

essentially expendable moorings, which can be deployed in remote areas, which require excessive shiptime for recovery, and for special observational programs. Novel uses of mooring platforms will evolve. For example, moored profilers can be used to good advantage for situations requiring high vertical as well as temporal resolution data. A variant of moored profilers is the "pop-up" system, which could be deployed as an expendable system with a telemetry module. The package would be dropped from a ship or airplane and rest on the ocean bottom until it rose to the surface either on-command or at a pre-specified time. Advanced communication satellites and fiber-optic cables will be needed for transmittal of data types requiring high bandwidth; examples include multi-frequency acoustical and multi-wavelength optical as well as video data.

2.4 DRIFTERS AND FLOATS

Drifters and floats provide spatial data by effectively following water parcels (e.g., see Bishop, this volume, Griffiths et al., 2001; Dickey 2002a). Physical oceanographers have utilized these methodologies for several decades. Drifters and floats can collect data in regions of the world oceans that are rarely visited by oceanographic cruises. These collective platforms now utilize the Global Positioning System (GPS), giving very accurate position data. Surface drifters provide important near surface data whereas isobaric and isopycnal following subsurface floats give information concerning circulation in the ocean's interior. Recently developed profiling floats that use buoyancy changes to move vertically have been used to provide physical data during rise and descent through the water column as part of their function to telemeter data. Present projections suggest that roughly 1000 surface drifters and 3000 profiling floats (near surface to 2000 m) will be in operation annually within the next few years (Argo Science Team, 2001). Emerging drifter and float systems will be simplified and ruggedized to enable easy deployment from ships-of-opportunity and aircraft. Within the past decade, a few oceanographers have begun to deploy optical and/or chemical sensors from drifters and floats (e.g., see Bishop this volume and Dickey, 2002a). It is anticipated that an increasing number of interdisciplinary variables will be sampled from these platforms in the future as size, weight, and power become less limiting. Biofouling will require special measures as mentioned earlier, but even more so for non-recoverable platforms that cannot be post-calibrated.