

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/327272854>

Runoff and soil erosion process-based modeling in different land uses in the Brazilian Cerrado

Conference Paper · August 2018

CITATIONS

0

READS

149

4 authors:



Jamil A. A. Anache

Universidade Federal de Mato Grosso do Sul

59 PUBLICATIONS 761 CITATIONS

[SEE PROFILE](#)



Dennis C Flanagan

USDA - Agricultural Research Service

240 PUBLICATIONS 6,553 CITATIONS

[SEE PROFILE](#)



Anurag Srivastava

University of Idaho

23 PUBLICATIONS 266 CITATIONS

[SEE PROFILE](#)



Edson Wendland

University of São Paulo

506 PUBLICATIONS 2,095 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



SegHAE: water-food-energy security in the Brazilian Cerrado - MCTI/CNPq N° 441289/2017-7 [View project](#)



Bacias Representativas de Uso Misto [View project](#)



RIO18
21st World Congress
of Soil Science

21 WORLD CONGRESS OF SOIL SCIENCE
Sunday 12 – Friday 17 August 2018
Rio de Janeiro, Brazil

Rio de Janeiro August | 12 - 17

Runoff and soil erosion process-based modeling in different land uses in the Brazilian Cerrado

Jamil Alexandre Ayach Anache¹; Dennis Flanagan²; Anurag Srivastava²; Edson Wendland¹

EESC / USP¹; Purdue University²

Land use can influence runoff and soil erosion, threatening soil and water conservation in the Cerrado biome in Brazil. The adoption of a process-based model was necessary due to the lack of long-term observed data. We aimed to predict runoff and soil erosion for four different land uses: wooded Cerrado (Cerrado sensu stricto), tilled fallow without plant cover, pasture, and sugarcane, using a process-based model named WEPP (Water Erosion Prediction Project). We performed the model calibration using a 5-year dataset (2012-2016) of observed runoff and soil loss in four different land uses in experimental plots (5 m width and 20 m length) located in the central area of the State of São Paulo. Selected soil and management parameters within the WEPP model were calibrated for each land use with the existing field data. The simulations were conducted using the calibrated WEPP model components with a 100-year climate dataset created with CLIGEN (weather generator) based on regional climate statistics. The WEPP model had an acceptable performance for the subtropical conditions. Land use can influence runoff and soil loss rates in a significant way. Finally, the runoff behavior was distinct for each land use, but for soil loss we found similarities between pasture and wooded Cerrado, suggesting that the soil may attain a sustainable level when the land management follows conservation principles.

Keywords: Overland flow; soil loss; WEPP model

Financial Support: CNPq (grant numbers 201109/2015-8 and 142393/2015-0) and FAPESP (grant number 2015/03806-1)



**Brazilian Soil Science
Society**

<https://www.21wcsc.org>
21wcsc@21wcsc.org
commercial@21wcsc.org