

Report to Congress

Feasibility of Transitioning from Using 100-Year Floodplain Data to a Forward-looking Predictive Model that Takes into Account the Impacts of Sea Level Rise



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Requirement

This report is provided in response to House Report 116-120, page 328, accompanying the National Defense Authorization Act for Fiscal Year 2020.

House Report 116-120, page 328 accompanying the National Defense Authorization Act for Fiscal Year 2020:

The committee notes that according to the Department of Defense's January 2019 report entitled "Report on Effects of a Changing Climate to the Department of Defense," two-thirds of the 79 installations analyzed in the report are vulnerable to current or future recurrent flooding. The report also noted that several installations on the eastern seaboard are already experiencing the effects of sea-level rise. The committee further notes that ensuring the right planning assumptions are used for military construction projects on flood-prone installations can help ensure the viability of infrastructure throughout its 40-year planned useful life, increase the resiliency of the Department's installations, and result in cost avoidance after catastrophic flooding events. Accordingly, the committee directs the Under Secretary of Defense for Acquisition and Sustainment to provide a report to the House Committee on Armed Services by February 1, 2020, that assesses the feasibility of transitioning from 100-year floodplain data to a forward-looking predictive model that takes into account the impacts of sea-level rise.

Executive Summary

The Department of Defense (DoD)-led interagency Coastal Assessment Regional Scenario Working Group developed the DoD Regional Sea Level (DRSL) database to account for sea level change in installation master planning and land use planning at coastal locations. New DoD policy will direct the use of the DRSL database be incorporated into Unified Facility Criteria for coastal installations to use as a forward-looking predictive model that takes into account sea level rise. While data from the DRSL database will be able to reasonably predict sea level fluctuations, several other factors such as hydrology, hydraulics, infrastructure, and land use are contributing factors in determining flood hazard areas. In addition to the DRSL database, installation planners and engineers will need to understand these, and other localized factors to

accurately identify future flood hazard areas and develop master plans and land use plans accordingly.

Background

For several years, the Department has examined ways to incorporate changing sea level in master planning and land use planning at coastal installations. The Strategic Environmental Research and Development Program (SERDP) funded research efforts to increase understanding of sea level fluctuations, how to model future potential sea level rise, and its potential impact on coastal installations. The DRSL database is the result of those earlier efforts.

Discussion

The Department developed the DRSL database for use in installation and facilities planning at coastal installations to account for future sea level change. The DRSL database, and its accompanying report, *Regional Scenarios for Coastal Risk Management*, published in 2016, were developed by the DoD-led Interagency Coastal Assessment Regional Scenario Working Group.

The DRSL database, accessible with a DoD-issued Common Access Card, is an online database that provides regionalized sea level and extreme water level scenarios for three future time horizons (2035, 2065 and 2100) for over 1700 coastal military installations world-wide. The database provides access to site-specific scenario values for each of the three future timeframes, based on five global sea-level rise scenarios that range from 0.2 meters to 2.0 meters rise by 2100. The scenarios should not be considered predictions or most likely futures. Rather, the scenarios provide bounding values to assist decision-makers in managing their risks in the context of plausible future sea levels. This information can then be used to estimate the potential impacts of sea level rise on an installation, and allow to installation planners and leadership to make informed decisions about future land use planning.

By fall of 2020, The Assistant Secretary of Defense for Sustainment and the Secretaries of the Military Departments, acting through their DoD Engineer Senior Executive Panel representatives, will incorporate the use of the DRSL database into Unified Facilities Criteria for determining future inundated areas, floodplains, floodplain design elevations, and related parameters at coastal installations. The Assistant Secretary of Defense for Sustainment will update the DRSL database and other supporting tools as necessary to sustain technology transfer, data currency, and system functionality.

The DRSL database is a credible tool to identify potential sea level rise at coastal installations, and its contribution to area flooding. There are other localized factors the Federal Emergency Management Agency uses to develop flood hazard maps. Those factors include hydrology, infrastructure, hydraulics, land use, and historical rainfall. Other factors in analyzing flood risk include the installation's level of exposure, sensitivity to impacts of sea level rise, adaptive capacity, quality and resolution of elevation data, and impact of the local and regional topography and hydrology. The proximity to tidal affects and the magnitude of local tides, both of which are site-specific, are examples of level of exposure. The installation's elevation and topography are examples of sensitivity. Topography and extent of available building space are examples of an installation's adaptive capacity. Additionally, slightly more than half of all installations in the United States have flood hazard mapping data, and few installations outside the United States have that data. The DRSL database does not incorporate these factors used in determining flood hazard areas.

Conclusion

The DRSL database is a credible tool to identify potential sea level rise at coastal installations. It can provide forward-looking data that takes into account the impacts of sea level rise. However, several other site-specific factors contribute to determining flood hazard areas for an installation that are not incorporated into the DRSL database. The DRSL database is a forward-looking predictive model for future sea level rise at coastal installations, and the DoD will incorporate data from its predictive models to assist in installation planning. The DRSL database will not replace current flood hazard mapping. It will however be a factor for installation planners to use, along with others factors like hydrology, infrastructure, hydraulics, land use, and historical rainfall to identify potential future flood hazard areas. This will enhance installation planning, improve viability of infrastructure, and increase installation resiliency.