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Applications of GIS, Internet technology, close-range remote sensing, and virtual reality to develop geomorphological education

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Effective geomorphological education for young students such as university undergraduates and high school students is crucial for fostering future geomorphologists and the long-term development of Geomorphology. As an outreach activity, geomorphological education for common people is also meaningful. Especially, education related to geomorphological hazards for citizens will lead to disaster risk reduction. We have been developing materials and curricula for geomorphological education using GIS, Internet technology, close-range remote sensing, and virtual reality, and have applied them to practical courses in high school classes and social events in Japan and China. The developed materials include: 1) online resources for learning GIS operations including geomorphometric analysis, 2) Web-based online GIS for a better understanding of flood hazard maps in relation to landforms, 3) explanatory materials of typical landforms in Japan based on photographs and topographic data obtained by Unmanned Aerial Vehicles (UAVs), and 4) visual contents for virtual tours of geomorphological sites such as a coastal cliff and an underground cave. This presentation introduces the main points of our educational activities and discusses their implications to provide future perspectives.