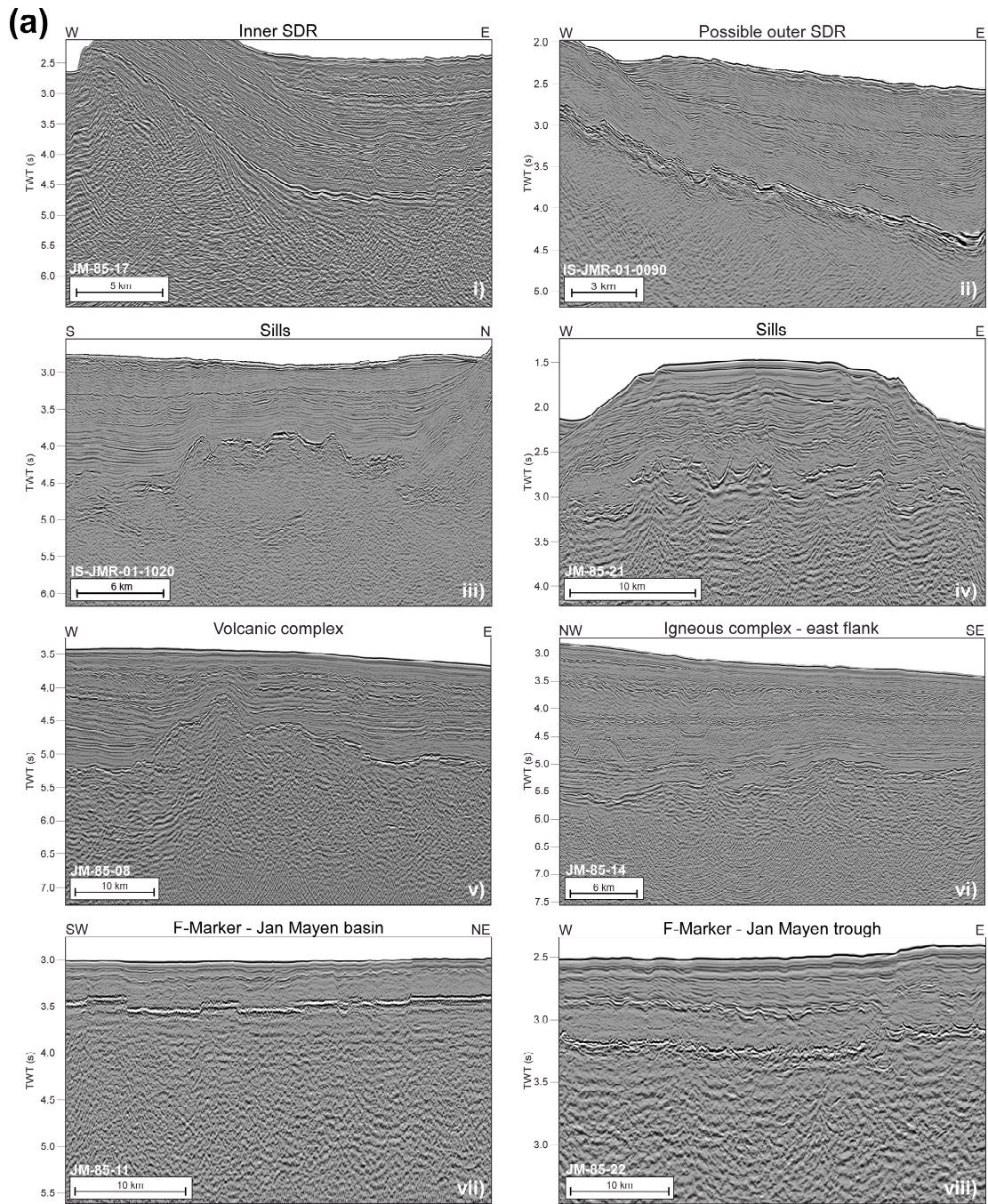


Supplement 6

Mapped JMMC volcanic facies, stratigraphic horizons and igneous events.



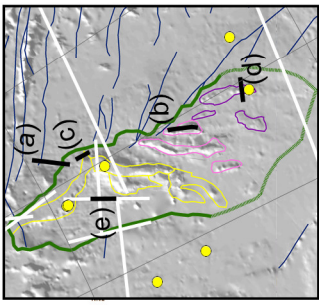
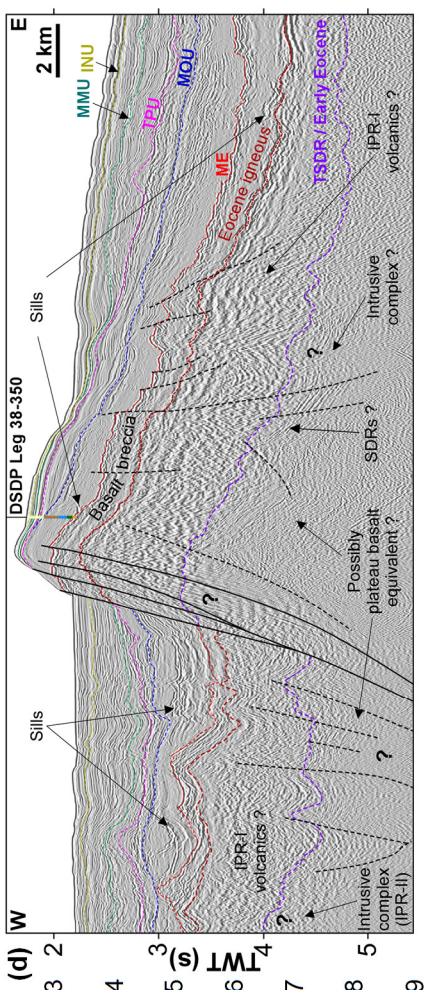
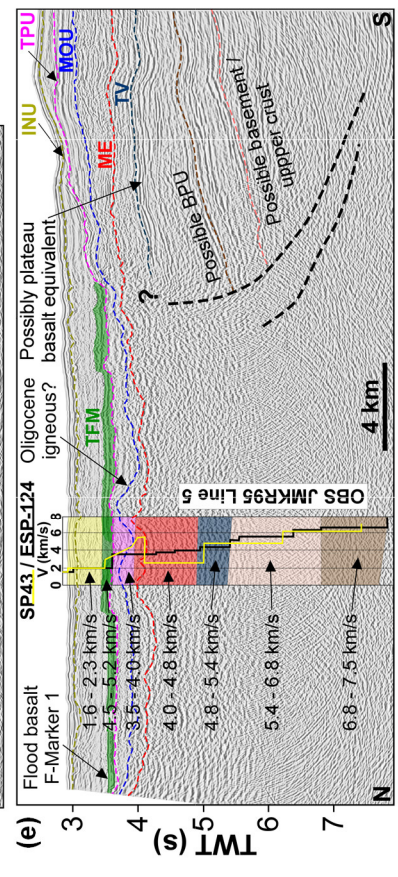
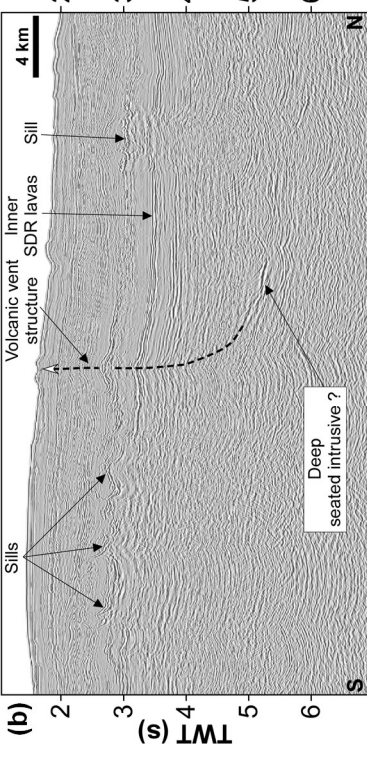
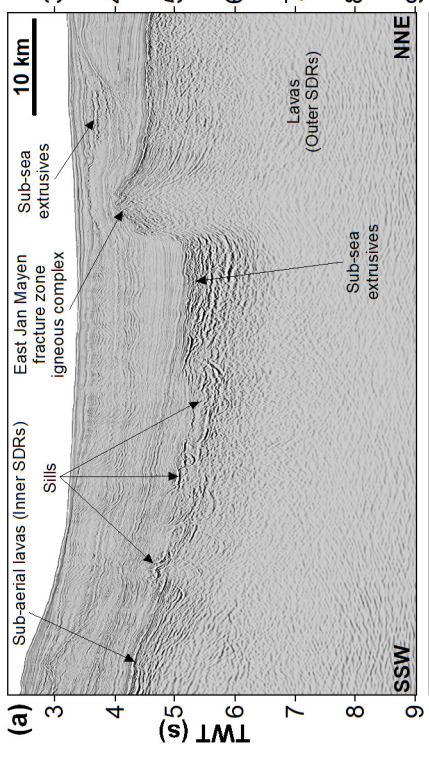
Jan Mayen microcontinent area volcanic facies types example:

- (i) **Seaward dipping reflector (SDR's) / Inner SDR:**
clearly visible wedge feature of eastward dipping reflectors into the Norway basin, discordantly overlaying the JMMC breakup margin.
- (ii) **Atypical seaward dipping reflector (SDR's) / Outer SDR:**
not clearly showing wedge shape units connected to the south-eastern SRC igneous margin (IPR-1) that has been heavily affected by later faulting during the rift transfer across the IPR.
- (iii & iv) **Sills and dykes:**
layer parallel, saucer-shaped, to fault parallel sill and dyke intruded within the Eocene to Early Miocene strata.
- (v & vi) **Volcanic and igneous complexes:**
build up onto the SDR's and the firstly established oceanic crust along and east of the continent ocean boundary (COB).
- (vii & viii) **Shallow rift basalt - F-Marker:**
series of shallow intrusions and regional extensive lava flows, possibly in shallower water, occurred in different IPR activity phases during Late Oligocene within the Jan Mayen trough and during Early Miocene within the Jan Mayen basin. that relate to the rifting and separation of the western flank of the JMMC from the main land.

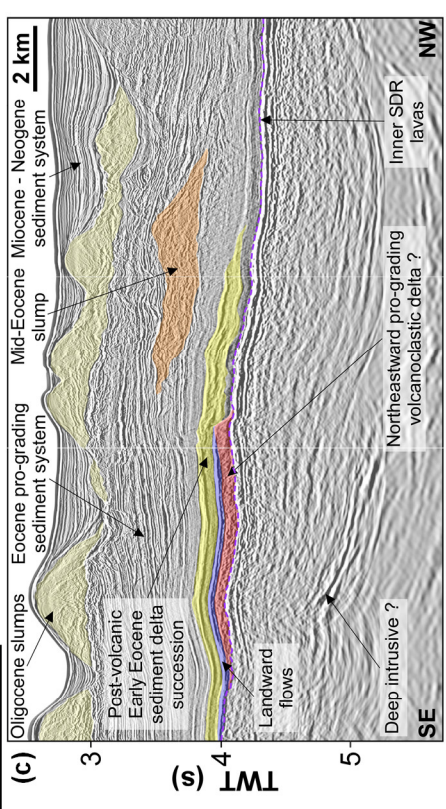
(b) Examples of volcanic and stratigraphic facies and related structures.

Data interpretation is based on 2D multi-channel seismic reflection data from surveys NPD-2011, ICE-02 in 2009 and reprocessed data from the JM-85, JMR-01, and JMR-08 surveys.

- (a) Fracture zone intrusive, sills and dykes – JMMC northeast flank;
- (b) Vent structures, sills and dykes – JMMC southeast flank;
- (c) Eocene terrestrial to shallow marine transition from landward flows to hyaloclastite delta and pro-grading sediment systems;
- (d) Early-Mid Eocene IPR basalt breccia and Eocene to Oligocene sills; and
- (e) Oligocene F-Marker extrusive and intrusive.



Sandy muds, oozes, volcanic ash
 Unconsolidated silty sands
 Predominantly clay- / mudstone
 Limestone, sediment breccia
 Turbidite, sediment breccia
 Basalt breccia, basalt intrusion



(c) Summary of interpreted stratigraphic horizons and main igneous events.

Horizon	Epoch	Igneous/ tectonic events
JM10	Plio-Pleistocene	Strong reflector. Unconformity. Continuous seafloor spreading Kolbeinsey Ridge, subsidence affecting the Jan Mayen Ridge (deep marine environment).
JM15	Middle Miocene	Unconformity. Rift transfer in Iceland, Kolbeinsey Ridge active seafloor spreading
F-Marker 1	Early Miocene	2 nd breakup, IPR-IV, emplacement of flood basalt (intrusive & extrusive formations) during a breakup event (JMB – west flank domain)
JM20	Top Paleogene	Unconformity. Uplift and erosion
Volcanic SW-W margin	Late Oligocene to Early Miocene	Rift transfer across IPR forming of large igneous complexes and forming of volcanic margin.
F-Marker 2	Late Oligocene	Emplacement of flood basalt (intrusive & extrusive formations) during IPR rift transfer (JMT domain)
JM30	Middle to Late Oligocene	Unconformity. Onset of deposition after the main breakup within the Greenland margin
F-marker 3	Middle Oligocene	Emplacement of flood basalt (intrusive & extrusive formations) during IPR rift transfer (SE SRC)
JM35	Early to Middle Oligocene	Unconformity. Onset of main rifting and breakup within the Greenland margin.
JM40	Late Eocene	Unconformity, intrusive complexes
JM45	Middle to Late Eocene	Seafloor spreading at the Ægir Ridge and accumulation of sediments at the Jan Mayen Ridge, derived from Greenland highlands.
JM50	Middle Eocene	Rift transfer across IPR forming of large igneous complexes and well-defined unconformity
Poss. Volcanic Conduit	Early to Middle Eocene	Rift transfer across IPR forming of large igneous complexes and forming of volcanic margin.
JM-60 SDR & Plateau Basalt equivalent	Early Eocene	1 st breakup extension between Greenland and Norway. Forming of the plateau basalts and sub-joined with onset of seafloor spreading at the Ægir Ridge and forming of SDR's
JM70	Paleocene	Pre-rift strata