

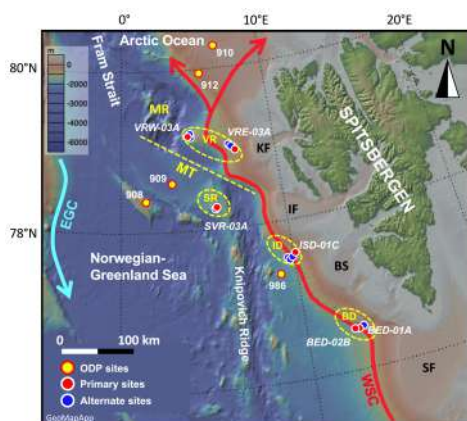


IODP EXP-403: Eastern Fram Strait Palaeo-Archive (FRAME)

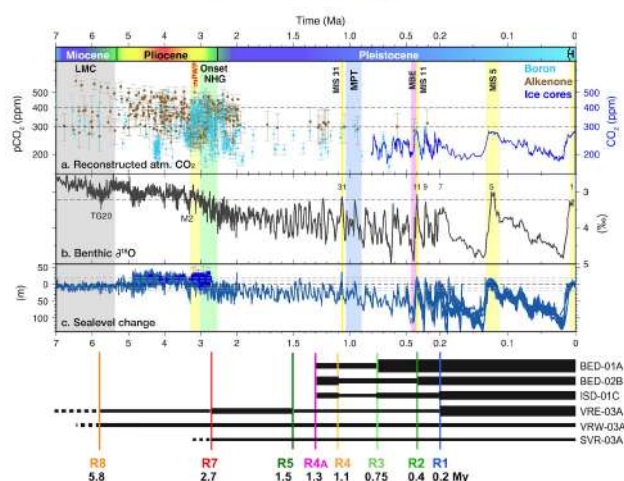
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The **FRAME - Eastern Fram Strait Palaeo-Archive** – final proposal (985-Add2) has been approved by the IODP Scientific Advisory Structure on May 2022 and scheduled as **Expedition-403** that will take place between **June 4 – August 2, 2024** (Reykjavik – Amsterdam), representing the last expedition of the RV JOIDES Resolution under the IODP flag. The **Scientific Staff** is composed by: R.G. Lucchi and K. St John as Co-Chief, T. Ronge as Expedition Project Manager/Staff Scientist, and the Scientific Party: S.K. Adukkam Veedu, M.A. Bárcena, S. De Schepper, L. Duxbury, C. Gebhardt, A. Gonzales-Lanchas, N. Greco, J. Gruetznier, L. Haygood, K. Husum, M. Iizuka, A. Kapuge, A. Lam, O. Libman-Roshal, Y. Liu, L. Monito, B. Reilly, Y. Rosenthal, Y. Sakai, Y. Suganuma, C. Sullivan, Y. Zhong. IODP proposal 985 aims at reconstructing of the variability of the West Spitsbergen Current (WSC, Atlantic Water), its influence on climate changes particularly during key climate transitions and onset of the North Hemisphere Glaciation (NHG), ice shelves development and stability, and sea ice distribution. The **drill program** is designed to target six primary sites (red dots in map) located on Sediment Drifts containing continuous, expanded palaeoclimatic archives of the eastern side of the Fram Strait representing the only deep gateway for ocean current heat, salt, and moisture transport between the Atlantic and Arctic Oceans. **Scientific objectives** are: (1) The role of the WSC on the NHG and during key climatic transitions; (2) The impact of WSC pathways and characteristics on the stability of the marine based paleo Svalbard-Barents Sea Ice Sheet, considered the best paleo analogue of the present West Antarctic Ice Sheet whom lost in stability under the present global warming is the major uncertainty for sea level rise projections; (3) Definition of the spatial location of the Molloy Transform Fault (Fram Strait fault system) during the Miocene-Pliocene transition; (5) Constrain the spatial variations in the effect of glacial and tectonic stresses on sub-seabed sediment deformation and carbon transport associated with paleoclimatic changes; (4) Definition of the influence of the WSC variability, ice coverage and climate on the microbial populations through time and to what extent this is still affects contemporary geochemical fluxes.

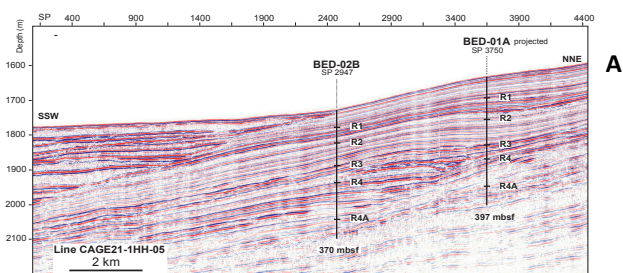


Map of IODP Exp-403 drill sites and relevant sites of ODP151 and 162. Dashed yellow circles indicate the location of the sediment drifts. Acronyms: WSC= Western Spitsbergen Current; EGC= East Greenland Current; KF= Kongsfjorden through; IF= Isfjorden through; BS= Bellsund through; SF= Storfjorden through; MR= Molloy Ridge; VR= Vestnesa Ridge; SR= Svyatogor Ridge; ID= Isfjorden Drift; BD= Bellsund Drift. The inset shows the North Atlantic circulation (red= warm Atlantic water; blue= cold Arctic water).

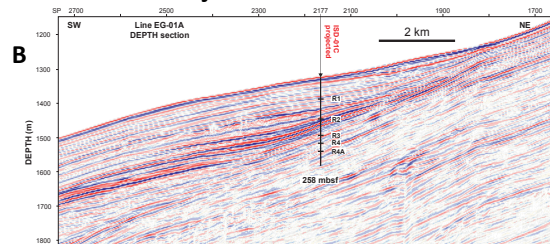


Composite record of major climatic transitions and events in the last 7 My. The stratigraphic coverage of the Exp-403 primary sites is represented with black bars indicating the stratigraphic resolution (thick lines = high resolution), and interpreted ages of the main seismic reflectors marked (R1-R8). Warm periods of interest are indicated with a yellow mask or line.

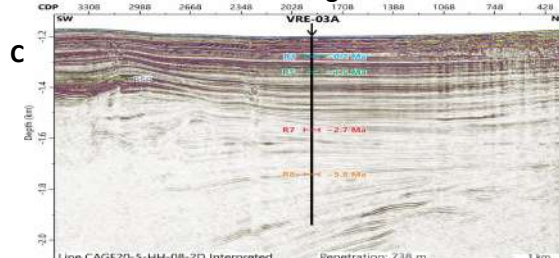
Sites BED01A and BED02B: Bellsund Drift



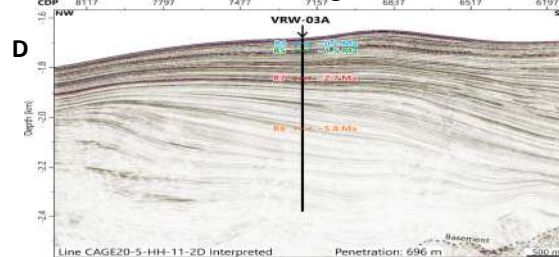
Site ISD01C: Isfjorden Drift



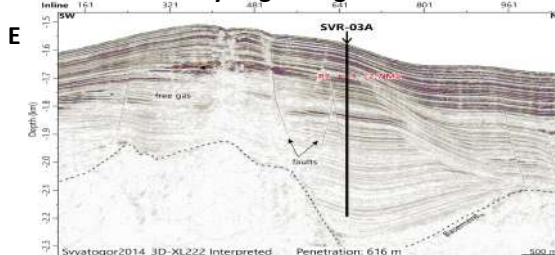
Site VRE03A: Vestnesa Ridge east termination



Site VRW03A: Vestnesa Ridge west termination



Site SVR03A: Svyatogor Ridge



Figures A, B, C, D, E show the MCS sections with the location of the proposed drilling sites.