1. INTRODUCTION

The 2017-2018 hydrological year, which started in June 2017, was marked by exceptional events in certain parts of the basin, notably on the main course and the Bénoué tributary. Indeed, local floods in September 2017 were, sometimes, marked, by rapid increase in the water level. It is the case of the Niamey station which, over the period, was heavily influenced by tributaries of the right bank from Burkina Faso and which reached the yellow and orange alert levels. On the Bénoué course, water levels increased enough over the period and even caused flooding.

The analysis below essentially focuses on the evolution of the Guinean floods in 2017. The analysis of that event is based on raw hydro-meteorological data derived from both field observations to the end of October 2017 and flow trend forecasts from the period running from October 2017 to end of March 2018.

The Guinean floods are the result of inputs from the upper Niger basin from Guinea through Mali and towards downstream in Niger, Benin and Nigeria. While going through Mali, Niger River mainly receives inputs from Sankarani and Bani, themselves fed by the most important sub-tributaries which are the Baoulé and the Bagoé taking their source in Côte d'Ivoire. This volume of water coming from Upper Niger stays for a few months in the Inner Niger Delta (IND) in Mali and continues its way to the Middle Niger via the hydrometric stations of Niamey (Niger) and of Malanville (Benin), and then to the lower Niger and the Maritime Delta in Nigeria before flowing into the Atlantic Ocean.

In the last years, the occurrence of extreme events has become recurrent and this is shown by an alternation of severe low flows and exceptional floods, which causes significant damages. If, in general, the 2010/2011, 2012/2013 and 2013/2014 hydrological years experienced exceptional floods all over the basin, there were deficits in the years 2011/2012 and 2014/2015.
2. COMPARED TREND FORECASTS AND HYDROGRAPHS

Based on the last data received from hydrometric stations, particularly those of Koulikoro, Diré, Ansongo (in Mali) and that of Niamey (in Niger), there were trend forecasts for the period running from October 2017 to March 2018 for those stations.

2.1. Upstream Inner Delta: Koulikoro station

Upstream the Inner Niger Delta (IND), at the Koulikoro station, the maximum of the Guinean floods was observed on 12th September 2017, with a 2,537 m³/s flow as against 3,719 m³/s in 2016, that is a decrease in the maximum by about 30%. This peak in flow will be delayed in the IND and will then spread downstream. The hydrograph for the 2017/2018 hydrological year shows a year of significant deficit and below the five-year dry return period. The same deficit situation is observed on the Baoulé and Bagoé tributaries feeding the Sankarani and Bani tributaries.

2.2. Downstream Inner Delta: Diré station

At the exit of the inner Delta, after it has stayed in the IND, the rise in the floods continues until it reaches the maximum at the Diré station. This maximum remains well below that of the 2016/2017 hydrological year. In general, the hydrograph remains average in the low flow.
The trend forecasts indicate that the expected maximum rating will be lower than that of last year and it will be observed in the first half of November 2017. This maximum level ranges from **460cm** to **500cm**, which corresponds to **1,735 m³** and **2,088 m³** flows. For this 2017/2018 hydrological year, the recession in Diré was early because it started in the first decade of November 2017.
2.3. Middle Niger: Niamey station

Each year, the Niamey observation station records two different types of floods: the so-called local floods and the Guinea floods. The local floods are generally observed from July to September and the Guinea floods from October to March. The local floods are much more influenced by inputs from right bank tributaries (Dargol, Gorouol and Sirba) of Niger River, while the Guinea floods represent inputs from the upper basin, from Guinea and Côte d’Ivoire, through Mali via the Inner Niger Delta (IND) to spread downstream through the Diré, Ansongo, Kandadji, Niamey, Malanville and Jidere Bode stations before running into the Kainji and Jebba dams in Nigeria.

Niger River’s 2017 local floods in Niamey effectively started in June. As from then, we have a progressive increase of the water level at the Niamey station. As from mid-August, the level had increased and reached its peak on 8th September 2017. That increase resulted in yellow and orange alerts.

The Guinea floods, which started in October, still continue. Trend forecasts indicate that the maximum rating is expected at the Niamey station from 20th December 2017 to 20th January 2018. This maximum could be lower than the 530 cm existing yellow alert rating.
2.4. Lower Niger: Lokoja station

The Guinea floods, coming from upper, Niger pass through the Diré and Ansongo (Mali), the Kandadji and Niamey (Niger) and the Malanville (Benin) hydrometric stations. In Lokoja (Nigeria), Niger River receives inputs from its largest tributary, the Benoué.

The maximum flood in Lokoja was reached on 5th October 2017, with a 21,020 m³/s.
3. SITUATION OF DAMS

3.1. Sélingué dam

The Sélingué dam reached its normal intake level in the period running from 19th October to 7th November 2017. However, at the end of November 2017, we noticed a 40 cm drop in the water level compared to 2016 in the same period.

3.2. Kainji dam

The Kainji Dam in Nigeria started to be filled in mid-June 2017, earlier than last year. This year 2017/2018, the maximum filling level reached the normal retention level (maximum retention capacity) on 11th October 2017, whereas last year 2016/2017, the maximum was below the normal retention level.
CONCLUSION

The so-called Guinea floods take their source from Upper Niger, stay for about 2 months in the Inner Niger Delta and continue to spread in the Middle Niger through the Diré and Ansongo stations (Mali), the Kandadji and Niamey stations (Niger), the Malanville station (Benin) and the Jidere Bode station (Nigeria) to finish their race in the Kainji dam in Nigeria.

The maximum level was recorded at the Diré station on 13\textsuperscript{th} November 2017, with a rating of 460 cm corresponding to a 1,728 m\textsuperscript{3}/s flow.

The maximum of the Guinea floods is expected at the Niamey station in the first decade of January 2018 at the latest and it will be observed at Jidere Bodé in the 2\textsuperscript{nd} decade of January 2018. Trend forecasts at the Niamey station indicate that the maximum rating will be lower than the 530 cm existing yellow alert rating.

At the Lokoja station in Nigeria, the maximum flood was reached on 5\textsuperscript{th} October 2017, with a rating of 980 cm and the drop in the water level is ongoing.

Both the Sélingué dam (Mali) and the Kainji dam (Nigeria) have reached their normal retention level (maximum dam volume). However, there is a faster emptying of the Sélingué dam compared to last year in the same period.

The 2017/2018 hydrological year is marked by low rainfall in upper Niger, which results in low flows, particularly in Koulikoro. Considering that low rainfall situation in upper Niger, Sélingué dam managers are advised to more rigorously manage the water to better ensure meeting needs downstream.