

JURASSIC PALAEOGEOGRAPHY AND TERRANE TECTONICS ALONG THE EASTERN PALAEO-PACIFIC RIM - PALAEOMAGNETISM OF THE JURASSIC PIEDRA HUECA AND OTLALTEPEC RED BEDS

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The paleogeographic and tectonic relationships of southern Mexico and northern Central America have long remained a major puzzle and a source of endless controversy in the context of Pangea reconstructions, formation of the Gulf of Mexico and Caribbean Sea and subsequent tectonic evolution of the region. As part of a long term project to study the motions of palaeo-plates and terranes of the Middle America region, detailed palaeomagnetic and tectonic studies of Mesozoic units are being undertaken. Results here presented correspond to two redbed units (Middle and Late Jurassic ages, respectively) from the Mixteca terrane. After detailed thermal demagnetization of 220 oriented samples, characteristic remanent directions were isolated for the two units. The lower unit Piedra Hueca presents scattered site-mean directions when referred to present-horizontal or after simple tilt correction. The structural study documented two deformation events for Piedra Hueca and application of corresponding two-stage tilt corrections gave tightly grouped site-mean directions. The respective overall mean directions for the two units after single and two-stages tilt corrections are: Otlaltepec, Dec = 347° , Inc = 25° , $k = 80$, $a-95 = 14^\circ$, and Piedra Hueca, Dec = 354° , Inc = 4° , $k = 30$, $a-95 = 11^\circ$. The Middle - Late Jurassic corresponds to the episode of major rifting in the Gulf of Mexico and drifting apart between North and South America. Kinematic plate tectonic models have currently solved the overlap problem, the drifting of North and South America and the aggregation of Middle America by large scale left-lateral motions (e.g. along the Mojave-Sonora and Mexican volcanic belt megashears). These new paleomagnetic data, combined with recent palaeobiogeographic, tectonic, stratigraphic and sedimentological studies indicate a more complex history. The corresponding palaeolatitudes for the Middle and Late Jurassic are $2.2^\circ \pm 5.6^\circ$ and $12.8^\circ \pm 7.9^\circ$, thus constraining motions from northerly positions of the Mixteca terrane to smaller magnitudes than those previously suggested.