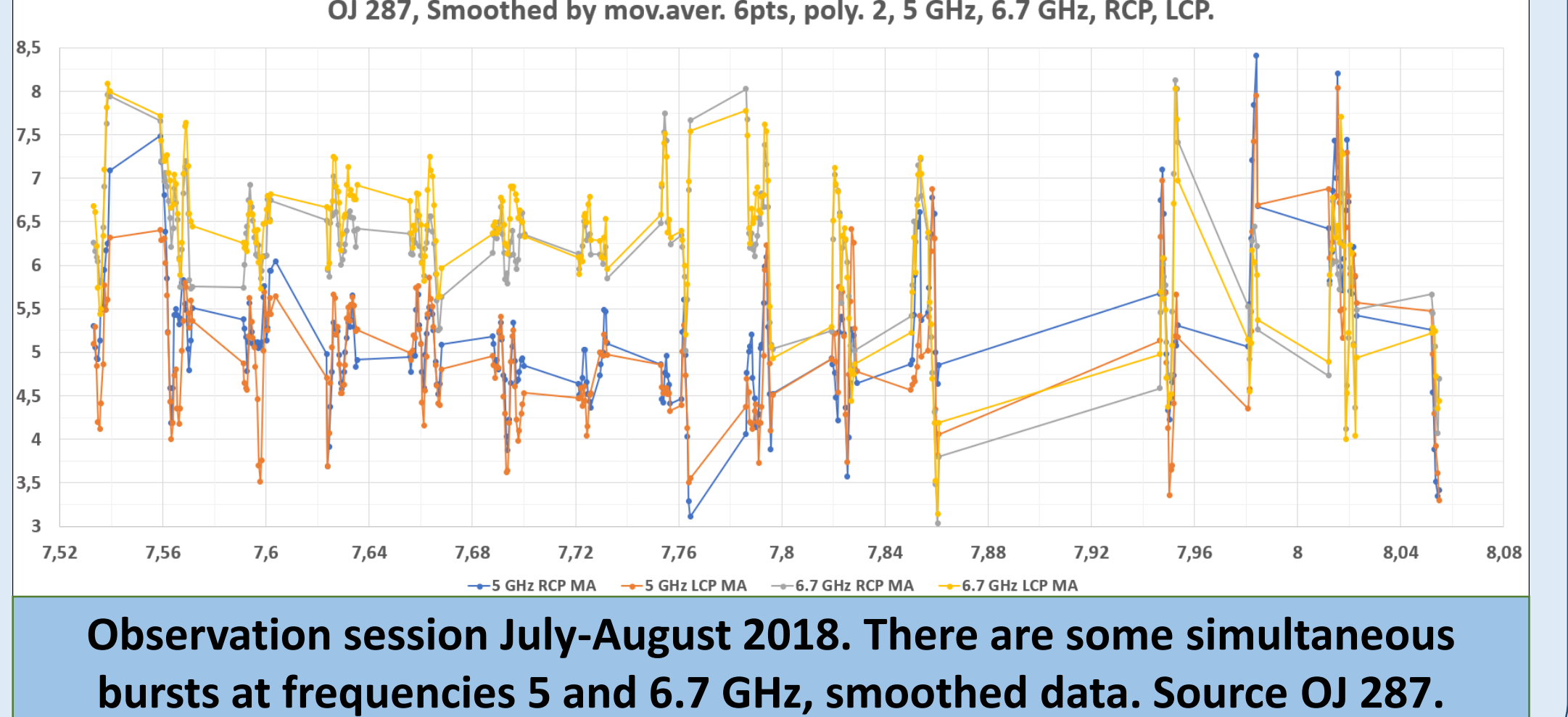
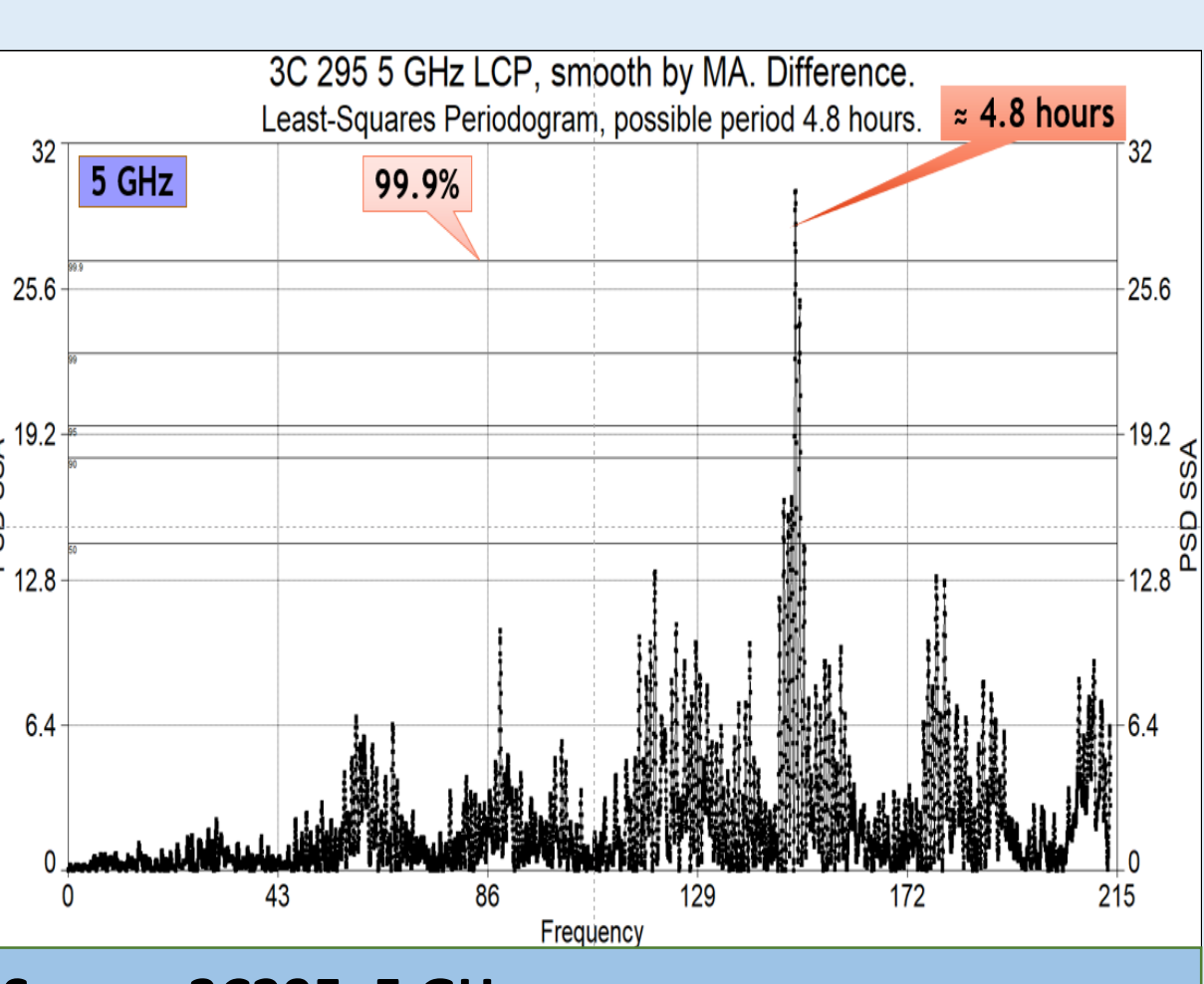
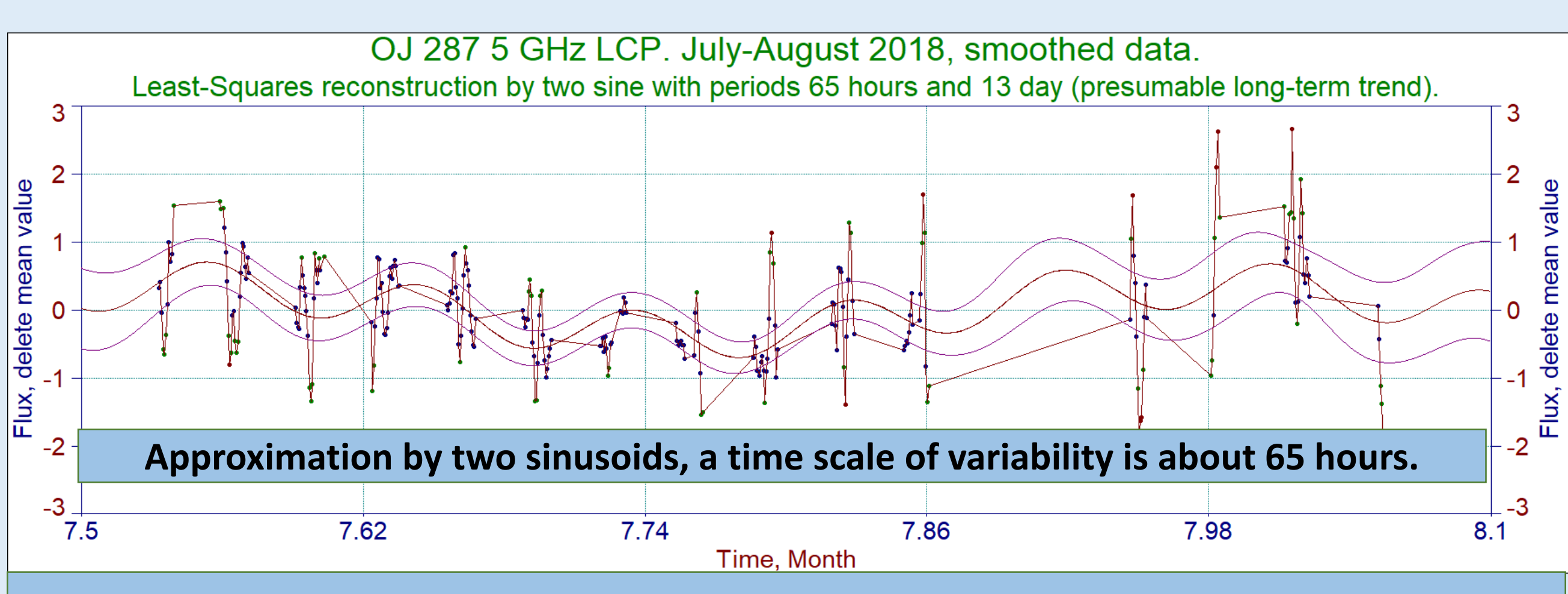
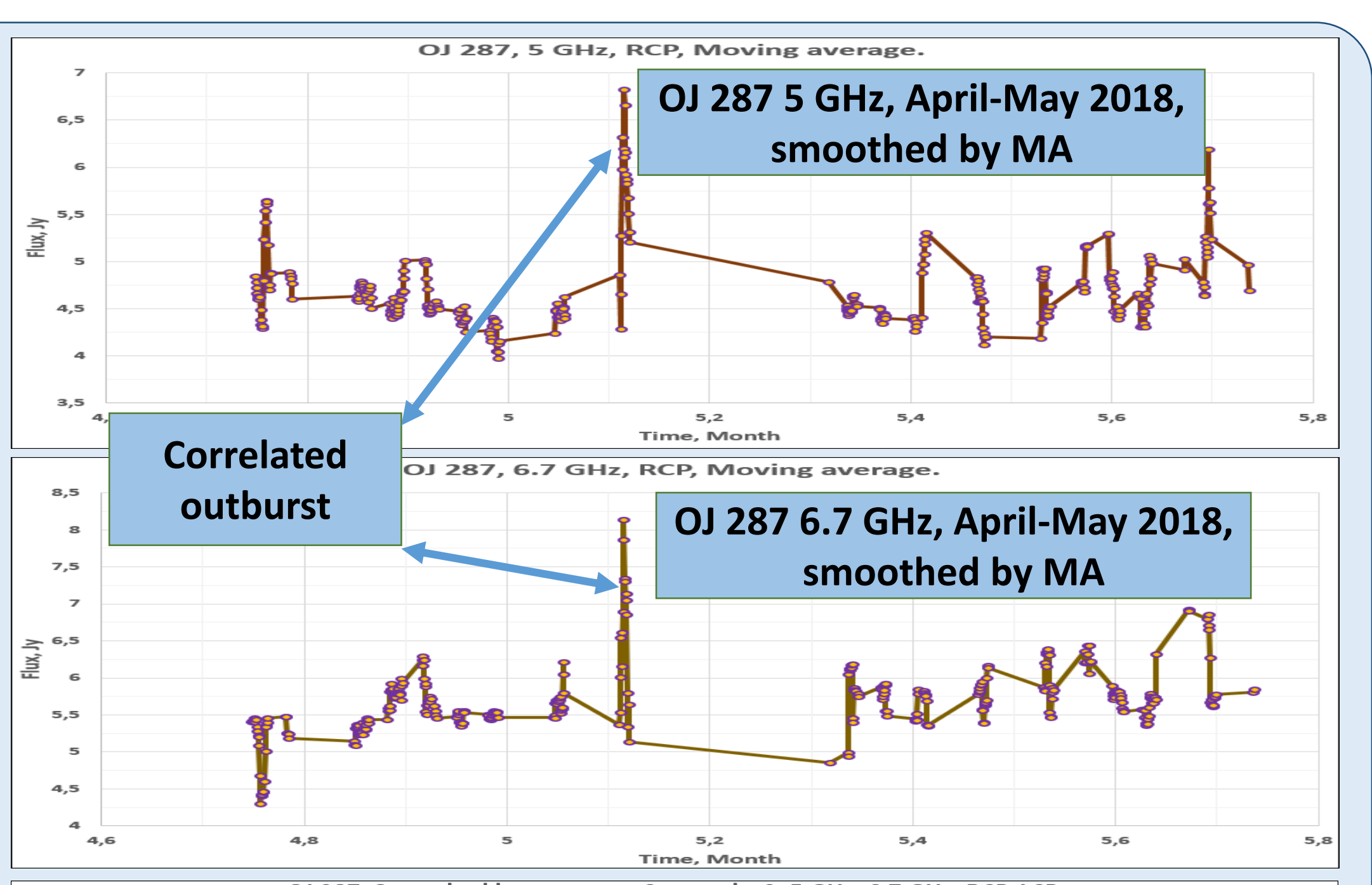
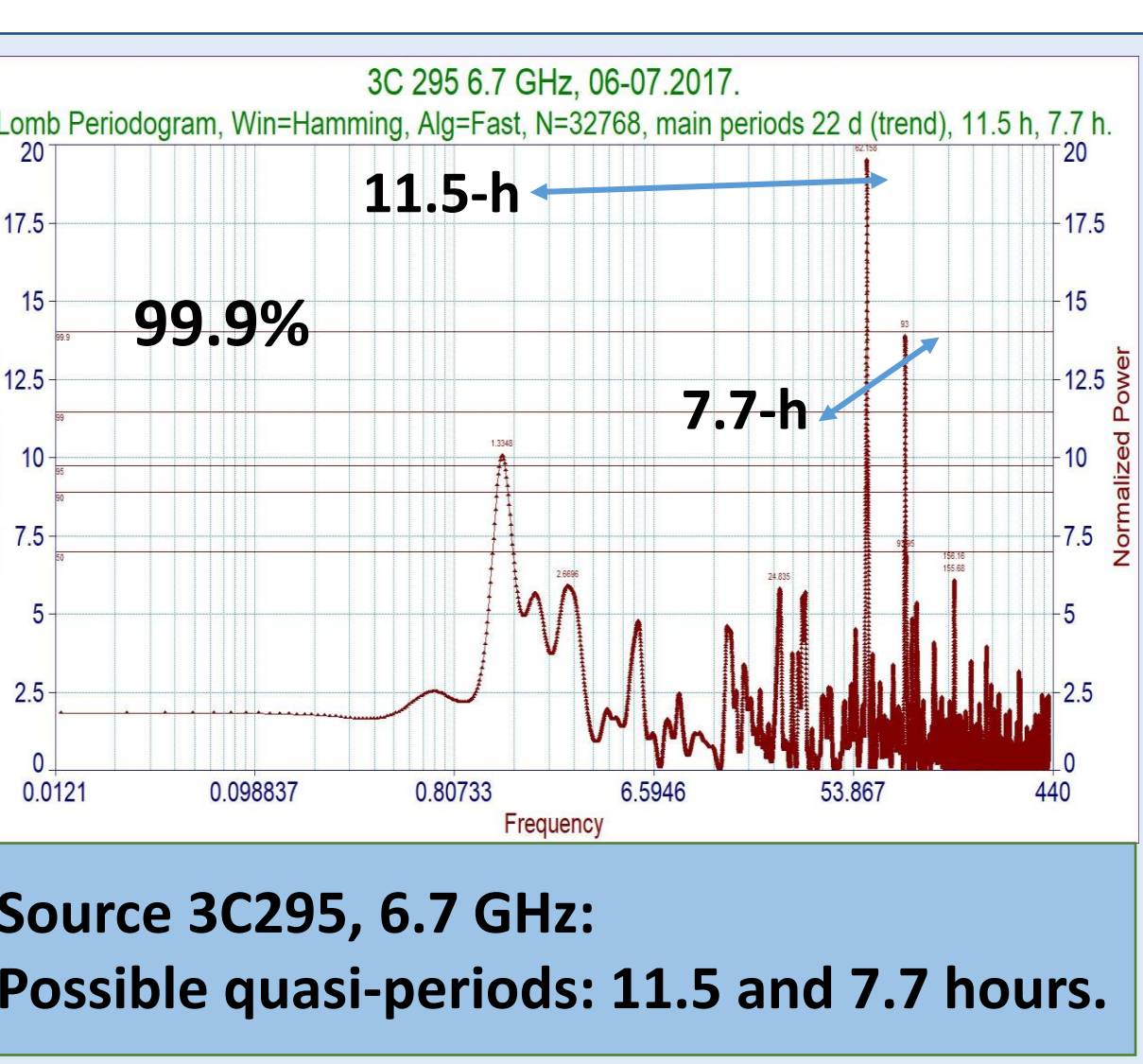
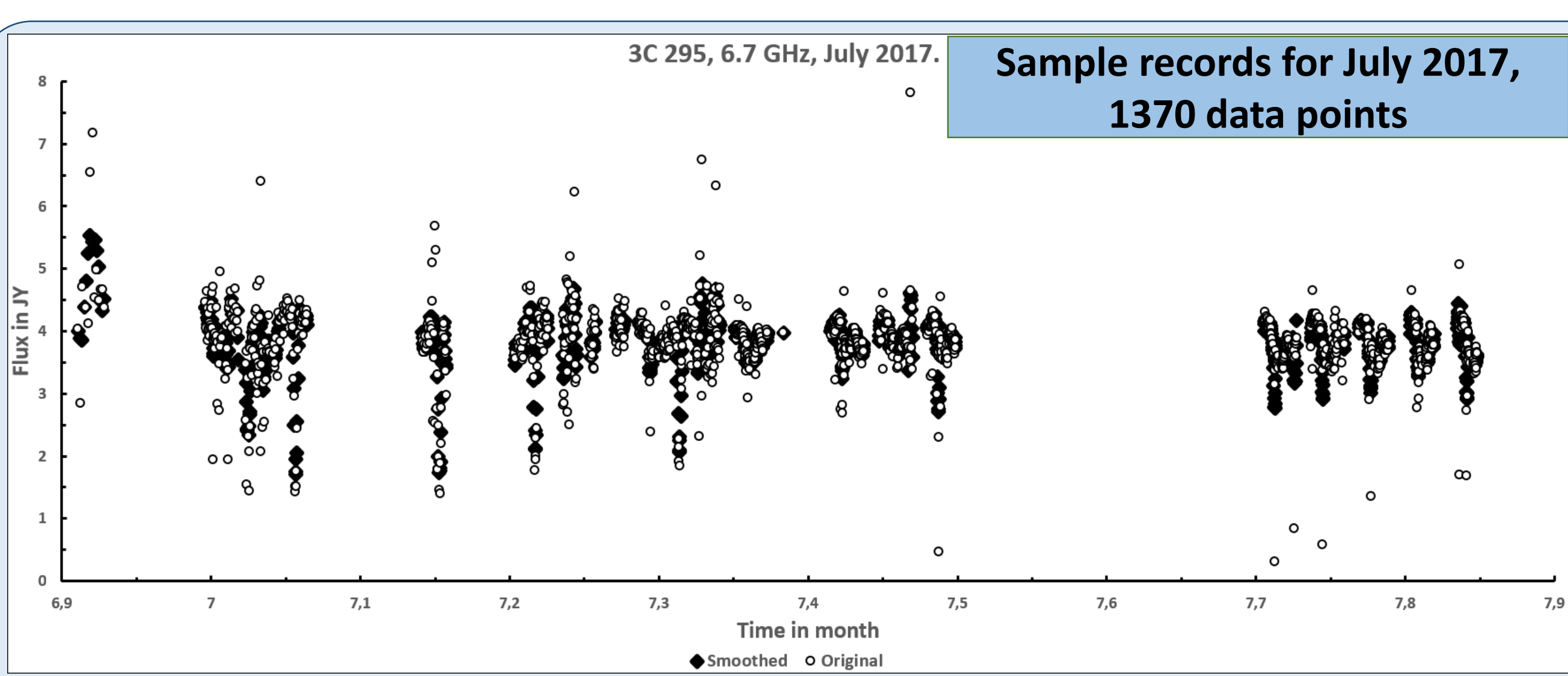
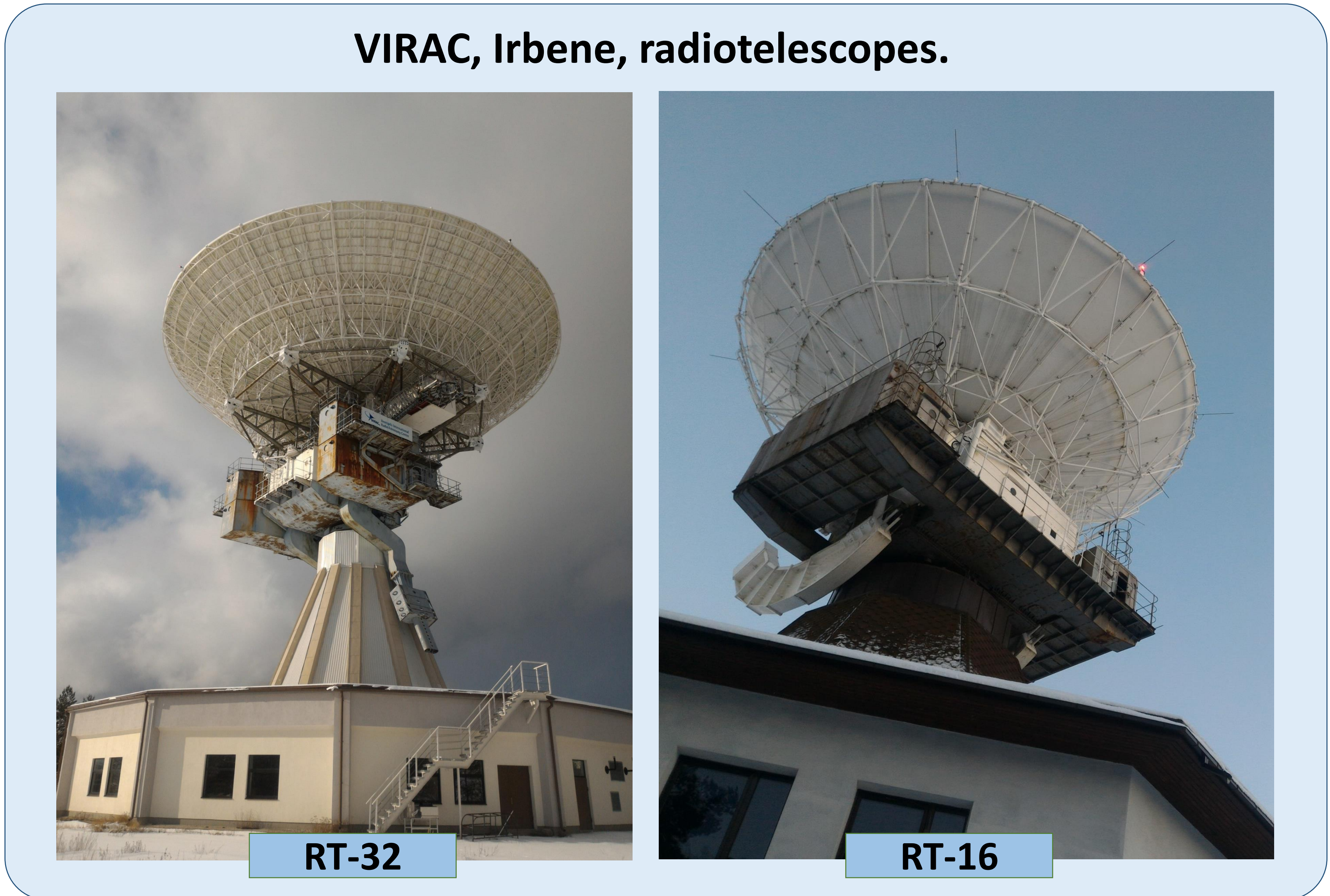
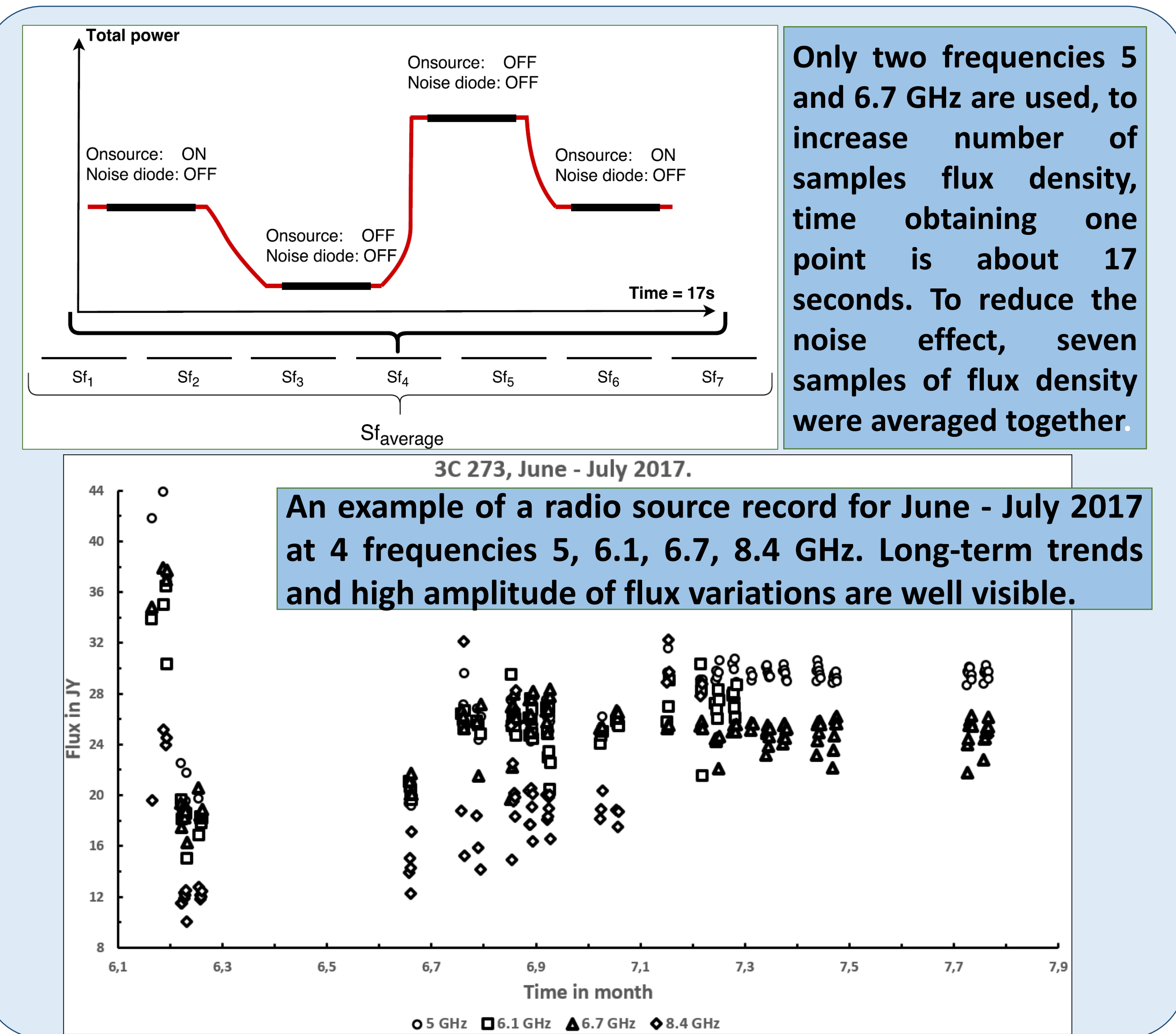


AGN intra-day and inter-day variability studies on VIRAC radiotelescopes.

Ventspils International Radio Astronomy Centre (VIRAC) operates with two radio telescopes RT-16 and RT-32 accordingly with 16 and 32 m fully steerable Cassegrain type antennas. Starting from year 2017, the VIRAC radio telescopes are used to study the intra-day and inter-day variability of various types of active galactic nuclei (AGN). The investigated sample of radio sources includes 3C 273, 3C 454.3 (quasars), BL Lacertae, OJ 287 (BL Lac objects) and 3C 295 (Sy II galaxy). Calibration sources are 3C 123, 3C 196, 3C 286.

This poster shows preliminary research results proposed for discussion. These radio sources, assumed there are intraday variability in radio and optical bands, both external (interstellar scintillations, ionospheric effects) and internal (processes in the radio source itself) nature. The poster discuss possibility for observations of these promising objects during VLBI sessions by EVN and simultaneous long-term total flux monitoring using VIRAC antennas. The temporal changes in fluxes linked with VLBI maps opens opportunity to determine the nature of the physical processes that form fast flux changes of various types of active galactic nuclei.



To suppress low-frequency part of the data, differentiation of the time series was applied, an additional check will be made with longer data series and more data points and at different radio frequencies.

- Based on the many observational sessions of the source 3C 295 a long quasi-period of ≈3 days is possible at frequencies 5 and 6.7 GHz, except for it, there may be a longer quasi-period ≈14 to 19 days at both frequencies. In the June - July 2017 session, a 3-day quasi-period was also found and ≈10 - 11 days, which is close to the values obtained for the April-May 2018 session.
- The source OJ 287 shows fast flux variations in time scale about 2-5 days, quasi-periods of less than 24 hours are not yet registered. Possible flux variations of source 3C 295 on the time scale of 4.5-4.8 hours are presumably registered only in the session June-July 2017 and April-May 2018. Therefore, additional testing is required on longer and better data records on different radio-frequencies.
- The sources 3C 454.3 and OJ 287 show a good correlation between some fast bursts at 5 and 6.7 GHz.
- The 3C 273 source has large, trend-like flux variations at 4 frequencies 5, 6.1, 6.7, 8.4 GHz and further it is planned to increase number of observations for possible registration of IDV and inter-day variability.