Modeling Construction Site Erosion Using GeoWEPP

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Modeling Construction Site Erosion Using GeoWEPP

Environmental Health and Safety, Iowa State University

Problem Statement
- EH&S is upgrading soil erosion models from RUSLE2 to GeoWEPP. There was a need for verification as to whether the results would vary between the two softwares. GeoWEPP is a new updated software and RUSLE2 has been used for the past decade. With ISU being responsible for so many construction sites an accurate model of soil erosion is essential.

Objective(s)
- The goal was to be able to get EH&S a new working software that would be able to provide updated soil erosion values for the construction sites on ISU's campus.
- Write a paper explaining the differences in the two software packages, along with reanalyzing past data.

Constraints
- Both ArcGIS and GeoWEPP must be available on campus and run concurrently to compare results.

Scope
- Learn and apply GeoWEPP to develop erosion estimates for a representative construction site (SE Univ. Blvd  Recreation Fields).
- Create a written program installation guide.
- Teach EH&S staff to navigate GeoWEPP software.
- Describe differences between RUSLE2 and WEPP modeling estimates.

Methods/Approach
- I compared the previous RUSLE2 data submitted by EH&S to the Iowa DNR to the Iowa USLE handbook.
- In addition, I submitted a paper to EH&S explaining why converting to GeoWEPP should be considered.

Major Deliverables
- Develop a software installation guide.
- Develop user guide.
- Develop training materials for continuity.

Recommendations
- For a site to site basis I would recommend the university switch to GeoWEPP since it is able to analyze on an event basis. Since these construction sites do have a long duration there is no need to use RUSLE2 for an annual soil erosion value. Although both models allow for data input, GeoWEPP is able to keep track of updates on weather and terrain changes.

References
- Dr. Clay Miller, Environmental Health & Safety, crmiller@iastate.edu
- Dr. Brian Gelder, Agriculture & Biosystems Engineering
- Dr. Kaleita, Agricultural & Biosystems Engineering.

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