

# The SysSon Platform

**Technical Report TR-2016-12-1**  
**Institute of Electronic Music and Acoustics, Graz**  
**(Status: in progress)**

Hanns Holger Rutz

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# 1 Presentation of QBO Sounds at WegC

The rendered examples from the November session at WegC have been uploaded to [https://soundcloud.com/sysonproject/sets/wegc\\_161110-neu](https://soundcloud.com/sysonproject/sets/wegc_161110-neu). The general feedback at the meeting was positive, and the next step will be to incorporate some of the issues and ideas raised, as well as to extend the sound models to the high-resolution data set.

Some decisions were agreed upon: representing cold temperatures with high frequencies or high register, and warm temperatures with low frequencies or low register; mapping altitudes to frequencies. With respect to the anomalies calculation, it was confirmed that one should normally use arithmetic means instead of the the median. Regarding the blob analysis, further tests are needed to explore more parameters of the analysis, since in the current sound model only centroid and vertical height had been used. In particular, it was suggested that the temporal duration or horizontal width would be more meaningful. Finally, while the cluster sonification (bank of sine oscillators) was well received, the kind of “echoes” or “reverberation” in the sound are confusing. A possible explanation for this phenomenon is that it constitutes an artefact from the fixed frequency relationship between the bands, and thus it could be alleviated by slightly randomising the centre frequencies or phases of the oscillators.

## Second Feedback

At the beginning of December, we received a second written feedback by WegC staff based on the play-list created on the SoundCloud account (i.e., without giving further background information on the sound models): The blob based model using only sine oscillation was described as very clear in terms of perceiving the quasi-periodicity, the contour of the downward glissandi, and the overlap of glissandi. It was criticised that the “pitch” (possibly in combination with the non-existing timbre of the sine oscillation) was unpleasant, especially when having to listen to the sound repeatedly, rendering this timbre rather unsuitable for analysis purposes, while still remaining usable for demonstrating the QBO phenomenon.

In contrast, the timbre of the cluster model was perceived as more pleasant, while the sound is more confusing when subject to analysis, and small changes in the pitch are not easily audible. Also the overlap of the glissandi is more difficult to perceive. Again, the “echoes” in the sound are described as confusing.

The fixed rendering clearly reveals a disadvantage, as the click indicators for the months passing by were described as too low in volume, and for higher speed it was wished to remove the clicks altogether. This would be an indicator for implementing at least simple toggle buttons or sliders for the user parameters in the GUI. Likewise, being able to listen to the data at different tempos was noted as very useful.

Otherwise, the “figurative” model with two different timbres for hot/cold anomalies was described as having a better indication of the overlaps of the glissandi, whereas it is more difficult to follow the precise contour in comparison to the sine oscillator example. Another suggestion given in the feedback was to allow the (interactive) isolation of “a sound level” (by which probably was meant the isolation of an altitude level and thus frequency band), in order to analyse the overlap of the glissandi and the periodicity of the QBO. For the next iteration, it was especially suggested to combine the temperature data with other variables such as precipitation or pressure, synchronised on the time line.

We have asked the person that gave this feedback to also address the different blob timbres (where the timbre changes from “flat” to more articulated based on the blob height). We have not received this additional feedback, yet.

## 2 Wrap up 2016

This sections tries to answer the question of the project report: “What has been achieved so far in the ongoing project year (milestones, intermediate steps; events)?”

- perform evaluation of a current situation with the platform; project several software milestones; implement milestone 'synth graph branching' (implementation, tests, integration, documentation)
- implement milestones for improved sound model control (synth graph plotting, trace function)
- partial implementation 'automatic voice management'
- successively published four stable software releases (most recently 1.11.0)
- improvements and bug removals (5 tickets closed, 15 tickets opened in the main project; c. 30 tickets closed in related libraries); 76 commits to open source project
- documentation through an online help system for UGens as well as monthly technical reports regarding project process and sonification models
- first iteration QBO sonification models (quasi-biennial-oscillation); seven selected models discussed with WegC, feedback and planning of next iteration; sound examples on SoundCloud

## 3 State of the Platform

TODO:

## 4 Upcoming Work

This section tries to answer the question of the project report: “In the ongoing project year, what are the next steps planned (schedule, intermediate steps, milestones)?”

- at least two further iterations of sonification models (QBO: synchronous comparison with other variables; higher temporal resolution)
- translate models back into interactive user-controllable patch; installation at WegC as a tool usable in their regular praxis; dissemination as open source tool, including the developed sonification templates - documentation of the EEK translational processes; conference presentation (e.g. ICAD 2017 Pennsylvania; SMC 2017 Helsinki) - exchange with guest researchers in sonification at IEM (May 2017) - where feasible: implementation of further software milestones (matrix pre-processing DSL; interaction control / UI)