Baseline Operational Capability

For CAT RFCs

Version 20080424

The following statements define Baseline Operational Capability (BOC) relative to the migration of NWS RFCs from NWSRFS to CHPS under the Implementation Strategy and Plan developed by the CHPS Acceleration Team (CAT).

BOC is the minimum set of software, hardware, and information infrastructure to operationally support the four CAT RFCs (ABRFC, CNRFC, NCRFC, and NWRFC) in a fashion consistent with their operational service delivery as of January 1, 2008. Once BOC is established and implemented, local innovation can be used to evolve the forecasting environment into a form that makes fuller use of the flexibilities and capabilities available within CHPS. At the appropriate time, it is also recommended that this same BOC be established and implemented at non-CAT RFCs in order to meet goals associated with timelines and reliability.

The following statements define BOC.

- Existing data flows and resources will be directed and re-mapped to provide the same point, areal, and gridded data currently provided to NWSRFS. Where economies and clear improvements can be made without significant cost, they will be considered by the CAT.

  o Supported data types include those specified in the NWSRFS Users Manual, Chapter 1.4. Additional data types deemed critical for transition by the CAT may be added to the above list.

  o Pre-processors are required for precipitation (MAP, MAPX), temperature (MAT), and potential evapotranspiration (MAPE). To reduce risk, the current OFS pre-processors will be used for the CHPS BOC. Following the rollout of initial CHPS/FEWS system, actions will be required to re-engineer and modernize the entire suite of pre-processors.

    ▪ The OFS RRS function appears to exist in the FEWS system but OHD/CAT will need to verify that the FEWS version performs similarly to the OFS RRS utility.

    ▪ Where possible, existing programs such as MPE and GFE will be leveraged/adapted for use in the initial FEWS rollout and beyond.

  o Migration requires the development of data import/export utilities so that NWSRFS developed time series can be evaluated within Delft-FEWS and visa-versa. This includes all point, areal, and gridded data.

- A convention to identify and differentiate data and time series developed using different systems and techniques are required.

  o A means to identify sensitive/proprietary data that must be excluded from external reports is required.

  o Data flows will support archiving and verification requirements.

  o The BOC for preprocessors (precipitation, temperature, potential evapotranspiration) will need to be defined and must include statements related to temporal distribution.

- CHPS requires sophisticated data visualization and quality control functions. How and where QC is performed is important as it impacts production.

  o CHPS data QC functions will be ported from existing tools and local applications selected by the CAT.

  o Data QC and visualization capabilities within Delft-FEWS will be explored and leveraged as appropriate.

  o Keep IHFS for pre-processors and existing QC processors but also allow for direct data feeds to FEWS and provision of QC'd data back to external (IHFS, Archive, other) databases.

  o The selection and/or development of any QC or visualization tools within CHPS will need to be closely coordinated with AWIPS II to avoid duplication of effort.

- Workflows will emulate the Forecast Group and Segment structure of the current NWSRFS implementations to simplify migration and training.

- The following NWSRFS operations will be migrated to Delft-FEWS where they can be used with existing calibrated parameter sets:

  o BASEFLOW   TATUM   (potential FEWS analogs   )
    SARROUTE   CHANLOSS   CLEAR-TS   LOOKUP3
    CONS_USE   STAGE-Q   CHANGE-T   LOOKUP
    LAG/K   ADD/SUB   DELTA-TS
    LAY-COEF   SSARRESV   SET-TS   ADJUST-Q
    TIDEREV   STAGEREV   MULT/DIV   ADJUST-H
    MUSKROUT   UNIT-HG   NOMSNG   ADJUST-T
    RES-J   RES-SNGL   MERGE-TS
    RSNWELEV   SAC-SMA   MEAN-Q
    SNOW-17   WEIGHT-TS

- o HL-DHM and HL-RDHM will not be ported to CHPS as a part of the BOC.

- o Other operations identified by non-CAT RFCs will be deferred to post-BOC.

- o Migration tools will be developed to assist RFCs in translating segment definitions into the form required by CHPS.

- o A forecaster interface is required to configure and operate models and workflows.

- RFCs will need to port hydraulic modeling requirements to HEC-RAS or another hydraulic model which has been adapted for Delft-FEWS and is readily available from the Delft-FEWS user community.

  - o This establishes a requirement for HEC-RAS capability within CHPS.

  - o Calibration of HEC-RAS will remain external to CHPS.

  - o Transition support will come from OHD/HL Hydraulics Group.

  - o Implementation note: There is a risk associated with recalibrating FLDWAV/DWOPER to HEC-RAS relative to the time required and ultimately the success. The fall-back position will be to adapt FLDWAV and potentially DWOPER to CHPS.

- The following Run-time modifications will be provided for in the BOC:

  - o

IGNORETS	TSCHNG	TSADD	ROCHNG	HECRAS
FMAP	CHGBLEND	SACCO	UHGCHNG	
SSARREG	WECHNG	AESCCHNG	SETQMEAN	
MFC	RAINSNOW	ROMULT	UHGDATE	
RRICHNG	RRIMULT	SETMSNG	QCSHIFT	
SWITCHTS	WEADD	UADJ	QPSHIFT	

  - o An interface is required for forecaster use.

- Post-processing features related to product generation will be accomplished through the porting of existing tools and local applications into the CHPS environment under the assumption that time series, mean areal, and gridded data (observed, simulated, and forecast) and other static and dynamic information can be extracted from Delft-FEWS for such purposes on demand.

  - o To the extent possible, standardization and the development of common tools will be pursued, but it is recognized that each RFC has specific product generation requirements that must be maintained through BOC.

- To the extent possible, post-processing tools will be integrated into Delft-FEWS to avoid redundant processes and steps.

- Transfer of operational time series from one RFC to another must be supported.

- Calibration of model parameters is not part of BOC and will be addressed, post-BOC. SAC-SMA and Snow-17 calibration will also remain external to CHPS.

- CHPS will not include the existing NWSRFS generation of FFG. FFG will be generated by processes external to CHPS as a stop-gap measure at CAT RFCs. FFG generation should be an integrated CHPS capability post-BOC.

- Ensemble capabilities will support existing operational products and services.

    - Re-tool ESPADP to access and utilize Delft-FEWS time series.

    - ESP products include those required by AHPS as well as trace ensemble files. Formats must be consistent with current customer/partner requirements.

    - ** Need further discussion re: ens_pre and ens_post. **

    - ** Additional insight needed re: ensemble capabilities of Delft-FEWS **

- The initial CHPS/FEWS release and built upon the baseline operational capabilities will make use of the existing RFC AWIPS hardware platform and performance environment. A requisite condition for the post-BOC environment will be a redesign of the hardware environment in order to deliver significantly improved performance and support for enhanced and distributed computational abilities.

- Training

    - CAT RFCs will need technical training on how to access Delft-FEWSdb to support current post-processing and product generation applications.

- Configuration tools

    - Additional tools will be needed to assist CAT RFC developers in the migration and configuration of their systems.

- Support and maintenance

    - ** Details of requirements needed here **

- (more…)