



Holocene paleoenvironmental changes and glacial history of the Van Mijenfjorden, Svalbard

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A 18 m long sediment core (MD99-2305) was retrieved during the IMAGES-1999 cruise with "R/V Marion Dufresne" from the outer basin of Van Mijenfjorden (77°46.87'N and 15°17.81'E), western Svalbard at about 110 m water depth. For this study, we analyzed ca. 16 m sediment sequences spanning the last 12 calendar ka BP, except for the lower 2 m thick over-consolidated diamicton sediment. Based on detailed multi-proxies, including organic-geochemical parameters (TOC, C/N ratio, Rock-Eval pyrolysis, Opal, $\delta^{15}\text{N}$ and $\delta^{13}\text{C}_{org}$ values) together with lithofacies, magnetic susceptibility, benthic and planktonic foraminiferal occurrence, stable oxygen and carbon isotopes on benthic foraminifer *C. reniforme*, the core MD99-2305 well recorded the Holocene paleoenvironmental changes of the Van Mijenfjorden in the western Svalbard. In general, the low HI and OI values throughout the sediment sequences fall close to the origin within a van Krevelen-type diagram and therefore, seem to reflect a predominance of terrigenous organic matter. This might be also supported by relatively higher C/N values of ≥ 10 throughout the sequences. In contrast, the $\delta^{13}\text{C}_{org}$ values ranging from -24 to -22‰, suggest that the organic matters supplied to the Van Mijenfjorden glaciomarine sediments seem to be a mixture of marine and terrigenous origin. In particular, the variations in $\delta^{13}\text{C}_{org}$ values through times have been strongly related to fluctuations in tidewater glacier behavior as well as productivity in the surface waters within the fjorden during the last 12 cal. ka BP.