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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Office of the Secretary Of Defense **Date:** March 2023

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602675D8Z I <i>Social Science Research for Climate and Environmental Change</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	4.000	4.718	-	4.718	5.500	6.095	6.395	6.534	Continuing	Continuing
046: <i>Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)</i>	-	0.000	4.000	4.718	-	4.718	5.500	6.095	6.395	6.534	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program supports the Department's initiative to Build Sustainable and Long-Term Advantage.

This program funds Department of Defense (DoD) physical climate and social science applied research. Climate and environmental change will impact the full range of U.S. military operating environments. DoD capabilities, until recently, have been aligned toward the historical environmental and geopolitical record; failure to anticipate and plan for the security effects of climate and environmental change holds significant potential to not only degrade DoD readiness and effectiveness but also compound the frequency and scope of novel geostrategic risks and surprises. Efforts under this program will focus on interdisciplinary science and technology that spans physical climate modeling and forecasting and social sciences capable of yielding tangible decision support tools that empower operational planners to prepare for and adapt to the complicated, interconnected security and stability challenges of climate and environmental change. Insights derived from this program will enable Combatant Commands to better engage key partners and allies in efforts to plan for and mitigate risks and promote global peace and stability.

The program is in Budget Activity 2, Applied Research as it includes studies, investigations, and non-system specific technology efforts directed toward general military needs with a view toward developing and evaluating the feasibility and practicality of proposed solutions and determining their parameters.

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B. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	4.000	4.800	-	4.800
Current President's Budget	0.000	4.000	4.718	-	4.718
Total Adjustments	0.000	0.000	-0.082	-	-0.082
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-0.082	-	-0.082

Change Summary Explanation

The FY 2024 reduction of \$0.082 million is comprised of a realignment of \$0.104 million to support the Historically Black Colleges and Universities/Minority Serving Institutions program, which is a priority of the Under Secretary of Defense for Research and Engineering (USD(R&E)), \$0.005 million to support departmental priorities and an economic assumption increase of \$0.027 million.

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602675D8Z / Social Science Research for Climate and Environmental Change	Project (Number/Name) 046 / Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
046: Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)	-	0.000	4.000	4.718	-	4.718	5.500	6.095	6.395	6.534	Continuing	Continuing

Note

New Start (Y/N): No

A. Mission Description and Budget Item Justification

This program will leverage and integrate expertise from operational end users, physical climate scientists and models, tools, and datasets, and social scientists with deep understanding of designated regional and local communities to anticipate and respond more quickly and precisely to climate and environmental change risks and opportunities. The program aims to explore how specific environmental and social indicators might inform strategic reviews to adapt warfighter training and planning in anticipation of climate global trends. The research program will build upon the products of the 6.1 Minerva Research Initiative (program element 0601110D8Z) with a focus on end-user defined mission, geographic, and timescale priorities to forecast local and regional climate and environmental change effects, assess and predict likely societal impacts and responses, and ultimately provide operations planners technically-relevant and operationally precise scenarios to incorporate into CONPLANS and OPLANS and ISR requirements related to climate change.

B. Accomplishments/Planned Programs (\$ in Millions)

Title: Providing Research and End-user Products to Accelerate Readiness and Environmental Security (PREPARES)	FY 2022	FY 2023	FY 2024
Description: PREPARES will leverage and build upon Minerva products by incorporating their findings into operationally-relevant planning scenarios that accelerate the Department’s understanding of the social, cultural, behavioral, and political dynamics most likely to be affected by climate and environmental change in strategically important areas of the world. By aligning research objectives with the priorities of operational end users who can apply the tools and knowledge products to their areas of responsibility, the proposed enhancement would translate and integrate results from 6.1 strategic and global-centric analyses to provide operational and tactical assessments to inform CONPLANS and OPLANS, focusing on specific regions and detailed scenarios for the warfighter. PREPARES uniquely applies research to integrate physical climate and social sciences and accelerate “research to operations”, directly impacting military operational planning and preparations to mitigate the security risks from climate and environmental change. This effort also will rapidly produce the tools and products the end-users need to sustain data-informed planning and analysis for operations and engagements with partners and allies.	-	4.000	4.718
FY 2023 Plans:			

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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2022	FY 2023	FY 2024
<p>Activities for this first year will include those items necessary for establishing the program, including: creation of an advisory team, governing body and project guidance and execution documentation; identification of priority scenarios for exploration; and selection of performers and initiation of modeling and social science research efforts.</p> <p>To demonstrate technical feasibility and relevance to operational end-users, PREPARES initially will focus on several issues related to climate and environmental change security challenges that are of importance to and identified by the SOCOM Enterprise, affected commands, and operational elements, including Civil Affairs operational planners. For FY 2023, the program will initiate focused research into including – but not limited to – one or more of the following areas identified by the Combatant Command end users:</p> <ul style="list-style-type: none"> • Development of data-driven, spatially explicit forecasts of where climate and environmental change risks and opportunities exist now and will occur in the near future, their types, and the dynamics within each; • Understanding the sociocultural tensions in a given theater as a result of perceptions of disproportionate climate and environmental change impacts, including shifts in opportunities and challenges; • How socioeconomic interdependence and burden sharing to manage climate and environmental change challenges may affect the roles and relationships of DoD alliances and those of our competitors; • Assessments of the ability of state and non-state groups to organize, mobilize, strategize, govern, and gain advantage in the face of climate and environmental change and the locations of where this may occur due to pre-existing instabilities and/or other existing risk factors; • How climate and environmental change may be leveraged by specific actors in power competition and the emergence of critical threats in contested regions; • How climate and environmental change may impact, influence, and interact with other compounding risk factors, including social, political, and economic dynamics; • The development of integrated tools and data products (e.g., data-driven scenarios, social-ecological systems models, remote and in-situ observations, statistical guidance) to forecast the emergence of physical phenomenon at relevant time and spatial scales in the context of their sociocultural settings; and • Using the aforementioned research topics to rapidly establish an end-user product for decision support and potential early warnings of threats (through precise indicators) so as to guide planning and/or response before such threat impacts defense effectiveness. <p>FY 2024 Plans:</p>			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Second year activities will focus on continued research in the pilot priority scenario studies selected during FY 2023. The development of a data product concept, the development of a data product prototype, and opportunities for working meetings will ensure synchronization and coordination among the end users, social scientists, and physical scientists.</p> <p>As the initial technical feasibility research phase wraps, the activity will coordinate with end users, including the SOCOM Enterprise, affected Commands, and Civil Affairs operational planners, social scientists, and physical scientists. Coordination will provide insights and lead to the selection for development of one or more specific data products to support data-informed planning. Initial analysis for operations and engagements with partners and allies will focus on risks related to climate and environmental change. A data product concept and development process will be drafted in FY 2024, with the following general themes:</p> <ul style="list-style-type: none"> • End users provide needs/insights for product and subsequent analysis; • Physical scientists evaluate recent climate modeling at the regional level and select appropriate data inputs for use in social science modeling in areas of geopolitical importance; • Physical scientists/forecasters use knowledge and skills to provide insights for weather-climate predictability over a 12 to 18-month period; • Physical scientists/forecasters create software or products by which the hazard forecast is communicated and provided to social scientists, including a range of probabilities; • Social scientists determine what types of weather-climate hazards over a 12 to 18-month period serve as proxy for instability/conflict in areas of interest; • Social scientists use the physical science environmental output and indicator information to weigh the risks of compounding threats that are likely to emerge or have already emerged within a year to several years; • Social scientists apply weights and/or determine severity of instability/conflict due to multiplicative compound threats within a year to several years; • Social scientists provide analysis of possible scenarios on timescale and in areas of interest to end users with relative probabilities and degrees of severity to help inform which areas require immediate planning actions, which need heightened surveillance, and which do not need further action at the current time; and • End users receive a data product(s) that aids in decision making by the results of this cycle. <p>FY 2023 to FY 2024 Increase/Decrease Statement: The increase of \$0.718 million between FY 2023 and FY 2024 supports continued research, analysis, and development of a data product concept and prototype.</p>			
Accomplishments/Planned Programs Subtotals	-	4.000	4.718

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C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

NA