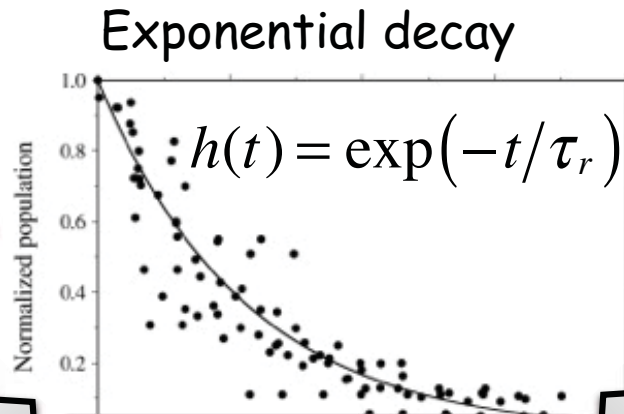


Residence time of marine debris on beaches

Q: What determine the accumulation of marine debris?

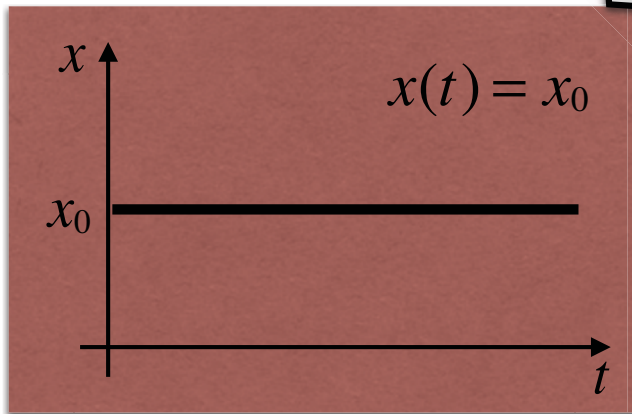


Residence time

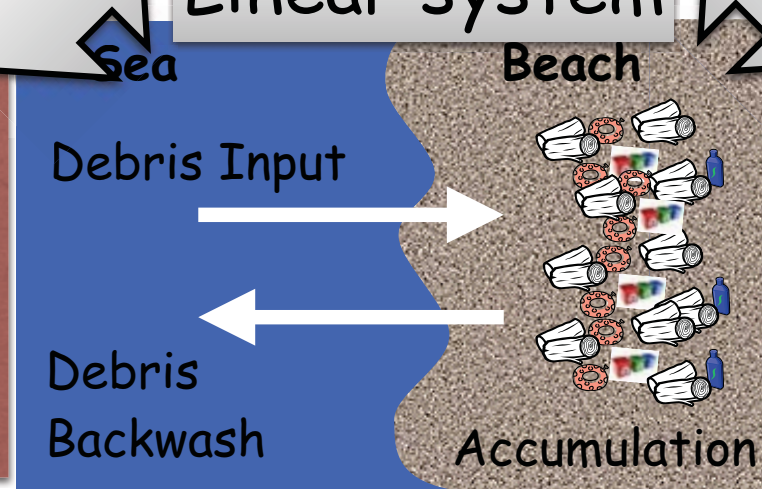
$$\tau_r \approx \frac{B^2}{D}$$

← Beach width
← Diffusivity

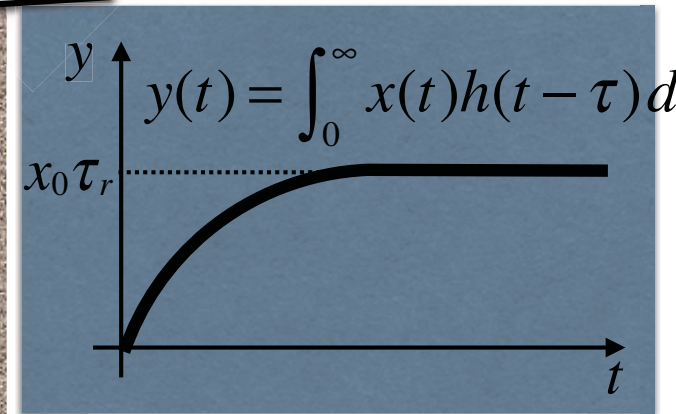
Debris Input



Linear system



Accumulation



NOTE: Please refer the following papers, if you wanna know the residence time of marine debris on beaches.

- Kataoka et al., Mar. Pollut. Bul., 101, 539-548, 2015
- Karaoka and Hinata, Mar. Pollut. Bul., 91, 73-81, 2015
- Karaoka et al., Mar. Pollut. Bul., 77, 266-273, 2013

Science Objectives

- Understanding the residence time determining the accumulation of marine debris

Measurement requirement

- Long term monitoring of the accumulation of marine debris with a high temporal resolution
- Mapping the beach width in the world
- Measuring a probability of high wind-waves events

Benefit

- Understanding the residence time links to decide the clean up sites, and to identify the hot spots for generation of micro plastics.