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3D PDF - a means of public access to geological 3D – objects, using the example of GTA3D

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In geology, 3D modeling has become very important. In the past, two-dimensional data such as isolines, drilling profiles, or cross-sections based on those, were used to illustrate the subsurface geology, whereas now, we can create complex digital 3D models. These models are produced with special software, such as GOCAD ®. The models can be viewed, only through the software used to create them, or through viewers available for free.
The platform-independent PDF (Portable Document Format), enforced by Adobe, has found a wide distribution. This format has constantly evolved over time. Meanwhile, it is possible to display CAD data in an Adobe 3D PDF file with the free Adobe Reader (version 7). In a 3D PDF, a 3D model is freely rotatable and can be assembled from a plurality of objects, which can thus be viewed from all directions on their own. In addition, it is possible to create moveable cross-sections (profiles), and to assign transparency to the objects.
Based on industry-standard CAD software, 3D PDFs can be generated from a large number of formats, or even be exported directly from this software. In geoinformatics, different approaches to creating 3D PDFs exist.
The intent of the Authority for Mining, Energy and Geology to allow free access to the models of the Geotectonic Atlas (GTA3D), could not be realized with standard software solutions. A specially designed code converts the 3D objects to VRML (Virtual Reality Modeling Language). VRML is one of the few formats that allow using image files (maps) as textures, and to represent colors and shapes correctly. The files were merged in Acrobat X Pro, and a 3D PDF was generated subsequently. A topographic map, a display of geographic directions and horizontal and vertical scales help to facilitate the use.