**Project Title: Levant and Central America Climate I (LCACI)**

**Software Description & NASA Software Engineering Classification**

**Technical Point of Contact**

Jessica Sutton, jessica.sutton@noaa.gov

**Introduction**

The motivation of this software developed from speaking with Major Harris of the 14th Weather Squadron. The 14th Weather Squadron currently uses satellite, modelled, and *in situ* data to monitor drought in vulnerable countries for the Department of Defense. They would like to incorporate higher resolution data products and additional data products (i.e. NDVI, ground water, etc.) to enhance their current monitoring efforts.

**Applications and Scope**

The code and software developed for this project will be used by the 14th Weather Squadron to access and process data more easily. If the coding proves useful, they will incorporate it into their current operational tool for drought monitoring.

**Capabilities**

The code and software will download, subset, and analyze parameters on a daily, monthly, and annual time step. It will be made to provide maps and figures to the 14th Weather Squadron. More information is needed to determine the format that the 14th Weather Squadron would like the final products.

**Interfaces**

The code is written in R and uses many R libraries. The team will work with the 14th Weather Squadron to produce a complimentary code in python. The users will be using the code to add data into their current operational tool.

**Assumptions, Limitations, & Errors**

The code will be limited in use to specific parameters and will need to be updated according to dataset changes. It will be written to subset based on two regions, but can be changed to include other geographical extents. The output/final products of the code will change depending on what the 14th Weather Squadron request.

**Additional Information**

**Software Classification & Justification**

This software is considered to be Class E software per NPR 7150.2.

**This software is used to:**

* + Perform minor desktop analysis of science or experimental data.

**The software is not used to:**

* + make decisions for an operational Class A, B, or C system or to-be built Class A, B, or C system
  + support engineering development
  + test other Class D software systems
  + support mission planning or formulation
  + operate a research, development, test, or evaluation laboratory
  + provide decision support for non-mission critical situations
  + in a Major Engineering/Research Facility
  + perform research associated with airborne vehicles or systems

The software will not:

* + operate, directly support, or be flight qualified to support an operational system
  + be used in technical decision concerning an operational system
  + directly affect primary or secondary mission objectives
  + adversely affect the integrity of engineering/scientific artifacts
  + have an impact on operational vehicles

Additionally, if the software had anomalous behavior, that behavior would not cause or contribute to a failure of a system function:

* + resulting in a minor failure condition for the airborne vehicle
  + with an effect on airborne vehicle operational capability or pilot workload

When these criteria are no longer valid, categorization/classification will be reevaluated and the project will start following the procedures for the higher class.

**Not Safety Critical**: The software does not:

* Reside in a safety-critical system with at least one of the following being applicable to the software:
  + Causes or contributes to a hazard
  + Provide control or mitigation for hazards
  + Controls safety-critical functions
  + Processes safety-critical commands or data
  + Detects and reports, or takes corrective action, if the system reaches a specific hazardous state
  + Mitigates damage if a hazard occurs
  + Resides on the same system (processor) as safety-critical software
  + Process data or analyze trends that lead directly to safety decisions (e.g. determining when to turn power off to a wind tunnel to prevent system destruction)
  + Provide full or partial verification or validation of safety-critical systems, including hardware or software systems