level has risen at the greatly reduced rate of 0.08 m/century, which is roughly consistent with estimates of 0.11 m/century based on tide gage data over the last century. As will be discussed later, the earlier much more rapid rise of sea level may still be having an effect.

The most widely applied engineering approach to predicting shoreline response to sea level rise is the so-called Bruun Rule. This rule considers: a) the active profile to always be in equilibrium, and to retain its relative position to sea level, and b) the active portion of the profile to be limited by the "depth of effective motion" seaward of which no sediment exchange occurs. With the above assumptions, when sea level rises a vertical distance, S, the entire active profile must rise also by S, requiring a volume $\forall_R$, of sand per unit beach length

$$\Delta\forall_- = SL \tag{7.1}$$

in which L is the offshore length of active profile. This required sand is provided by a profile retreat, R, over a vertical distance, h_*+B, (see Fig. 7.2). The volume generated by this retreat is

$$\Delta\forall_+ = (h_*+B)R \tag{7.2}$$

and equating the two volumes, the retreat R can be shown to be

$$R = S\frac{L}{(h_*+B)} = \frac{S}{\tan\theta} \tag{7.3}$$

in which θ is the average slope of the active profile out to its limit of active motion, Fig. 7.3. From Eq. 7.3, it is clear that beach profiles with mild slopes would experience greater recessions due to a given sea level rise than would steeply sloping profiles.

Several laboratory and field studies have been carried out to evaluate the Bruun Rule, usually with confirmation claimed. Schwartz (1965) conducted small-scale laboratory model studies to determine whether an increase in water level caused an offshore deposition equal to the rise in water level as predicted by the Bruun Rule. The wave basin was quite small using medium sized sand of 0.2 mm. Following the development of an equilibrium profile,