

# METAPANEL FINAL EVALUATION REPORT ON SAS RESEARCH INSTITUTE

Period January 1, 2016 – December 31, 2021

According to § I, section 15 and 16 of Principles of periodic assessment of SAS research institutes adopted under the regulation of § 10, section 5, letter d) Act No. 133/2002 Coll. on Slovak Academy of Sciences and approved by the SAS Assembly on November 21, 2021, Metapanel issued the report with following evaluation and proposal for Institute rating.

<b>Name and address of SAS Institute</b>	<b>Ústav vied o Zemi SAV, v.v.i. Dúbravská cesta 9 840 05 Bratislava</b>
<b>On-site visit date</b>	<b>October 17, 2022</b>

## Scientific quality and productivity

<b>Comments, including strengths and weaknesses</b> (recommended number of characters with spaces: up to 4000)	<b>Rating*</b>
<p>The Earth Science institute has 80 positions (FTE), 43 of them are researchers ("many researchers took administration, management etc positions", p. 98). The institute consists of two divisions which were former independent institutes (Geology, Geophysics). The executive body of the institute consists of 9 scientists, all of them are male. One of the outstanding young researchers, Adam Tomasovych, is now head of the scientific board. An international advisory board with internationally highly acknowledged scientists has been established (all of them men). If I look at the age and gender structure of the institute I see almost no women younger than 40 years, and, with the exception of the age group 41-45 women remain extremely underrepresented.</p> <p>&gt; The number of researchers with other duties (administration etc) seems very high</p> <p>&gt;improve gender balance in executive bodies and boards, please consider this in your hiring policy.</p> <p>The mission statement from the Geology Division provides a long list of Earth Science subdisciplines, where the division does research. It looks as if the division has no clear mission, as, for example, providing knowledge for a world in transition to a carbon-free future, or aiming at improved understanding of mountain ranges using combined geophysical and geological approaches. And, the institute, after 6 years, is not ready to formulate a joint mission statement.</p> <p>&gt;Develop a joint mission for the institute, strengthen collaboration between departments.</p> <p>Research activity of the institute: The ESI provides an impressive list of research projects, most of them supported by national funds (Vega etc). Some of the</p>	B

<p>projects reach high international visibility. They come dominantly from Paleobiology (Tomasovych et al.), from Seismology (Moczo, Kristek et al) and from Gravimetry (Vaida et al). Some researchers are coauthors in well-cited multiauthor studies (forest meteorology, paleogeography, climate). I see no prominent joint projects between Geophysics and Geology.</p> <p>Since 2016, there is a clearly visible attempt of several researchers to establish stronger international links. Researchers already successful before 2016 remain internationally best visible, others continue with valuable research in their field of competence without strong impact as reflected in rather low number of citations. It may be worthwhile to reflect about the major mission of the institute, to strengthen collaboration within the institute and across Institute boundaries (see, for example, climate, meteorology: project on rainfall and Barrel Size and other projects: collaboration with Hydrology and Geography is highly recommended). The institute continues to have poor financial support from outside ("other salary budget", p. 3). International financial support is coupled with strong international networks.</p> <p>&gt;Funding by European grant systems needs to be improved. Geophysics needs to intensify submission of successful proposal also for national grants (geology has a better record than geophysics). ERC grants – urgent need to increase submission of (successful) proposals.</p> <p>&gt;Increase international visibility, strengthen International collaboration, participate in networks, further increase number of participants, e.g. at EGU in Vienna ( EGU is also recommended for Early Career Scientists, they have an excellent Early Career Program (some ESI researchers already are active within EGU, they can act as "role models" for others).</p> <p>Publication record: Publication activity has increased considerably, with an increase also in top quality journal publications. Few researchers are clearly outstanding with publications in high-impact journals. A clear increase is measured in the research output since 2016 and, as a consequence, in the citation record. Another comment to publications: Yes, Geologica Carpathica is open access and it remains convenient to publish in the house journal. And, yes, the journal provides a platform for geological research in the Carpathians. The comment, that one does not want to support commercial publishers is fine, however, there are, today many excellent non-commercial international open-access journals (e.g. all Journals from EGU).</p> <p>Research and PhD's: The number of PhD's remains small. We see a positive development with an increasing number of women PhD's since 2016. Good, that PhD's are motivated to write their own proposals. Try to recruit more international PhD students.</p> <p>A side comment to Habilitation/ DrSci. In SAS (Tomasovich, Krystek): Is this still a useful step in a science career in the 21<sup>st</sup> century ?</p> <p>Teaching: numbers of lectures decreased since 2017, With low numbers of students at universities, no ESI researchers seem to be needed for teaching, but, reduced contacts with bachelor/master students result in reduced number of PhD's, an unhealthy situation for SAS Earth Sciences.</p>	
---	--

#### Societal, cultural, or economic impact

Comments, including strengths and weaknesses (recommended number of characters with spaces: up to 4000)	Rating*
The institute lists a number of industrial and governmental contacts, a few of contracts bring financial support of more than 10000 Euros (hydrocarbon potential, gravimetry for express road). Other contracts are supporting the institute with a few thousand Euros.	B/C

<p>Popularisation of Science may be further intensified, image of Earth Sciences in Slovak society is in need for further improvement (if we look at, for example, the small number of PhD's). Earth Sciences today have the opportunity to lead most important debates about the Anthropocene (what can we learn from Earth and Climate History? What about resources for our cell phones, e-cars and so on). Public lectures were low due to COVID in 2020 and 2021 but they were much lower already in 2019 if compared 2016-2018. Also drop in telecommunication media contacts, but larger number of articles in press media.</p> <p><i>&gt;Please improve public outreach and, bundle forces with neighbour institutes (e.g. Geography).</i></p>	
--	--

## Strategy and potential for development

Comments (recommended number of characters with spaces: up to 4000)	Rating*
<p>Research strategy of the institute starts with a "mission statement" which is much better formulated than the mission statement in the report, even if it remains rather vague ("scientific knowledge to the geoscience community"...).</p> <p>The action plan (p.110) is oriented towards important goals. The institute describes the path they intend to go in the next years. Again, the wording remains rather open ("to create departments as dynamic and flexible units...").</p> <p>The institute defines a promising path towards a stronger institute, what is still missing is the description of well-defined measures to be taken. The projects described are of relevance for Earth Sciences, joint ventures between geophysics and geology are not yet visible. Climate change topics need to be addressed in close interaction with other institutes (Hydrology, Geography).</p> <p>Positive developments are planned: regular PhD-seminars (why not combine with seminars with guests from abroad -e.g. from Vienna, Budapest, Prague).</p> <p>Social potential: a nice list, but highly important themes like the "Anthropocene", "Climate change and lessons from the past" are not listed.</p> <p><i>&gt;I see the Institute on a promising track but still more precise steps towards the future described in the text are missing.</i></p> <p><i>&gt;Formulate well-defined milestones in your plans for the next evaluation period</i></p>	B

\*Rating on a scale from A to D, where A is internationally leading; A/B part is internationally leading, overall is visible at the European level; B is visible at European level; B/C part is visible at the European level, overall is solid; C is solid; C/D is partly solid; D is not solid;

## OVERALL ASSESSMENT

<p><b>General comments on the Institute performance (2016-2021)</b></p> <p>The Institute demonstrates that it is motivated to follow recommendations given by Evaluation Panel 2016. I see the institute with a few "star scientists" with good or excellent international recognition (B and A-B), others are doing solid research which needs to be strengthened by better integration in an international research community (B-C). Another positive development: The institute is active in bringing back researcher from abroad. Publication records are improved, some researchers publish regularly in high-quality journals. An international advisory body has been established, regular meetings with the board need to be established.</p> <p>A stronger presence of more researchers beyond the Slovak borders will result in improved outside funding. It pays off to interact on an international level and, therefore, it is of high importance to also be active and visible at European conferences as EGU, which is annually held next door, in Vienna and to integrate into international research networks.</p> <p>A critical comment to internal collaboration: The departments of the institutes are improving collaboration, however, joint projects need to be further developed.</p>
---

Problematic remains the funding situation: European funding remains insufficient (ERC grants, etc), even if a few researchers have been successful in acquiring international funds. The members of the institute will need better professional accompaniment when preparing EU-proposals.

**Comments and recommendations for further improvement and development of the institute**

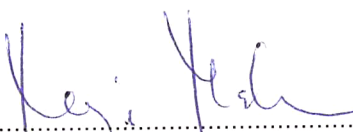
- The number of researchers with other duties (administration etc) seems very high, increase the number of active researchers, replace retiring researchers with young researchers, search for excellent female researchers
- improve gender balance in executive bodies and boards, please consider this in your hiring policy.
- Develop a joint mission for the institute, strengthen collaboration between departments.
- Funding by European grant systems needs to be improved. Geophysics needs to intensify submission of successful proposal also for national grants (geology has a better record than geophysics). ERC grants – urgent need to increase submission of (successful) proposals. Improve training for proposal writing for ESI researchers.
- Establish regular contacts with the advisory board and ask the board for nurturing criticism in your mission development.
- Increase international visibility, strengthen International collaboration, participate in networks, further increase number of participants e.g. at EGU in Vienna, EGU is also recommended for Early Career Scientists, EGU has an excellent Early Career Program (several ESI researchers already are active within EGU, they can act as “role models” for others).
- Continue with improvement of PhD-program, further strengthen exchange with institutes abroad, send PhD students abroad, provide opportunities for visits of labs in top research centers abroad (for longer stays up to one year).
- Strengthen teaching activities and collaboration with universities.
- Improve EU-funding, this facilitates improved financial support of PhD students or Post-Doctoral students
- Collaboration/dialogue with other SAS- and University Institute needs to be intensified (e.g. Climate/Meteorology with Hydrology and Geography). Discuss future of meteorology/climate research/environmental research with other institutes involved (Hydrology, Geography).
- Outreach is of high relevance, it asks for well-organized plans and actions, developed on the level of the institute boards. This will, at least, help to increase reputation of Earth Sciences in society and among children in schools. ESI may take the lead in merged outreach actions with neighboring institutes and with University Institutes.

**Proposal of overall institute rating:**

**B**

The institute demonstrates that merging of geology with geophysics was successful, the institute has now an improved potential to further grow (future reduction of administrative research positions). Better interaction of meteorology/climate science with other SAS institutes is recommended. Improvements in research/publications are clearly visible, support by European grants (ERC) remains poor, gender balance is good among PhD's, it needs to be improved among researchers and in boards. Rating is in part B-C, in part B.

December 12, 2022

  
.....  
On behalf of the Metapanel  
Prof. Marja Makarow