

Global Physiographic and Climatic Maps to Support Revision of Environmental Testing Guidelines

The goal was to provide critical data and information so that the Department of the Army could update applicable guidelines for consideration of environmental effects during Research, Development, Test and Evaluation (RDTE). The U.S. Army must provide equipment to the warfighter that will ensure mission success under any conditions, at any location and at the time of this project, the Department of Defense's (DOD) guidelines of environmental effects on equipment lacked adequate descriptive information. We reported our findings in 2009. Our proposed revisions to applicable guidance documents (Army Regulation 70-38) described and defined strategic level Global Military Operational Environments (GMOEs) to incorporate ecoregions into the classification scheme, for a better accounting of seasonality, precipitation patterns, vegetation and terrain.

Summary of Project Details: We produced a series of maps (and digital data sets) to include a global physiographic map, a global dust potential map, a global permafrost and ground ice extent map, a global digital elevation map, global land cover map, and a set of 8 global climatic maps. The data sources we processed included remote sensing data sets, online terrain and surface characteristic databases, previously published map products and original map data we had previously generated. The report details the methods, modeling and sources of information and data that we used to generate the final 15 maps.

Management Implications: We produced digital data (maps) that depict environmental conditions with the potential to influence military activities and equipment operation. Our characterization of the global conditions affecting RDTE material were produced at scales that were strategic for the purpose of a general overview of the types and distribution of those environmental and climatic factors that would likely be encountered during military operations. The products we produced met the Army's need to identify the potential natural factors that are inherent in extreme environments, which may directly impact military operations. In this instance, the specific focus was on testing materiel and equipment that will function as designed under extreme conditions and understanding the hazards of those conditions along with where those conditions could be expected. Our analyses revealed areas of the world that have analogous environmental features including terrain, climate and vegetation. Our maps are expected to be used to instruct and guide revision efforts of documents through presentation and summarization of a wide range of global environmental conditions. We recommended continuing these analyses at more detailed levels to bring this understanding to an in-depth characterization of specific areas and their analog sites.