SFB754: Sediments of the Peruvian Oxygen Minimum Zone as records of mid-depth ocean dynamics

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The Peruvian coastal region is characterized by one of the strongest oxygen minimum zones (OMZ) of today's world oceans. In order to investigate long term variations of past oxygen conditions, sediment cores have been collected from the shelf and slope off Peru during R/V *Meteor* cruises M77/1 and M77/2 between the 1 to 18°S and water depths of 200 to 1300 m within and below the Peruvian OMZ. Sediments consisted of olive green to grey green clay and silty clay predominantly showing laminations within the OMZ. Diatomaceous oozes were observed in cores collected from underneath the main upwelling areas. Bioturbated silty clays with planktonic foraminifera were found around the OMZ. In many cores collected from southern part of the region, sedimentation was interrupted by erosional surfaces or slumps. Chronostratigraphy of the cores was accomplished by AMS radiocarbon dating and benthic foraminiferal oxygen isotope records. They showed a distinct correlation with the EPICA ice core, even with minor fluctuations. Sedimentation rates varied between 5 and 300 cm/ka. Core records revealed that continuous archives are available from the northern part of the Peruvian OMZ only. Cores from the central and southern OMZ showed slumping, erosional surfaces, and gaps in chronology during last 40 ka. In particular, the southern cores do not show any record younger than 18 ka. The above features mirror the impact of the Peru-Chile Undercurrent and breaking internal waves. The **s**outhward flowing undercurrent impinges the continental slope between 150 and 450 m depth with highest velocities of 20 cm/s from 8 to 11°S. Internal waves affect sedimentation and shaping the slope between 500 and 700 m south of 11°S. Both, undercurrent and internal waves created erosional surfaces, non-sedimentation and slumps. Cores below 300 m recovered glacial sediments only indicating the present oceanographic processes became established with the onset of Termination I.