

Imminent Flash Flood Threat (IFFT)

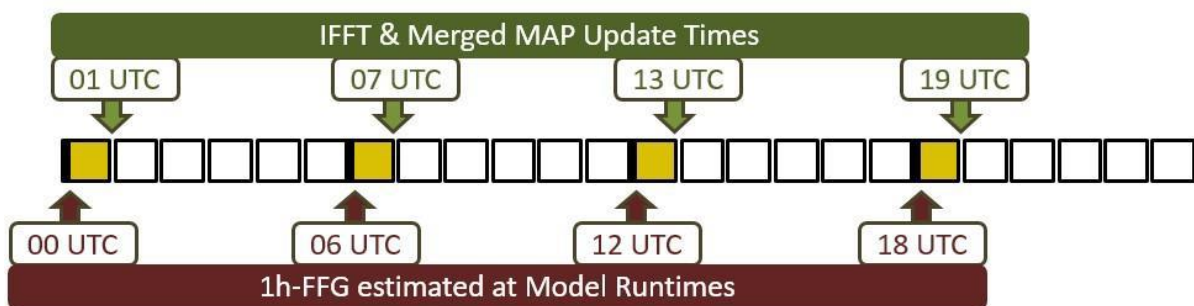
Imminent Flash Flood Threat (IFFT) is one of the three flash flood threat products. The values indicate the difference of the Merged MAP of a given duration and the corresponding past model processing hour FFG of the same duration for a given sub-basin. That is, the IFFT value is considered a current “observation”. IFFT indicates that a flash flood is happening now or is imminent. IFFT provides the forecaster with an idea of likely regions of imminent flash flood threats. Each IFFT product is updated every six hours. Outputs are provided graphically for each of the FFG system basins and as text. It should be noted that this product concerns the past rainfall and should be evaluated before using for warnings. IFFT is offered as a baseline product that must be carefully evaluated by the forecaster in real-time.

Values of IFFT (1-, 3-, and 6-hour) are not displayed in the graphical products or provided in the data text files for basins with areas of 40% or greater snow cover or basins with an accumulated drainage area greater than 2,000 km².

Basins meeting either of these criteria are shown in grey colored shading in the FFGS products and as -999.00 in the text files.

1.1. 1-Hour Imminent Flash Flood Threat (1hr-IFFT)

IFFT 01-hr: Difference of 01-hr FFG from a previous model processing hour and 01-hr MAP observed over the following 1 hour (mm/1hr). The 1-hour IFFT is valid at (01, 07, 13, and 19 UTC) as shown in Figure below.



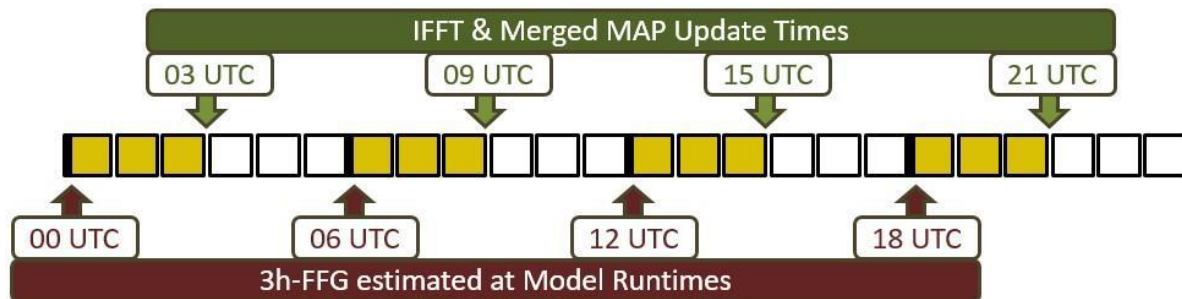
1-hr IFFT estimation scheme

$$1h\ IFFT_t = 1h\ merged\ MAP_t - 1h\ FFG_{t-1h}, \text{ where } t = 01, 07, 13 \text{ and } 19\ UTC$$

The 01-hr IFFT at 01:00 UTC = the difference between the 01-hr Merged MAP from 01:00 UTC and the 01-hr FFG from 00:00 UTC (valid for 01 UTC). The 01-hr IFFT at 07:00 UTC = the difference between the 01-hr Merged MAP from 07:00 UTC and the 01-hr FFG from 06:00 UTC (valid for 07 UTC). The 01-hr IFFT at 13:00 UTC = the difference between the 01-hr Merged MAP from 13:00 UTC and the 01-hr FFG from 12:00 UTC (valid for 13 UTC). The 01-hr IFFT at 19:00 UTC = the difference between the 01-hr Merged MAP from 19:00 UTC and the 01-hr FFG from 18:00 UTC (valid for 19 UTC).

1.2. 3-Hour Imminent Flash Flood Threat (3hr-IFFT)

IFFT 03-hr: Difference of 03-hr FFG from a previous model processing hour and 03-hr MAP observed over the following 3 hours (mm/3hr). The 3-hour IFFT is valid at (03, 09, 15, and 21 UTC) as shown in Figure below.

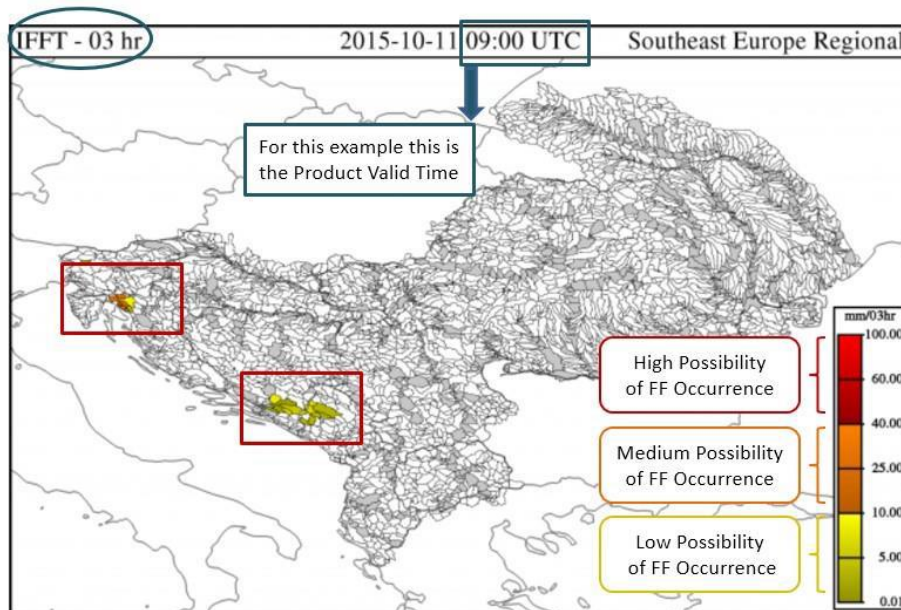


3-hr IFFT estimation scheme

$$3h\ IFFT_t = 3h\ merged\ MAP_t - 3h\ FFG_{t-3h}, \text{ where } t = 03, 09, 15 \text{ and } 21\ UTC$$

The 03-hr IFFT at 03:00 UTC = the difference between the 03-hr Merged MAP from 03:00 UTC and the 03-hr FFG from 00:00 UTC (valid for 03 UTC). The 03-hr IFFT at 09:00 UTC = the difference between the 03-hr Merged MAP from 09:00 UTC and the 03-hr FFG from 06:00 UTC (valid for 09 UTC). The 03-hr IFFT at 15:00 UTC = the difference between the 03-hr Merged MAP from 15:00 UTC and the 03-hr FFG from 12:00 UTC (valid for 15 UTC). The 03-hr IFFT at 21:00 UTC = the difference between the 03-hr Merged MAP from 21:00 UTC and the 03-hr FFG from 18:00 UTC (valid for 21 UTC).

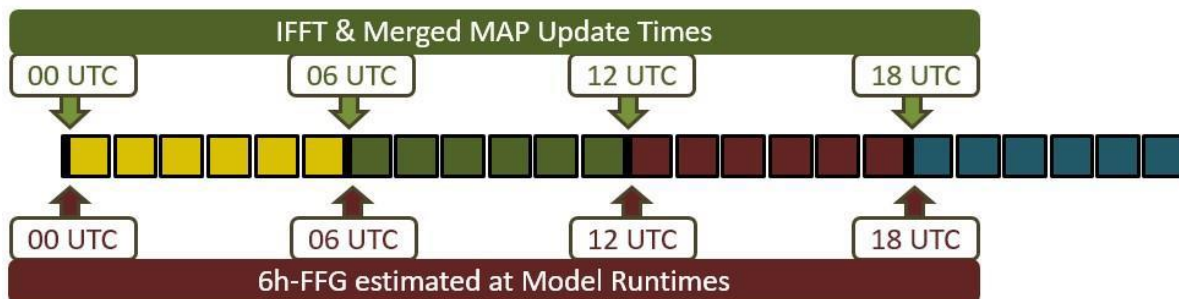
In our example, the 03-Hour IFFT at 09 UTC, 11 October 2015 is shown on figure below. IFFT values are displayed for sub-basins located on the north coastal region of Croatia and southern region of Bosnia and Herzegovina. The IFFT values are 0-10 mm/3h in yellow, 10-40 mm/3h in orange and 40-100mm/3h in red. Catchments of orange or red color have highest probability that flash flood has already occurred or is going to occur very soon. **FFT products are not intended to be the forecast; rather, these are indicators of regions of potential concern that the forecaster should review.**



03-hr IFFT at 09 UTC, 11 October 2015

1.3. 6-Hour Imminent Flash Flood Threat (6 hr-IFFT)

IFFT 06-hr: Difference of 06-hr FFG from a previous model processing hour and 06-hr MAP observed over the following 6 hours (mm/6hr). The 6-hour IFFT is valid at (00, 06, 12, and 18 UTC) as shown on figure below.



6-hr IFFT estimation scheme

$$6h\ IFFT_t = 6h\ merged\ MAP_t - 6h\ FFG_{t-6h}, \text{ where } t = 00, 06, 12 \text{ and } 18\ UTC$$

The 06-hr IFFT at 00:00 UTC = the difference between the 06-hr Merged MAP from 00:00 UTC and the previous 06-hr FFG from 18:00 UTC (valid for 00 UTC). The 06-hr IFFT at 06:00 UTC = the difference between the 06-hr Merged MAP from 06:00 UTC and the previous 06-hr FFG from 00:00 UTC (valid for 06 UTC). The 06-hr IFFT at 12:00 UTC = the difference between the 06-hr Merged MAP from 12:00 UTC and the previous 06-hr FFG from 06:00 UTC (valid for 12 UTC). The 06-hr IFFT at 18:00 UTC = the difference between the 06-hr Merged MAP from 18:00 UTC and the previous 06-hr FFG from 12:00 UTC (valid for 18 UTC).

This document was prepared by WMO-FFGS team using South East Europe Flash Flood Guidance System Forecaster Guide¹ and FFGS Operational Output Product Descriptions available in the FFGS Real-Time Product Console developed by Hydrologic Research Center.

¹ https://www.wmo.int/pages/prog/hwrf/flood/ffgs/documents/SEFFGS_Forecaster_Guide-Final_ES_TM-AS-PM.pdf