



Current status, limitations, and future perspectives of smartphone applications for geoscience

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Smartphones have been drawing attention with respect to scientific uses; the scope of their applicability has rapidly expanded in recent years. Many smartphone applications (apps) have been developed in the realm of geosciences for purposes of collecting, storing, analyzing, and visualizing various sets of information and data. In this study, a large number of commercial applications available in the field of geosciences were investigated and the areas of use and major features of those applications were examined. The results revealed many cases in which the existing recording, analysis, and measurement methodologies and tools could be improved to a certain extent or replaced by utilizing the device's computing capacity, mobility, sensors, and other strengths. Commercially available applications have been developed for various purposes and a number of different disciplines. Although a great number of apps have been developed for mere information conveyance, computing, and other similar purposes, the results also identified many apps that can be used for complex purposes, such as sensor-based measurements, analysis, and field survey execution. The background of such app development and implementation is characterized by many limitations with respect to hard- and software aspects of smartphones, reflecting the characteristics of mobile-devices and differences that set them apart from PCs. Despite the weaknesses, both hard- and software aspects of smartphones are rapidly advancing, resulting in increasingly more variations in the type; even more applications are anticipated to be implemented in the future.