

## Feeling the Science, Thinking about Art

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### Abstract

MAARBLE (Monitoring, Analyzing and Assessing Radiation Belt Loss and Energization) was an FP7-funded project, involving monitoring of the geospace environment through space and ground-based observations, in order to understand various aspects of the radiation belts (torus-shaped regions encircling the Earth, in which high-energy charged particles are trapped by the geomagnetic field), which have direct impact on human endeavors in space (spacecraft and astronauts exposure).

Besides interesting science, the MAARBLE outreach team employed a variety of outreach techniques to provide the general public with simplified information concerning the scientific objectives of the project, its focus and its expected outcomes. An outstanding moment of the MAARBLE outreach experience was the organization of an international contest of musical compositions inspired by impressive sounds of space related to very low and ultra-low frequency (VLF/ULF) electromagnetic waves.

The MAARBLE international contest of musical composition aspired to combine scientific and artistic ways of thinking, through the science of Astronomy and Space and the art of Music. It was an original idea to provide scientific information to the public, inviting people to “feel” the science and to think about art. The leading concept was to use the natural sounds of the Earth’s magnetosphere in order to compose electroacoustic music. Composers from all European countries were invited to take part at the contest, using some (or all) of the sounds included in a database of magnetospheric sounds compiled by the MAARBLE outreach team.

The results were astonishing: the contest was oversubscribed by a factor of 19 (in total 55 applications from 17 countries) and the musical pieces were of overall excellent quality, making the selection of winners a very difficult task. Ultimately, the selection committee concluded on the ten highest ranked compositions, which were uploaded on the MAARBLE website. Furthermore, the three winning compositions received important awards and they were officially presented in a dedicated event during the international conference “Geospace revisited: a Cluster/MAARBLE/Van Allen Probes Conference” in September 2014.

The awe inspiring music was deeply felt by the public as it was uniquely combined with the projection of related space images and videos. The artists themselves described what feelings the music generated in them and how these inspired their compositions, characterizing this as an exhilarating experience, a “time capsule of sounds”, a “cosmic wind of music” and, ultimately, a creative path of discovery. As one of the winners put it: “It was like a myth about evolution, randomness, and mysteries, but ultimately the fragility of life and our existence”.



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### References

[1] The MAARBLE musical contest website: <http://www.maarble.eu/outreach/index.php/multimedia/sounds-of-space>