

Oswaldo Ulloa presented his work on low oxygen minimum zones off of Peru and Chile. Oxygen minimum zones (OMZ) are defined as those zones with oxygen concentrations of $0.5 \text{ ml O}_2/\text{L}$ or $22 \mu\text{M}$. They are typically distributed off the eastern coasts of the ocean. Some reports indicate that they are areas of low diversity but no one has looked at microbial populations in detail. Some of the questions facing this environment include: How do intermediate waters vary in OMZ's, and how stable are they? Oswaldo's group has found that OMZ's are not stable and that they vary over large scales and geological time scales. OMZ's need to be studied in relation to the physical forces that shape them. Oswaldo's group has been examining the nitrogen cycle in OMZ's. He has been detecting high rates of nitrification, a high diversity of denitrifiers, and the presence of anaerobic ammonia oxidizing bacteria that may be a significant sink for oceanic nitrogen.