

6. ROUTINE MEASUREMENTS

(i) Bathymetry

These are being undertaken by the Navy and the Hydrographic Office on the continental shelf, but data on the bathymetry of the continental slope is lacking in most areas not associated with regular shipping routes.

(ii) Meteorology

An up to date climatology of the reef region together with a comparison on existing meteorological data with mean sea level pressure and wind speed data evaluated from the Bureau of Meteorology's 3° x 3° grid of mean sea level pressure would ascertain the need for offshore automatic weather stations.

At present the need for such stations cannot be properly evaluated.

(iii) General Hydrography and Large Scale Circulation

Long time series of hydrographic measurements as a function of depth on both sides of the reef (that is, in the Coral Sea and the Lagoon proper) and at a selection of positions along the reef (latitudes) would be useful in determining general hydrography.

These measurements could readily be supplemented with remotely sensed sea surface temperatures and chlorophyll. The feasibility of obtaining synoptically consistent data from either side of the reef would need evaluation as it cannot be easily achieved except in limited regions.

(iv) Tidal Currents and Heights

Some routine measurements of tidal height are already being made. The coastal tide gauge network (Department of Harbours and Marine) and the storm surge network (Beach Protection Authority) provide extensive coverage of the coast as far north as Cooktown. Routine access to digitized data is required for effective use by scientists other than those in these two organisations. Further north, coastal stations should ideally be located at about 100 km interval along the coast. In addition, several stations are needed at selected locations near the outer reef itself in order to determine phase and amplitude relationships for those areas not yet studied. Although there appears to be some slight seasonal dependence of tides, measurements of tides (once made) remain valid and predictable for future times.

(v) Long Period Currents and Heights

Any array designed to measure tides would also be useful for a study of longer period currents, but in addition, wind stress forcing and forcing due to geopotential anomalies in the Coral Sea (pressure gradients imposed at the reef edge) are required. Hydrographic measurements exterior to and within the reef would aid in the determination of along-shore gradients due to varying density. Any

planning of routine measurements would probably need to await results of the northern Barrier Reef study since this addresses dynamics in the most remote region.

(vi) Wind Waves and Swell

Remote sensing methods (for example, synthetic aperture radar) are best for studies of similarities and differences in wave climatology over a large region.

Directional wave recording measurements, especially in outer reef areas and the Coral Sea would also be useful.

(vii) Tropical Cyclones

Routine measurements would not appear to be suitable for a study of Tropical Cyclones due to the lack of predictability. Although almost any routine measurements would aid in the study of a tropical cyclone, a separate individual study plan would seem necessary.