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Chapter 1 : Vertical integration - Wikipedia

Horizontal and vertical distribution are opposite business models. These terms are used somewhat loosely, and sometimes 'distribution' is replaced with scaling or integration.

Received Aug 10; Accepted Dec To view a copy of this license, visit http: Abstract Recent studies suggest that previous estimates of mesopelagic biomasses are severely biased, with the new, higher estimates underlining the need to unveil behaviourally mediated coupling between shallow and deep ocean habitats. We analysed vertical distribution and diel vertical migration DVM of mesopelagic acoustic scattering layers SLs recorded at 38 kHz across oceanographic regimes encountered during the circumglobal Malaspina expedition. Mesopelagic SLs were observed in all areas covered, but vertical distributions and DVM patterns varied markedly. The distribution of mesopelagic backscatter was deepest in the southern Indian Ocean weighted mean daytime depth: Overall the data suggest strong spatial gradients in mesopelagic DVM patterns, with implied ecological and biogeochemical consequences. Our results suggest that parts of this spatial variability can be explained by horizontal patterns in physical-chemical properties of water masses, such as oxygen, temperature and turbidity. The gravitational flux of organic particles out of the narrow vertical range where primary production occurs is usually thought to be the main mechanism of the biological carbon pump. The vertical settling speeds are strongly influenced by the size and type of primary producers 1 , and it is also well documented that animal ingestion and repackaging of organic material modify export flux rates 2. Vertical coupling of the shallow and deep ocean are therefore heavily influenced by ocean ecology. Planktonic consumers frequently migrate vertically, thereby also transporting energy and nutrients, further influencing the vertical coupling of the oceans 3. Recent studies have suggested that the biomasses of mesopelagic animals, i. Since many mesopelagic organisms migrate vertically, this has consequences also for the vertical coupling. Here we use acoustic data from the Malaspina expedition 5 , spanning some of the major oligotrophic oceanic gyres as well as more productive regions at the equator and in the tropics, to elucidate patterns of mesopelagic diel vertical migration behaviour. Since we use single frequency acoustics, our results do not encompass all mesopelagic animals, but are geared towards the larger micronektonic components that are acoustically detectable, particularly mesopelagic fish with a gas-filled swim bladder. We here focus on the patterns of vertical distribution and proportions of acoustic backscatter moving between the deep and shallow ocean on a daily basis. Diel vertical migration DVM has been described as the largest animal movement on earth in terms of biomass 6. In the typical pattern of DVM organisms reside in deeper waters at day, apparently to avoid visual predators, while foraging at night in upper waters in the shelter of darkness 6. The first global biomass estimate of mesopelagic fishes was at million tonnes 8 , but this value may be an order of magnitude too low 4 , 5. Long-ranging DVM and high biomass imply that mesopelagic fish are an important part of the biological pump 9 , While studies have quantified the contribution of mesopelagic micronekton to vertical flux locally 11 , 12 , 13 , 14 , little effort has been made to quantify the role of DVM in global-scale biogeochemical cycling A first step to understand the role of vertical migrators as vectors of carbon and nitrogen from the surface to deeper layers, is to obtain a better understanding of the diel vertical migration behaviour. An analysis based on a globally compiled data set of migration depths 15 found that the depths were correlated with oxygen levels. However, migration depth is only one aspect of DVM behaviour. Another essential parameter in describing DVM behaviour is the fraction of populations taking part in DVM, and for micronektonic organisms this has not been addressed on larger scales. DVM behaviour is usually dynamic 16 , and even within single populations different behaviour may be displayed 17 , 18 , for example related to seasonal environmental variations 19 , While vertical migrations are ubiquitous in the mesopelagic zone, not all mesopelagic organisms carry out DVM. Even within single species individuals may or may not migrate depending on internal state Mesopelagic Scattering Layers and Diel Variation Along the path of the Malaspina cruise daytime scattering layers were found in the mesopelagic zone in all ocean regions Fig. Table 1 summarizes results for the combined data and also for the different regions.

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Chapter 2 : Ocean Salinity: Vertical & Horizontal Distribution of Ocean Salinity | PMF IAS

Vertical distribution means developing a marketing campaign focused on a targeted group with the hopes of furthering your hold on that audience. From the supply chain world, this often manifests as what's called "vertical integration," where a company owns and manages each and every component of their product or service's life cycle.

The distribution channel begins with the manufacturer that makes a product. The manufacturer sells the product to a wholesaler. The wholesaler sells to retailers, who ultimately sell to end customers. When a manufacturer sells directly to end customers, it uses forward vertical integration. When a wholesaler or retailer manufacturers, it uses backward vertical integration. More Control A main advantage sought by companies that get into vertical integration is more control over the value chain. When retailers decide to acquire or develop a manufacturing business, they get more control over the production part of the distribution process. Similarly, when a manufacturer performs distribution or retailing activities, it has more control over the way the product is presented and at what prices it is sold in the market. Cost Control Vertical integration also typically offers significantly ability to control costs throughout the distribution process. In the traditional distribution process, every step in product movement involves mark-ups so the reseller can earn profit. By selling directly to end buyers, manufacturers can "eliminate the middle man," removing one or more steps of mark-ups along the way. A single entity managing the distribution process also has more ability to optimize resource utilization and avoid wasted costs. Lower transportation costs are common. Competitive Advantages Some companies engage in vertical integration solely to increase advantages over competition and to block competitors from gaining access to scarce resources or important markets. A manufacturing company may enter distribution or retailing to gain direct access to customer in a highly competitive market before its manufacturing competitors do. Differentiation Vertical integration gives companies access to more production inputs, distribution resources and process and retail channels. Each of these offers opportunities for the company to distinguish itself from competitors through effective marketing. A retailer can more quickly adapt to changing customer needs if it owns the manufacturing or production firm that makes its products. A manufacturer could sell through an Internet website and use online advertising techniques to drive traffic and build marketplace credibility. References 2 12 Manage: What is Vertical Integration About the Author Neil Kokemuller has been an active business, finance and education writer and content media website developer since He has been a college marketing professor since Kokemuller has additional professional experience in marketing, retail and small business.

Chapter 3 : Vertical Distribution Expeditions | The Ocean Cleanup

The vertical distribution and arrangement of foliage through the canopy may be formally described in terms of the vertical distribution of (projected) foliage area density a F (z) (m 2 m âˆ' 3) per unit volume of canopy space at height z (m).

Birdseye[edit] During a hunting trip, an American explorer and scientist, Clarence Birdseye , discovered the beneficial effects of " quick-freezing ". For example, fish caught a few days previously that were kept in ice remained in perfect condition. It later came to be known as General Foods. They kept the same Birdseye name, but it was split into two words Birds eye for use as a trademark. Birdseye was one of the pioneers in the frozen food industry. Birdseye Company used vertical integration to manage their business. Because during these times, there was not a well-developed infrastructure to produce and sell, Birdseye developed its own system by using vertical integration. But until now, Birdseye has faded slowly because they have fixed costs associated with vertical integration, such as property, plants, and equipment that cannot be reduced significantly when production needs decrease. The already-developed infrastructure did not allow Birdseye to quickly react to market changes. Alibaba[edit] In order to increase profits and gain more market share, Alibaba , a Chinese-based company, has implemented vertical integration deepening its company holdings to more than the e-commerce platform. Alibaba has built its leadership in the market by gradually acquiring complementary companies in a variety of industries including delivery and payments. Steel and oil[edit] One of the earliest, largest and most famous examples of vertical integration was the Carnegie Steel company. The company controlled not only the mills where the steel was made, but also the mines where the iron ore was extracted, the coal mines that supplied the coal , the ships that transported the iron ore and the railroads that transported the coal to the factory, the coke ovens where the coal was cooked, etc. The company focused heavily on developing talent internally from the bottom up, rather than importing it from other companies. For example, in United States v. Networks began arranging content initiated by commonly owned studios and stipulated a portion of the syndication revenues in order for a show to gain a spot on the schedule if it was produced by a studio without common ownership. Lacking the financial resources and contract talent they once controlled, the studios now relied on independent producers supplying some portion of the budget in exchange for distribution rights. Similarly, Sony has media holdings through its Sony Pictures division, including film and television content, as well as television channels, but is also a manufacturer of consumer electronics that can be used to consume content from itself and others, including televisions, phones, and PlayStation video game consoles. Meat industry Vertical integration through production and marketing contracts have also become the dominant model for livestock production. Farm contracts contain detailed conditions for growers, who are paid based on how efficiently they use feed, provided by the integrator, to raise the animals. The contract dictates how to construct the facilities, how to feed, house, and medicate the animals, and how to handle manure and dispose of carcasses. Generally, the contract also shields the integrator from liability. He finds that in many cases of agricultural vertical integration, the integrator food company denies the farmer the right of entrepreneurship. This means that the farmer can only sell under and to the integrator. These restrictions on specified growth, Hightower argues, strips the selling and producing power of the farmer. The producer is ultimately limited by the established standards of the integrator. Yet, at the same time, the integrator still keeps the responsibility connected to the farmer. Hightower sees this as ownership without reliability. The intermediate product can only be produced with the help of specific physical assets e. Should the buyer own the assets vertical integration or should the seller own the assets non-integration? Suppose that today the parties have to make relationship-specific investments. Since today complete contracts cannot be written, the two parties will negotiate tomorrow about how to divide the returns of the investments. Since the owner is in a better bargaining position, he will have stronger incentives to invest. Hence, whether vertical integration is desirable or not depends on whose investments are more important. For instance, DeMeza and Lockwood have studied different bargaining games, [18] while Schmitz has introduced asymmetric information into the incomplete contracting setup. Essays in the Spirit of Alfred D. Retrieved 17

January Every year should be marked by the promotion of one or more of our young men.

Chapter 4 : Statistical Distributions

Vertical distribution refers to the distribution of the different layers in a multitiered architecture across multiple machines. Horizontal distribution deals with the distribution of a single layer across multiple machines, such as distributing a single database.

Surface salinity is greatly influenced in coastal regions by the fresh water flow from rivers, and in polar regions by the processes of freezing and thawing of ice. Wind, also influences salinity of an area by transferring water to other areas. The ocean currents contribute to the salinity variations. Salinity, temperature and density of water are interrelated. Hence, any change in the temperature or density influences the salinity of an area. In hot and dry regions, where evaporation is high, the salinity sometimes reaches to Comparatively Low salinity regions In the estuaries enclosed mouth of a river where fresh and saline water get mixed and the Arctic, the salinity fluctuates from 0 â€" 35, seasonally fresh water coming from ice caps. Pacific The salinity variation in the Pacific Ocean is mainly due to its shape and larger areal extent. Atlantic The average salinity of the Atlantic Ocean is around The equatorial region of the Atlantic Ocean has a salinity of about Near the equator, there is heavy rainfall, high relative humidity, cloudiness and calm air of the doldrums. The polar areas experience very little evaporation and receive large amounts of fresh water from the melting of ice. This leads to low levels of salinity, ranging between 20 and It gradually decreases towards the north. Indian Ocean The average salinity of the Indian Ocean is The low salinity trend is observed in the Bay of Bengal due to influx of river water by the river Ganga. On the contrary, the Arabian Sea shows higher salinity due to high evaporation and low influx of fresh water. Marginal seas The North Sea, in spite of its location in higher latitudes, records higher salinity due to more saline water brought by the North Atlantic Drift. Baltic Sea records low salinity due to influx of river waters in large quantity. The Mediterranean Sea records higher salinity due to high evaporation. Salinity is, however, very low in Black Sea due to enormous fresh water influx by rivers. Their water becomes progressively more saline due to evaporation. The oceans and salt lakes are becoming more salty as time goes on because the rivers dump more salt into them, while fresh water is lost due to evaporation. Cold and warm water mixing zones Salinity decreases from 35 â€" 31 on the western parts of the northern hemisphere because of the influx of melted water from the Arctic region. Sub-Surface Salinity With depth, the salinity also varies, but this variation again is subject to latitudinal difference. The decrease is also influenced by cold and warm currents. In high latitudes, salinity increases with depth. In the middle latitudes, it increases up to 35 metres and then it decreases. At the equator, surface salinity is lower. Vertical Distribution of Salinity Salinity changes with depth, but the way it changes depends upon the location of the sea. Salinity at the surface increases by the loss of water to ice or evaporation, or decreased by the input of fresh waters, such as from the rivers. The lower salinity water rests above the higher salinity dense water. Salinity, generally, increases with depth and there is a distinct zone called the halocline compare this with thermocline , where salinity increases sharply. Other factors being constant, increasing salinity of seawater causes its density to increase. High salinity seawater, generally, sinks below the lower salinity water. This leads to stratification by salinity. Questions Multiple choice questions Salinity is expressed as the amount of salt in grams dissolved in sea water per a 10 gm c gm b 1, gm d 10, gm Which one of the following is the smallest ocean:

Chapter 5 : distributed system - what is the Vertical and Horizontal distribution? - Stack Overflow

vertical distribution research Between November and July The Ocean Cleanup conducted six expeditions to the North Atlantic to measure the vertical distribution of plastic at sea. In principle, plastic floats at the surface of the ocean, but small pieces can be pushed down by wind and wave action.

Received Mar 27; Accepted Sep 3. This article has been cited by other articles in PMC. Abstract Buoyancy acting on plankton, i. From specific gravity measurements of marine fish eggs salinity appears to be the only determinant of the buoyancy indicating that the thermal expansions of the fish egg and the ambient seawater are equal. We analyze the mechanisms behind thermal expansion in fish eggs in order to determine to what extent it can be justified to neglect the effects of temperature on buoyancy. Our results confirm the earlier assumptions that salinity is the basic determinant on buoyancy in marine fish eggs that, in turn, influence the vertical distributions and, consequently, the dispersal of fish eggs from the spawning areas. Fish populations have adapted accordingly by producing egg specific gravities that tune the egg buoyancy to create specific vertical distributions for each local population. A wide variety of buoyancy adaptations are found among fish populations. The ambient physical conditions at the spawning sites form a basic constraint for adaptation. In coastal regions where salinity increases with depth, and where the major fraction of the fish stocks spawns, pelagic and mesopelagic egg distributions dominate. Here, the principles of vertical distributions of fish eggs in the world oceans are presented in an overarching framework presenting the basic differences between regions, mainly coastal, where salinity increases with depth and the major part of the world oceans where salinity decreases with depth. We show that under these latter conditions, steady-state vertical distribution of mesopelagic fish eggs cannot exist as it does in most coastal regions. In fact, a critical spawning depth must exist where spawning below this depth threshold results in eggs sinking out of the water column and become lost for recruitment to the population. An example of adaptation to such conditions is Cape hake spawning above the critical layer in the Northern Benguela upwelling ecosystem. The eggs rise slowly in the onshore subsurface current below the Ekman layer, hence being advected inshore where the hatched larvae concentrate with optimal feeding conditions. Introduction The transport and dispersion patterns of fish eggs and larvae during the early life stages of fish were hypothesized by Hjort [1] to be critical for the formation of year-class strength. These physical processes can be divided into two different components: Together with the variability in abundances of predators and prey that also is influenced by the ocean physics this second component leads to variability in recruitment. Fish populations are potentially able to adapt to the mean horizontal transport and dispersion pattern, i. This occurs in two ways. Firstly, through the initial release points of the eggs that includes the spawning behavior where the fish select spawning area [2 â€” 4] and the spawning depth [5 , 6]. Secondly, by producing eggs of defined specific gravity [7 , 8] that, in turn determines the local buoyancy of the fish eggs [9 , 10] and hence, their vertical position in the water column [11 â€” 13]. In this way, the resulting vertical distribution of the ichthyoplankton structures the predator-prey dynamics for the pelagic offspring as well as the horizontal transport and dispersion towards the feeding areas for the young of the year. Vertical distribution of the planktonic offspring is, consequently, a key factor in understanding the ambient conditions during a period, which has strong impact on year-class formation [14 â€” 16]. Differently from invertebrates in the marine environment the teleosts have the specific attribute of maintaining approximately constant concentration of salts in their blood and body fluids [17 , 18] independent of the ambient seawater salinity. It implies that teleosts have active osmoregulation where salts are excreted from the body. In eggs this occurs particularly in the chloride cells embedded in the surface epithelium of the yolk sac [19]. The water content in teleost eggs is a key factor in determining egg specific gravity [20]. The eggs are keeping their internal salt concentration approximately constant by osmoregulation independent of the ambient salinity. As poikilotherms, however, the internal temperature is equal to that of the ambient seawater. The dominating role of salinity in teleost egg specific gravity has the implication that it is possible to measure rather precisely the egg specific gravity in laboratory. This was first done by embedding the eggs in salinity solutions to obtain the salinity level of neutral buoyancy [7]. Coombs [21] introduced the density gradient column for

high-precision measurements of the specific gravity of fish eggs, which allowed for calculating vertical velocities of eggs in the water column and to develop models for their vertical distribution [11 , 12]. It became possible to observe quantitatively the impacts of the various components within the fish egg. For example, Coombs [22] addressed the impacts of thermal expansion on egg specific gravity, while the effects of egg size and chorion thickness on egg specific gravity were explored in several studies [23 â€” 27]. The development of egg specific gravity through incubation was observed [5 , 13 , 22 , 28 , 29], and the causes behind these changing patterns have been analyzed [27]. The particular impacts of buoyancy changes in eggs with large perivitelline space, like in sardine eggs, have been studied [30 , 31]. The first model of vertical distribution of fish eggs was developed by Sundby [11], based on the fraction of eggs with specific gravity lower than that of surface water i. The model was developed for steady-state distributions, which imply balance between buoyancy flux and vertical turbulent diffusion. This steady-state model concept was extended to include mesopelagic eggs and bottom eggs through the entire water column in a vertical hydrographic structure where salinity increases with depth [12]. Coastal regions also comprise the spawning areas for the major part of marine fishes of the world oceans [32], and, hence, with an ambient hydrographic structure as described above. However, as will be shown in the present paper, in the major area of the high seas of world oceans the vertical salinity profile is opposite of most of the coastal regions, i. Also, in some specific coastal regions, particularly in the eastern boundary upwelling ecosystems EBUEs , salinity decreases with depth. These particular ecosystems are important regions for the life cycle, including the spawning, of major fish species. In this paper we expand the basic concepts of vertical distribution of marine fish eggs as earlier described for coastal regions with increasing vertical salinity with depth [11 , 12 , 34] to include ambient physical settings where the vertical salinity decreases with depth. We present the generic concepts of vertical distribution of fish eggs covering all types of physical hydrographic settings of the world oceans. Exploring the details of the physical-biological attributes of marine fish eggs from spawning throughout incubation are part of expanding these concepts. We show how decreasing salinity with depth constrains the possible depths where mesopelagic spawners can successfully reproduce, and we discuss how changes in egg specific gravity throughout incubation can contribute to keeping the eggs floating in the mesopelagic layer until hatching. Moreover, we have used values obtained from literature [24 , 35 â€” 40] on the specific gravities on lipids and proteins, and the algorithm for seawater density as a function of temperature and salinity [41] as shown in Table 1. We have used observations from the literature, as cited in the table legend of Table 2 [5 , 22 , 24 , 25 , 27 , 40 , 42 â€” 45], on the volumetric thermal expansion of lipids and proteins together with the volumetric thermal expansion of seawater at various salinities [41] to compare the thermal expansion of the ambient seawater and the net thermal expansion of fish eggs, as calculated according to Eq 3 , and displayed in Table 2. Finally, we selected eggs from four different fish species to analyze the sensitivity of changes in thermal expansion for different compositions of perivitelline space, water content of the yolk and ambient salinity. The differences in volumetric thermal expansions are displayed in Table 2. We have used the conclusions from Table 2 - i. Vertical velocities of the eggs were calculated according to Sundby [11] taking into account the changes in vertical speed of the eggs related to the Reynolds number. Data from the World Ocean Atlas WOA [46] was used to present the critical features of vertical salinity structure of the world oceans. WOA consists of objectively analyzed climatological fields, e. Since most mesopelagic and bathypelagic eggs are observed at various depth ranges above m depth four alternative depth ranges â€” m depth, 0â€” m depth, â€” m depth, and â€” m depth are applied to illustrate ambient salinity structure of mesopelagically spawned eggs in general. In the regions with negative vertical salinity gradient we show that steady-state vertical distribution of mesopelagic eggs is an impossible solution. We have used observations on Cape hake Merluccius capensis eggs in the Northern Benguela to illustrate how mesopelagic eggs develop vertically under such conditions.

Chapter 6 : Large scale patterns in vertical distribution and behaviour of mesopelagic scattering layers

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Figure 3 shows a graphical representation of the frequency distribution in Table 3. This kind of graph is called a histogram. A later chapter contains an entire section devoted to histograms. A histogram of the grouped frequency distribution shown in Table 3. The labels on the X-axis are the middle values of the range they represent. To represent the probability associated with an arbitrary movement which can take any positive amount of time , we must represent all these potential times at once. For this purpose, we plot the distribution for the continuous variable of time. Distributions for continuous variables are called continuous distributions. They also carry the fancier name probability density. Some probability densities have particular importance in statistics. A very important one is shaped like a bell, and called the normal distribution. Many naturally-occurring phenomena can be approximated surprisingly well by this distribution. It will serve to illustrate some features of all continuous distributions. An example of a normal distribution is shown in Figure 4. Do you see the "bell"? The Y-axis in the normal distribution represents the "density of probability. In Figure 4, for example, the probability of an observation with value near 40 is about half of the probability of an observation with value near For more information, please see the chapter on normal distributions. Although this text does not discuss the concept of probability density in detail, you should keep the following ideas in mind about the curve that describes a continuous distribution like the normal distribution. First, the area under the curve equals 1. Second, the probability of any exact value of X is 0. Finally, the area under the curve and bounded between two given points on the X-axis is the probability that a number chosen at random will fall between the two points. First, the probability that his movement takes some amount of time is one! We exclude the possibility of him never finishing his gesture. Second, the probability that his movement takes exactly We can make the probability as close as we like to zero by making the time measurement more and more precise. For example, the normal probability density is higher in the middle compared to its two tails. Other distributions need not have this feature. There is even variation among the distributions that we call "normal. Others are less spread out their tails might approach the X-axis at 30 and More information on the normal distribution can be found in a later chapter completely devoted to them. The distribution shown in Figure 4 is symmetric; if you folded it in the middle, the two sides would match perfectly. Figure 5 shows the discrete distribution of scores on a psychology test. This distribution is not symmetric: A distribution with the longer tail extending in the positive direction is said to have a positive skew. It is also described as "skewed to the right. A distribution with a positive skew. Figure 6 shows the salaries of major league baseball players in in thousands of dollars. This distribution has an extreme positive skew. A distribution with a very large positive skew. A continuous distribution with a positive skew is shown in Figure 7. A continuous distribution with a positive skew. Although less common, some distributions have a negative skew. Figure 8 shows the scores on a point problem on a statistics exam. Since the tail of the distribution extends to the left, this distribution is skewed to the left. A distribution with negative skew. This histogram shows the frequencies of various scores on a point question on a statistics test. A continuous distribution with a negative skew is shown in Figure 9. A continuous distribution with a negative skew. The distributions shown so far all have one distinct high point or peak. The distribution in Figure 10 has two distinct peaks. A distribution with two peaks is called a bimodal distribution. Frequencies of times between eruptions of the Old Faithful geyser. Notice the two distinct peaks: Distributions also differ from each other in terms of how large or "fat" their tails are. Figure 11 shows two distributions that differ in this respect. The upper distribution has relatively more scores in its tails; its shape is called leptokurtic. The lower distribution has relatively fewer scores in its tails; its shape is called platykurtic. Distributions differing in kurtosis. The top distribution has long tails. It is called "leptokurtic. It is called "platykurtic.

Chapter 7 : The Differences Between Horizontal And Vertical Distribution

ly the vertical distribution of Anguilla leptocephali in relation to salinity and temperature. Materials and methods The day- and night-time vertical distributions of leptocephali were studied during.

Chapter 8 : The Advantages of a Vertical Integration Strategy | racedaydvl.com

The regression coefficient, Î², was considered to be a measure of vertical root distribution and was used as a response variable to test whether significant differences in vertical root distributions existed among tolerance classes.

Chapter 9 : Vertical Integration

Vertical and meridional distributions of the atmospheric CO 2 mixing ratio between northern midlatitudes and southern subtropics T. Machida,1 K. Kita,2 Y. Kondo,2 D. Blake,3 S. Kawakami,4 G. Inoue,1 and T. Ogawa4.