



## **Late Triassic uplift of southern Norway revealed by detrital zircons in the Norwegian–Danish Basin**

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Zircon U/Pb geochronometry is used to identify the sediment source areas of the Upper Triassic to Lower Jurassic shallow marine to paralic Gassum Formation in the Norwegian–Danish Basin. The analyses of zircon grains from geographically and stratigraphically widely distributed cores take advantage of the detailed sequence stratigraphic framework existing for the succession. The zircon ages indicate that the sediment in the lower part of the Gassum Formation in the northern and central parts of the basin was supplied solely from the Telemarkia Terrane in the southern part of southern Norway. However, age signatures from other basement terranes were added during periods of transgression presumably as a result of longshore reworking. The sediment in the eastern part of the basin has a different provenance signature that reflects supply from various sources of which some or all seemingly include older sediments. The basinwide fluvial incision that occurred during a relative sea-level fall in the Rhaetian is interpreted to be related to uplift of southern Norway since a pronounced content of zircon grains with U/Pb ages of 1.65 Ga were introduced in the Norwegian–Danish Basin at the time. This age is dominant in the upper part of the Gassum Formation and is present in all studied younger sediments in the Norwegian–Danish Basin, whereas it is missing in older sediments in the basin. Rocks with corresponding ages are presently exposed in the Jotun Nappe Complex and the Western Gneiss Complex in the central and northern parts of southern Norway. Thus, major faulting activity must have occurred in southern Norway during the Late Triassic that made such rocks available for erosion with permanent southeastwards drainage.