
<i>Donal Mullan, David Favis-Mortlock, Rowan Fealy</i>	
Impact of Global Changes on Soil Vulnerability in the Mediterranean Basin	495
<i>O. Cerdan, J.-F. Desprats, J. Fouche, Y. Le Bissonnais, B. Cheviron, V. Simonneaux, D. Raclot, F. Mouillot</i>	
Precipitation Parameters of Stochastic Climate Models for a Changing Climate.....	504
<i>Bruce Wilson, Aleksey Sheshukov</i>	
Rainfall Erosivity in Austria	513
<i>Andreas Klik, Franz Konecny</i>	
Contribution of Historical Extreme Typhoon Events to Sediment Yield from Lin-Pien Watershed	522
<i>Chia-Chun Wu, Kuan-Sheng Wu, Ching-Lun Kao</i>	
CLIGEN: Addressing Deficiencies in the Generator and its Databases.....	531
<i>William Rust, Fred Fox, Larry Wagner</i>	
Geospatial Application of the Water Erosion Prediction Project (WEPP) Model	540
<i>Dennis Flanagan, James Frankenberger, Thomas Cochrane, Christian Renschler, William Elliot</i>	

Applying Online WEPP to Assess Forest Watershed Hydrology	549
<i>Shuhui Dun, Joan Wu, William Elliot, James Frankenberger, Dennis Flanagan, Donald McCool</i>	
Applying WEPP Technologies to Western Alkaline Surface Coal Mines	558
<i>Joan Wu, Shuhui Dun, Hakjun Rhee, Xiangdong Liu, William Elliot, Tom Golnar, James Frankenberger, Dennis Flanagan, Paul Conrad, Richard McNearney</i>	
Comparison of WEPP and SWAT For Watershed Hydrology and Erosion Prediction.....	560
<i>Jan Boll, Erin Brooks, Zachary Easton, Tammo Steenhuis</i>	
Linking Gully Erosion and Rainfall Erosivity.....	569
<i>M. Campo, J. Casali, R. Gimenez</i>	
Effects of Topographic Feedback on Erosion and Deposition Prediction.....	577
<i>Seth Dabney, Dalmo Vieira, Daniel Yoder</i>	
Ecological Site Descriptions Including use of State and Transition Models in Impacting Evolution of Plant Communities on Landscape and Erosion Evolution	586
<i>Michael John Kucera, David Lightle</i>	
Geospatial Technology Application in Landscape Change Monitoring of Southeastern United States Coastal Wetlands and Impact from Global Warming and Climate Change	588
<i>Sudhanshu Panda, Karen Burry</i>	
Measuring Streambank Erosion Bank Profiles to more Robustly Estimate Recession Rates and Calibration of the AnnAGNPS-CEAP Model	597
<i>Clarence Prestwich, William Barry Southerland</i>	
Effect of Canopy Leaf Distribution on Sand Transport and Abrasion Energy.....	599
<i>Lawrence Hagen, Mark Casada</i>	
Wind Tunnel Study on Sand Emission from the Surface of Non-uniform Sand	608
<i>Ning Huang</i>	
Field Wind Tunnel Testing of Two Silt Loam Soils on the North American Central High Plains	610
<i>Robert Scott Van Pelt, Matthew Baddock, Ted Zobeck, Veronica Acosta-Martinez, Alan Schlegel, Merle Vigil</i>	
Coastal Plain Landscape Feature Evolved From Historic Erosion and Deposition	612
<i>Loris Asmussen, Walter Knisel, Loris Asmussen</i>	
Predicting Soil Erosion Potential from Military Vehicle Tracking and Terrain Impacts	620
<i>Heidi Howard, Paul Ayers, Daniel Koch, Alan Anderson, James Kane, George Bozdech, Niels Svendsen</i>	
Real- or Near-Real Time Monitoring of Military Training Land Sustainability using Geospatial Techniques and Automated Sensor Deployments	629
<i>Stacy Hutchinson, J. Shawn Hutchinson, Philip Woodford, Christopher Otto</i>	
Pervious Pavers: Where is the Perviousness?.....	631
<i>Elizabeth Pappas, Chi-hua Huang</i>	
Simulation and Modeling for the Optimal Allocation of Military Lands.....	633
<i>Niels Svendsen, Heidi Howard, Daniel Koch, Paul Ayers, Anne Dain-Owens</i>	
Long Term Monitoring of Wind Erosion Induced Changes to Soil Properties in Western Kansas	642
<i>John Tatarko</i>	
Evaluation and Improvement of Gabion Walls for Sediment Reduction from Sloping Fields	644
<i>Yong Hun Choi, Chul Hee Won, Woon Ji Park, Min Hwan Shin, Kyu Chul Bang, Joong Dae Choi</i>	
Effect of Surface Cover Materials and Soil Amendments on Sediment Discharge from Upland Fields	652
<i>Woon Ji Park, Hyun Jun Shin, Yong Hun Choi, Min Hwan Shin, Chul Hee Won, Jeong Ryeol Jang, Joong Dae Choi</i>	
Evaluation and Controlling of Agricultural Hillside Erosion Based on Integrated GIS Methods.....	660
<i>J. Tamas, A. Nagy, T. Forian</i>	
Soil Moisture Fluctuations as Affected by Straw-mat Mulch	669
<i>Chia-Chun Wu, Chen-Han Wang, Yu-Ting Chan</i>	
Soil Erosion and Sediment Deposition In Granite, Gneiss And Sedimentary Rock Watersheds.....	678
<i>A. Orkhonselenge</i>	
Soil Erosion and Sediment Redistribution Estimated From Soil Geochemical Activity.....	680
<i>A. Orkhonselenge</i>	
The Role of Streambank Erosion Contributions to Sediment Loads in the Town Creek Watershed in Mississippi	687
<i>John Ramirez Avila, William McAnally, Eddy Langendoen, Sandra Ortega Achury, James Martin</i>	
Soil Erosion and Productivity Losses in Highly Degraded Soils of the Eastern Savannas of Colombia.....	696
<i>John Ramirez Avila, Edgar Almanza Manrique, Sandra Ortega Achury</i>	
Evaluation of Bulk Density and Vegetation as Affected by Military Vehicle Traffic.....	703
<i>Amare Retta, Larry Wagner, John Tatarko</i>	
Evaluation of Rice Straw Mat Surface Cover Materials under a Laboratory Rainfall Simulation Condition	712
<i>Chul Hee Won, Min Hwan Shin, Yong Hun Choi, Woon Ji Park, Joong Dae Choi</i>	

Maturity Process of Rills.....	721
<i>Chia-Chun Wu, Ching-Lun Kao, Kuan-Sheng Wu, Po-Lung Chen, Hsiao-Jou Lin, Ching-Wei Lin</i>	
Erosion Plot Monitoring: Impact of Different Tillage Systems on Average Annual Soil Erosion and the Significance of Extreme Rainfall Events	730
<i>Stefan Martin Strohmeier, Andreas Klik</i>	
Stream Bank Erosion Contributions to Sediment Loads in Jordan Creek, Alaska: DWSM-BE Based Assessment.....	739
<i>Debabrata Sahoo, Debasmita Misra, Deva Borah, Brock Tabor</i>	
Nenana River Stabilization	746
<i>Mark Sherman, Tonya Bear, Don Carlson</i>	
Characterization of Microbes Carried in Dust.....	748
<i>Terrence Gardner, Veronica Acosta-Martinez, Ted Zobeck, Matthew Baddock, Robert Scott Van Pelt, Zachary Senwo</i>	
Shear Stress Partitioning of Overland Flow on Disturbed and Undisturbed Rangelands.....	750
<i>Osama Al-Hamdan, Frederick Pierson, Mark Nearing, Jeffry Stone, Christopher Jason Williams, Patrick Kormos, Jan Boll, Mark Weltz</i>	
Multivariate Models for Annual Rainfall Erosivity in Brazil	759
<i>C. Mello, M. Viola, S. Beskow, L. Norton</i>	
Application of MUSLE to Todoroki River Watershed in Okinawa, Japan	768
<i>Kazuhito Sakai, Tamotsu Nakandakari</i>	
Development of a GIS Interface for WEPP Model Application to Great Lakes Forested Watersheds.....	775
<i>James Frankenberger, Shuhui Dun, Dennis Flanagan, Joan Wu, William Elliot</i>	
Watershed Analysis of Runoff and Erosion Potential on Santa Cruz Watershed (Arizona, USA and Sonora, Mexico): Impact of Climate and Land Cover Changes	784
<i>Yongping Yuan, Wenming Nie</i>	
Integrating WEPP into the WEPS Infrastructure.....	793
<i>Fred Fox, James Frankenberger, Dennis Flanagan, Larry Wagner</i>	
Development of VFDM: A Riparian Vegetated Filter Dimensioning Model	795
<i>Silvio Jose Gumiere, Alain Normand Rousseau</i>	
USDA Integrated Approaches and Resources for Erosion Prediction and Control in Sustainable Farming Systems.....	804
<i>Linda Oyer Scheffe, David Lightle</i>	
Application of the Soil and Water Assessment Tool (SWAT) for Sediment Transport Simulation at a Headwater Watershed in Minas Gerais State, Brazil.....	806
<i>D. Pinto, A. Da Silva, C. De Mello, S. Beskow, G. Coelho</i>	
Development of a WEPP-Water Quality (WEPP-WQ) Model	815
<i>M. Reza Savabi, Dennis Flanagan, James Frankenberger, Bob Hubbard, David Bosch, Tom Potter</i>	
Author Index	