

## Minutes of Meeting

**Project:** Enhanced Nile DSS  
**Subject:** Requirements Elaboration  
**Date:** 14/10/2014  
**Place:** NBI Webex

**Project No.**  
**11813512**

**Participants:** LCE,MTS, MIB DHI  
 Mohamed Elshamy, Ephrem NBI  
 Getahun,  
**Distribution:** All + CSO  
**Minutes by:** Michael Butts /MIB

**Agenda:** 1 Climate change functionality

### Minutes:

### Action/deadline

#### 1 Climate Change functionality

The climate change enhancements can be grouped under 4 headlines

- Provide functionality to support climate change data (control, scenario and delta change factors) for precipitation, evapo-transpiration and temperature
- Provide functionality to generate downscaled climate change projections for precipitation, evapo-transpiration and temperature with 3 statistical algorithms
  - Delta change factors
  - Quantile-Quantile
  - Perturbed Quantile
- Extension of zonal statistics tool
- Metadata support to relate climate change data

#### Climate change enhancements.

The functionality requested is based on using time series data and raster data (netcdf files) to perform appropriate climate change calculations. The NB DSS already includes managers for time series data and the GIS manager for raster data. It is therefore proposed that the climate change enhancements in terms of data processing are implemented as tools in the NB DSS framework rather than developing a new manager.

No objections

DHI will formulate the climate change enhancements in this manner in the Requirements and Design Document

## **Support for climate change data – Requirements 2.1-2.5 & 2.7-2.9.**

### **Requirement 2.2 Enable CC data to be brought into the NBDSS as netcdf files.**

It is assumed that the user will manually download the netcdf files for the control and scenario data sets from the IPCC sites as needed. It is assumed that these netcdf files follow the CF (Climate and Forecast) format.

Mohamed pointed out that intention was not to restrict to the IPCC GCM's. DHI replied that the user can download and use the netcdf files from other sources provided these conform to the same format as IPCC.

Once the files are downloaded on disk then they can be brought into the DSS using an import facility. While it is reasonable to import change factors into the NB DSS, the volume of data prohibits the direct import of control and scenario data. For the latter we will add support in the DSS to access NetCDF data stored in the hard disk.

Mohamed also pointed out that it would be desirable have an automated download process even though this is not part of the requirements. DHI replied that this is not feasible to develop automated downloads as the data is stored in different ways/structures in different locations. Allowing the user to manually download the appropriate files is the most flexible approach. It is also worth noting that the volume of CC data is enormous. It should be carefully managed and it would be inappropriate to store these large data volumes within the Nile DSS. Also some of the potential data sources require a user login and the acceptance or understanding of the conditions of use including the provision of the data to third parties.

No objections

## **Generate downscaled projections – Requirements 2.11-2.15 & 2.17-2.19a.**

### **Requirement 2.11-2.14 Statistical downscaling**

DHI will implement three methods; the delta change method (which makes changes in the mean value) and the Perturbed Quantile (PQ) and Quantile-Quantile (QQ) which both include the higher order moments.

These methods are widely applied for rainfall and therefore can also be applied to ET. Neither DHI nor NBI are aware of applications of PQ and QQ methods for temperature and these may not be meaningful for temperature downscaling. DHI will investigate the literature and make a recommendation in the Requirements and Design document as to whether these

DHI to include in Requirements and Design Report

methods are appropriate for temperature and should therefore be implemented or not.

**Extension of zonal statistics tool - – Requirements 2.19b-2.23.**

Requirements were clearly understood.

**Metadata – Requirements 2.6,2.10,2.16,2.24,2.25**

The requirements are clear in terms of using metadata to be able to track history of, e.g., which raster data was used to produce time series using zonal statistics or the attributes of NetCDF files when data are imported. DHI thinks this would pose restrictions in terms of the usage of metadata as it would require the definition of a metadata schema.

DHI to include this alternative in the Requirements and Design Report

This way, DHI suggested that “Change Log” is used instead of metadata.

NBI approved of this approach as it is more general.

A handwritten signature in blue ink, appearing to read 'Michael R. ...', is written over a horizontal line.

Signature

*Attachments: Climate functionality ppt*

*Documents distributed at meeting: None*

