

How to represent fluctuations at spatiotemporal scales?

Figures

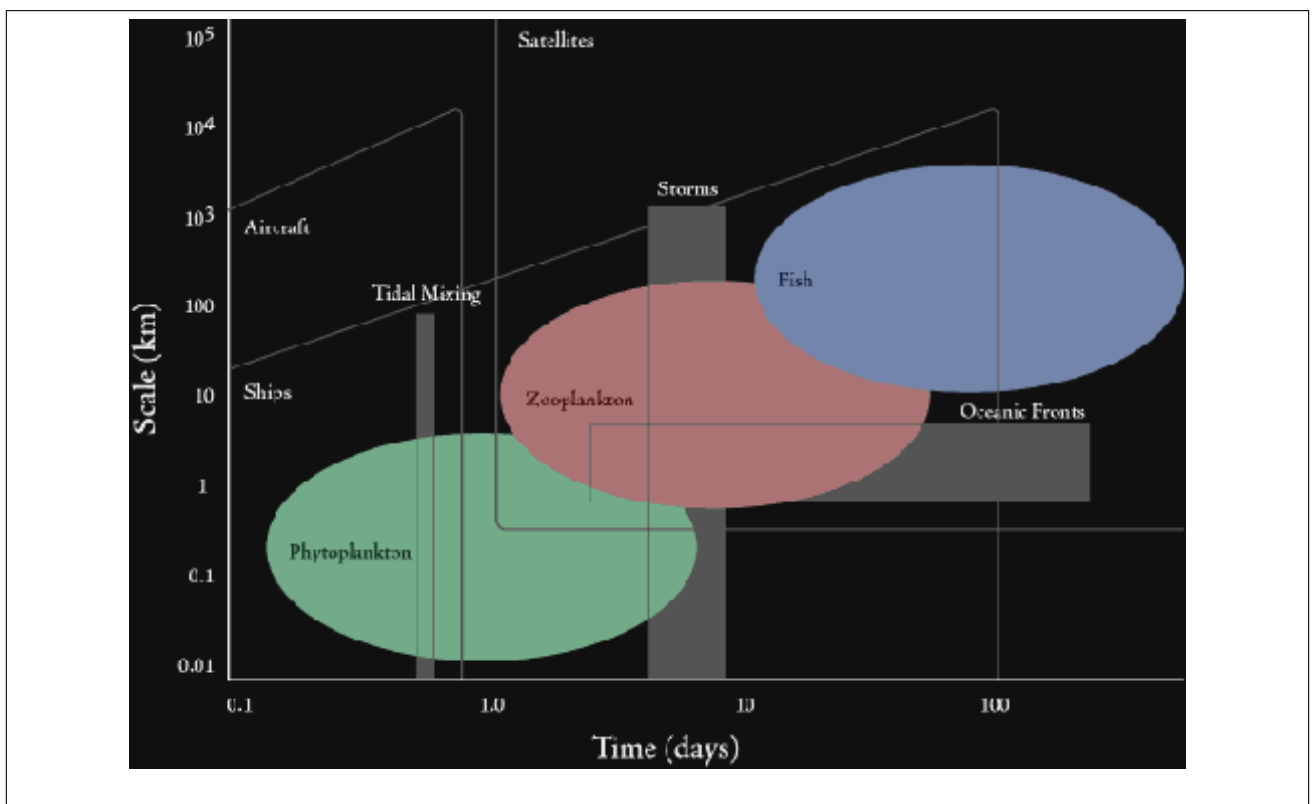


Figure 1: This diagram illustrates the approximate spatial and temporal ranges for a variety of oceanic phenomena, along with estimated observational capabilities of various research platforms. Three basic trophic levels (phytoplankton, zooplankton, and fish) are shown. Thus, aircraft observations are ideal for large-scale, high resolution regional (synoptic) characterizations, encompassing a single tidal cycle and population variability at a scale of 10-1000 meters. In contrast, satellites can best observe variability over 10-1000 kilometers, with a maximum temporal resolution of about 1 day. Ship observations can be at very high spatial resolution but are more limited in spatial range than aircraft or satellites.

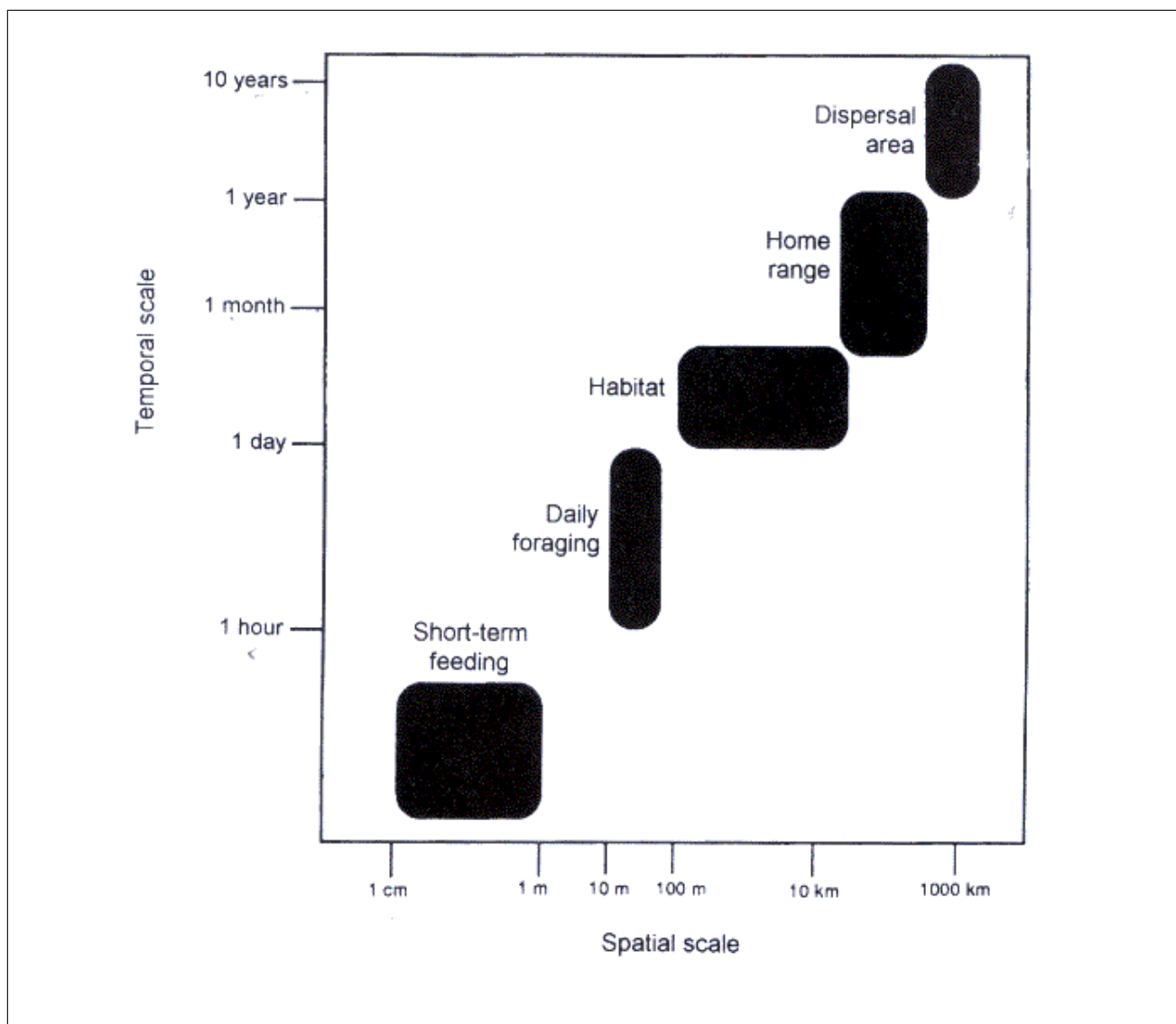


Figure 2: Temporal and spatial scales within which large wading birds operate daily and over their lifetimes (modified from Holling, 1992).

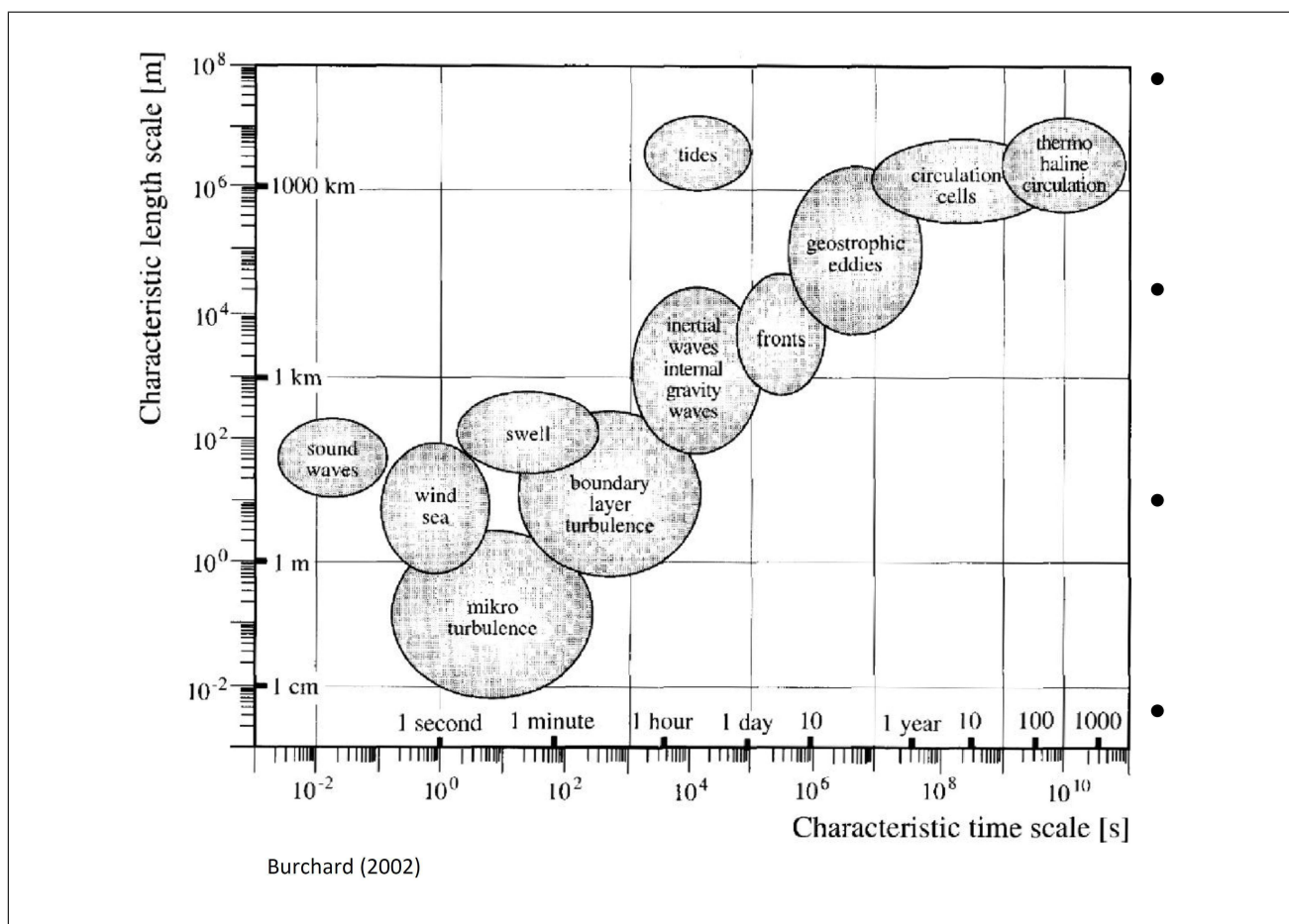


Figure 3: Oceanic processes for temporal scales spanning 10 orders of magnitude, while spatial scales span 12 orders of magnitude. Presumably mantle solvers would extend the upper bounds on each of these scales. Downloaded from <http://earthscience.stackexchange.com/questions/49/similarities-between-grand-circulation-solvers-and-mantle-convection-solvers>.

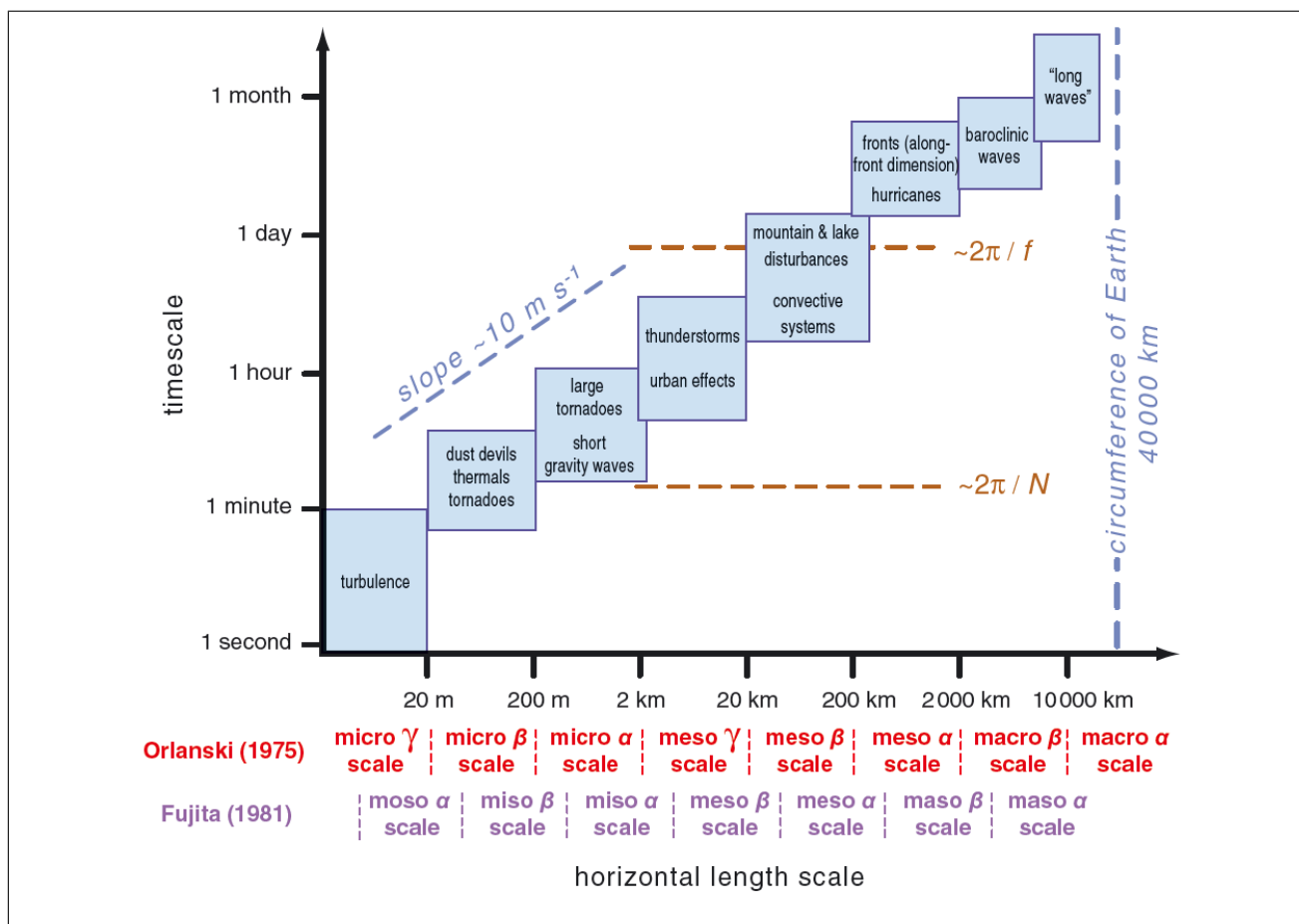


Figure 4: Atmospheric scales

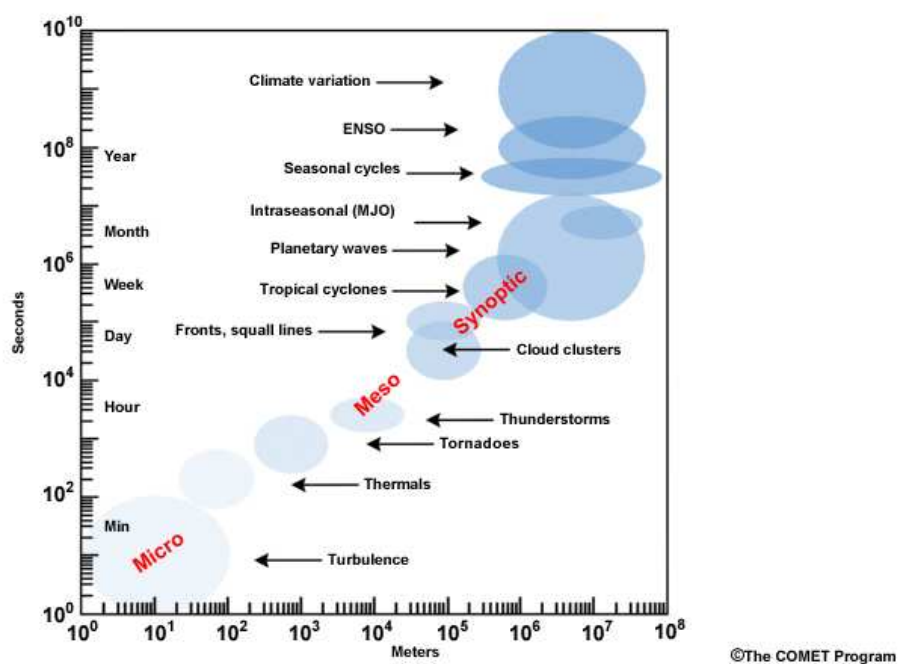


Figure 5: Atmospheric scales again