Activity 2.a - Provide an initial status report of past and on-going activities and how well they met or are meeting the objective of the FFI. It should be done considering the findings of the review of the SAP, under item 1 above. This will include assessing the performance of the FFI and its component programs and activities, such as the APFM (flood forecasting aspect), GFFGS, CIFDP; ascertaining conformance with the FFI objective and the identification of missing elements.

GFFGS

GFFGS is one of the core components of FFI - it has been successfully implemented in different regions and under implementation and planning in more regions. Detailed information of the project status could be found in the developer's website (http://www.hrc-lab.org/projects/index.php) and WMO Commission for Hydrology FFI related web page (http://www.wmo.int/pages/prog/hwrp/FFI-index.php). GFFGS is one of the main components of the FFI, oriented on flood forecasting in very short time perspective (up to 6 hours), and thus covers flood forecasting and warnings of flash floods. Following upgrades of the GFFGS can improve GFFGS in terms of its agreement with the FFI SAP requirements:

- create "hydrological requirements" in weather forecast products, to further account for them in SWFDP subprojects implementation strategy;
- participation of CHy AWG members in SWFDP board;
- possibility to assimilate outputs from several NWP models to perform ensemble flash floods forecasting;
- upgrading graphical presentation of forecast - allow background data presentation in the GFFGS user interface (include major cities, gauges location, river network and other layers);
- make steps to upgrading GFFGS to operational distributed flood forecasting system with river routing component, which will allow to increase flood forecast lead time (up to several days or more – depending on river basin size) and make possible flood forecasting for big streams (main river of a basin).

CIFDP

CIFDP is a joint demonstration project of JCOMM and CHy, which aims to cover topics that are related to decreasing flood related risks in coastal areas from storm surges, tides, waves and river flows. CIFDP structure has three ongoing subprojects: Caribbean (CIFDP-C), Bangladesh (CIFDP-B), and Indonesia (CIFDP-I). These subprojects slightly differ from one another in terms of technical components (different modelling approaches, different degrees of river modelling, different processes covered/described), but together they meet the goal of the CIFDP. Detailed descriptions of the projects can be found on the JCOMM website (http://www.jcomm.info/).

Proposed action on CIFDP that could impact the results of the subprojects is given below and basically is directed to the need to provide more adequate inclusion of hydrology within the modelling system and its design, and the resulting need for more hydrological support to be provided to the CIFDP to accomplish this, in particular:

- prepare guidance material on how to unite two systems - sea modelling and river modelling - get examples, assess functional needs – what functionality is really needed; pragmatic approaches to do so given different data availability conditions (may serve as a basis for further WMO guidance - in the moment there is no WMO documents on that problem);
- hydrological component should be explicitly described in project proposal (for future projects), or for next phases of existing projects, and explicitly include needs of NHSs for flood forecasting;
- create template for NHS to assess its capacity in terms of hydrologic observation, modeling and forecasting in coastal areas (in domain of ocean model implementation);

- prepare cases for NHSs to increase their awareness and possible involvement in the CIFDP subprokects;
- identify system developers/donors for hydrological component of the CIFDP development and implementation;

As different subprojects have slightly different approaches, a brief description and recommendations for each ongoing CIFDP subproject is presented below.

CIFDP-C

The project is in its first development stage. The developer of the system is NOAA National Hurricane Center together with NOAA NCEP experts (surge, tide and waves). Donor of the sup-project is USAID. River hydrology is not incorporated in the moment in the modeling system, but the system is designed to provide sea level data in biggest rivers control points not far from the shore (control points will be indicated by NHS (INDRHI) - till April 2016).
Proposed actions include:

- achieve information from INDRHI about: rivers with hydraulic models implemented, model details, capacity information, interest in this actions by creating questionnaire template (may be used in the future for further sub-projects); send the template to system developers (J. Rhome) for the consideration and collaboration with Dominican Republic NMS and NHS - ONAMET and INDRHI, respectively;
- based on received information, upgrade/revise modelling domain - possibly for accounting for river hydraulic model endpoints (so that modelling domain touches river modelling end points - control points);
- as the FFGS system is implemented and operational and based on INDRHI riverine modeling requirements, which will need to be established, it is important that INDRHI receive sea level forecasts from ONAMET so it can reflect these in its modeling efforts to estimate possible effects on coastal watersheds and rivers impacted by tidal surge;

CIFDP-F

The project right now under further planning (phase 1 was implemented) and waiting for possible donors (may be considered in February 2016, expected donor is KOICA – Korean International Cooperation Agency). The domain is divided into two parts - south Fiji and north Fiji. The south part of Fiji has a need for only wave modelling, while north Fiji needs both surge and river modelling. For the planning of the river modelling component, it is necessary that the project developers become acquainted with hydrological conditions and hydrological user requirements in the region. The system developers are the Secretariat for the Pacific Community and BoM.

CIFDP-B

Bangladesh is definitely the area where river-ocean interaction plays an important role in overall coastal flooding conditions. Right now it is in its 2nd phase - the modelling system is in its pre-operational state, which focuses on multi-agency simulation exercise and technical capacity building events. The model developer is Mr F. Fakhruddin and his team. The modelling framework consists of a storm surge model and a land surface model that are joined in FEWS system for producing overall output. The river modelling component is developed for Ganges and Brahmaputra rivers - however it has not been requested by NHS of Bangladesh nor includes its involvement as there is strong miscommunication between NMS and NHS in the country. Proposals on the project development include:

- get more information about existing modeling system details (from F. Fakhruddin) for further investigation and possible guidance material;

- get historical river flow data from Bangladesh NHS, perform hindcast of an extreme event to demonstrate the added value if used within a single system;
- show added value if NMS and NHS cooperate in coastal flood forecasting to possibly bring NHS of Bangladesh into the project.

CIFDP-I

The most developed domain in terms of any component of the system (river hydrology, ocean components). The system has been developing for the last 30 years - begun in 1980-s by Dutch hydrologists (Delft team). Model developer - Deltares. Proposal on the project development:

- gather information on used models and data;
- possible background for guidance material;
- make sure parts of the system are integrated into single modelling system.

SWFDP

SWFDP is one of the most important components of the FFI as it provides forcing to other FFI projects and subprojects like GFFGS. In order for future, as well as existing, SWFDP projects to be designed in accordance with GFFGS and flood forecasting needs, SWFDP should develop "hydrological requirements" for its projects:

- develop list of requirements for the hydrological needs of the SWFDP to be taken into consideration by developers (e.g., high resolution QPF in mountainous areas, basic forecasted weather elements that are necessary to provide, ensemble QPF, etc);
- participation of CHy AWG member in SWFDP board;