

A Summary of Our Mapping Project in Kvamshesten Basin, Norway

Jess Payne, Chris Hewetson, Hannah Marsden and I chose Kvamshesten, a Devonian sedimentary basin in western Norway as the location for our Part II mapping projects. We chose Kvamshesten as it gave us the opportunity to map a range of sedimentary lithologies within the basin, as well as the basin-bounding fault, allowing us to make interpretations surrounding the basin's initial formation, depositional history, and any later deformation.



Map showing the location of the mapping area, with the red pin marking Storehesten mountain on the basin's southern margin, and the blue outline showing the eastern tip of the basin mapped by Jess and I.



Left: a view of the basin from its eastern tip. Right: a view of the basin looking north from the veranda of our house in Fauske.

The four of us arrived in the area in late July, and stayed until the 3rd September (2018), with twenty-eight days spent in the field, some initial reconnaissance days, and a few days off to explore the surrounding areas. We rented a house in the hamlet of Fauske, which soon became a much-anticipated sight at the end of long field days. On arriving in the area, we quickly realised that the house was further from the basin than we'd been told, with two hours of difficult hiking required just to reach the basin, and so we decided to rent a car so that we could drive up to a car park, reducing the hike to around 45 minutes, though this was still a pretty steep climb up to the basin! We mapped as two pairs, each picking an intended mapping area of around 10km² after the first reconnaissance days, with Jess and I mapping the eastern tip of the basin, and Chris and Hannah mapping to the west. The final products of each of our projects were a geological map and a report describing the stratigraphy, structure, metamorphism and sedimentary geology in our mapping areas, offering interpretations based on these observations, and summarising the geological history

of the mapping area, in the context of that of the wider region. Below is a brief summary of my interpreted geological history of the area, to give an insight into the geology we saw.

Kvamshesten is one of a series of four Devonian sedimentary basins in the Sunnfjord region of western Norway. These basins are thought to be a product of regional extension associated with the collapse of the Caledonian orogen. This regional extension was manifested in the generation of large-scale extensional detachments and shear zones, allowing the exhumation of high-pressure metamorphic rocks (Western Gneiss Region) buried in the Caledonian orogeny, extensional basin formation, and the generation of fault rocks. One of these detachments, the Nordfjord-Sogn Detachment Zone, is found within the mapping area and bounds Kvamshesten basin. Sedimentation in these basins occurred in the Middle Devonian and, I interpreted the sedimentary lithologies in Kvamshesten basin to represent two alluvial fan systems in the north and south interacting with a central braided stream system and floodbasin. This region was later affected by north-south compression leading to regional folding, with the basins exposed in east-west-trending synclines and the high-pressure rocks of the Western Gneiss Region exposed in east-west-trending anticlines. Evidence of this folding, as well as evidence of smaller-scale faulting possibly associated with such folding or the extension responsible for basin formation, was found in the mapping area.

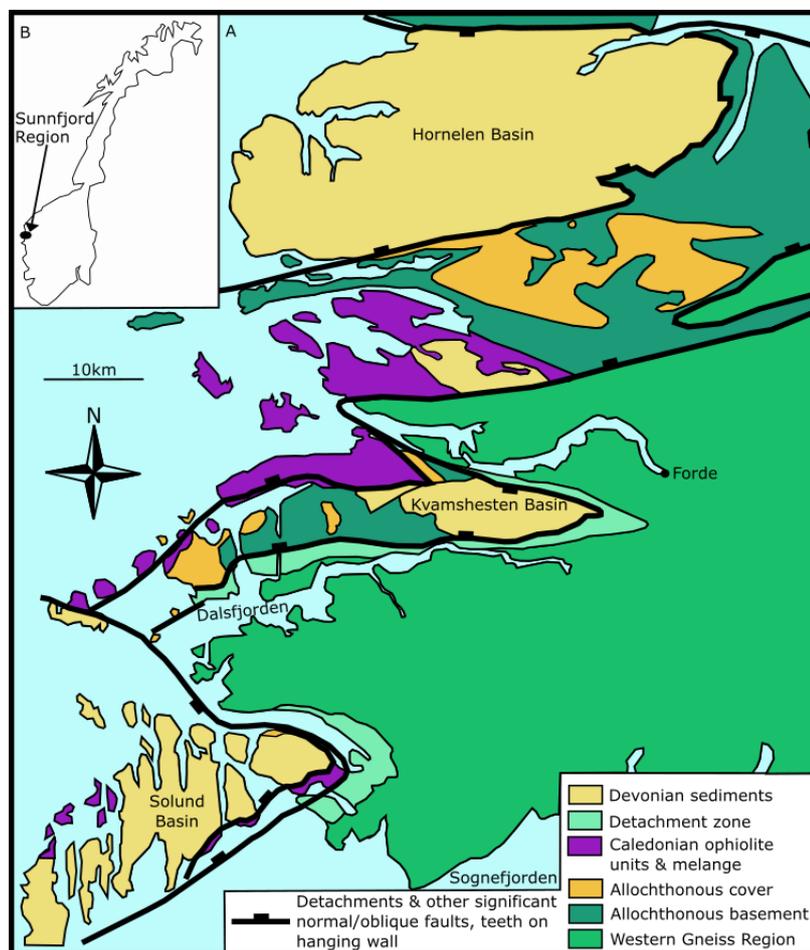


Figure 1.3: Simplified geological map of the Sunnfjord Region. The map shows the series of Devonian basins, extensional faults and the Western Gneiss Region just outside the mapping area. Modified from Sturt & Braathen (2001), with information also added from Osmundsen & Andersen (2001).

Despite the weather being typical for western Norway, we thoroughly enjoyed our mapping projects, quickly getting used to lunch in the storm shelter and becoming very attached to our waterproofs! The exposure was incredible, and the scenery was frequently breath-taking, so much

so that it took a while to get used to the lack of waterfalls and mountains back home, though I think we were all quite happy to not walk up any hills for a while! All in all it was a great experience, quite unlike anything we've ever done before, and we would all like to thank the Class of 2008 fund for providing us with much-appreciated financial support, which helped us to get the most out of our time in Norway. Many thanks from Jess, Chris, Hannah and Lucy.



The four of us enjoying a visit to Jostedalsglacier on one of our days off towards the end of the trip.