ID: Type: **Oral**

T3.1-O5. Ubiquitous Infrasound

Recent work has demonstrated on-board barometers and microphones in the present generation of smartphones are infrasound-capable, and provide an existing, dense ubiquitous global sensor network that can supplement the IMS. Extreme natural events in sensitive regions can trigger false alarms in treaty verification systems. The 0.5 Mt Chelyabinsk explosion was well recorded by IMS IS31 in Kazakhstan at a range of 600 km. Even at this range, the signal amplitude was in excess of the 1 Pa pressure resolution of the Nexus 5 barometer, and had substantial energy above the 1 Hz cutoff frequency of the iPhone 5 microphone. The number of smartphones is expected to reach ~10 billion globally by the end of the decade. Even if one in a million smartphones were available for infrasound applications, ~10 thousand additional data channels would need to be validated and processed. Ongoing work explores frameworks that can utilize these data in compliance with privacy and open data policies. Mobile sensor networks also present challenging problems on how to best process moving, unevenly sampled sensor data with variable timing and position accuracy and undocumented transfer functions.

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