

L213

Vortex ring

飛び出す雲のリング

■Purpose of Exhibition

This exhibit offers you an opportunity to observe a vortex ring developed by an air current.



■Additional Knowledge

When billowing cloud-like white air emerges above the exhibit, press the button on the exhibit and a white cloud will turn up to amazingly form into a ring. The ring's ascending velocity depends on whether you press the button quickly or slowly. How would you like to give it a try? The occurrence of an abrupt strong air current forms a vortex ring, which is rarely found in nature. The ring may potentially be observable when a volcano erupts (Photo 1) or when smoke comes out of the chimney. An atomic cloud from an atomic bomb dropping represents the same kind of phenomenon, although everybody hates to see it. The most familiar example in real life is the artificial ring of smoke that a smoker intentionally makes for fun or something by puffing out cigarette smoke. Nobody notices the presence of this phenomenon because air currents are invisible in the absence of smoke or steam. The exhibit allows you to see an air current through the minuscule water droplets discharged from its supersonic humidifier. This is what's called "air cannon" and you can easily make an "air cannon" experiment at home. Make a box of cardboard. Then, make a circular hole in one face of a box (Photo 2). Fill the box with incense smoke to make the air current visible and tap the box and a smoke ring will dash forward. You'll be able to feel how strong it is if you let it go straight to your body. Among other things, a bird's flapping wings and a helicopter forcefully create vortex rings.

Article by Shoji Nishimoto, curator