



# The age of the first pulse of continental rifting associated with the breakup of Pangea in Southwest Iberia: new palynological evidence

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## Abstract

In this work, we report the first palynological age for the base strata of the Silves Sandstones of the Silves Group in the Algarve Basin, located in Southern Portugal. The group is the oldest sedimentary unit of the Algarve Basin and was deposited unconformably over late Pennsylvanian turbidites of the Mira Formation, which were folded and faulted during the Variscan Orogeny. The Silves Group comprises a detrital red bed succession, representing the earliest phase of sedimentation associated with the initial rifting of Pangaea. Macrofossils are rare, occurring predominantly in the top layers of this group, and do not accurately constrain the age of the entire group's deposition. From an outcrop exposed in the central Algarve, a grey mudstone bed positioned 2.5 m above the Variscan unconformity plane yielded palynomorphs that date the beginning of sedimentation in this basin to the early Carnian age (Late Triassic). The moderately well preserved and low-diversity palynological association comprises *Aulisporites astigosus*, *Enzonalasporites densus*, *Ovalipollis pseudoalatus*, *Samaropolinites speciosus*, *Tulesporites briscoensis* and *Vallasporites ignacii*, among others, and is indicative of an early Carnian age.

**Keywords** Upper Triassic · Variscan unconformity · Palynology · Algarve Basin · Portugal

## La edad del primer pulso de rifting continental asociado a la ruptura de Pangea en el suroeste ibérico: nueva evidencia palinológica

### Resumen

Mediante datos de asociaciones palinológicas, describimos por primera vez la edad de los niveles de la base de la Formación Areniscas de Silves, del Grupo Silves, en la cuenca del Algarve, sur de Portugal. Este grupo representa la unidad sedimentaria más antigua del Mesozoico de la Cuenca del Algarve, y fue depositada discordantemente sobre las areniscas de edad Pensilvaniense superior de la Formación Mira, un registro sedimentario que fue plegado y fallado durante la Orogenia Varisca. El Grupo Silves muestra unos sedimentos detríticos rojos que representan la fase más temprana de la sedimentación y que está asociada a las primeras fases de la ruptura de Pangea. Los microfósiles son escasos, se encuentran en los niveles superiores del grupo y no proporcionan una edad determinada. Una asociación palinológica ha sido encontrada y descrita

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