



UNIUNEA EUROPEANĂ



GUVERNUL ROMÂNIEI



Universitatea de Vest
din Timișoara



Fondul Social European
POSDRU 2007-2013



Intervenție Structurată
2007-2013



MINISTERUL
EDUCAȚIEI
NAȚIONALE

OPȘORUJ



Groundwater drainage monitoring and karst terrain analysis using Spontaneous Potential (SP) in Anina Mining Area (Banat Mountains, Romania). Preliminary study.



Laurențiu ARTUGYAN¹ and Petru URDEA¹



¹West University of Timișoara, Department of Geography, Timișoara, Romania;
lau_artugyan@yahoo.com

¹West University of Timișoara, Department of Geography, Timișoara, Romania;
petru.urdea@e-uvt.ro



CONTENTS

1. INTRODUCTION

2. LOCALIZATION

3. SITE DESCRIPTION

4. SITE DESCRIPTION IN IMAGES

5. METHODOLOGY

6. RESULTS AND DISCUSSIONS

7. CONCLUSIONS



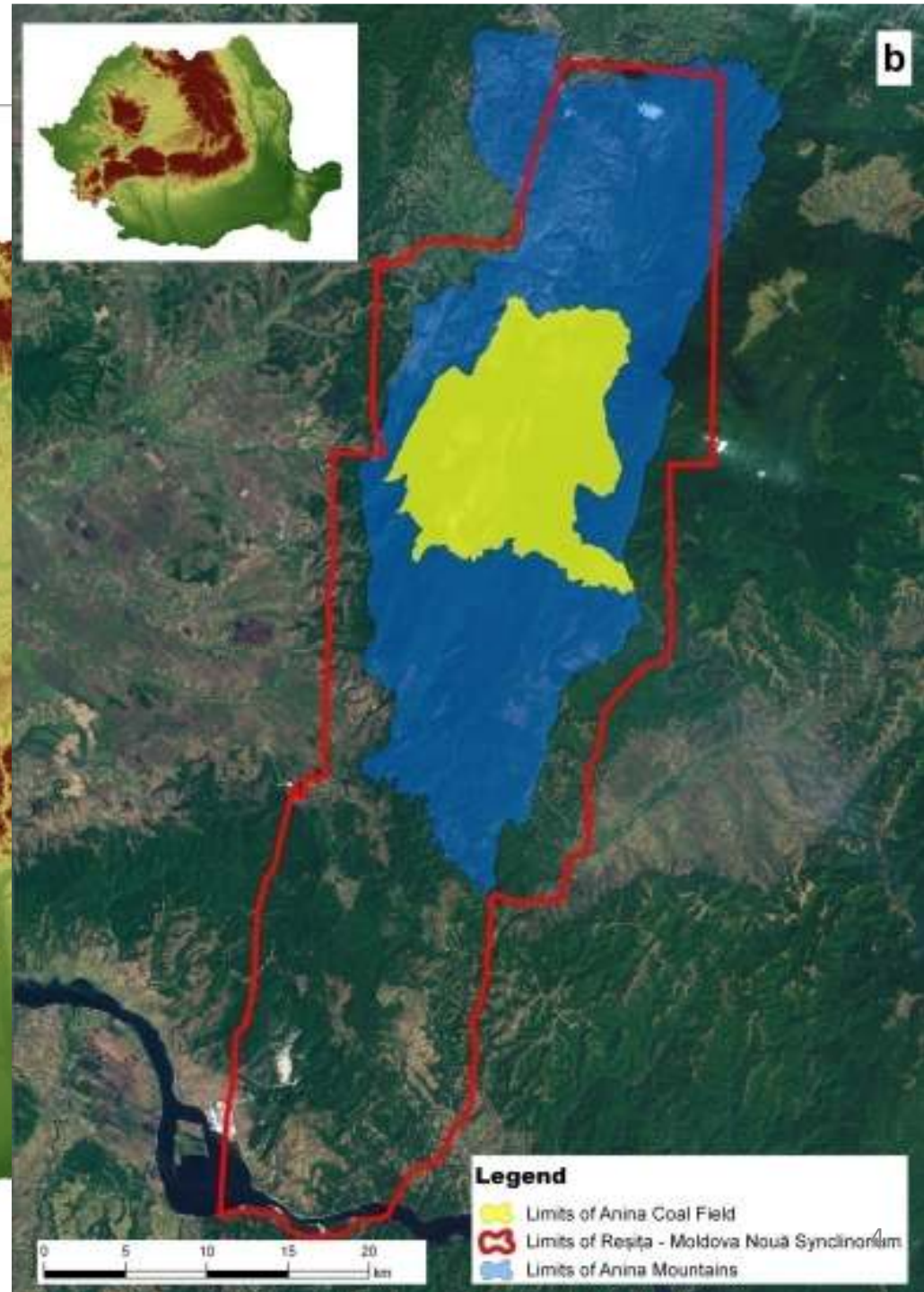
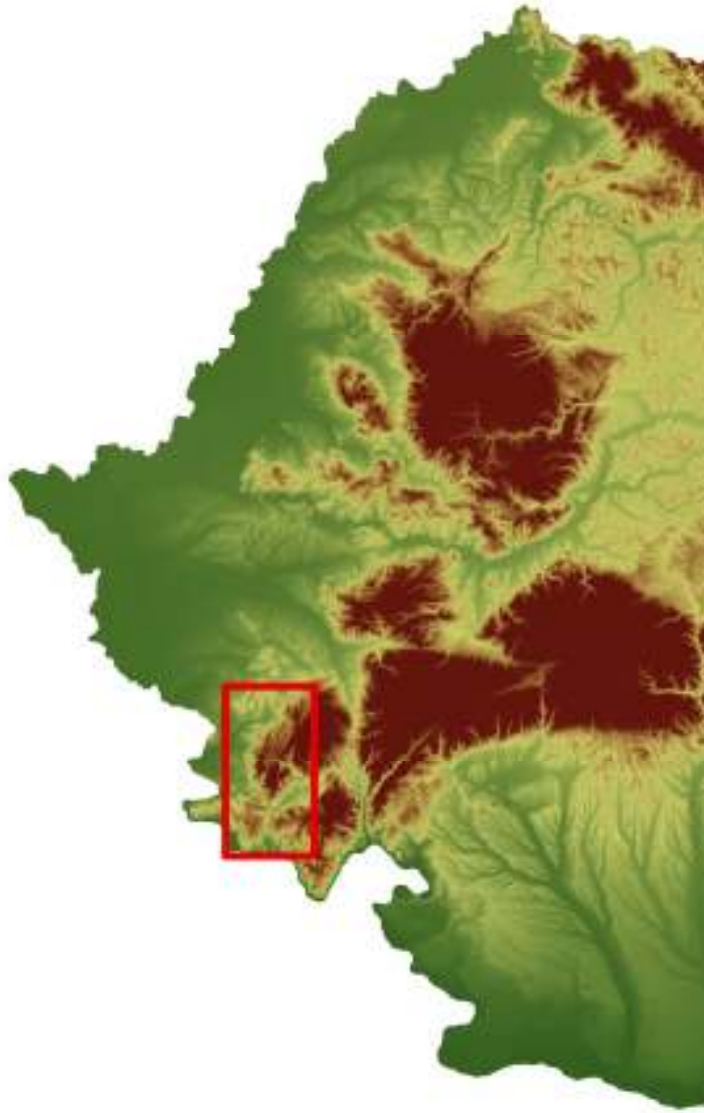
STATE OF THE ART

The Spontaneous Potential (SP) method is the method that can offer information regarding the geometry and the dynamics, simultaneously, of ground water flow in real time (Jardani *et al.* 2007b, 2008).

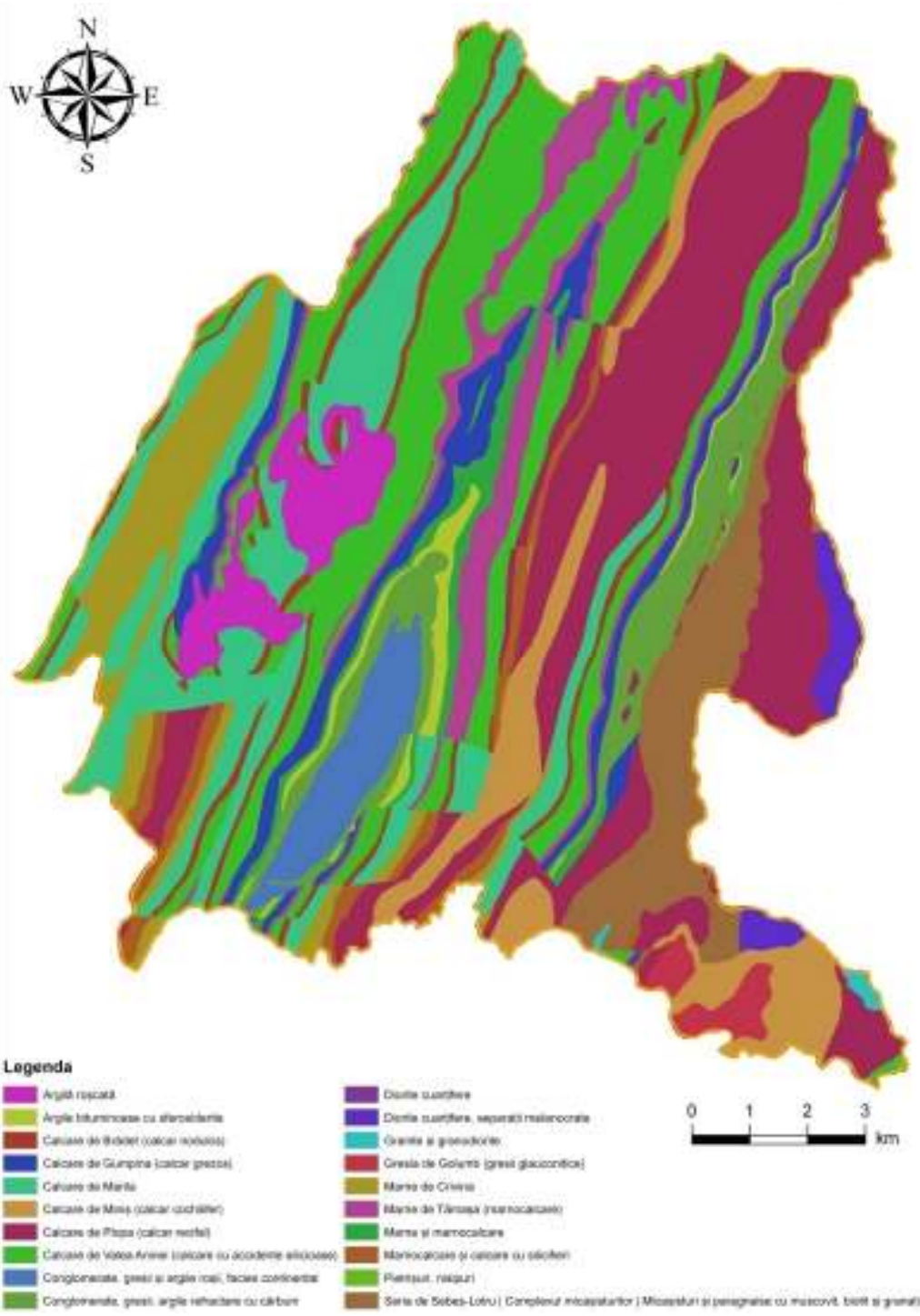
Based on the flow of ground water, there is resulting a natural electrical potential. This natural electrical potential is directly related to the movement of water within the aquifer (Jardani *et al.* 2009).



LOCALIZATION



- Different typ
- The presenc (granite, grave
- The altern valleys, give t suspended kar
- There are blind valleys, the other side by many caves



ated materials

ited by deep ntativeness of

igs, potholes, d karrens. On e represented

SITE DESCRIPTION IN IMAGES



METHODOLOGY

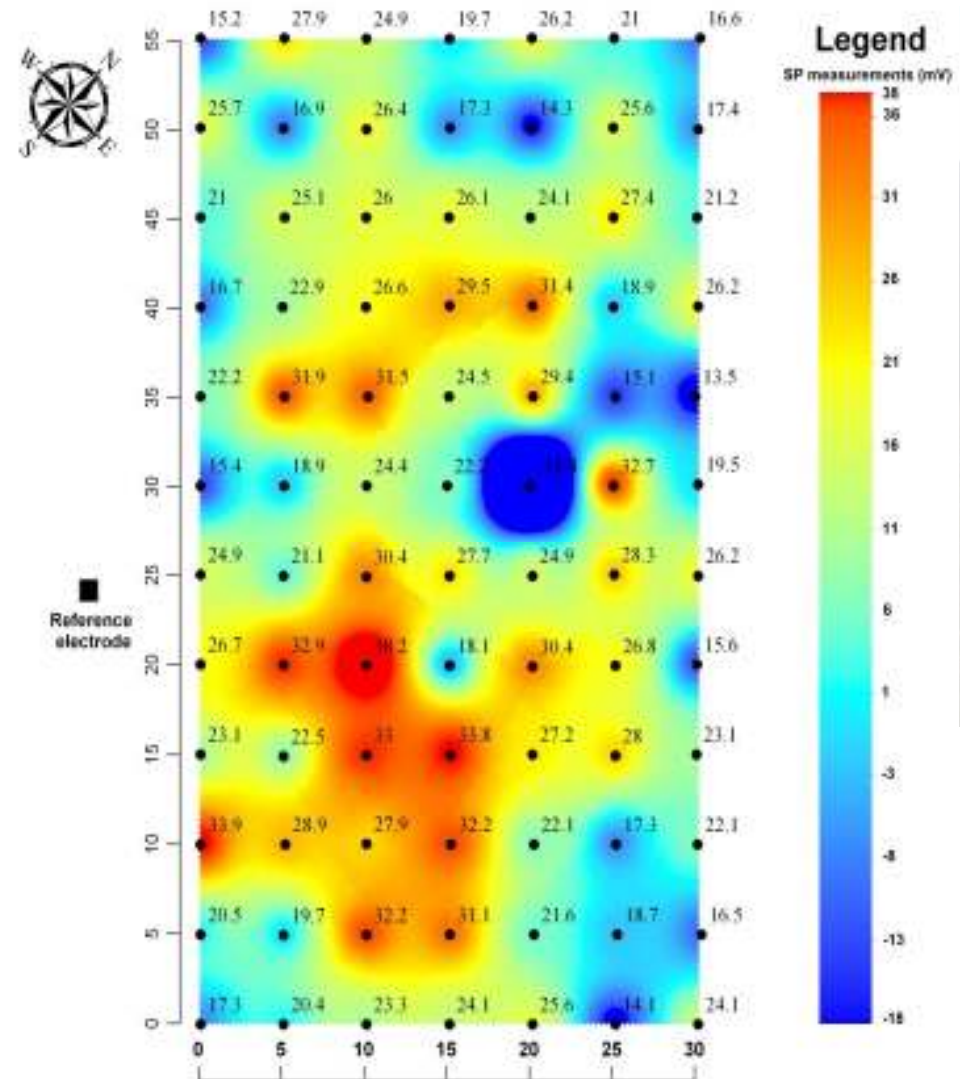
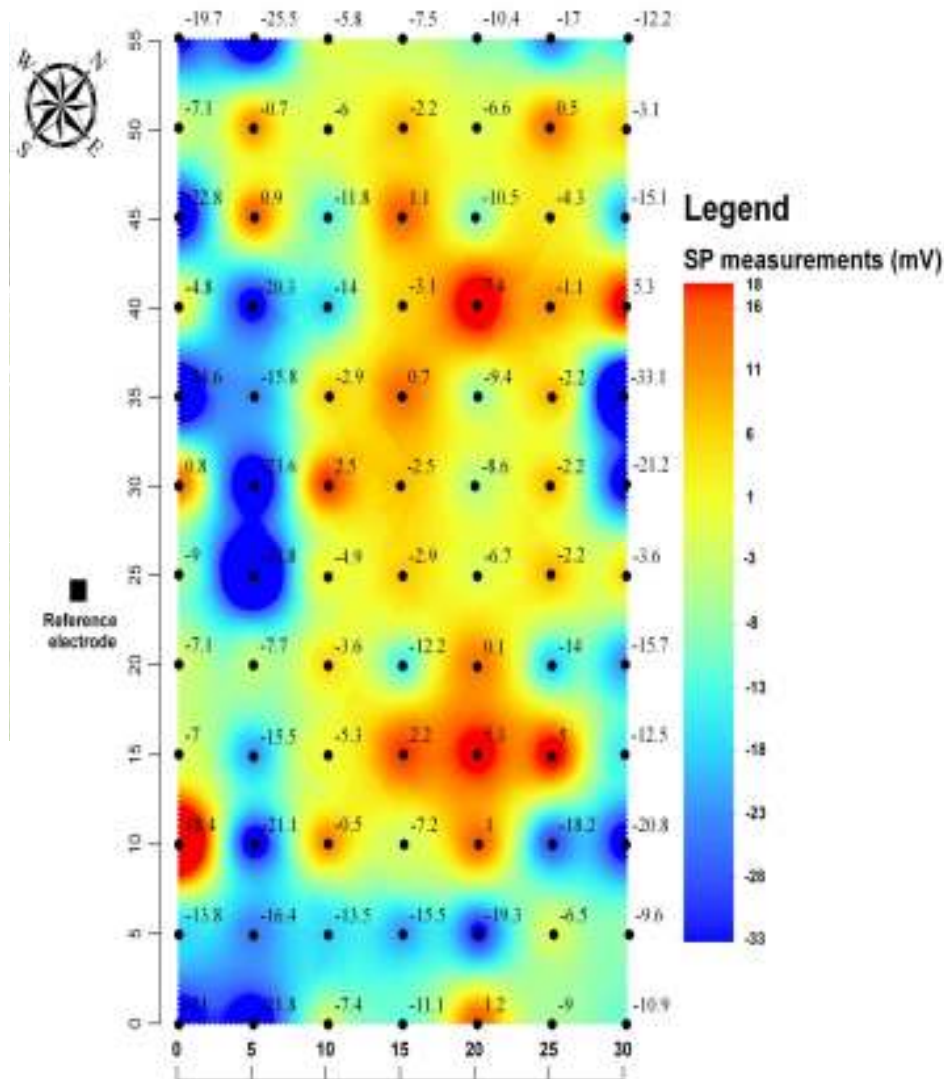


RESULTS AND DISCUSSIONS

Märghitaş Plateau study case - SINKHOLE 1

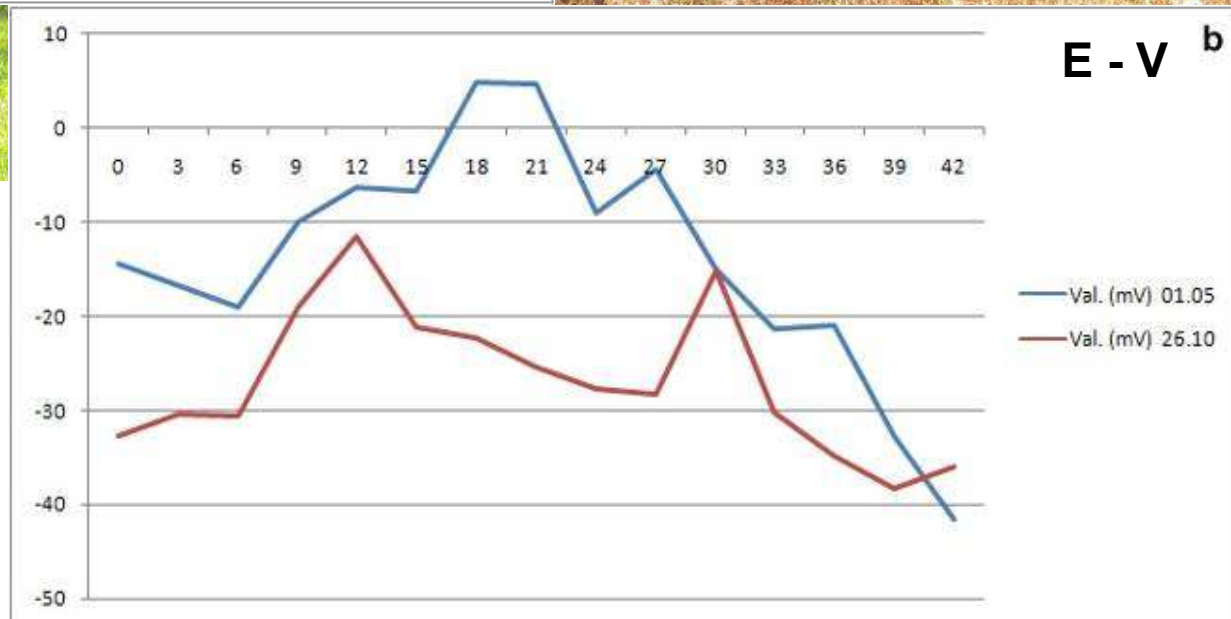
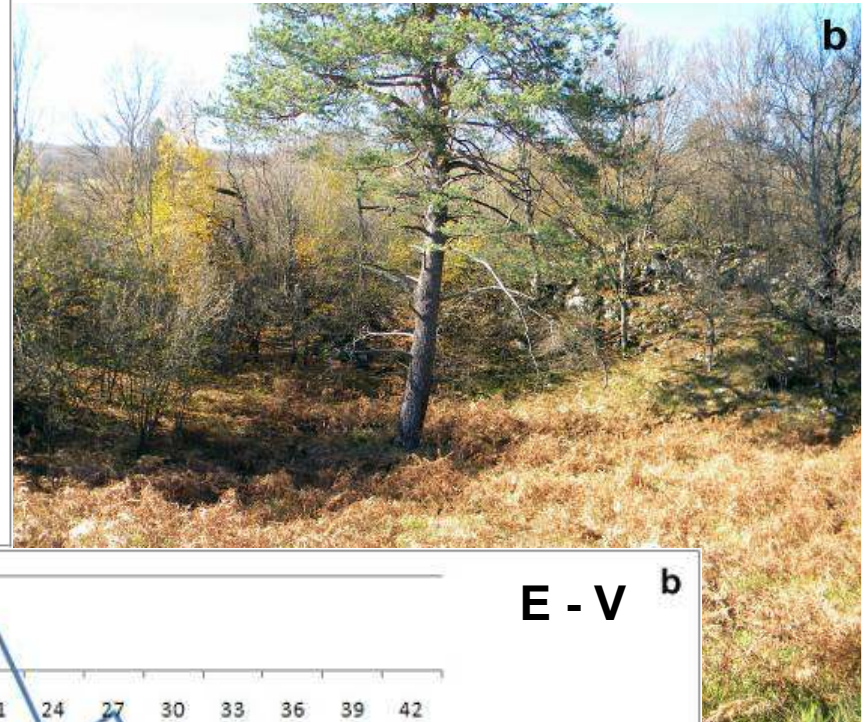
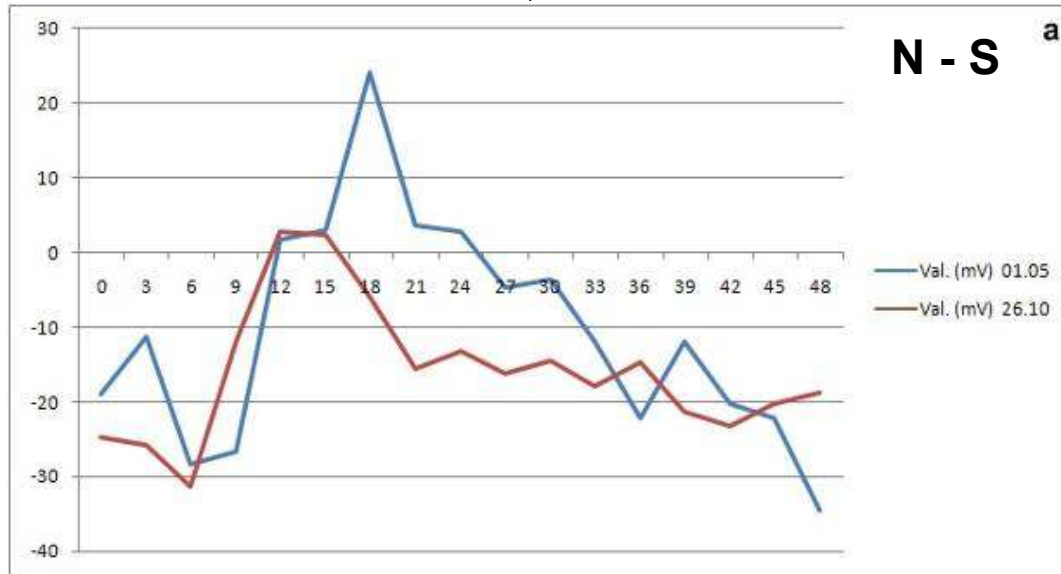
MAY 2013

NOVEMBER 2013



RESULTS AND DISCUSSIONS

Mărghițaș Plateau study case - SINKHOLE 2



CONCLUSIONS

- ✓ There are sinkholes with a direction in water flow.
- ✓ Karstic depressions where we observe the SP values points out a stagnate tendency in the middle of them.
- ✓ Water drainage is influenced by the slope, by tectonic features and by sinkholes morphology.
- ✓ There are micro fissures that are growing the level of dissolution, based on SP measurements
- ✓ We were able to ascertain that the SP measurements confirm that the main tectonic orientation, NW–SE is decisive in the water drainage.
- ✓ In our future work we intend to obtain more field data using spontaneous potential to compare with our first results.
- ✓ We intend to integrate in our analysis some other geophysical methods such as Ground Penetrating Radar and Electrical Resistivity Imaging.

Acknowledgements

We would like to thank those students and friends who helped us in the data field acquisition campaigns, been a real support in obtaining these results.



This work has been supported from the strategic grant POSDRU/159/1.5/S/133391, Project “*Doctoral and Post-doctoral programs of excellence for highly qualified human resources training for research in the field of Life sciences, Environment and Earth Science*” cofinanced by the European Social Fund within the Sectorial Operational Program Human Resources Development 2007 – 2013



*THANK YOU FOR
YOUR ATTENTION!*