# Investigating the Change of Microbiom and Geology Context for the Rare 'Data' by Text Analysis of Scientific Papers Published in Geophysics and Mine in 2006-2007 and 2016-2019

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**Abstract**

Geophysics and Mine are two important journals in the world. Geophysics is a journal of the Society of Exploration Geophysicists (SEG) and Mine is a journal of the Society for Mining, Metallurgy, and Exploration (SME). In this study, we aim to compare the change of geology context in the rare 'data' in the scientific papers published in these two journals in 2006-2007 and 2016-2019. We used the text analysis method for this study. We found that the rare 'data' in the scientific papers published in Geophysics and Mine in 2006-2007 and 2016-2019 are related to the microbiom and geology context. We also found that the rare 'data' in the scientific papers published in Geophysics and Mine in 2006-2007 and 2016-2019 are related to the

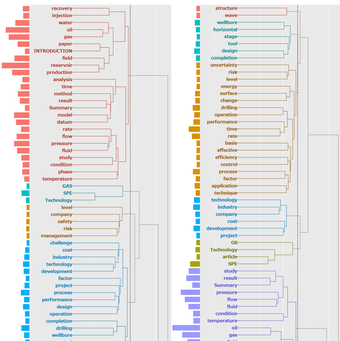


**Figure 5.** Hierarchical Cluster Analysis of keywords in 2008-2009 vs 2018-2019. KH Coder 3

**Remark:** HCA give a good comparison, for example, in 2008-2009 keyword simulation connected with modeling, approach and parameter, in in 2018-2019 keyword simulation connected with numerical, scale and modeling

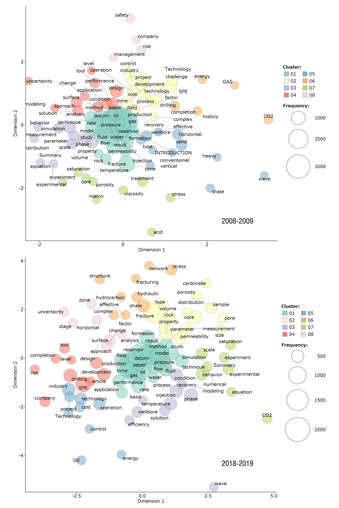


**Figure 6.** Multi-Dimensional Scaling for term clustering by KH Coder 3 in 2008-2009 vs 2018-2019

**Remark:** We could see that permeability, fracture, core and rock moved from first cluster to the new one

## Made by Sifaka

**Table 15.** Comparison the top 40 key phrases in 2008-2009 and 2018-2019 based on titles and abstracts as noun phrases by Sifaka indexing

| Term as noun phrase | Collection Term Frequency | Term as noun phrase | Collection Term Frequency |
|---|---|---|---|
| reservoir pressure permeability | 4 | term productivity | 4 |
| nozzle diameters | 3 | tunnel creation | 4 |
| world class | 3 | steam breakthrough limit | 3 |
| water flow | 3 | fracture conductivity impairment | 2 |
| term productivity | 3 | uoe pipe | 2 |
| pore pressure change | 2 | water flow | 2 |
| formation fracturing | 2 | co2 foam eor corefloods | 2 |
| point source | 2 | khanty mansiisk | 2 |
| test loop | 2 | reservoirs ulrs | 2 |
| cantagallo sands | 2 | stick slip torsional vibrations | 2 |
| siberia oil | 1 | water injection rate | 2 |
| temperature logs | 1 | well region | 2 |
| rate temperature | 1 | siberia oil | 1 |
| scale computations | 1 | horn river basin hrb canada | 1 |
| beaufort sea gyre | 1 | equinor technology ventures | 1 |
| hydrate plug formation kinnari | 1 | adhesion work | 1 |
| drilling information | 1 | image resolution increases | 1 |
| macroscale bedding planes | 1 | rate temperature | 1 |
| jackup rig fleet | 1 | fracture facies maps | 1 |
| operator drilling contractors | 1 | operating wind load | 1 |
| nc clay | 1 | formation fracturing | 1 |
| steam oil ratios sor | 1 | body exoskeleton | 1 |
| fracture conductivity impairment | 1 | ai sector | 1 |
| uoe pipe | 1 | speed wob rate | 1 |
| transportation facilities | 1 | time analytics | 1 |
| reservoirs a | 1 | reservoirs a | 1 |
| bokor a new | 1 | fluid withdrawal conditions | 1 |
| fluid rates | 1 | deepwater ports | 1 |
| depletion process | 1 | fluid rates | 1 |
| standing deconvolution problem | 1 | models systems | 1 |
| injection experiment | 1 | fes deposition | 1 |
| gas conformance control | 1 | direction oil well tubing etc. | 1 |
| porosity carpentier | 1 | contact loads | 1 |
| maximum reservoir contact wells smart well completions | 1 | reservoir conditions summary micropores | 1 |
| eit experiment | 1 | carbonate lithofacies | 1 |
| drill string stretch | 1 | throat diameters | 1 |
| formation applications | 1 | liner assembly | 1 |
| inverse gaussian model | 1 | gypsum formation | 1 |
| reservoir property estimates | 1 | mass balance assessment | 1 |
| wellbore loading | 1 | layer expansion dle | 1 |

**Remark:** Extraction noun phrases is robust method for further query construction: fracture conductivity impairment, co2 foam eor corefloods, stick slip torsional vibrations, hydrate plug formation (AND author) Kinnari and so on

**References:**

**KH Coder** (by HIGUCHI Koichi) is a free software for **quantitative content analysis** or **text mining**. It is also utilized for **computational linguistics**. https://khcoder.net/en/

**Sifaka** is a text mining application built on top of an open-source search engine. Sifaka stores documents using multiple types of text representations (e.g., terms, bigrams, trigrams, noun phrases, named entities). https://www.lemurproject.org/sifaka.php

Van Eck, N.J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, *84*(2), 523-538.

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