I. INTRODUCTION

The Ocean Observatories Initiative (OOI) is a multi-decadal, National Science Foundation (NSF) funded program that will provide continuous, real-time (cabled) and near-real-time (telemetered) observations of climate variability, ocean circulation, ecosystem dynamics, air-sea exchange, seafloor processes, and plate-scale geodynamics. The OOI is composed of seafloor instruments, fixed moorings, and mobile assets containing over 700 instruments in the Atlantic and Pacific oceans. Here we provide an overview of the OOI sampling strategy for a selection of the platforms and instrument suites.

II. SCIENCE THEMES AND GOALS

The OOI is designed to capture ocean processes ranging from the short-term such as hypoxic events, algal blooms, seismic activity, turbulent water movement, and seasonal storms to long-term changes in climate, riverine output, variation in productivity/POC flux, CO₂ sequestration, ocean acidification, gas hydrate dissociation, magma generation, and food web dynamics (Figure 1, left).

The Endurance and Regional network design (Figure 3, above) extends from the near-shore to the deep-sea, including surface expression, seafloor sensors, profilers, and gliders. The 80 m and 600 m Coastal Oregon sites are connected to the electro-optical cable, providing power and data transmission capacity as well as the Regional sites.

The default sampling regime for the Endurance gliders (Figure 8) will follow a set of East-West and North-South lines, including Gray’s Harbor (GH) and Newport Hydrographic (NH). This provides coverage of the Endurance Array sites, as well as resolution of cross-shelf processes that affect conditions at those sites (see maps, left). The sampling regime can be scaled back level-by-level down to a pivotal baseline if necessary due to power, maintenance, or adaptive sampling constraints. There will be an average of 6 gliders deployed year-round.

All science instruments (CTD, PAR, ECO triplet, Oxygen, ADCP) will collect at or near the instrument maximums. The ADCP will sample at the maximum rate only during a downcast, due to power, maintenance, or adaptive sampling constraints. There will be an average of 6 gliders deployed year-round.

VII. CONCLUSIONS

Sampling strategies for instruments on other OOI platforms will follow similar guidelines, and will be in place well before deployment. Input from project scientists and community workshops is a key requirement. The OOI sampling strategy is a living document that will change and grow as core instruments come online, and as new ones are added to the network.