REPUBLIC OF SLOVENIA
MINISTRY OF THE ENVIRONMENT AND SPATIAL PLANNING
SLOVENIAN ENVIRONMENT AGENCY

SEE FGG System
FLASH FLOOD CASE STUDIES

HYDROLOGICAL FORECASTING DEPARTMENT
SLOVENIAN ENVIRONMENT AGENCY
(ARSO)

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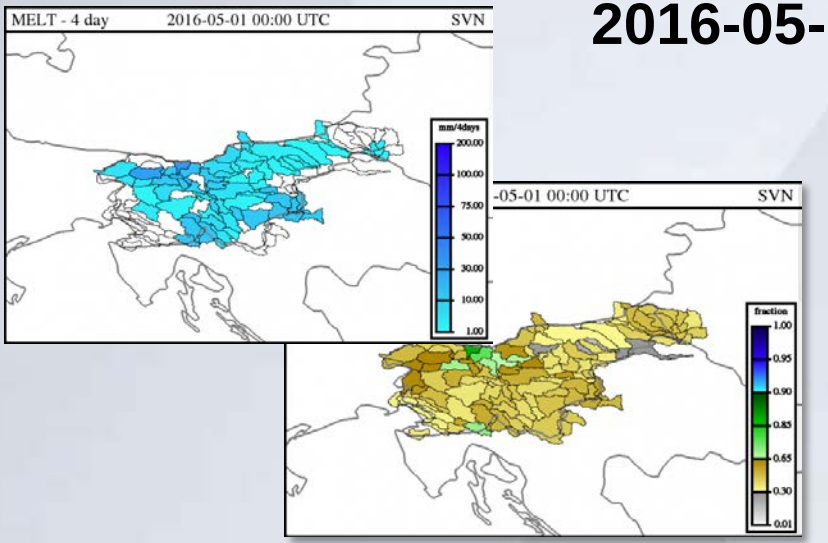
Zagreb, 9. - 13. May 2016

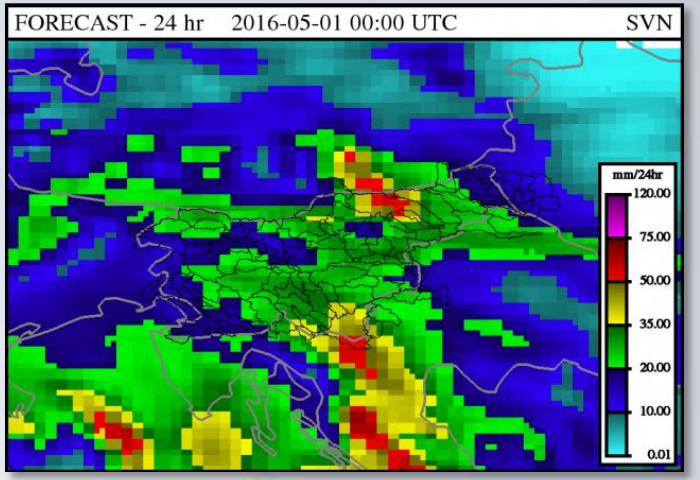
Case study
Flash flood in NE Slovenia
1st and 2nd May 2016

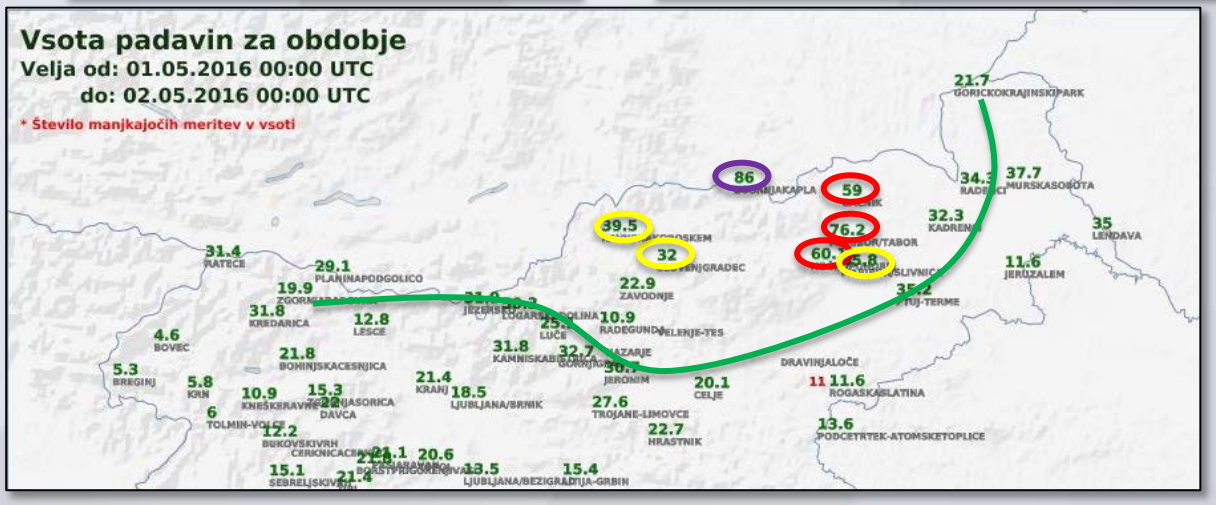
- Heavy local precipitation in the mountainous NE part of Slovenia and Southern Austria
- Soil moisture affected by snowmelt in the previous days
- Bankfull conditions exceeded at the outlet of 5 catchments (SEEFFG delineation) and several flooding locations on smaller torrential streams within the catchments.

Initial conditions and 24 hour forecast

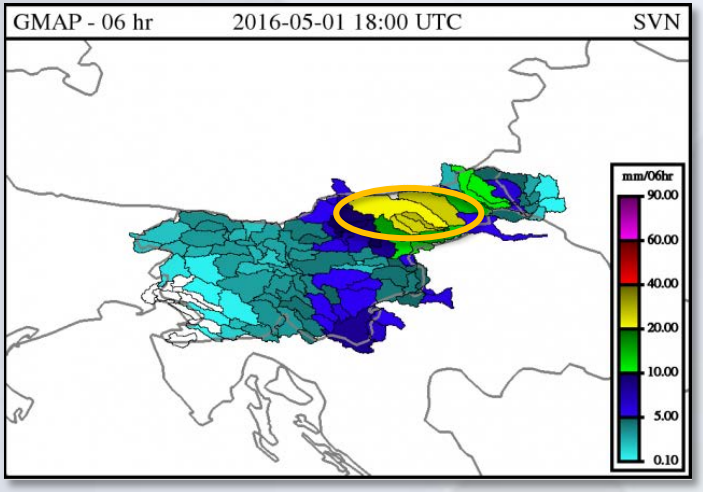
2016-05-01 00:00

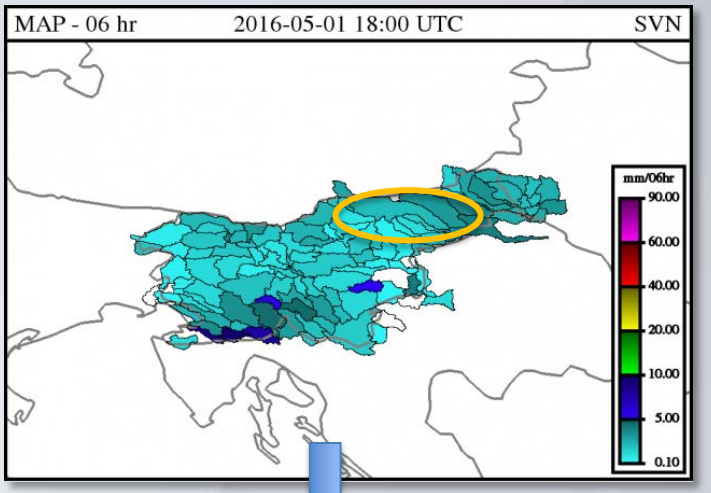


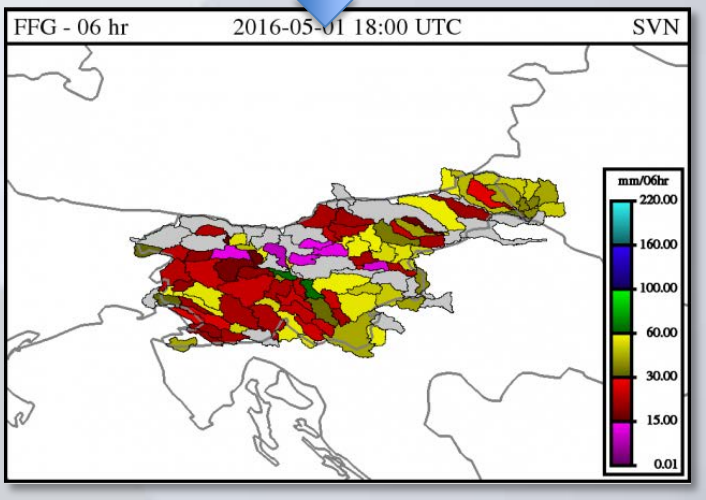




Start of the event – 2016-05-01 18:00





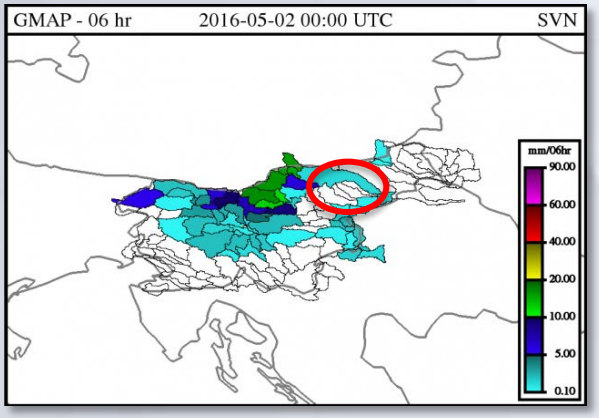


- Underestimation of the satellite rainfall resulting in low MAP values
- Expected lower FFG values in NE Slovenia according to GMAP

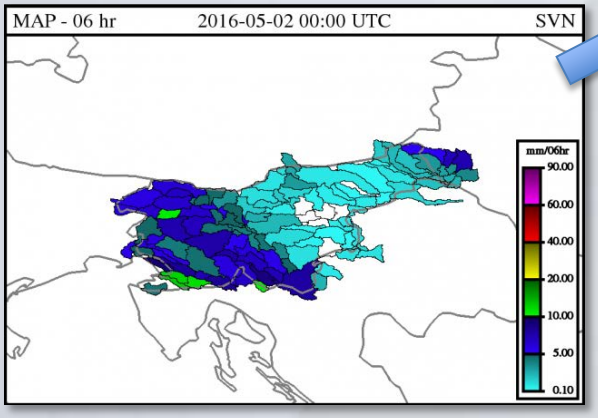
- Low FFG in Alpine and Pre-Alpine Slovenia – moderate rainfall input
- Evaluation of Cross Sec./Threshold Discharge

Development of the event – 12 hour totals up to 75 mm

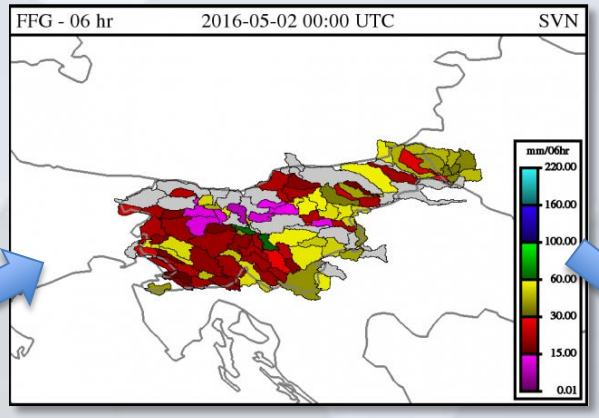
2016-05-02 00:00



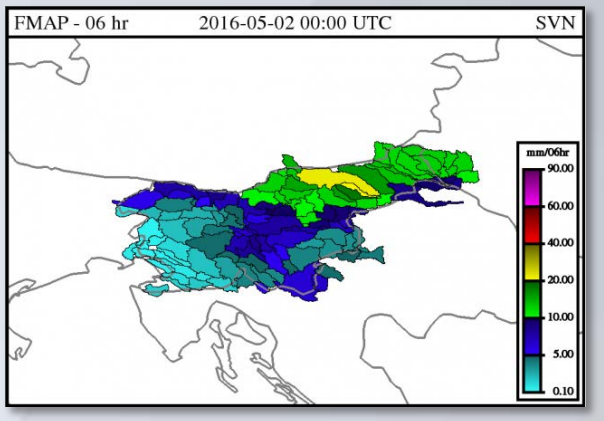
Missing reporting data



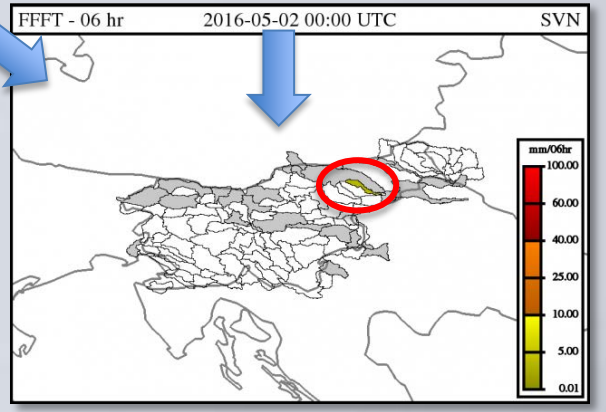
Satellite data uncertanty



- Underestimated rainfall both from gauge and satellite data
- FFG values too high

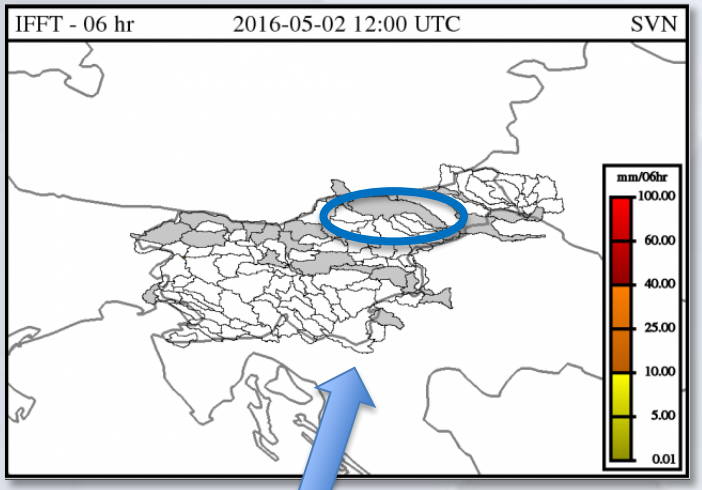


Persistent forecast – 20-40mm/6h

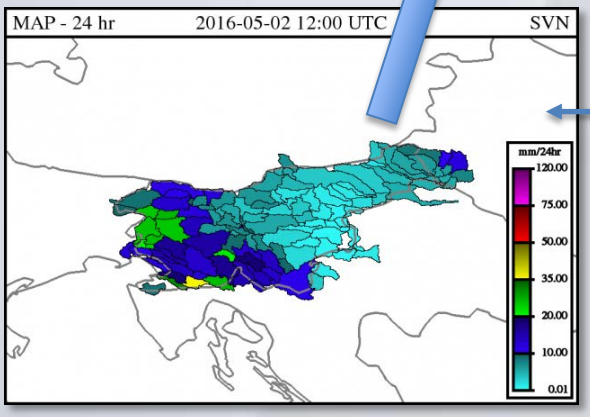


FFFT triggered in <u>one catchment</u> regardless of high FFG values

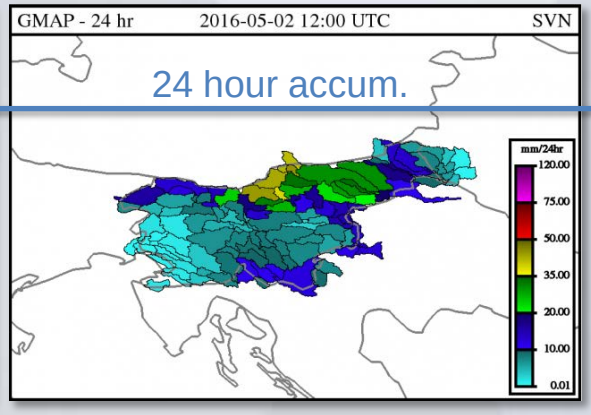
Peak of the event – **2016-05-02 12:00**



- Rivers in the highlited area reaching or exceeding the bankfull at the outlet of the catchments
- Low recorded MAP throught the event (several reasons) resulting in underestimated accumulated precipitation and threat products



Merged MAP



24 hour accum.

Gauged MAP

Automatic gauges

Case study
Floods and Flash floods in Slovenia
11th to 18th October 2015

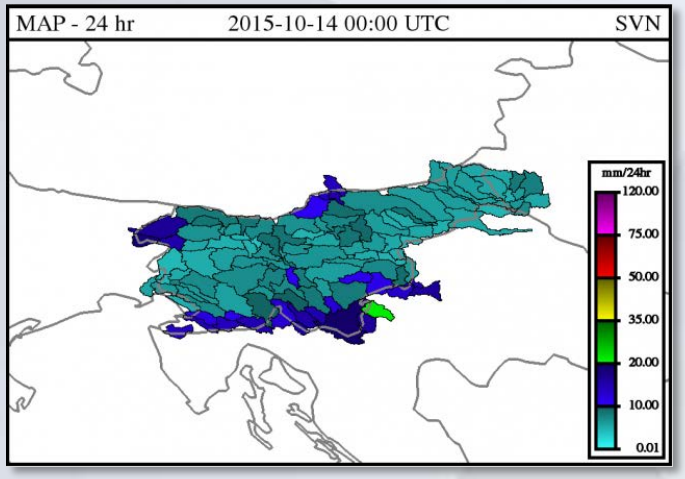
- Continuous rainfall in the Central and Southern part of Slovenia from the beginning of the month

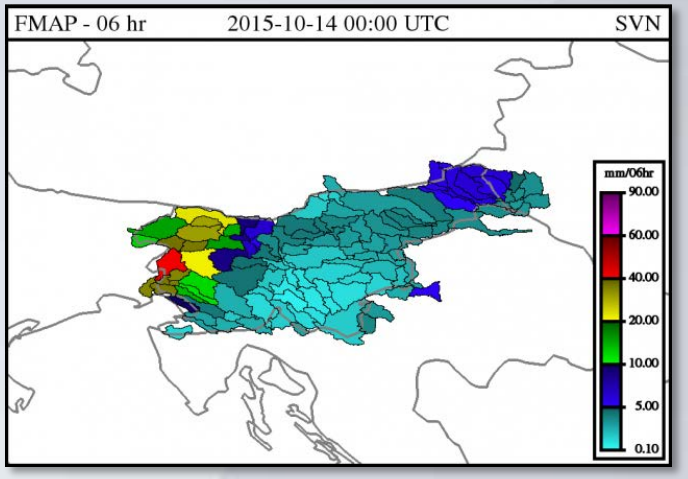
- Low pressure system over the Adriatic sea causing intensive precipitation from the direction
- of the Trieste and Kvarner Bay

- Bankfull conditions exceeded at several catchments both from heavy intensity rainfall as well as accumulated stream water and karstic groundwater storage

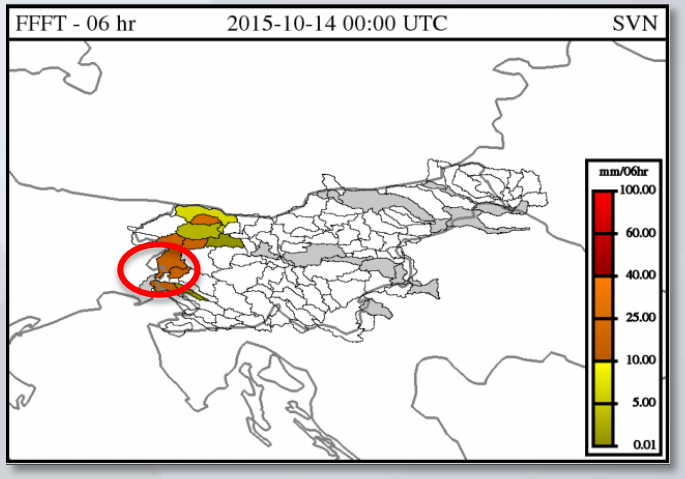
Flash flood in W Slovenia

2015-10-14 00:00



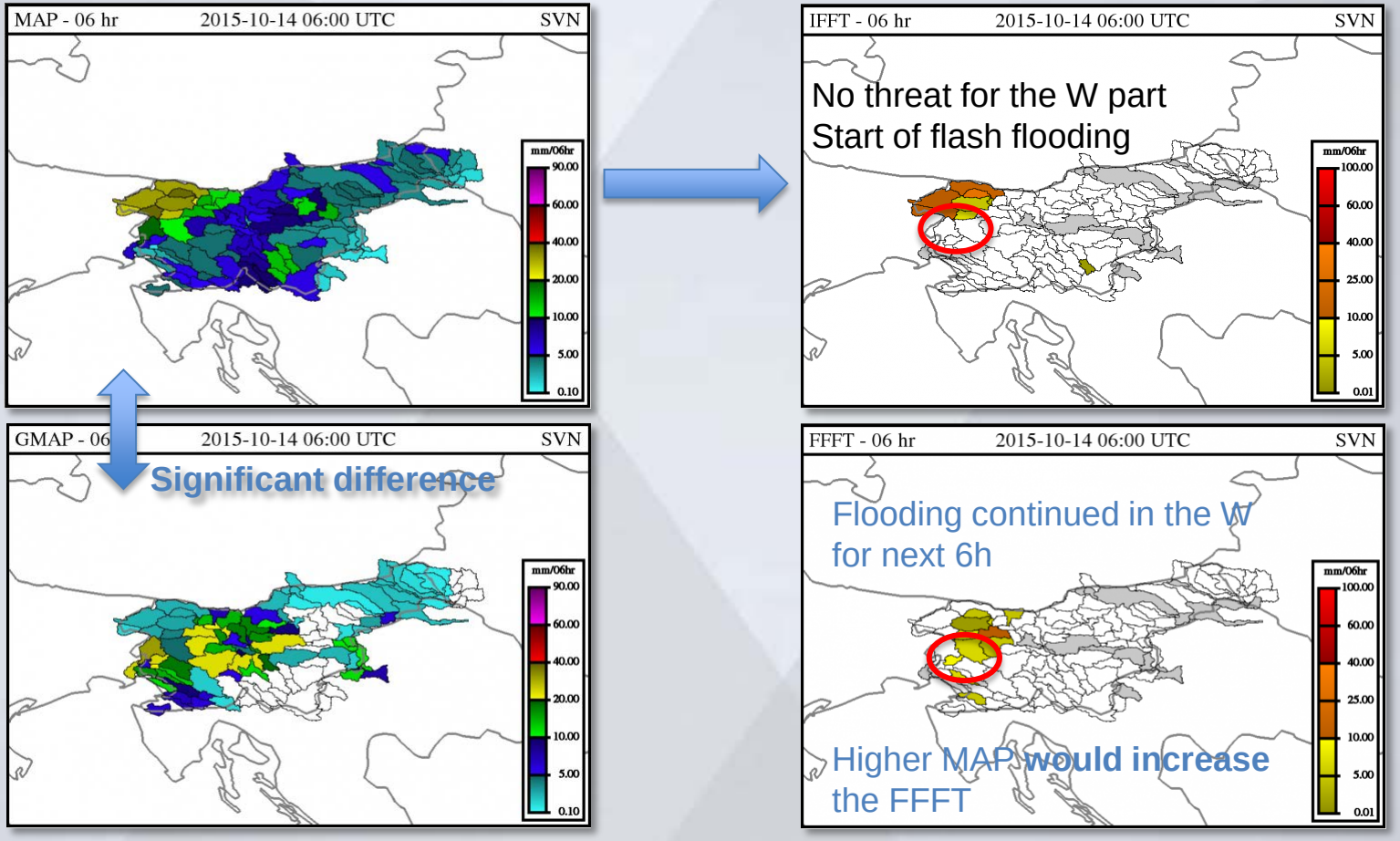


- Satellite rainfall in good comparison to the gauged data in this event
- Saturated soil from rainfall even before the previous 24 hours
- Focus on flood exposed areas in W Slovenia (red marker) for which the warning was issued



Flash flood in W Slovenia

2015-10-14 06:00



Floods in Central and Southern Slovenia

2015-10-15 00:00