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Shahid Iqbal, Michael Wagemich, Irfan U Jan, Wolfram Michael Kuerschner, Sussane Gier, Mehwish Bibi



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1 **Hot-house climate during the Triassic/Jurassic transition: The evidence of**
2 **climate change from the southern hemisphere (Salt Range, Pakistan)**

3 Shahid Iqbal^{1,2}, Michael Wagreich², Irfan. U. Jan³, Wolfram Michael Kuerschner⁴, Sussane
4 Gier² and Mehwish Bibi²

5 1- Department of Earth Sciences Quaid-i-Azam University Islamabad, 45320 Islamabad, Pakistan.

6 2- Department for Geodynamics and Sedimentology, University of Vienna, Althanstrasse 14 A-1090
7 Vienna, Austria.

8 3- National Centre for Excellence in Geology, University of Peshawar, 25130 Peshawar, Khyber
9 Pakhtunkhwa, Pakistan.

10 4- Department of Geosciences, University of Oslo, 1047 Blindern 0316 Oslo, Norway.

11 Corresponding author's E-mail: sigbal_geol@yahoo.com

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Abstract

14 The Triassic–Jurassic boundary interval was characterised by the change from warm,
15 semiarid–arid to a hot and humid climate in the Tethyan domain linked to input of
16 greenhouse gases from the Central Atlantic Magmatic Province (CAMP) activity and Pangaea
17 breakup. This study provides the very first outcrop evidences of palaeoclimatic evolution
18 during the Triassic–Jurassic boundary interval in the then southern hemisphere, along the
19 eastern margin of Gondwana facing the western Tethys. In the Tethyan Salt Range of
20 Pakistan a succession of Upper Triassic dolomites, green-black shales (Kingriali Formation) to
21 overlying Lower Jurassic quartzose sandstones, shales, laterites and conglomerates (Datta
22 Formation) represents the sedimentary archives of this critical time interval. Bulk and clay
23 mineralogy of the Upper Triassic shales indicate the presence of mainly illite while kaolinite
24 is a minor component. The kaolinite content, a reflection of the mature stage of chemical
25 weathering and hence hot–humid conditions, increases up-section in the overlying shales
26 and sandstone–shale succession. The following laterite–bauxite horizons lack illite and are
27 entirely composed of kaolinite, boehmite and haematite. The bulk rock geochemistry of the
28 succession confirms a similar trend. The Chemical Index of Alteration (CIA_{molar}) displays an

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