Accepted Manuscript

An updated global review of solutional weathering processes and forms in quartz sandstones and quartzites

Robert A.L. Wray, Francesco Sauro

PII: S0012-8252(17)30023-5

DOI: doi: 10.1016/j.earscirev.2017.06.008

Reference: EARTH 2438

To appear in: Earth-Science Reviews

Received date: 30 January 2017 Revised date: 31 May 2017 Accepted date: 18 June 2017



Please cite this article as: Robert A.L. Wray, Francesco Sauro, An updated global review of solutional weathering processes and forms in quartz sandstones and quartzites, *Earth-Science Reviews* (2017), doi: 10.1016/j.earscirev.2017.06.008

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

An updated global review of solutional weathering processes and forms in quartz sandstones and quartzites

Robert A L Wray¹ and Francesco Sauro^{2,3*}

- 1 UOW College, University of Wollongong, Wollongong, Australia, 2522, email: rwray@uow.edu.au
- 2 Department of Biological, Geological and Environmental Sciences, Italian Institute of Speleology, Via Zamboni 67, 40126 Bologna, Italy, email: cescosauro@gmail.com
- 3 La Venta Geographical Explorations, Treviso, Italy
- * Author to which all correspondence should be addressed

1. Introduction	
2. Processes	7
2.1 The chemical characteristics of silica dissolution	
2.1.1 Forms of quartz and silica	8
2.1.2 Characteristics of the silica-water system	8
2.1.3 Influence of inorganic cations and metal ions	11
2.1.4 Influence of organic acids	12
2.2 Solutional weathering mechanisms of quartz sandstone and quartzite 14	
2.2.1 The locus of chemical attack	15
2.2.2 The Arenization concept	18
2.2.3 "Ghost" or "Phantom Rock" processes	23
2.2.4 Main factors controlling the arenization process	25
2.2.4.1 The 'time' factor	25
2.2.4.2 Climate and water availability - the 'Flushing Rate'	25
2.2.4.3 Primary porosity	26
2.2.4.4 Quartz grain/crystal size	28
2.2.4.5 Solution weathering processes of other silicates	28
2.2.4.6 Physical properties of interlocked quartz-sandstones	31
2.2.4.7 Degree of fracturation	33

Download English Version:

https://daneshyari.com/en/article/5785099

Download Persian Version:

https://daneshyari.com/article/5785099

<u>Daneshyari.com</u>