

The differentiation of units in the Nevado-Filábride complex (Betic Cordillera, Spain). A revision based on a geochronological study of detrital zircons

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The Nevado-Filábride complex is the lower metamorphic complex of the Betic Internal Zone (SE Spain). Its subdivision and age have been discussed over the years. It has been proposed the existence of various units, including one of the most accepted subdivision which aims to existence of two tectonics units (or nappes according the terminology of some authors): the lowermost Veleta unit (mainly formed by graphite schists and quartzites) and the upper Mulhacén unit (formed by micaschists, quartzites, metabasites, gneisses and marbles). However, in our opinion, the existence of those units is not supported by field data. Conversely, the lithological similarities present between the lower and upper part of the stratigraphic succession and the absence of notorious tectonic contacts point to existence of a continuous succession in the complex.

In this work we present U/Pb age preliminary determinations of detrital zircons acquired from different samples corresponding to rocks that are assigned to the Veleta and Mulhacén units. The aim of the work is the determination of the younger zircon age included in the meta-sediments in order to obtain the maximum ages of sedimentation, but also to find similarities or differences of the zircon age populations between the Veleta and the Mulhacén units.

The results obtained are:

- 1) 272.6 ± 1.8 Ma is the youngest zircon age. The sample was taken in the upper part of the Mulhacén unit in the western area of Sierra Nevada. The obtained age points to a middle Permian for the maximum age of sedimentation. This age is in line with the U/Pb ages obtained by various authors from gneisses taken from equivalent parts of the complex, which show approximately Permian to upper Carboniferous ages.
- 2) Samples taken from the lower part of the petrological succession show upper Carboniferous as younger ages.
- 3) Although samples were taken from different stratigraphic positions of the Veleta and Mulhacén units, we have observed the existence of common age populations at ~ 300 , ~ 450 , ~ 600 , ~ 1000 and ~ 2000 Ma in all the studied samples. This similarity of the age populations between samples points to a common source area.

According to the results of this work, the similarities existing between U/Pb ages of zircons do not support the tectonic differentiation of the Nevado-Filábride complex. Conversely, it is remarkable the enormous thickness of the petrological succession (more than 5000 m) between the lower and upper samples. This huge volume of sediments should have been deposited in a relatively short period of time, during the Permian to Carboniferous, according to the younger ages of the lower and upper samples.