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**23-24 Avril 2019
El Jadida, Maroc**

**La 11^{ème} édition du Colloque
Magmatisme, Métamorphisme et Minéralisations Associées
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on zircons show a Wuchiapingian age (255 ± 3 Ma). The two geochronological methods thus match around the same age corresponding to the Late Permian.

In North Africa and Western Europe, most of the Permian magmatism occurred during the Cisuralian (Autunian) and shows calc-alkaline affinities (Bonin, 1972; Broutin et al., 1994; Youbi et al., 1995; Lago et al., 2004). Late Permian alkaline magmatism have been only recorded locally in the Moroccan Meseta (Aït Chayeb et al., 1998; Bouloton et al., 2019) and the Iberian Meseta (Scarrows et al., 2006; Esteve et al., 2014). The Permian event was named by Bonin et al., (1987) as the Alkaline Magmatic Province of the Western Mediterranean recorded in Eastern Europe, West and Northwest Africa. The TMC as all these Late Permian rocks would represent precursors of the CAMP event during the progressive extension of the thickened Variscan lithosphere and before the break-up of Pangaea.

Keywords: Anti-Atlas, Tafilalet, Magmatism, Pb-U dating, Ar/Ar dating, Permien

Pétrologie et géochimie du volcanisme basique Ediacarien des boutonnières d'Ait Sawn et de Tissouktai (Anti-Atlas Oriental, Maroc).

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Au Sud-Est d'Ouarzazate (Sud-Ouest du massif de Saghro, Anti Atlas), affleurent les formations géologiques d'Ait Sawn et de Tissouktai. Ces dernières, attribuées à l'Ediacarien (Ou Néoprotérozoïque terminal), sont constituées de volcanites basiques (Andésites basiques) qui s'organisent en coulées successives, dont l'étude pétrographique révèle l'existence de plusieurs faciès.

Les roches étudiées présentent les caractéristiques géochimiques des suites volcaniques calco-alkalines des sites orogéniques, qui sont caractérisées par un enrichissement en éléments incompatibles avec des spectres de terres rares fractionnés (fort rapport LREE/HREE), et un enrichissement en LILE (K, Rb, Ba) par rapport aux HFSE (Nb, Zr). La signature orogénique calco-alkaline que portent ces andésites basiques pourrait être attribuée à une fusion partielle d'un manteau en contexte extensionnel par un héritage d'une subduction antérieure.

Mots-clés : Anti-Atlas, Ediacarien, calco-alkalines, orogéniques.

Did pulses of the Central Iapetus Magmatic Province (CIMP) both trigger and end the c. 580 Ma Gaskiers Glaciation ?

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Large Igneous Provinces (LIPs) and Silicic LIPs (SLIPs) can have a significant global climatic effect and we explore the relationship between the LIP record and the c. 580 Ma Gaskiers glaciation. The late Ediacaran glaciation exists on at least fourteen different paleocontinents, and assuming synchronicity, this Gaskiers glaciation was likely of short duration: 1.6 Myr-340 Ky. The Central Iapetus Magmatic Province (CIMP) event found in Laurentia, Baltica and West Africa consists of multiple pulses 617-520 Ma with the ~580 Ma pulse particularly well developed in North Africa. We propose that: 1) the initial silicic ~580 Ma pulse of the Ouarzazate event (Anti-Atlas of Morocco) helped trigger the Gaskiers glaciation, and 2) that global warming associated with the subsequent ~579-570 Ma Continental Flood Basalts marking the second stage of the Ouarzazate event, helped end the ice age.

Key Words: Large Igneous Provinces (LIPs), Ediacaran, Climate change, The Central Iapetus Magmatic Province (CIMP), Gaskiers Glaciation

Structure and Geochemistry of the Sheeted Dike Complex of the Pan-African Khzama Ophiolite, Anti-Atlas, Morocco

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In the central Anti-Atlas a Pan-African shear zone materialize a suture which cross the Bou Azzer and Siroua inliers where a ophiolite crop out. This ophiolite complex is considered among the oldest and more famous in the world, despite it was partially dismembered by Pan-African tectonics (ca. 650Ma). A very important Sheeted Dyke Complex (SDC) is preserved on the top of the ophiolite sequence. Our study is focused on the petrographic, geochemical and structural characterization of the SDC. Dikes of the SDC are highly deformed and somewhere severely altered. They are generally formed by dolerites, which are hosted by gabbros. Geochemically, two types of dykes are observed: depleted MORB-type tholeiites and quartz tholeiites more or less rich in titanium than MORB-type. Systematic measurements were carried out on several stations of Khzama massif (Siroua) in order to determinate the organization and tectonic evolution of these dikes. In Khzama, the dike complex is very well