**Regional implications on facies, climate and lateral sediment distribution of Upper Triassic continental reservoir sandstones (TAGI) in SW Morocco from outcrop (Argana Valley) and core (Essaouira Basin )**

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Facies analysis of core from the Meskala Field (*TAGI: Trias Argilo-Greseux* Inferieur, onshore Essaouira basin) is correlated with outcrop data from extensive exposures in the Argana Valley (*T6 Tadrat Ouadou Sandstone member)* to assess facies relationships and potential provenance of major fluvial feeder systems into the western Triassic synrift basins in SW Morocco. The depositional systems identified, show a varied and complex continental facies suit, allow insight into late Triassic climate and challenge current understanding on sediment pathways. In Argana, deposition of T6 sandstones commences with localised coarse ephemeral alluvial conglomerates and braided river deposits, followed by an extensive perennial fluvial system. An initial arid climate with cyclical (seasonal) humid phases influencing discharge in the catchment area is suggested, while increased humidity (and related discharge) are inferred by the drastic change in fluvial architecture and widespread deposition of perennial fluvial deposits, also advocating an amplified climatic signal. A return to more arid conditions is anticipated by the abandonment of the fluvial system and a change to aeolian dune deposition towards the top of T6. In Essaouira, new core analysis allows identification of a transition from shallow braided fluvial deposits at the base of the cored reservoir interval (tentatively dated as Carnian to Norian), to a wet sand-flat depositional setting. A change from a cyclical (seasonal) humid-arid to a more arid system is suggested. Extensive deposition of perennial anastomosing rivers with extensive floodplain fines, imply an increase in discharge and humidity, most likely in the catchment, facilitating this change in fluvial style. These fluvial sediments are followed by shallow lacustrine deltaic deposits, progressively overlain by terminal playa fines with extensive highly mottled mudstones. A shift from cyclical humid-arid conditions to prevailing aridity towards the top of the continental sequence is inferred. For both regions, an integrated, process oriented depositional model with conclusions on the effects of climatic interaction controlling sedimentation is presented. The recognition of near horizontal fifth- to sixth-order fluvial bounding-surfaces improved lateral correlation in outcrop, and led to a better refined depositional model. Incorporation of paleocurent data suggest that during deposition of Carnian to Norian

sandstones, the dominant palaeoflow direction was to the S and SW, rather than directly towards the Meskala/Essaouira region in the NW, providing new insights on reservoir distribution in SW Morocco. An amplified humid climatic signal observed in both basins further supports the Carnian pluvial event being recorded in SW Morocco on a regional scale.