

Learning Geophysical Phenomena by Numerical Simulations: A Curriculum of Geophysics Education in High School

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In this study, we have developed a new curriculum for high school students to learn the complicated geophysical phenomena. The geophysical phenomena treated in the curriculum are the projectile motion of volcanic rocks, the motion of Foucault pendulum, and the propagating motion of tsunami waves. A special feature of the curriculum is that students try to perform numerical simulations to understand the physics and behavior of these geophysical phenomena. The curriculum is composed of two successive physics classes for second or third grade high school students (each class is 45 minutes in length). In the first class, we lecture the basic physical laws, the formulation of differential equations, and the basics of numerical simulation approach. In the second class, every student plays the numerical simulations by using PC. In the current study, we have conducted questionnaire surveys to all the students after the classes to investigate how performing numerical simulation improves the understanding of the geophysical phenomena.

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