

Improved Units of Measure for Training and Testing Area Carrying Capacity Estimation

Background:

The ability of lands to accommodate and sustain the military mission has been identified as a high-priority Department of Defense (DoD)/Tri-Service user requirement. In order to characterize environmental conditions, integrate constraints, and quantify the capability of DoD lands to support military training and testing missions on a sustained basis, there is an increasing need for efficient tools, models, and techniques.

Objective:

This project will extend the Army Training and Testing Area Carrying Capacity (ATTACC) methodology to include multiple measures of land condition. In addition, it will extend the spatial and temporal scale of the ATTACC methodology to a scale applicable for installation-level land management.

Summary of Process/Technology:

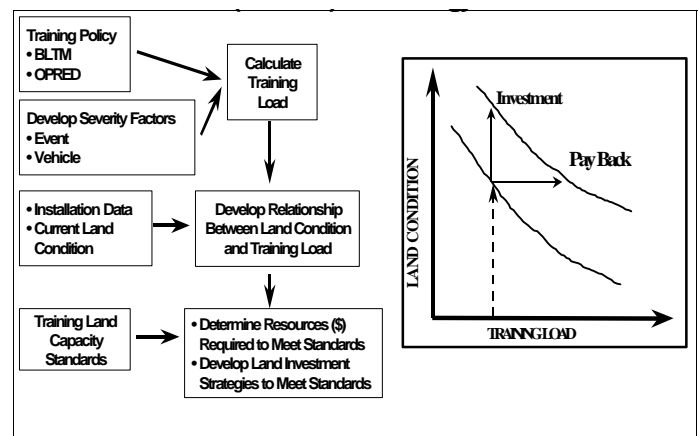
This project will improve the existing ATTACC measure of land condition (water erosion status) by utilizing technologies developed by SERDP Project **CS-752: Terrain Modeling and Soil Erosion Simulation**. Existing wind erosion models will be evaluated to determine which are most applicable to military lands, based on data requirements and model assumptions. Wind erosion models that will be evaluated include the Revised Wind Erosion Equation and the Wind Erosion Prediction System, along with various modifications of both models. Researchers will utilize the Ecological Dynamics Simulation (EDYS) model to incorporate species composition into the ATTACC model. A military impacts submodel will be developed for the EDYS model. Components of the ATTACC model will be modified to incorporate time varying climatic factors. Ultimately, a methodology will be developed to predict the distribution of training and testing activities based on training and testing doctrine.

Benefit:

This project will result in reduced land use maintenance costs and a greater availability of land for military training and testing activities.

Accomplishments:

The unit stream power approach for estimating topographic factors of the Revised Universal Soil Loss Equation (RUSLE) has been incorporated into the ATTACC model. A military impact component of the EDYS model was developed that accounts for the severity and distribution of mission impacts. This allows the EDYS model to predict changes in plant species composition associated with military activity in a manner consistent with ATTACC. Improvements have been made to the spatial/temporal scale of the ATTACC model. Improved training impact factors were developed for the ATTACC model that account for seasonal variation in mission impacts. Specifically, protocols were developed that objectively estimate vehicle severity, local condition, event severity factors, and wind erosion within the ATTACC model.



Army Training and Testing Area Carrying Capacity Methodology

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