



Provenance studies of the Middle Jurassic strata of the Tornquist Zone in southern Sweden and of storm generated siliciclastic strata of Upper Silurian Burgsvik Formation of southern Gotland, Sweden

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The aim of these studies is to try to retrieve the original source areas for the Jurassic Glass Sand Member and the underlying Fuglunda Member and to compare the provenance of the two different strata. The aim is also to investigate the provenance of the fine siliciclastic deposits of the Burgsvik Beds of southern Gotland. The provenance techniques used in these studies are SIMS U-Pb and Pb-Pb and Pb-Pb LA-ICPMS dating of single detrital zircon grains and Ar-Ar dating of detrital muscovite grains. Besides the geochronological analyses of zircon and micas also heavy mineral like garnet and rutile are studied with Scanning Electron Microscopy (SEM) and LA-ICPMS techniques and the quartz grains with Cathodoluminescence. Rutile is present in all samples while garnet is only found in the Glass Sand Member. Trace element data, chemical zoning and inclusion patterns in garnet, rutile and other heavy minerals may give important information on the metamorphic source terrain. The Middle Jurassic in Fyledalen Fault Zone of Skåne Sweden comprises the Fuglunda Member and the overlying Glass Sand Member of the Mariedals Formation. The Fuglunda Mb is believed to represent deposition in tidal channels and the Glass Sand Mb a fluvial-dominated part of a delta plain. Preliminary SIMS Pb-Pb and LA-ICPMS Pb-Pb dating of detrital zircon grain show trends of provenance of a western source, such as the Sveconorwegian Orogen. The preliminary results also show a difference between the two studied members of the Mariedal Formation. Two larger, upper Silurian, depositions of siliciclastic material on the island of Gotland in the Baltic Sea, the Late Wenlock Fröjel Formation and the Late Ludlow Burgsvik Beds, are recognized. Both units represent

storm dominated regressive settings. Previous workers have suggested the source area is the Baltic shield of eastern Sweden. Though preliminary SIMS Pb-Pb zircon analyses shows that the source is more likely to be found in western areas affected by the Caledonian and Sveconorwegian Orogens. During 2005 we will sample Cambrian strata along a 150 km long traverse within the Tornquist Zone.