

1: Polar Oceanography | University of Bergen

The Polar Science Center is a group of dedicated investigators conducting interdisciplinary research on the oceanography, climatology, meteorology, biology and ecology of the ice-covered regions on Earth and elsewhere in the solar system.

Of these three, the Siberian Shelf is the largest such shelf in the world. The whole area is subject to international territorial claims. Underwater features[edit] An underwater ridge , the Lomonosov Ridge , divides the deep sea North Polar Basin into two oceanic basins: The bathymetry of the ocean bottom is marked by fault block ridges, abyssal plains , ocean deeps , and basins. Water flow[edit] Distribution of the major water mass in the Arctic Ocean. The section sketches the different water masses along a vertical section from Bering Strait over the geographic North Pole to Fram Strait. As the stratification is stable, deeper water masses are more dense than the layers above. Profiles of temperature and salinity for the Amundsen Basin, the Canadian Basin and the Greenland Sea are sketched in this cartoon. It remains relatively stable, because the salinity effect on density is bigger than the temperature effect. It is fed by the freshwater input of the big Siberian and Canadian streams Ob , Yenisei , Lena , Mackenzie , the water of which quasi floats on the saltier, denser, deeper ocean water. Between this lower salinity layer and the bulk of the ocean lies the so-called halocline , in which both salinity and temperature are rising with increasing depth. A copepod Because of its relative isolation from other oceans, the Arctic Ocean has a uniquely complex system of water flow. Mean surface circulation is predominately cyclonic on the Eurasian side and anticyclonic in the Canadian Basin. The deepest water mass is called Arctic Bottom Water and begins around metres 3, feet depth. Arctic shelf water and Greenland Sea Deep Water. Water in the shelf region that begins as inflow from the Pacific passes through the narrow Bering Strait at an average rate of 0. This water is met by Greenland Sea Deep Water, which forms during the passage of winter storms. As temperatures cool dramatically in the winter, ice forms and intense vertical convection allows the water to become dense enough to sink below the warm saline water below. The overturning of this water plays a key role in global circulation and the moderation of climate. In the depth range of ≈ 2 metres ≈ 2 , feet is a water mass referred to as Atlantic Water. Inflow from the North Atlantic Current enters through the Fram Strait , cooling and sinking to form the deepest layer of the halocline, where it circles the Arctic Basin counter-clockwise. This is the highest volumetric inflow to the Arctic Ocean, equalling about 10 times that of the Pacific inflow, and it creates the Arctic Ocean Boundary Current. In fact, this water mass is actually warmer than the surface water, and remains submerged only due to the role of salinity in density. Water in the Beaufort Gyre is far less saline than that of the Chukchi Sea due to inflow from large Canadian and Siberian rivers. The most important feature of this water mass is a section referred to as the sub-surface layer. It is a product of Atlantic water that enters through canyons and is subjected to intense mixing on the Siberian Shelf. This insulation keeps the warm Atlantic Water from melting the surface ice. Additionally, this water forms the swiftest currents of the Arctic, with speed of around 0. Waters originating in the Pacific and Atlantic both exit through the Fram Strait between Greenland and Svalbard Island , which is about 2, metres 8, feet deep and kilometres miles wide. This outflow is about 9 Sv. Because of this, it is influenced by the Coriolis force , which concentrates outflow to the East Greenland Current on the western side and inflow to the Norwegian Current on the eastern side. With this dependence, the Arctic Ocean experiences variations due to seasonal changes in sea ice cover. Sea ice movement is the result of wind forcing, which is related to a number of meteorological conditions that the Arctic experiences throughout the year. For example, the Beaufort High $\hat{=}$ an extension of the Siberian High system $\hat{=}$ is a pressure system that drives the anticyclonic motion of the Beaufort Gyre. In addition, there is a sea level pressure SLP ridge over Greenland that drives strong northerly winds through the Fram Strait, facilitating ice export. In the summer, the SLP contrast is smaller, producing weaker winds. A final example of seasonal pressure system movement is the low pressure system that exists over the Nordic and Barents Seas. It is an extension of the Icelandic Low , which creates cyclonic ocean circulation in this area. The low shifts to center over the North Pole in the summer. These variations in the Arctic all contribute to ice drift reaching its weakest point during the summer

months. There is also evidence that the drift is associated with the phase of the Arctic Oscillation and Atlantic Multidecadal Oscillation.

2: Polar Ocean Physics Group

Polar Oceanography is an integrated synthesis of the biological, physical, geological, and chemical processes that occur in the polar oceans. The book represents the first modern interdisciplinary synthesis in this field.

Early history[edit] Humans first acquired knowledge of the waves and currents of the seas and oceans in pre-historic times. Observations on tides were recorded by Aristotle and Strabo. Early exploration of the oceans was primarily for cartography and mainly limited to its surfaces and of the animals that fishermen brought up in nets, though depth soundings by lead line were taken. Franklin and Timothy Folger printed the first map of the Gulf Stream in 1795. James Rennell wrote the first scientific textbooks on oceanography, detailing the current flows of the Atlantic and Indian oceans. During a voyage around the Cape of Good Hope in 1800, he mapped "the banks and currents at the Lagullas ". In 1845 Edward Forbes undertook dredging in the Aegean Sea that founded marine ecology. The first superintendent of the United States Naval Observatory 1842, Matthew Fontaine Maury devoted his time to the study of marine meteorology, navigation, and charting prevailing winds and currents. His textbook *Physical Geography of the Sea* was one of the first comprehensive oceanography studies. Many nations sent oceanographic observations to Maury at the Naval Observatory, where he and his colleagues evaluated the information and distributed the results worldwide. Almost nothing was known of the ocean depths. As exploration ignited both popular and scientific interest in the polar regions and Africa, so too did the mysteries of the unexplored oceans. The seminal event in the founding of the modern science of oceanography was the 1871 Challenger expedition. As the first true oceanographic cruise, this expedition laid the groundwork for an entire academic and research discipline. Challenger, leased from the Royal Navy, was modified for scientific work and equipped with separate laboratories for natural history and chemistry. Challenger during the years 1871-1876 Murray, who supervised the publication, described the report as "the greatest advance in the knowledge of our planet since the celebrated discoveries of the fifteenth and sixteenth centuries". He went on to found the academic discipline of oceanography at the University of Edinburgh, which remained the centre for oceanographic research well into the 20th century. In the late 19th century, other Western nations also sent out scientific expeditions as did private individuals and institutions. The first purpose built oceanographic ship, Albatros, was built in 1873. In 1893, Fridtjof Nansen allowed his ship, Fram, to be frozen in the Arctic ice. This enabled him to obtain oceanographic, meteorological and astronomical data at a stationary spot over an extended period. The first acoustic measurement of sea depth was made in 1852. Between 1868 and the "Meteor" expedition gathered 70,000 ocean depth measurements using an echo sounder, surveying the Mid-Atlantic ridge. Sverdrup, Johnson and Fleming published *The Oceans* in 1942, [12] which was a major landmark. The *Sea* in three volumes, covering physical oceanography, seawater and geology edited by M. S. The theory of seafloor spreading was developed in by Harry Hammond Hess. The Ocean Drilling Program started in 1985. The United States nuclear submarine Nautilus made the first journey under the ice to the North Pole in 1958. From the 1960s, there has been much emphasis on the application of large scale computers to oceanography to allow numerical predictions of ocean conditions and as a part of overall environmental change prediction. Geosat seafloor mapping data became available in 1985. Study of the oceans is linked to understanding global climate changes, potential global warming and related biosphere concerns. The atmosphere and ocean are linked because of evaporation and precipitation as well as thermal flux and solar insolation. Wind stress is a major driver of ocean currents while the ocean is a sink for atmospheric carbon dioxide. Oceanographic frontal systems on the Southern Hemisphere The study of oceanography is divided into these four branches: Biological oceanography, or marine biology, investigates the ecology of marine organisms in the context of the physical, chemical and geological characteristics of their ocean environment and the biology of individual marine organisms. Chemical oceanography and ocean chemistry, are the study of the chemistry of the ocean. Whereas chemical oceanography is primarily occupied with the study and understanding of seawater properties and its changes, ocean chemistry focuses primarily on the geochemical cycles. Geological oceanography, or marine geology, is the study of the geology of the ocean floor including plate tectonics and paleoceanography.

3: Polar Oceanography: Sea Ice

Polar Oceanography is an integrated synthesis of the biological, physical, geological, and chemical processes that occur in the polar oceans. The book represents the first modern interdisciplinary synthesis of this field.

4: 14th Conference on Polar Meteorology and Oceanography - AMS Annual Meeting

Scientists in the Polar Biological Oceanography Section are building a new understanding of how polar ecosystems will respond to climate change.

5: Oceanography - Wikipedia

This page contains information on the research activities in R. Sambrotto's Lab. at Lamont-Doherty. Its covers the people involved and the analytical work we do on the biogeochemistry of oceans and estuaries.

6: Polar Oceans: The Arctic and Southern Oceans - Windows to the Universe

The course aims to describe circulation and dynamics of the polar oceans, including the Norwegian- and Greenland Sea. The topics are discussed with respect to climatic variations and compared for the Arctic and Antarctic regions. Content: The course covers important processes related to.

7: Research | Lamont-Doherty Earth Observatory

Polar Oceanography Maury Project John Woods NASA Goddard Space Flight Center 18 July Update from Walt Meier, NASA Goddard.

8: State of the Polar Oceans published

Polar Oceanography. likes 2 talking about this. springboard for discussion about polar oceanography!

9: Polar Science Center » Oceanography

Polar Ocean Physics Group About the Group. Sea ice covers 7% of the surface of our planet. It is one of the most important and variable components of the planetary surface and is the key to understanding many basic questions about the energy balance of the Earth.

French illustration The exploits of Don Quixote Price of a life Shirin Merchant. Bonk the curious coupling science Playing music and video Architectural studies Kingdom hearts final mix guide Theories of cognitive development. Study smarter, think smarter Correspondence of James K. Polk. (Correspondence of James K. Polk) Living Your Best Life with Aspergers Syndrome Women deacons : Testamentum Domini nostri Jesu Christi and related texts Hindu Americans Elmer L. Hedin Astronomy and the Imagination Papers in Greek Archaeology and History in Memory of Colin d Gordon (Mcgill University Monographs in Clas Blumenfeld photographs The capture of Saddam : 13 December 2003 Forms I advocate for management and resolution of disputes Bicycling Magazines Nutrition for Peak Performance Reimbursement and access to prescription drugs under Medicare part B Downwind from Gettysburg Observations made with the nine-inch transit circle, 1912-1913 History of elizabethan theatre International peacekeeping and peace enforcement The bridge: the life and rise of barack obama Dragonfly (Morris, Neil, Creepy Crawly World.) Steel chair to the head How to get happily published Mikel, the son of the magi Appendix D: Guidelines for the care of patients in labor Mims medical microbiology American graphic design expression : the evolution of American typography Katherine McCoy A Paradigms Regained: The Uses of Illuminative, Semiotic, and Post-Modern Criticism As Modes of Inquiry in Explanations. Explanations that dont work. A. Genes. B. Leniency. C. Diversity. Prosperity Goldmine Standard Catalog of American Records 1950-1975 Basic book of drafting Environmental influences on autobiographical memory : the mnestic block syndrome Matthias Brand, Hans J. Jordan Valley survey, 1953 The Tale of Jemima Puddle-duck and Other Farnyard Tales Php: a beginners guide by vikram vaswani