

Reverse geological faults and folds are originated by compressive forces

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Abstract

The use of a simulation was useful to check the origin of some geological structures that are present in sedimentary rocks. The simulator is a transparent box attached to an engine that allows us to compress coloured aggregates disposed in layers. As a result of the experiment, we obtain a reverse fault and the folding of the strata, so we can claim that these structural types are originated after the action of compressive forces over sedimentary rocks.

Key Words: stratum, fault, fold, compressive forces.

Introduction

Sediments are accumulated in horizontal layers in sedimentation basins. These materials generate sedimentary rocks through the process of lithification. However, sedimentary rocks often surfaces in an inclined position so there must be a type of process which modifies its position. Moreover, in some occasions structures such as folds and faults can be observed. The use of elaborated models in a laboratory makes us understand the mechanism of the deformation of rocks. In this practice, we are going to propose the following hypothesis about the reasons of the deformation of rocks: "Compressive forces generate reverse geological faults and folds when acting over sedimentary rocks".

Development

To verify the hypothesis, we use an effort box in which we put several layers of coloured aggregates of at least 1 centimetre as it can be seen in the picture below.



After having set seven layers, we started the simulator engine to obtain the compression in the block of sediments according to the parameters indicated in the following chart:

Type of effort applied	Compressive
Length of the block before the effort	50 centimetres
Length of the block after the effort	28 centimetres
Variation rate	44%

The analysis of the results was made by means of the observation of the resulting block as well as the identification of the geological structures generated.

Results

This picture shows the block obtained after the test where the most relevant structures have been pointed out.



Conclusion

As a result of the test, we have obtained a reverse geological fault and the strata appear folded so we may conclude that the hypothesis raised is finally verified: "Compressive forces generate reverse geological faults and folds when acting over sedimentary rocks". After this test, there is another possible question to make: "Which type of structures will arise if we apply distensive forces?"

References

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