

Early mid-Devonian volcanism in the Orkney Islands, Scotland - implications for Mid-Upper Devonian chronostratigraphy

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Middle Devonian sedimentary rocks formed in the mainly lacustrine Orcadian basin constitute large parts of the exposed geology on the Orkney Islands. The basal sedimentary rocks rest unconformably on basement rocks of the ca. 430 Ma Orkney granite complex. The onset of Lake Orcadia in the Orkney Islands is marked by deposition of the lower Stromness flagstones (LSF), comprising alternating lacustrine strata of fine grained sandstones and shales. Near the base of the LSF we have identified a rhyolite dome or flow, intercalated with the lacustrine sedimentary rocks, whose emplacement essentially records the onset of Lake Orcadia. We here report high precision zircon U-Pb ID-TIMS data from the rhyolite. Combined with recent cyclostratigraphic results from the lacustrine successions, the new age provides an improved estimate of the Efebian-Givetian boundary and the *Kačák* event recorded at the top of the Achanarras level (Sandwich Fish Bed), marking the top of the LSF. Given the quite well constrained astronomical timescale of the Middle-Upper Devonian and scarcity of existing precise absolute ages in the Devonian, our new data can potentially improve the precision of Devonian chronostratigraphy by an order of magnitude.