

Terrain passability mapping in the Czech Republic

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Abstract:

The NATO Reference Mobility Model (NRMM) or similar models are largely the computer-based collection of methodologies, equations and algorithms designed to predict Cross-Country Movement (CCM) ability of a military vehicle operating in a prescribed terrain. The most important aspect of the success of the CCM models is the choice of the right methodology for calculating the navigation parameters for a terrain vehicle and the appropriate quality of available geographical data. The aim of the article is to analyse the main geographic factors that limit the ability of a vehicle to cross the different types of terrain and to describe the history of mapping and modelling the Cross-Country Movement in the Czech Republic and abroad. The main described geographic elements that determine the movement of off-road vehicles are the orographic shapes of the earth's surface (slope gradients), soil type, water, vegetation, roads, settlements and meteorological factors – see Fig. 1. According to the combination of these factors, we distinguish the terrain as passable (GO), difficult passable (SLOW GO), or impassable (NO GO).

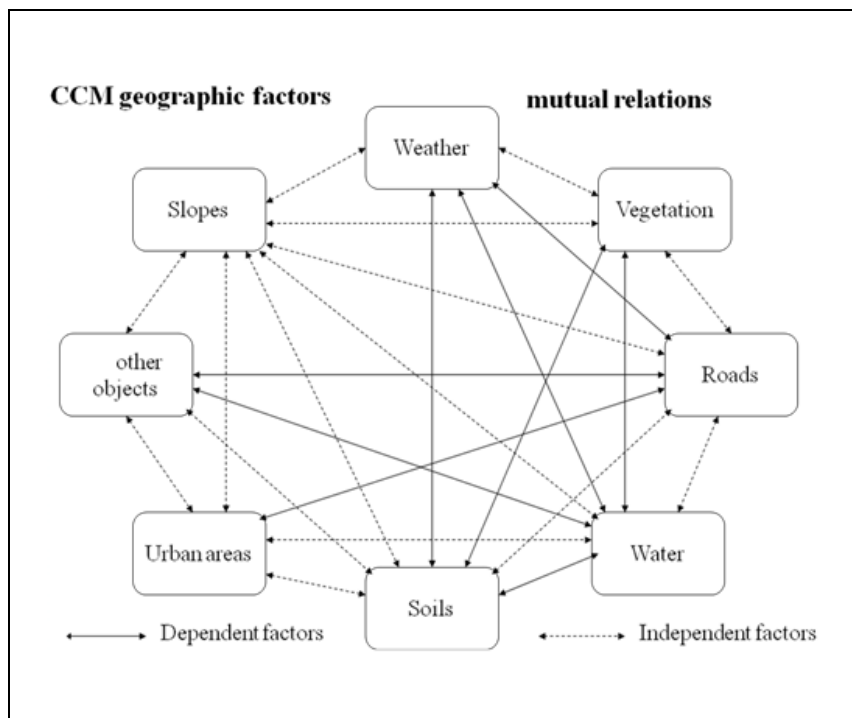


Figure 1. Mutual relationships of cross-country movement factors

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