

**SOCIO-ECONOMIC BENEFITS OF  
METEOROLOGICAL AND HYDROLOGICAL SERVICES**

**INVENTORY OF DECISION SUPPORT TOOLS**

DRAFT INVENTORY FRAMEWORK

ITEM	DESCRIPTION
Sector	Agriculture and Natural Resources
Sub-sector	Drought
Tool Name	VegDRI (Vegetation Drought Response Index)
Tool Description	The VegDRI tool is used to map and monitor general patterns of drought severity at a regional to national scale in the U.S. The tool produces a 1-km VegDRI map that characterizes drought conditions on a PDSI-like scale with the map being updated on a two-week time step.
Weather, Climate or Water inputs	Climate-derived drought indices that represent the climatic component of this bio-climatic drought index model.
Specific weather, climate, water data required	Standardized Precipitation Index (SPI) Palmer Drought Severity Index (PDSI) - Both indices are calculated and gridded from daily precipitation and temperature data collected at U.S. National Weather Service weather stations.
Spatial resolution	1-km raster data
Temporal resolution	14-day (bi-weekly)
Delivery methodology	Near real-time product that is updated biweekly to reflect current drought conditions; VegDRI results from previous biweekly periods are retained in a data archive.
Frequency of data requirement	Tool inputs dynamic climate and satellite-based observations on a bi-weekly time step while other biophysical parameters remain static. Tool has the capability to input new variables and be applied at different time steps.
Other	Uses historical climate and satellite-based vegetation observations for model development and applies model to current observations to produce a near-real time drought index map.
Detailed Tool Description	The VegDRI tool produces a map at a 1-km spatial resolution that categorized drought-induced vegetation stress on a scale similar to the PDSI. The VegDRI map provides a detailed view of drought stress conditions over large geographic areas, but has adequate spatial detail to characterize localized drought patterns. The VegDRI maps are updated on a two week time step to enable the progression of the general drought patterns and conditions to be monitored over the growing season. In addition to maps, the VegDRI results can be summarized by land cover type (e.g., grassland and cropland) and geographic location (e.g., county, district, or state) to provided a range of impacts statistics (e.g., percent area in each VegDRI class) that can be tracked over time (e.g., percent area change between VegDRI classes).
Spatial resolution	1-km
Temporal resolution	14-days (bi-weekly)
Delivery methodology	VegDRI map for multi-state regions of the U.S. currently available via the Internet. The production of national-level VegDRI maps is planned by 2009.
Frequency of provision	

Other	
Benefits of tool application	The VegDRI results can be used by agricultural producers, policymakers, and other stakeholders for various drought mitigation and planning activities. The high 1-km spatial resolution of VegDRI allows this information to be used for local-, state-, regional-, and national-level applications. The VegDRI is used to assist experts at the National Drought Mitigation Center, NOAA, and the U.S. Department of Agriculture that prepare the weekly U.S. Drought Monitor map to better assess drought severity and spatial patterns across the U.S.
Possible future advances	VegDRI tool maybe enhanced to provide weekly rather than bi-weekly observations of drought conditions. The development of a higher spatial resolution (250-meter) VegDRI product will also be attempted to support more local scale monitoring and assessment activities. A similar methodology will also be tested to develop a vegetation condition outlook tool. This tool would provide a general outlook of vegetation conditions at multiple time steps (e.g., 2 and 4 weeks) based on an analysis of the current vegetation conditions (at a given date in time), oceanic teleconnections, and short-term weather forecasts.
Comments	
URL	VegDRI description: <a href="http://drought.unl.edu/MonitoringTools/VegDRI.aspx">http://drought.unl.edu/MonitoringTools/VegDRI.aspx</a> VegDRI data: <a href="http://gisdata.usgs.gov/website/Drought%5FMonitoring/viewer.php">http://gisdata.usgs.gov/website/Drought%5FMonitoring/viewer.php</a>
Others	

