ENERGY RELEASE PROCESSES DURING THE PARTIALLY OCCLUDED FLARE ON 29TH MAY 2020, ACCORDING TO MICROWAVE OBSERVATIONS

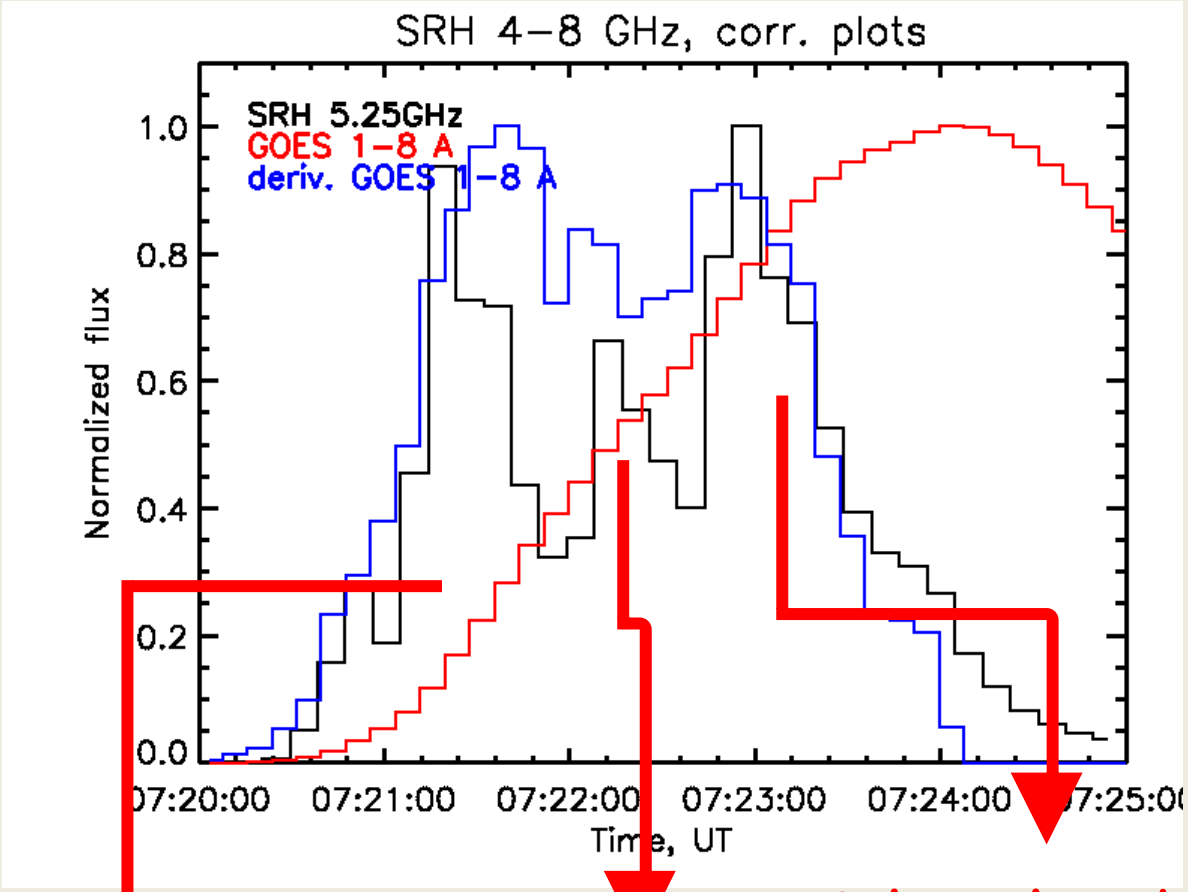
Larisa Kashapova & Dmitrii Zhdanov
Institute of Solar-Terrestrial Physics SB RAS,
Irkutsk, Russia

Data and instruments

- Siberian Radioheliograph -48 (SRH-48, Lesovoi et al 2014)
- Badary Broadband Microwave Spectropolarimeter (BBMS, Zhdanov & Zandanov , 2015)
- Radio Solar Telescope Network (RSTN, Kennewell and Cornelius, 1983)
- Nobeyama Radiopolarimeters (NORP, Nakajima et al., 1985)
- ONDREJOV spectrograph 0.8-2.0 GHz (RT5)
- GOES – 1-8 A flux
- STIX - 4-15 keV light curves (Earth-Sun-SOLO angle: 29.3 deg)

SOL2020-May-20T07:13

- M1.1 GOES class
- N32E89
- Onset 7:13 UT
- Maximum 07:24 UT
- End 07:28 UT



The first burst

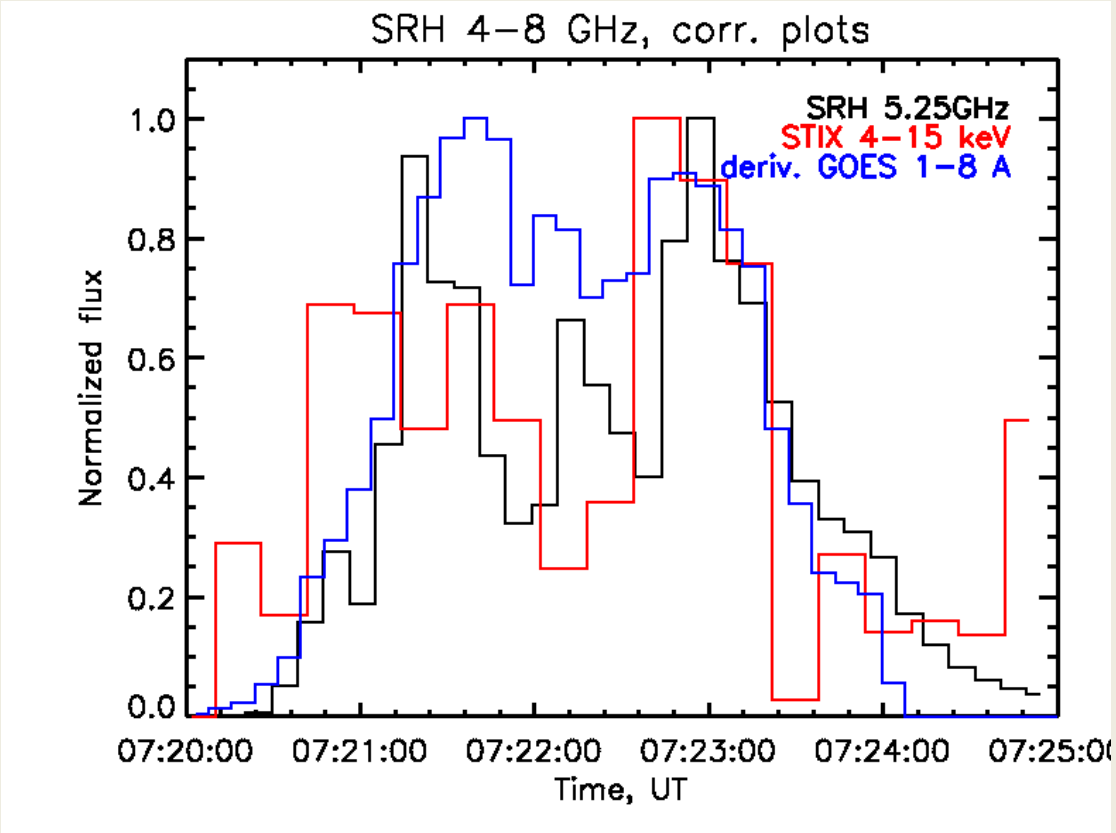
The second burst

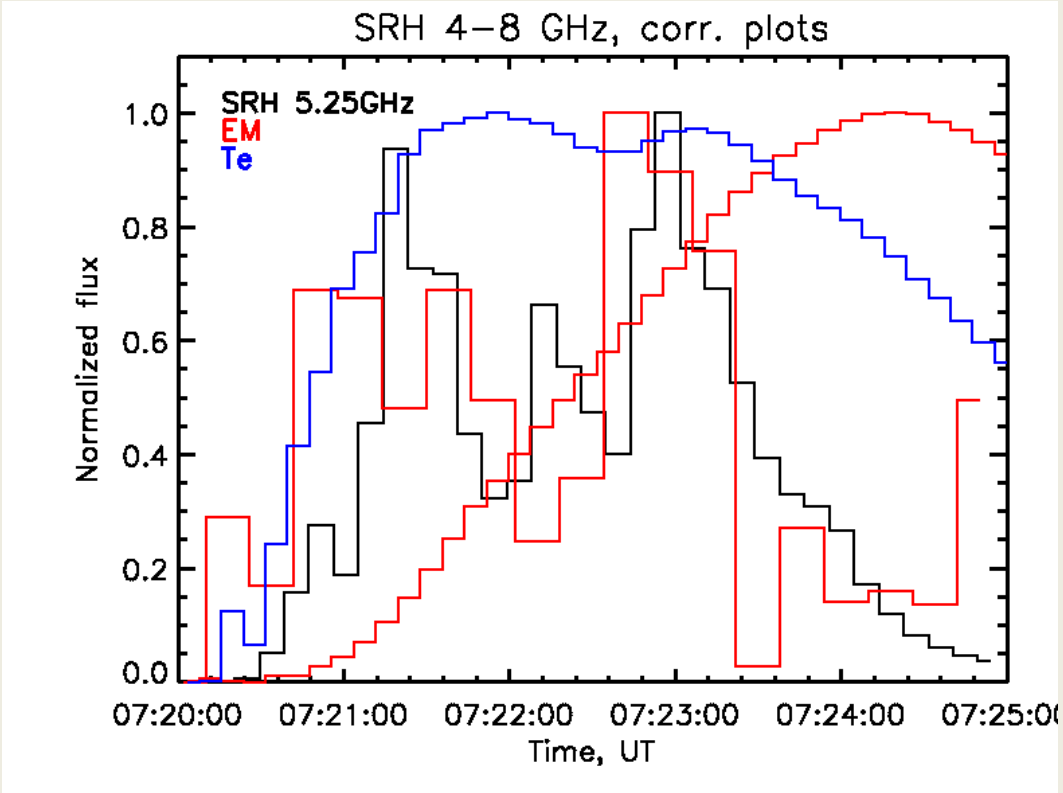
The third burst

SRH (MW) vs GOES & STIX

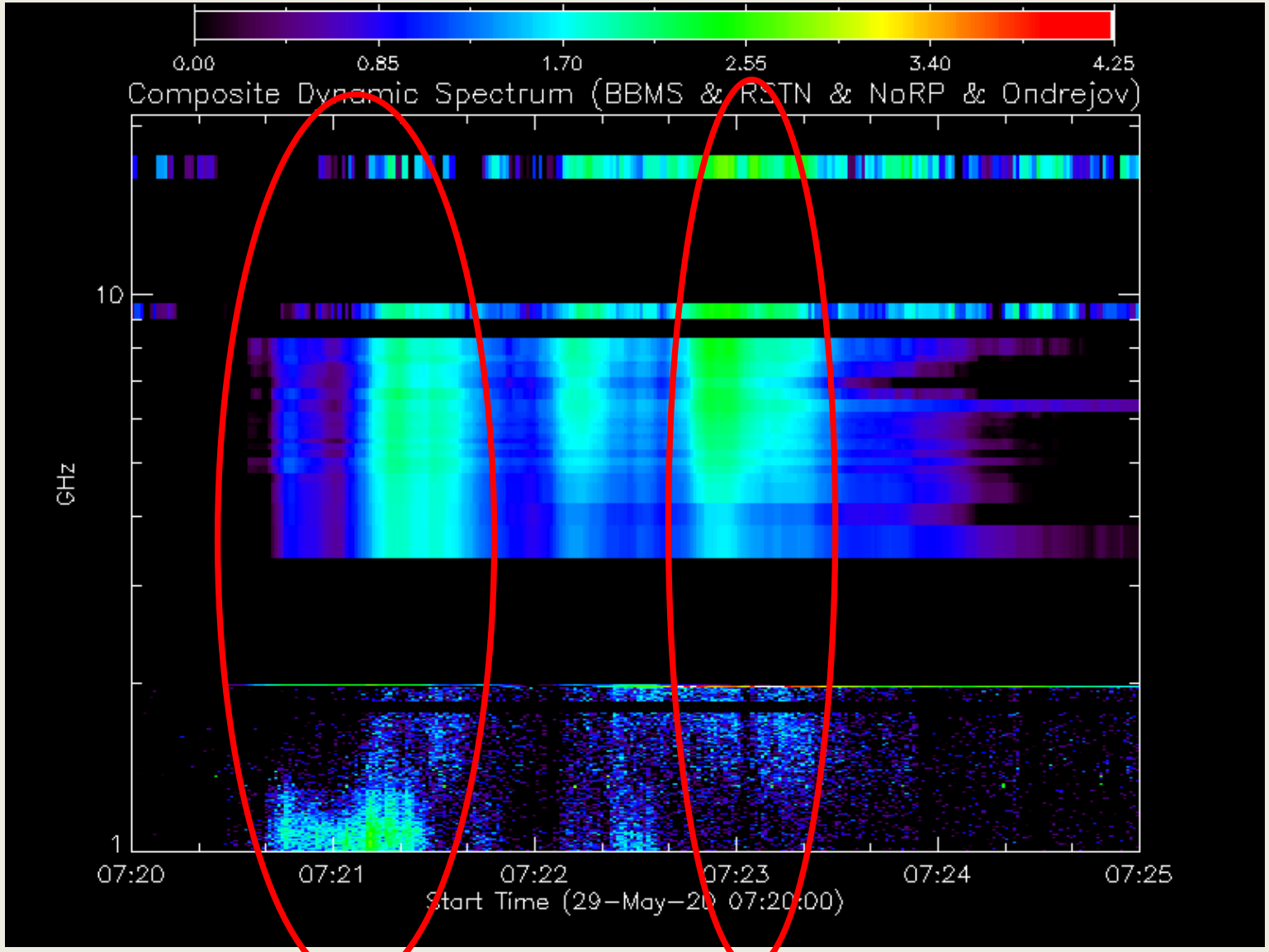
Te= 18 MK

EM=0.4 10^{49} cm^{-3}

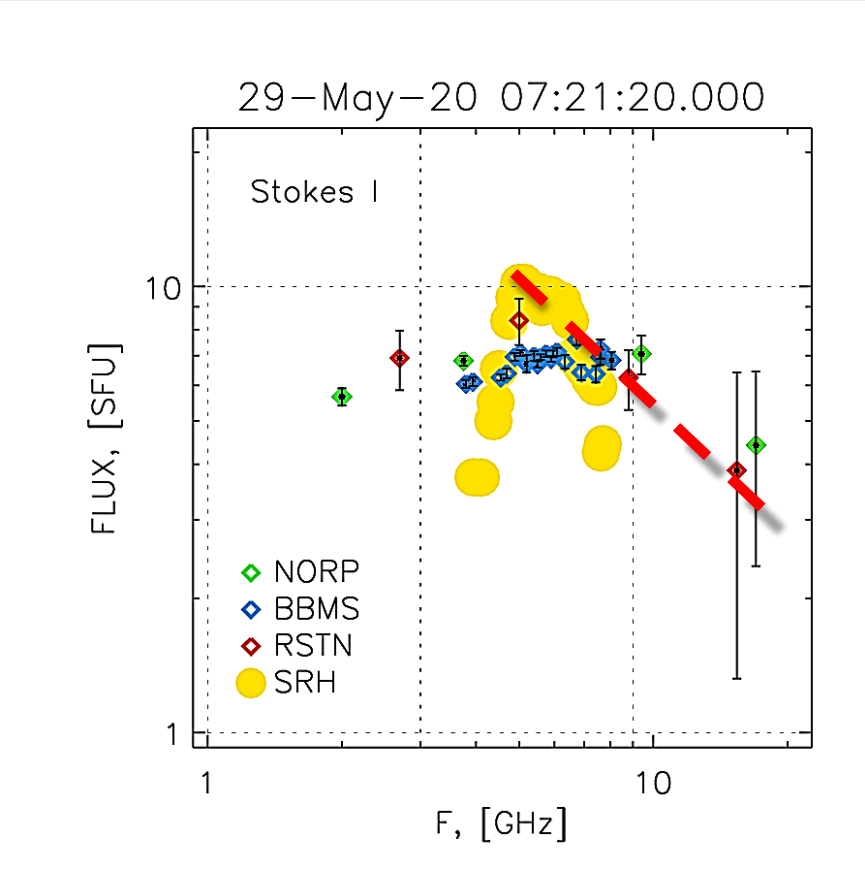


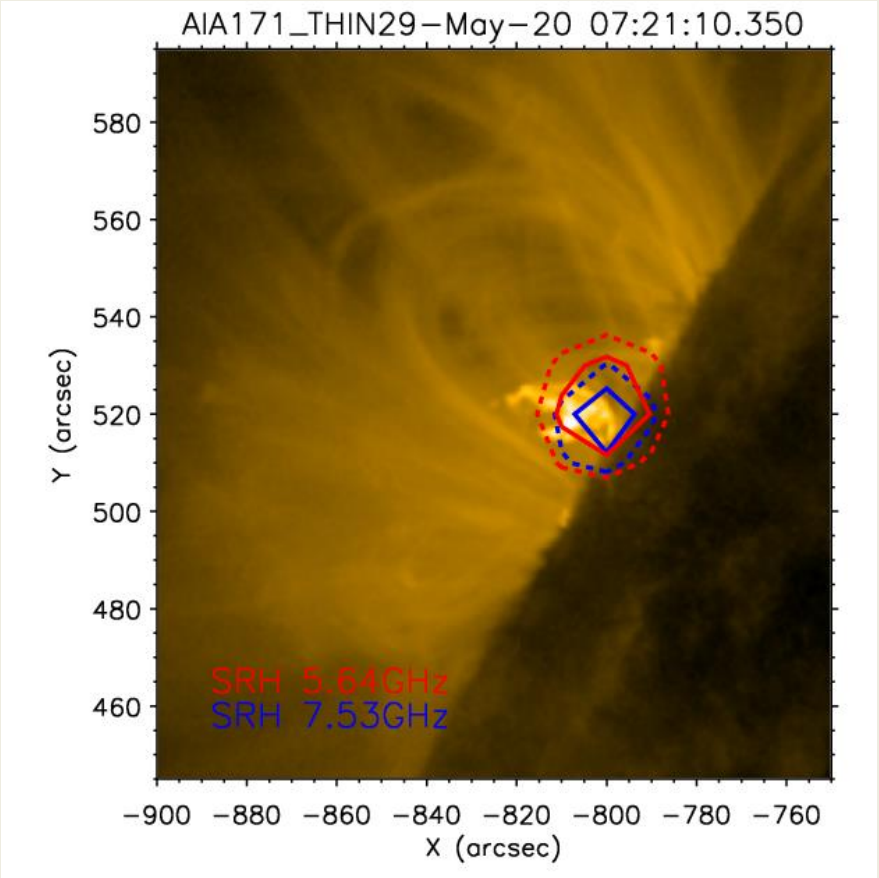


Composite dynamic spectrum

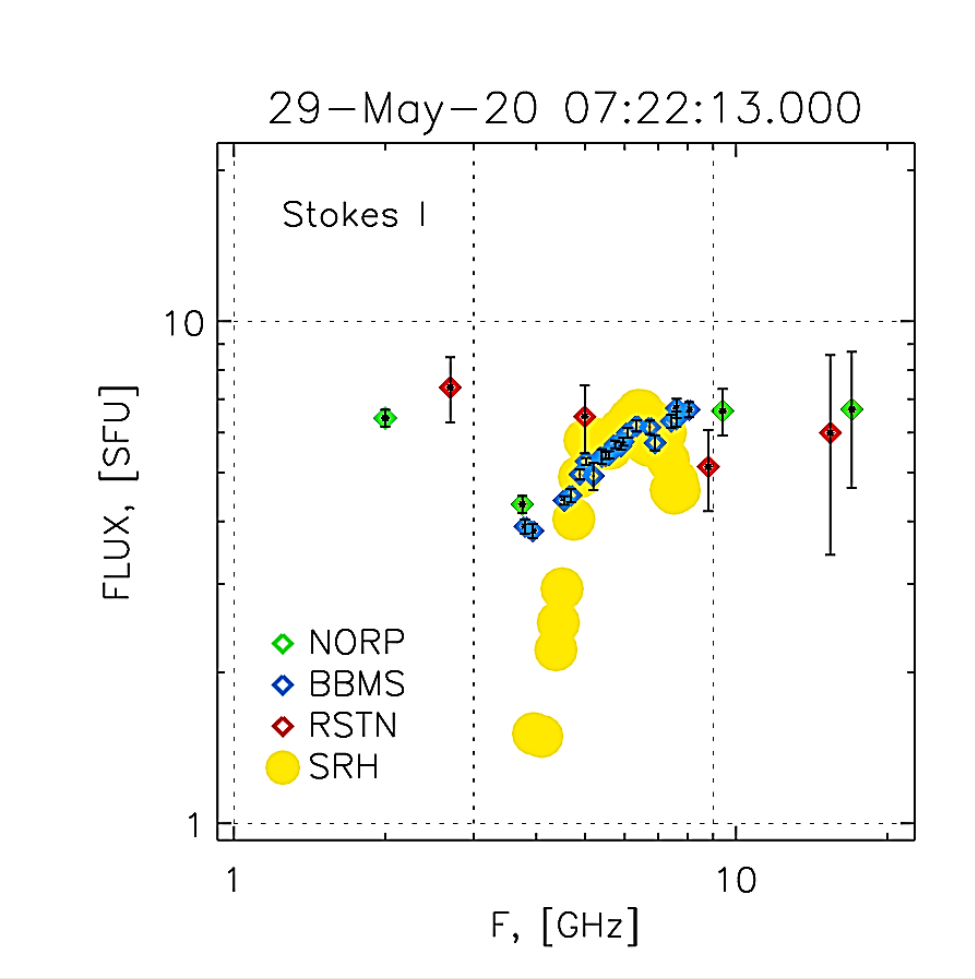


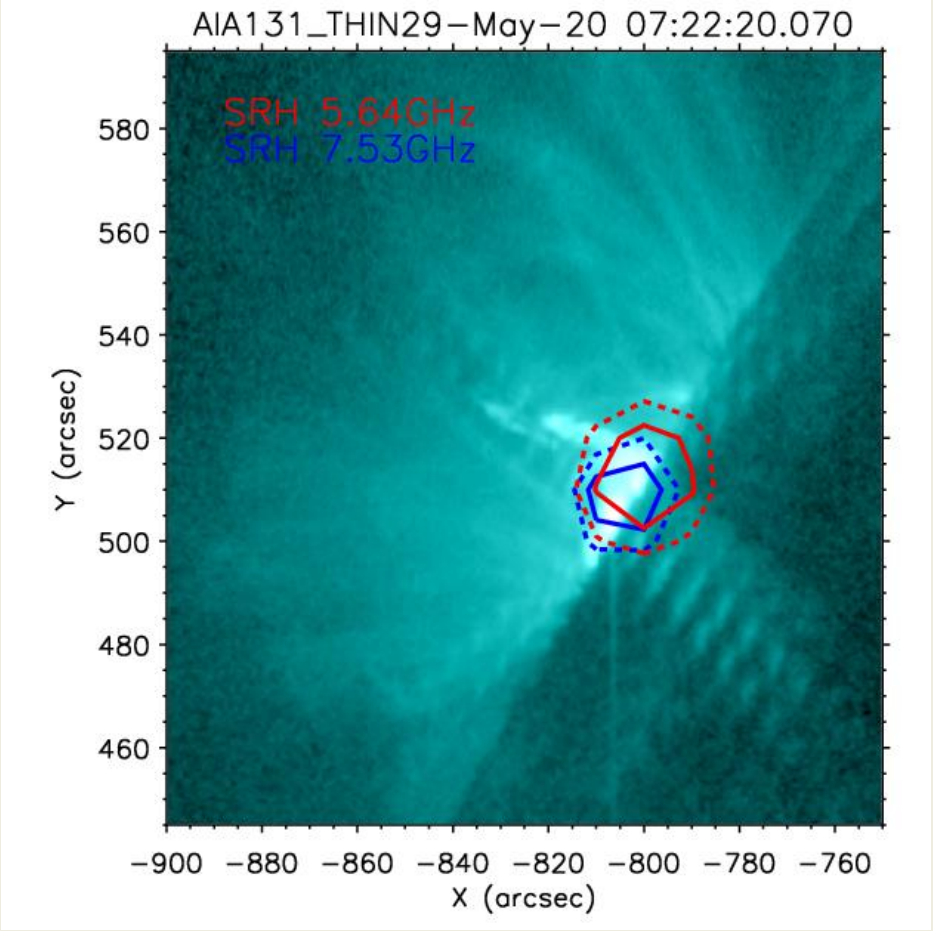
The first MW burst



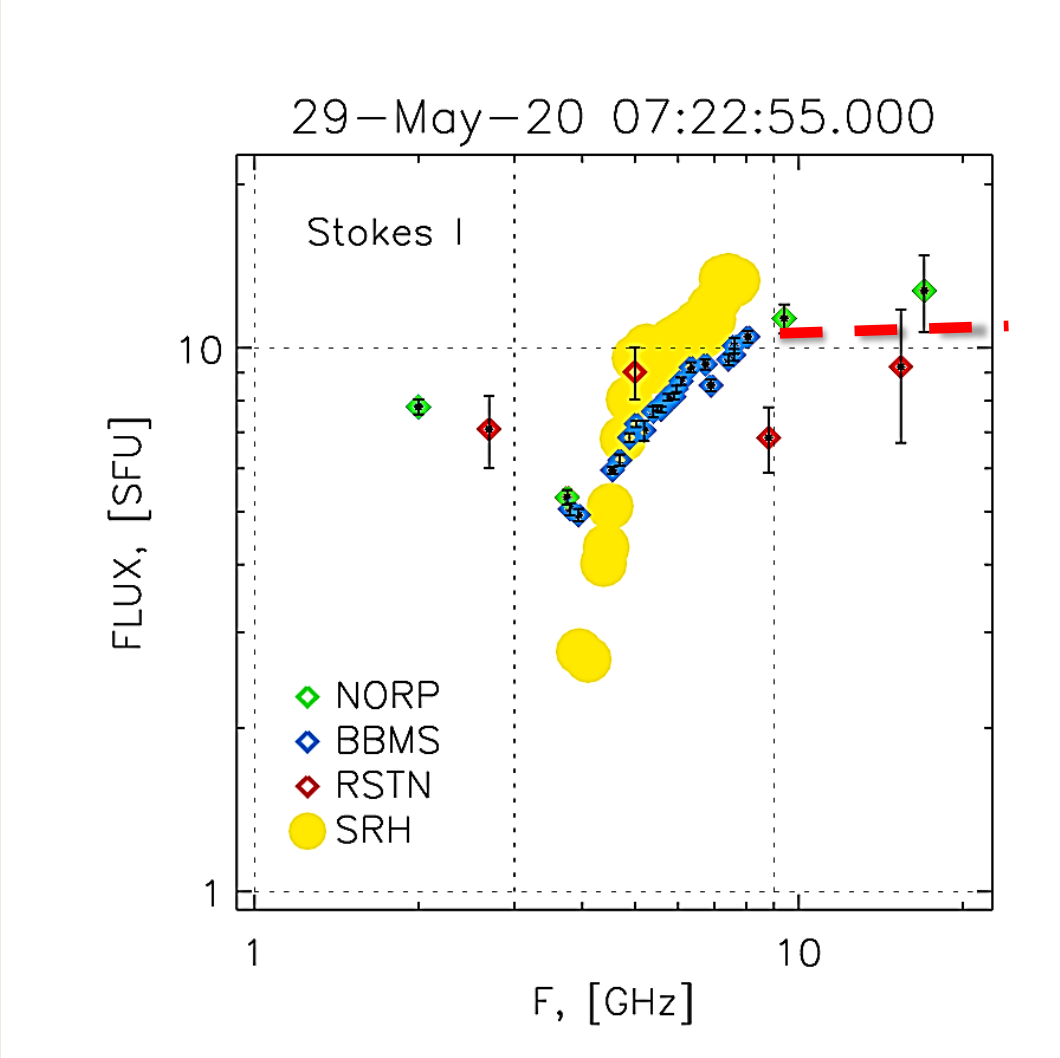


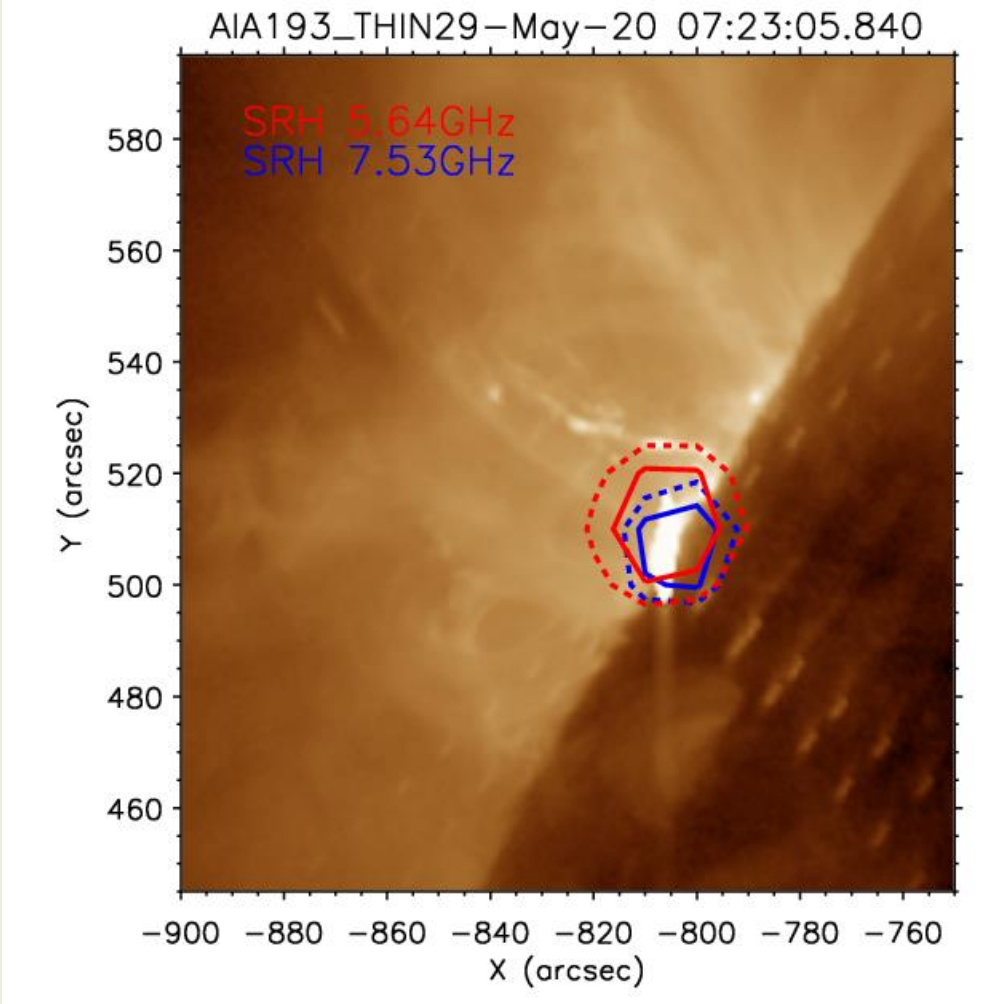
The second MW burst



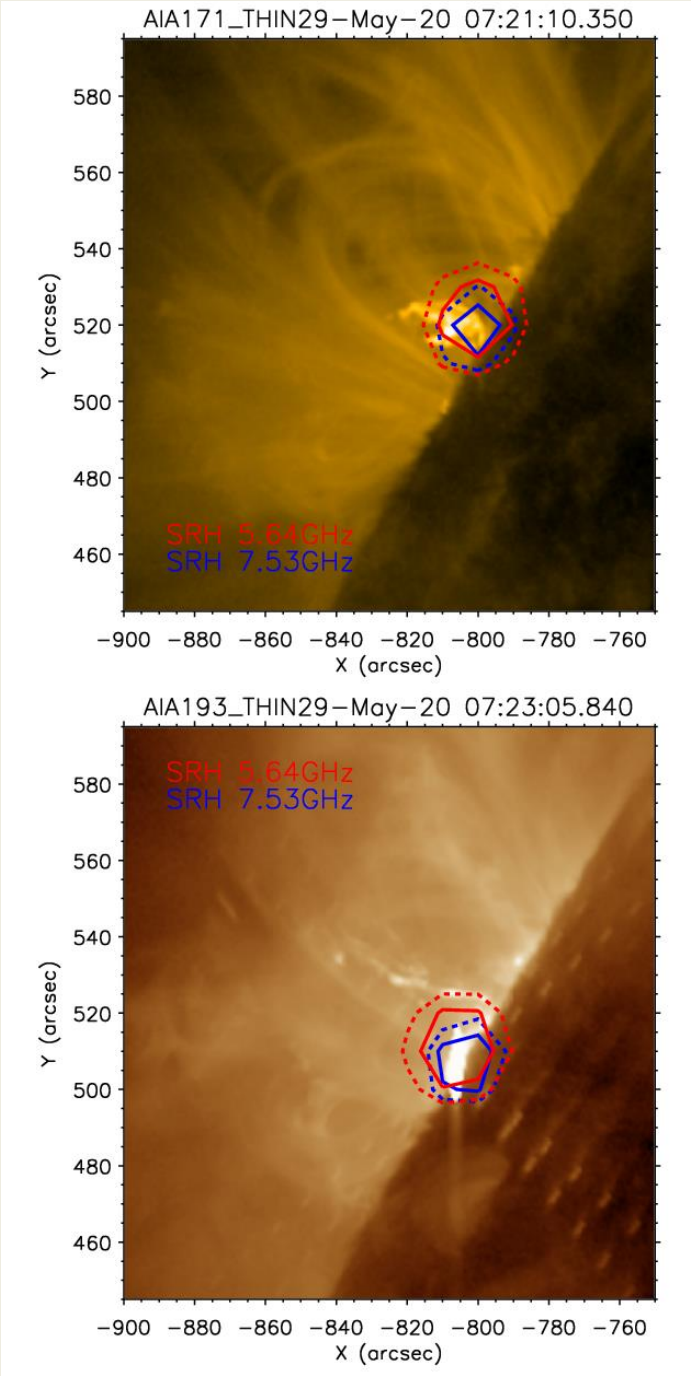


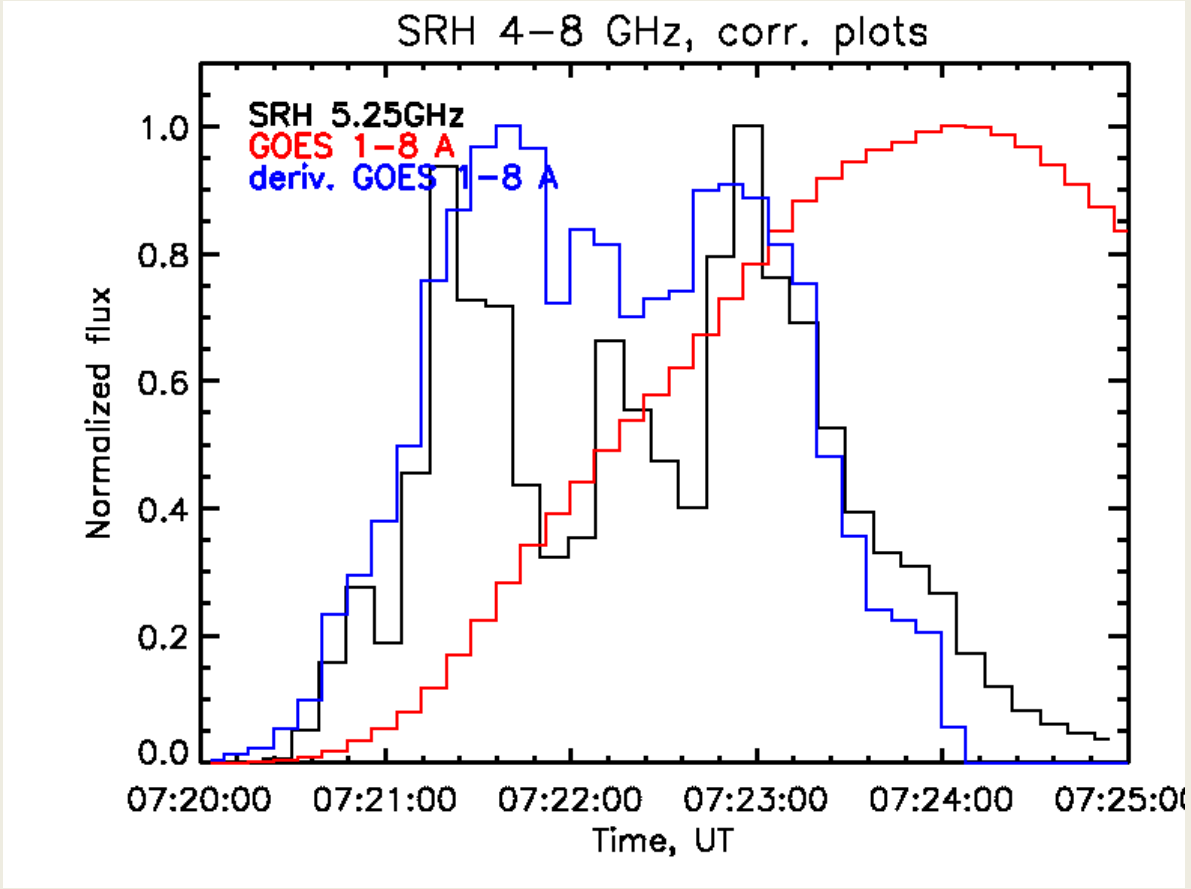
The third MW burst





Motion of the sources





Summary

We revealed three bursts on the microwave time profile within the 4-8 GHz range.

The spectrum of the first burst indicates the gyro synchrotron mechanism of non-thermal electrons.

The spectrum of the third burst shows the form of thermal (free-free) emission.

The position of the MW source at 7.53 GHz changed during the second burst for about 20-30 arc sec. This fact is in agreement with the appearance of new flare sources seen in EUV.

The primary energy release most possibly temporarily and spatially coincided with the first burst, while the other burst of this quasi-periodic flare had the other location

Thank you for attention !