DoD Climate Assessment Tool

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Agenda

➢ **What the Tool does**

➢ **How MILDEPs may use the Tool**

➢ **Additional background**

➢ **Questions**

What DoD Climate Assessment Tool Does

➤ **Calculates exposure to eight hazard areas**

Drought	Coastal Flooding	Riverine Flooding	Heat
Energy Demand	Wildfires	Land Degradation	Historical Extreme Weather

➤ **Includes <u>historic</u> exposure only (e.g., for hurricane and tornado tracks, ice jams)**

➤ **Aggregates exposure across the hazard areas through indicators and a "score"**

Two Time Periods + Two Climate Scenarios

➤ **Epoch: Time period of indicator data**

Future 1: 2035-2065, centered on 2050

Future 2: 2070-2100, centered on 2085

➤ **Climate Scenarios: Future climate scenarios according to emissions pathway**

Lower emissions

Higher emissions

➤ **Therefore user can choose:**

2050 Lower, 2050 Higher, 2085 Lower, or 2085 Higher

CONUS and OCONUS Locations

➤ **157 CONUS, includes AK and HI**
- Army - 50
- Navy - 49
- AF - 58

➤ **24 OCONUS locations (included in a later report)**

➤ **Additional locations in next round of exposure assessments**

How MILDEPS Can Use the Tool

➢ **Enables high-level screening of exposure**

➢ **Could inform Master Plans, Integrated Natural Resource Management Plans, Energy and Water Plans, etc. at the Installation Level**

➢ **MILDEPS initiating process to investigate application**

Additional Steps May Be Necessary

➢ **Tool calculates EXPOSURE, not VULNERABILITY**

➢ **GIS layers can be downloaded to installation GIS system for better planning functionality**

➢ **Coastal flood extent shown during extreme event storm**

➢ **Riverine flooding maps show future conditions with 2' and 3' additional freeboard, not projected changes in flooding from precipitation. May not be approach used by all Departments**

Observed Trends

- ➤ **Exposure increases over time**

- ➤ **Exposure in 2085 Lower scenario is similar to 2050 Higher scenario**

- ➤ **Higher aggregate scores for Southeast and Southwest**

- ➤ **Drought is dominant hazard, both for DoD and for each Department.**

- ➤ **Exposure to drought contributes to increase in wildfire exposure for Air Force installations.**

- ➤ **Rising temperatures will increase exposure to range of hazards that can directly impact military readiness**

Plan for Rollout and Implementation

➢ **Internal distribution of Report, MILDEP Reports, and Tool URL to MILDEPs (early Oct)**

➢ **Decide how/if to incorporate into Master Planning UFC**

➢ **Training (Now-February)**

➢ **RTC preparation for later in year**

Additional Background Information

8 Climate Hazards, Each with Multiple Indicators

CONUS Climate Hazard	Supporting Indicators
Drought	Flash drought frequency, drought year frequency, aridity, consecutive dry days, mean annual runoff[1, 3]
Coastal Flooding	Coastal flood extent, coastal erosion[2]
Riverine Flooding	Riverine flood extent, flood magnification factor[1, 3], maximum 1-day precipitation, maximum 5-day precipitation, extreme precipitation days
Heat	Days above 95°F, 5-day maximum temperature, high heat days, frost days, high Heat Index days[3]
Energy Demand	Heating degree days, cooling degree days, 5-day minimum temperature, 5-day maximum temperature
Land Degradation	Fire season length, aridity, soil loss[1, 3], coastal erosion, permafrost hazard
Wildfire	Fuel abundance[1, 2], ignition rate[1, 3], fire season length, flash drought frequency
Historical Extreme Conditions	Tornado frequency[1, 3], hurricane wind > 50 knots[3], hurricane maximum precipitation, hurricane frequency, ice storms[3], historic drought frequency[3], ice jams[3], wildland urban interface[1, 3]

Weighted Order Weighted Average (WOWA) Exposure "Scores"

- ➤ Method to calculate exposure to a hazard that takes into account:

- ➤ How much each indicator affects the hazard (importance weights)

- ➤ How much of the exposure score is the result of large indicator values (rank weights)

- ➤ Provides score for each Hazard

- ➤ Allows all eight Hazard scores for a location to be summed to yield an overall Installation hazard exposure score

- ➤ Tool users can modify the weightings