

Demonstration of the National Agricultural Decision Support System

<http://nadss.unl.edu/>

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Abstract

The National Agricultural Decision Support System (NADSS) is a web based geospatial decision support system used to aid producers and decision makers in analyzing and effectively mitigating the effects of drought. The NADSS application is unique in its implementation, containing web-based implementations of commonly utilized drought indices including the Newhall Simulation Model (NSM), Palmer Drought Severity Index (PDSI), and the Standardized Precipitation Index (SPI). By combining information (generated by the indices) and climate and agricultural data, NADSS is able to define parameters to analyze risks associated with drought. This report outlines a demonstration of the web implementation of these tools and the value they provide.

1. Introduction

The National Agricultural Decision Support System (NADSS) is a collection of decision support tools that are designed to help agricultural producers assess a variety of risks. Bringing together data from climate indicators, significant weather events and historical records we can compute drought and flooding frequencies, durations and intensities. Our tools automatically produce maps and tables that help illustrate the hazards of drought on the agricultural infrastructure.

The goals of NADSS are:

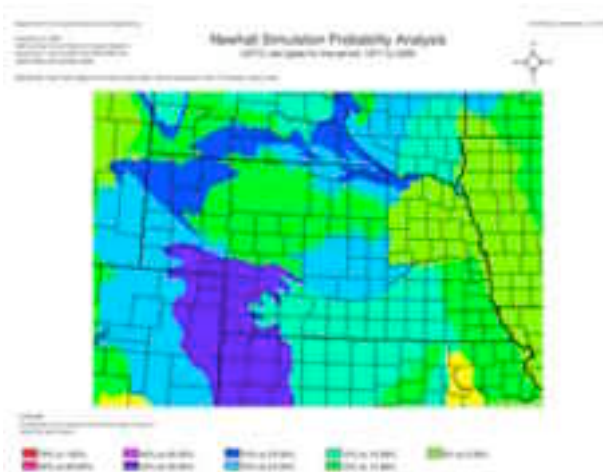
- to speed risk assessment with automation,
- to enhance risk assessment with increased spatial and temporal resolution and additional input variables,
- to extend risk assessment to forecasts and economic analyses.

Accomplishing these objectives requires basic computer and science research in constraint databases, data mining, information retrieval, geospatial information analyses, and distributed computing. The project integrates ongoing research in these areas in advanced development of a Geospatial Decision Support System (GDSS) for drought risk management.

The system implements tools for automating three major drought monitoring and analysis methodologies; these include: the Palmer Drought Severity Index (PSDI), the Standardized Precipitation Index (SPI), and the Newhall Simulation Model (NSM).

2. Demonstration

Researchers from the NADSS development team will demonstrate the NADSS applications at the 2004 National Conference on Digital Government Research. The demonstration includes an on-demand walk through of each of the web-based tools, sample output both in image (PDF) form as well as data form, and a presentation of best practice uses of our web tools, specifically in the area of risk management. The NADSS team will also provide documentation concerning the system architecture, computer science research accomplished through our implementation as well as general literature appropriate to the agronomy domain.



Visualization of the NSM Probability Analysis

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The goal of the demonstration is to familiarize conference attendees with the tools that we offer, technology developed, and provide feedback and input into how these tools and technologies can be used effectively by attendees from other domains. It is our hope to create a wider awareness of our implementation in order to create an open forum for further discussion in the domain of Geospatial Decision Support System design, maintenance and development, thereby increasing value brought to the user of our system and to the Digital Government Community.



The National Agricultural Decision Support System