

Meteor Beacon Project update June 2024

The beacon GB3MBA on 50.408MHz and the receiver network are there to support research into meteors.

Up to 5 receivers are active in our network and in the mornings, usually the busiest time for meteor events as the earth faces into our direction of travel around the sun, we are seeing meteor echoes at a rate of about 2 per minute.

Most echoes are from the ionisation created by meteors typically no bigger than grains of sand. Higher rates and bigger echoes can be expected during the regular meteor showers see <https://ukmeteorbeacon.org/MshowersList> for their dates.

A visit to the live stream at <https://ukmeteorbeacon.org/beaconclient/> is very worthwhile. They show detail of the Doppler shift of the echoes, the horizontal scale of the “waterfall displays” is in Hz and the vertical scale is about one minute long. Head echoes are the bright horizontal spots on the display while the tail echoes extend vertically i.e. they last longer. We frequently see that meteors pass through regions with substantial differences in wind speed giving rise to spread of Doppler shift in the tail echoes.

There is a guide to using the live streams in the resources – documents section of the project web site at:- <https://ukmeteorbeacon.org/documents/UsingLiveStreams.pdf>

We are working on streaming data, with a greater bandwidth than can conveniently be displayed on the live stream, so that trigger and recording mechanisms can be developed to capture events of interest for detailed examination. Precision timing data embedded in the data streams will enable observations from the different receivers to be correlated so that we can make use of the Doppler measurements of different reflection paths perhaps to calculate the radiant and trajectory of some larger meteors and meteorites.

Observations using the live streams are showing that the echoes at the 6m wavelength of our beacon are highly directional and, using the two receivers at NW Hampshire one of which has horizontal polarisation while the other has vertical polarisation we see that echoes can be linearly polarised.

Please take a look at the live stream to make meteor counts and capture any echoes of special interest. Your thoughts and explanations of the strange echoes we sometimes see are of value to the project. If you post them to the RAG I/o group we will publish the best ones on the project web site.

If you have any questions or want to get involved please do get in touch - <https://ukmeteorbeacon.org/Contactus>