

DOKTORAND: Christopher Sæbø Serck
GRAD: Philosophiae doctor
FAKULTET: Det matematisk-naturvitenskapelige fakultet
INSTITUTT: Institutt for Geofag
FAGOMRÅDE: Geologi
VEILEDERE: Alvar Braathen (UiO), Jan Inge Faleide (UiO),
Ivar Midtkandal (UiO), Alejandro Escalona (UiS)
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AVHANDLINGENS *Extensional Faulting and Folding in*
TITTEL: *Sedimentary Growth Basins: Case Studies from*
Seismic and Outcrop Data

Studier av seismiske data fra det sørvestlige Barentshav og feltstudier fra Oman peker på viktige sammenhenger mellom forkastninger, forkastningsrelaterte folder, sedimentfordeling og geometrien til sedimentære lagpakker i områder preget av ekstensjonstektonikk. Ved å sammenligne studier basert på ulike datatyper, i forskjellig skala og med sedimentære avsetninger av ulik type, alder og tektonisk bakteppe, heves forståelsen av ekstensjonsbassenger generelt og ekstensjonsfolders påvirkning av sedimentære systemer spesielt.

The studies presented in this doctoral thesis add to the understanding of extensional basins on topics such as fault and fold growth, fault reactivation and links between sedimentary architecture and controlling structures. In particular, the role of extensional fault-related folding for basin development and sediment deposition during active faulting is examined in different scales and data types: Seismic data from the Barents shelf and field data from Oman. This thesis sheds light on the hitherto insufficiently documented role fault-perpendicular extensional folding has on syn-tectonic sediment deposition.

Studies of seismic data in the Fingerdjupet Subbasin in the southwestern Barents shelf outline the geological evolution, with implications for not only the immediate surroundings but the circum-Arctic continental shelves in general. The Fingerdjupet Subbasin evolved as a multi-stage rift basin, where interaction between steep upper fault segments and a low-angle lower segment set up rollover folding of the Bjarmeland Platform into the Terningen Fault Complex. Syn-tectonic deposits were laid down hangingwall basins adjacent to the Terningen Fault Complex and associated fault sets.

Outcrop data from the Bandar Jissah Basin in Oman documents continental to marine sediment deposition from the late Paleocene to Eocene. During this time, the space available for sediment accumulation varied predominantly as a function of extensional faulting and folding, and the structures and sedimentary deposits indicate a transition from supradetachment basin to rift-style basin setting.