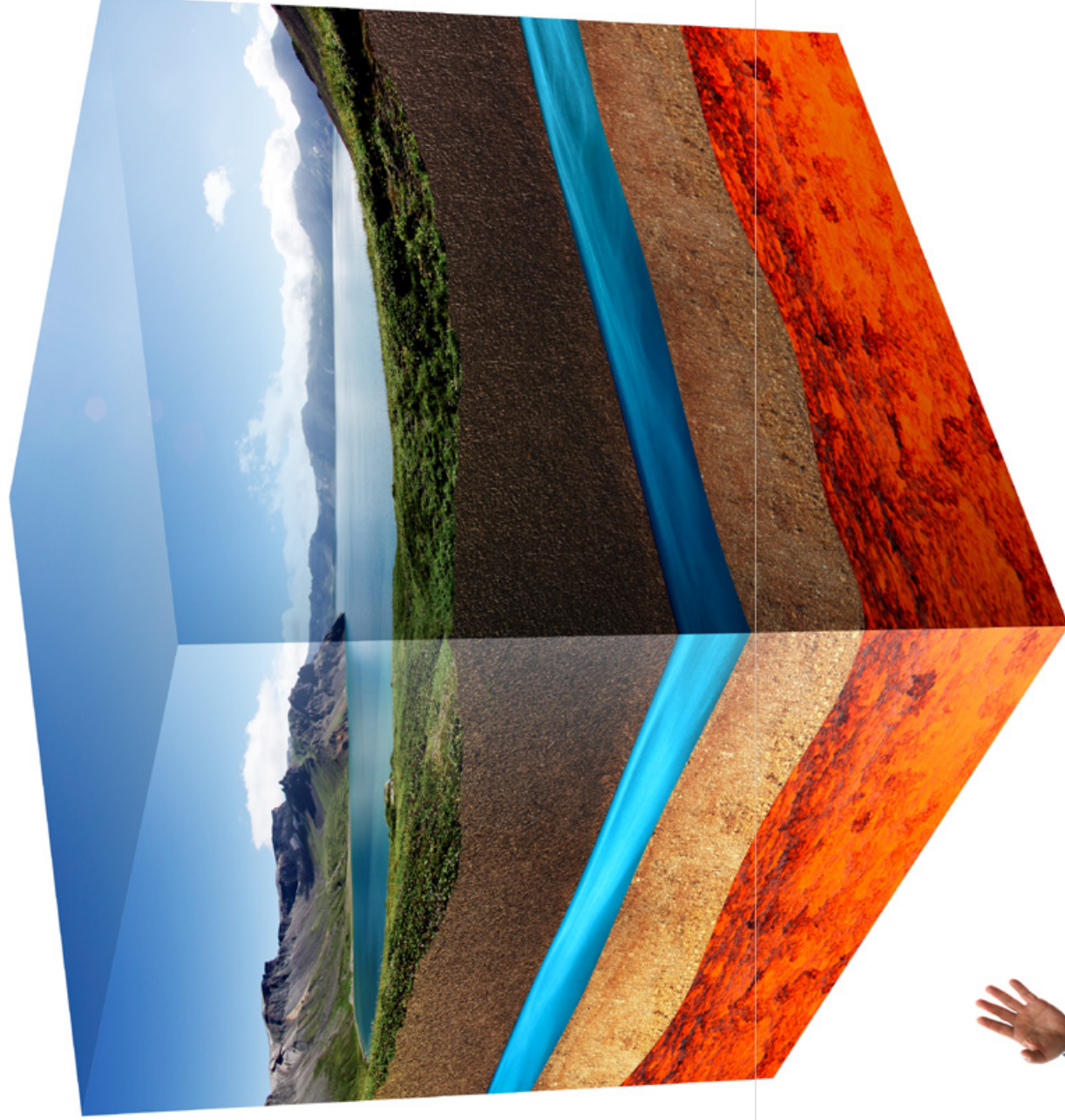


Nuclear Tests Could Trigger Volcanic Eruption

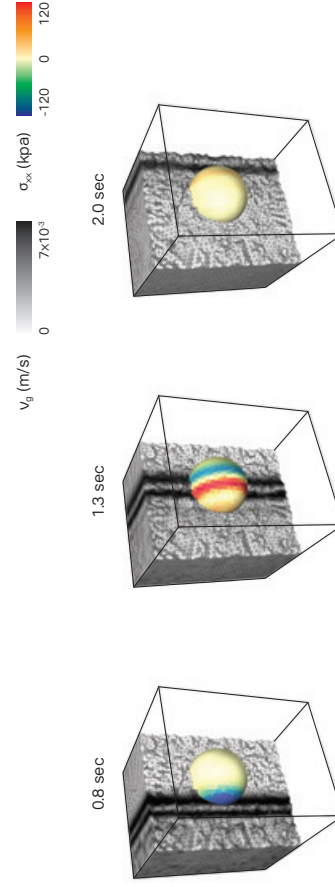
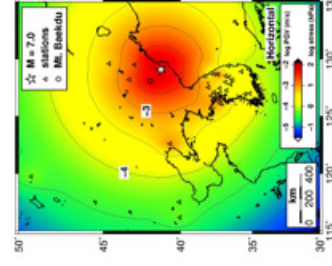
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Professor Tae-Kyung Hong and his Research Team

Discover that North Korea's Nuclear Tests Could Trigger Volcanic Eruption in Mt. Baekdu



→ Currently, there are fears that North Korea could soon test a hydrogen bomb. Amidst these concerns, Yonsei Earth System Sciences Professor Tae-Kyung Hong and his team are studying how North Korea's nuclear tests could affect seismic activities at Mount Baekdu. This is the first study to show that seismic waves following a nuclear test could possibly cause an earthquake and volcanic eruption at the mountain on the North Korean-Chinese border. Professor Hong and his team examined the dynamic stress changes of the magma chamber of Mt. Baekdu that can be induced by hypothetical North Korean nuclear explosions. Seismic waveforms for hypothetical underground nuclear explosions at North Korean test site were calculated by using an empirical Green's function approach based on the seismic waveforms of North Korea's first three nuclear tests; such a technique is efficient for regions containing poorly constrained velocity structures. The peak ground motions around the volcano were estimated from empirical strong-motion attenuation curves. A hypothetical M7.0 North Korean underground nuclear explosion may produce peak ground accelerations of 0.1684 m/s² in the horizontal direction and 0.0917 m/s² in the vertical direction around the volcano, inducing peak dynamic stress change of 67 kPa on the volcano surface and ~120 kPa in the spherical magma chamber. North Korean underground nuclear explosions with magnitudes of 5.0-7.6 may induce overpressure in the magma chamber of several tens to hundreds of kilopascals. Their calculations show that with a magnitude of 7.0, the blast would cause seismic tremors and changes in seismic earth pressure on the surface of Mount Baekdu and inside its magma chamber. This is the first study to show that North Korea's nuclear tests are capable of causing significant volcanic activity at Mount Baekdu. The results were published on February 17 in the online edition of Scientific Reports, a sister journal of Nature.



Modeling of Pressure Change in Magma Chamber by Nuclear Test Seismic Waves

