**Product Review Report**

**eTRAP Upgrade with R-CLIPER**

**Operational Readiness Review (ORR)**

**July 25, 2017**

***Review panel: Antonio Irving, OSPO; Kathryn Shontz, OSGS***

**Overall Summary:**

The eTRAP Upgrade with R-CLIPER Capability ORR was held at NCWCP on July 26, 2017. Ensemble TRaP (eTRaP) uses an ensemble of TRaPs based on multiple satellite-derived rain rates and predicted storm tracks to derive a maximum likelihood rainfall forecast and probability of exceeding specified rainfall accumulation thresholds. This phase of the project included the addition of tropical cyclone rainfall climatology and persistence (R-CLIPER) model rainfall rates. This addition adds to an already operational eTRAP product running in ESPC operations since 2009 and replaces the loss or retired TRaP inputs from SSM/I, TRMM and AMSR-E. Similar to previous reviews focus of the ORR was limited only to the addition of the R-CLIPER TRaP to the ensemble. All other elements of the project have been previously reviewed and are deemed to be at operational levels of maturity. No risks or actions relative to the addition of this new capability were identified and there were no outstanding risks from previous reviews. All system test met latency thresholds requirements. All relevant documents will be updated and all security protocols have been successfully addressed. The project did not anticipate any issues in the transition for the distribution of products from the DDS to the PDA when the PDA becomes operational.

**Project Strengths:**

* The project showed good cooperation and working relationship among stakeholders in particular between OSPO and STAR personnel.
* Extensive research of the R-CLIPER algorithm allowed for a more robust and reliable implementation with omission of unverifiable artifacts (e.g topography)
* Large number of historic and current storms available for testing and validation
* Operational since 2009 the eTRAP project leverages previous investment to streamline the research to operations transition of new satellite data inclusion.

**Project Weaknesses:**

* Lack of early and/or continuous participation with the user community to validate results.
* No noticeable increase in accuracy of final eTRAP by addition of R-CLIPER

**Review Success Criteria Assessment: Pass; Contingent Pass; Fail**

**MIRS High Resolution Products ORR Success (Exit) Criteria:**

1. *All open items in RID have been satisfactorily disposed of.*

**Review Panel Feedback: Pass**

1. *The updated RAD is satisfactory.*

**Review Panel Feedback: Pass**

1. *The SPSRB documents (UM, SMM and ATBD) have been reviewed and are deemed to be satisfactory.*

**Review Panel Feedback: Pass**

1. *Risks have been identified, planned mitigations are adequate, and residual risks are of acceptable level.*

**Review Panel Feedback: Pass**

* There is no CIP capability for eTRaPs at WCDAS.
* McIDAS support to be terminated in 2020, commensurate with user needs.
* Satepsanon to be sunsetted in the near future.
1. *Testing and validation results are satisfactory and is consistent with the expected operational environment.*

**Review Panel Feedback: Conditional Pass**

* Validation results for the R-CLIPER capability focused only on the increase in reliability/availability of the final product but with no increase in the accuracy. Even though there is an expectation that an increase in the number of individual TRAPs that create the ensemble TRAP would lead to an improvement in the accuracy this effect was not observed.
* The project leads noted that there was not a decrease in the accuracy associated with the R-CLIPER addition.
* The Board recommends that the updated product output is provided to users at SAB and WPC ahead of operational transition. Socialization of the differences in product output should be done as the output is visibly impacted from the R-CLIPER update. Users must be confident in the updated product and therefore should be provided the output statistics which demonstrate no accuracy degradation.
1. *The system is ready to be placed in an operational status.*

**Review Panel Feedback: Pass**

1. *The security impact assessment (SIA) has been completed.*

**Review Panel Feedback: Pass**