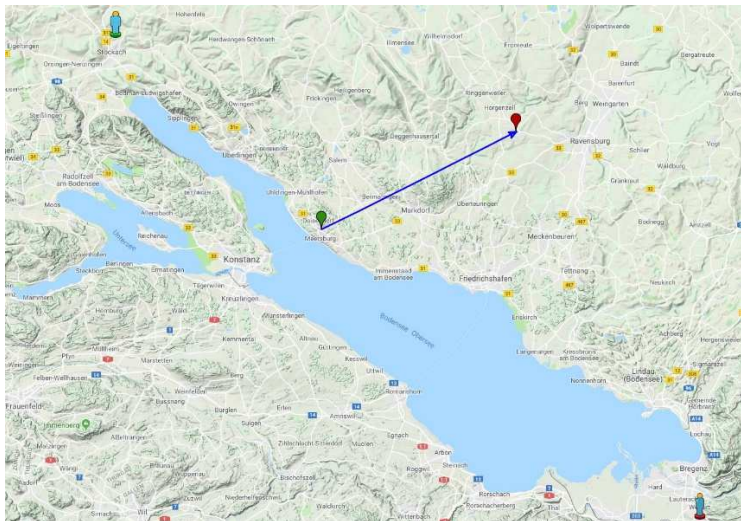


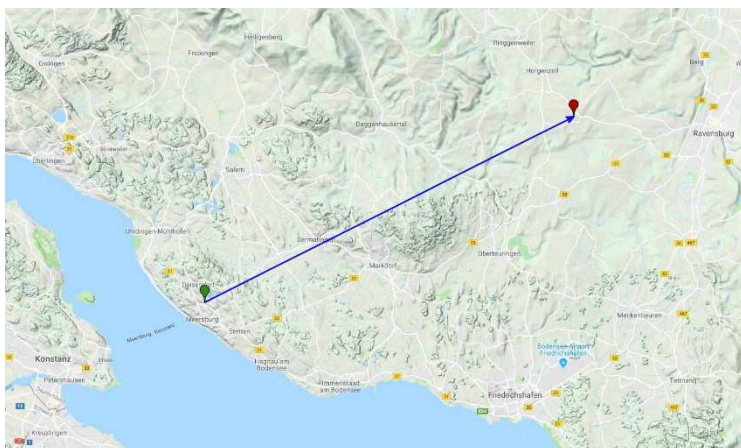
Probably infrasound detection of a bright fireball



On July 09, 2018, about 19:25 UT, a bright meteor occurred just East of the Bodensee.

Numerous eyewitnesses observed the event (http://fma.imo.net/imo_view/event/2018/2339)

Due to the twilight phase, the automatic video cameras of the Swiss Meteor Networks were not yet in operation at that time.



In average, the estimated duration was about 3.5 seconds and the brightness about -15 mag.

No sound was heard (neither immediately nor later).

No fragmentation was reported.

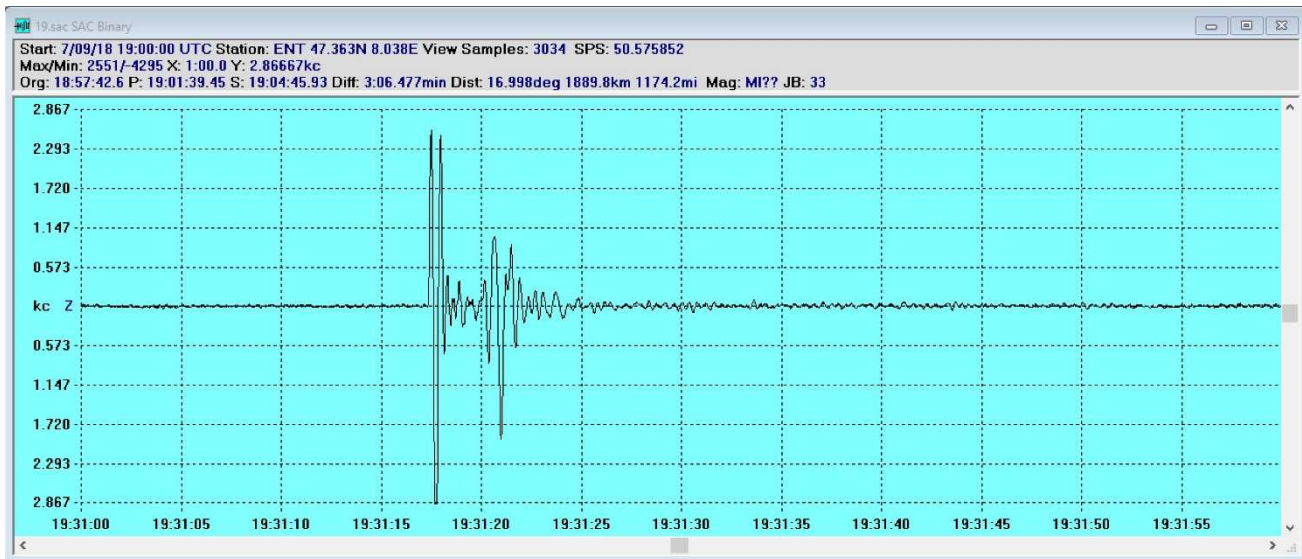


A persistent trail was observed for some minutes after the event.

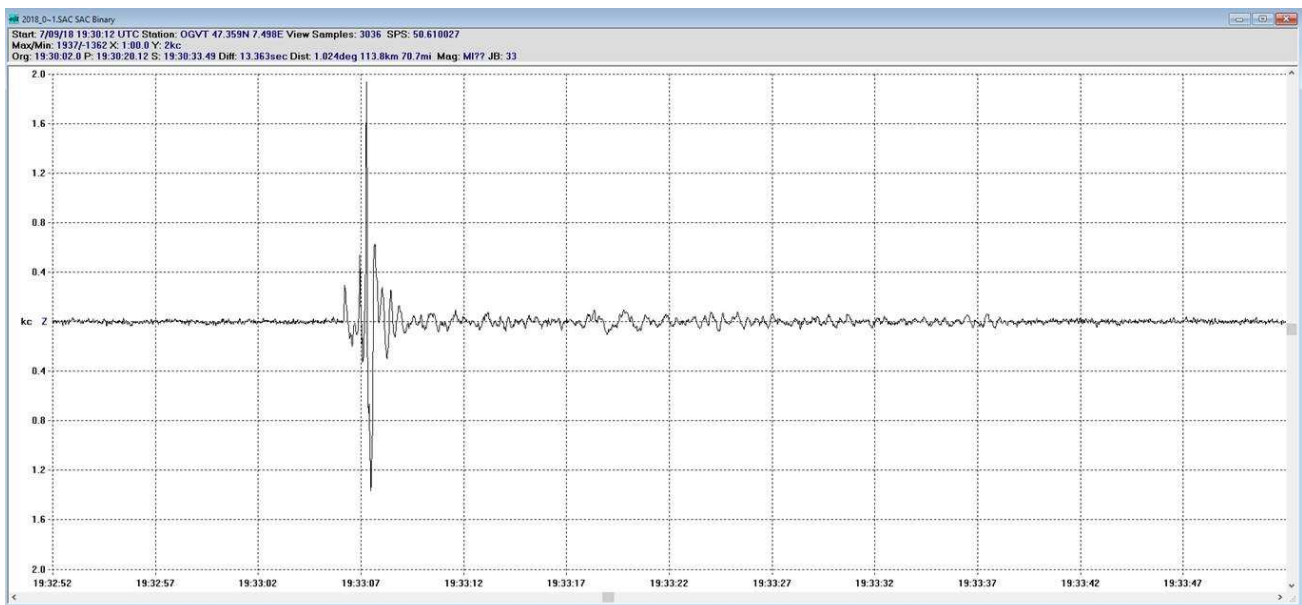
(Source: A. Salzgeber)

After this event, members of FMA checked their infrasound recordings and found the following signal, showing an unusual shape:

Station ENT:



Station VTE:



Simple estimation according to the imo eyewitness reports:

- Ground distance VTE – Meteor end: 143 km
- Ground distance ENT – Meteor end: 105 km

Assuming, that the meteor ended in a height of 50 km above ground, then:

- Air distance VTE – Meteor end: 151 km
- Air distance ENT – Meteor end: 116 km
- Difference of air distances: 35 km

Assuming, that the average thunder velocity was 320 m/s:

- Estimated time delay of arrival of the sound wave between ENT and VTE: 109 sec.
→ Effective time delay of arrival of the sound wave between ENT and VTE: 108 sec.

Martin Dubs remarked:

This time, in contrast to earlier observations, it seems to be a real signal. With a third or more observations, it would allow calculating the location of the explosion. With known temperature and wind profiles this should be fairly precise. The complicated signal points to fragmentation of the fireball and multiple explosions. With calibrated sensors also an estimate of meteor energy or mass should be possible (together with data from optical observations).

Summary:

It seems to be very likely, that the station ENT and VTE recorded the infrasound wave of the same meteor.