**Project Title:** Palm Oil Plantation Predictor **(POPP)**

**Software Description & NASA Software Engineering Classification**

Category III

Simple process of downloading, atmospherically correcting, and processing raster data in order to identify potential palm oil plantations.

**Technical Point of Contact**

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**Introduction**

Detecting palm oil plantations from a remote sensing approach can be a cumbersome and manually intensive process. By automating a number of these steps, any basic technician can create an output that easily identifies potential palm oil plantations for a given region. This software utilizes the arcpy and dnppy python modules along with IDL.

**Applications and Scope**

This software will be utilized by the World Wildlife Fund (WWF) and associated WWF projects.

**Capabilities**

This software will help the WWF identify potential oil palm plantations and support decision making processes in order to promote a more sustainable palm oil supply chain.

**Interfaces**

The software will utilize Python and IDL. Users will open the tool in Python (IDLE) and execute the given scripts.

**Assumptions, Limitations, & Errors**

Elements of this software were based on Landsat 8 data using a feature extraction technique. The decision tree applied to this model was based primarily on local spectral and physical properties of the Central Kalimantan region of Indonesia and may not accurately apply to other regions. This software also includes elements located within the DEVELOP National Program’s module “dnppy” and will need to be downloaded and installed in order to function properly.

**Additional Information**

Certain parameters and input/output variables of the script may need to be altered in order to successfully run on different machines.

**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