

Evidence of the mid-Valanginian Weissert Event in the Zagros Basin in Iran based on calcareous nannofossils and carbon isotope data

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The mid-Valanginian Weissert Oceanic Anoxic Event is one of the most important paleoceanographic events of the Early Cretaceous that is characterized by a positive excursion in the carbon isotope data, crisis in the nannoplankton as-sociation, and climate changes. In this study, calcareous nannofossils and carbon isotope data were investigated from the lower part of the Garau Formation in the Kabir-Kuh anticline, and they confirm the presence of the Weissert Event in the Zagros Basin in western Iran (central Tethys). Two positive excursions in the carbon isotope data (2.8‰ and 2.4‰) were recorded from the middle part of nannofossil Subzone NK3a and the middle part of the Subzone NK3b–NC4a transition that are comparable to placement in other parts of the Tethyan Realm: the Vocontian Basin in France (e.g., Duchamp-Alphonse et al., 2007), the Umbria-Marche Basin in central Italy, and the Subbetic Basin in Spain and SW Morocco, as well as in the Weddell Sea Basin in Antarctica.

In the Zagros Basin, we recorded a simultaneous increase in the relative abundance of warm and eutrophic taxa like *Diazomatolithus lehmanii*, *Rhagodiscus asper*, and *Cyclagelosphaera margerelii*, which might be related to the Paraná-Etendeka volcanism. An increase in the relative abundance of *D. lehmanii* was also recorded from other parts of the Tethyan Realm (e.g., Erba et al., 2004). A low relative abundance of nannoconids (less than 5%) was recorded except for in a few samples. This assemblage was followed by a high relative abundance of *Discorhabdus ignotus* in the early Hauterivian, which indicates cool surface water conditions (e.g., Mattioli et al., 2014). These data are accompanied by a decrease in the carbon isotope data to 0.7‰. The Weissert Oceanic Anoxic Event has now been confirmed in the central Tethys in the Zagros Basin in Iran, which further supports a wide paleoceanographic distribution for this event.

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