

## GROUP B – RAPPOTEUR REPORT FOR SESSION 5

The group deliberated on the following questions

1. What NWP and climate data streams (precipitation, temperature, surface and Groundwater flows) could potentially be used/tested in the HydroSOS project, and What criteria could be used for identifying their suitability?

The group noted that in order to provide a comprehensive list of NWP and climate data for the HydroSOS it is necessary to determine the type of hydrological model(s), basin characteristic, purpose and type products/forecasts that will be produced to meet user requirements. Nevertheless, it was proposed that the following data are required:- Soil moisture, precipitation, temperature, relative humidity and wind speed. It was also suggested that there is need to explore data assimilation of Earth Observational data in the Hydrological modeling and forecast initialization in cases where observed ground based data are not available.

The following criteria of determining their suitability was proposed:-

- Comparison with observed data
- Operational readiness and timeliness ie though some data is easily available the data should be in a format that can be readily used in the hydrological model
- Temporal and spatial resolution of the data depending on application

2. What types of hydrological forecasting methods could be used in the HydroSOS project?

In looking at the question of the choice of the forecasting method, the group is of the opinion that it is important to understand the purpose for which the method would be used and the availability of data the will be used for modeling. It was suggested that the hydrological process models (runoff and routing) combined with statistical methods to update predictions could be used

3. What temporal and spatial scales are of interest for testing in the HydroSOS?

It was pointed out that in determining the appropriate temporal and spatial scales of hydrological model, it is necessary to understand the purpose of the model runs. It is also important that the chosen model spatial resolution should large enough so as to capture the different hydrological processes of the region/basin and to meet the user needs for the areas of interest. It was also pointed out that the choice of the temporal and spatial scales might depend on the available data and user requirements.

4. What criteria and approaches could be used for identifying suitability of the candidate forecasting methods?

The group is of the opinion that in determining the criteria to be used in determining the suitability of the forecasting methods it is important to take into consideration the situation or conditions in which the model will be used.

The following criteria could be used to identify the suitability of the forecasting method:

- Evaluation of the performance the forecasting method based on the difference/consistency between forecasts and observations considering the needs and purpose of the forecast.
- Comparison of forecasts from different methods

- Replication of output, the forecasting method should reasonably replicate the conditions of the catchment area.
- Customization flexibility of the model for different applications/use
- Usefulness of the applications or information from the model
- User requirements
- Whether models include all the necessary processes occurring in the basin.

A wide range of forecasting methods exist, many of which have been developed for specific conditions and purposes. There is merit in developing an expert system that provides guidance on the 'best' approach for particular conditions and purposes.

5. How can the System take advantage of using multiple forecasts/simulations? Is this feasible?

Yes, it is feasible. To simplify forecast/simulation combination, common model output formats (egNETCDF) must be clearly defined. It was also suggested that a criteria for filtering models with lower forecast skill must be defined.