

## Session A – Planning of the South Asia Pilot Project

HydroSOS meeting - Session A, Thursday  
28<sup>th</sup> September 2017

### Question 1

What Status and outlook information currently exists?  
And is it being used in the pilot area?

a) Hindu Kush Himalayan HYCOS project

GEOSM model tried and works well. Has snow, reservoir, etc. facility. Also used in SE Asia

Uses satellite precipitation data

Operational outputs are flood status, snow melt forecast

(Amir will send info to Narendra)

b) Also in Hindu Kush PPCR project - for climate change adaption

Streamflow modelling carried out by Nepal

Takes account of hydrological aspects of rice paddy fields

QPF is automatically downloaded

- c) South Asia has FFGS in place, includes rainfall estimates for small basins and soil moisture.
- d) India NIH is involved in the potential proof-of-concept basin, the Godavari Basin, with the Australian Government.
- e) IITM – the India Institute of Tropical Meteorology - uses the NOAA model, LIS, to provide extended hydrological forecasts for all of India. They also would support the work in the potential proof-of-concept basin.

## Question 2

What status and outlook products are needed? Who would be the key users?

Streamflow status and outlook including for flood warning.

Drought indicators, including soil moisture

Seasonal and sub-seasonal outlooks

The ability to meet the hydrological challenge posed by rice paddy fields

Key users would include all agencies with responsibilities related to floods and drought, including agriculture.

### Question 3

What might be the look and feel of the HydroSOS products?

We did not get enough time to discuss this point. However, we did clarify the time scales and spatial scales of interest.

### Question 4

In selecting a geographical area for the pilot, what are essential factors?

The factors will include:

- A region or basin, where there is vulnerability to water stressors, and where significant benefits might result, and
- Probably, densely populated.
- Having transboundary rivers
- To gain some quick success, some existing monitoring and modelling capacity.
- Have adequate existing data to assess performance
- Able to enhance knowledge in problematical areas, e.g., snowmelt prediction.
- Ongoing data availability and country commitments to participation

The best fit in the region seemed to be the Brahmaputra and Ganges basins centred in Bangladesh.

Reasons:

- Transboundary, large population, large potential benefits, snow and ice issues, projects underway to build on,
- Significant flood, drought, snowmelt issues

Data availability and country participation raised a significant issue for this proposed pilot, and generated a lot of discussion.

It was established that:

Nepal would probably contribute to the HydroSOS pilot

Bangladesh also most likely to contribute/be involved. In particular, the Institute of Water Modelling

But a key issue is that India, which contains much of the upper catchment of the Ganges River and has significant reservoirs on it, is very reluctant to share any river flow data on that river. This raises practical and political issues.

Quite a long discussion evolved, key points were:

- Such a lack of data shouldn't prevent HydroSOS producing products
- Techniques exist for infilling or re-constructing data that isn't available
- The project does need to be sensitive in how this is done and shouldn't look to make an issue of it. Under WMO principles, it's a country's right not to participate.
- The project needs to build bridges, not upset governments
- Noted that many people live in transboundary river basins, so this situation will not be unique.

### Proposed solutions: (two considered)

1. Select both the Brahmaputra and Ganges Basins and exclude the upper Ganges catchment.
2. Add a proof of concept catchment in India to the above, as it will be important to gain India's participation in at least some of the project. The Godavari basin would be a strong candidate for this, as there is an existing project underway, with Australian contributions.

## Question 5:

How will institutional arrangements influence design?

- No particular issue with separate met and hydrology services.
- Noted that outputs and technical initiatives need a common basis between all the agencies.
- Principles that underpin the modelling are shared and discussed so that they can be reviewed.

## Session B – Planning of the South Asia Pilot Project

Summary of issues discussed and/or raised, that collectively address questions posed for Session B.

1. Who will lead the pilot project?
2. WMO needs to write a letter to PR and involve the Hydrologic Advisor, and ask them to appoint a lead person to assist with HydroSOS.
3. Data – what are we targeting? Days? Weeks? Months and Seasons?
4. Collection of retrospective and forecast datasets and converting such data into appropriate formats for hydrological modelling.

5. Guarantee of seamless flow of data, and the need to support offline development of models.
6. Resourcing and specific time allocations from participating agencies and/or individuals.
7. Modelling activities – Indian expertise in weather and climate products is available, and combined expertise of India, Nepal and Bangladesh in hydrologic modelling is also available for this pilot.
8. Dissemination of products.
9. Performance evaluation of various modelling configurations using common principles of verification.
10. Expertise available from Italy, Australia and UK in advisory roles for methods developments and implementations. Hands-on work of these experts will require resourcing.
11. Capacity building and training need to be considered central to the pilot.
12. Water Resource Managers should be able to see benefits from HydroSOS for water supplies and reservoir management as per operating protocols.
13. Products could be developed in such a way that farmers having small land holding be assisted with developments planned under HydroSOS.

14. The information produced by HydrSOS also needs to assist with planning new infrastructure investments and rejuvenation of water bodies and significant wetlands.
15. Complete information on water availability including groundwater at the river basin level.
16. Use of the common modelling principles in the pilot project, whilst trying to use existing models of NHMSs.
17. The products from HydoSOS pilot should aim to complement the existing products available for water resource information and management.
18. Need to clearly specify the scope of the pilot to be delivered over 3 years.
19. Use of the output of pilot project by different countries and getting benefits (value added to existing products)
20. Water availability outlooks for improved management under drought conditions.