

Antarctica by John Baines, John D. Baines. () We see that javascript is disabled or not supported by your browser - javascript is needed for important actions on the site.

The views are just incredible, landscapes, icebergs, rock formations, ice formations. Want to see penguins, seals and whales? This is the place. Many species ignore the "rules" and come very close to you, especially if you remain still and do not move. I usually refrain from using the term amazing Again, staff far exceeded my high expectations. Naturalist guides were all first rate, and would have liked to have had them as my teachers in school, extremely knowledgeable and enthusiastic. I thought the level of customer service, commitment to quality and above all ability to listen to my needs for the trip were excellent and I will be booking many trips in the future with ExpeditionTrips. The trip exceeded my expectations. The hotel manager, his staff and the crew on board were exemplary and completely accommodating. They made every landing fascinating, provided endless hours of entertainment both onboard and on the continent and were among the nicest, most outgoing people you are likely to meet as well! Due days prior to departure Payment Methods: The shipping company reserves the right to cancel any booking that is not paid within days of departure or deny boarding on any unpaid balances. To book kayaking and reserve your spot, the deposit for the trip must be provided. All other adventure options can be held before providing the deposit. Payment Policy is subject to change without notice. Cancellation Policy All requests for cancellation must be received in writing. Cancellation penalties are based on the number of days prior to departure that the cancellation was received and are subject to change without notice. We strongly suggest you obtain trip cancellation insurance. Failure to secure a valid passport, visa, or air arrangements does not waive this policy. Less than days: If full payment has not yet been received, the full penalty will still apply and any unpaid balance is due immediately. Any payments for Adventure Options will also be forfeited. Pre- and Post-Travel Options: Subject to change without notice. Prices quoted are based on group participation and no refunds will be made for any part of the program in which you choose not to participate, including kayaking, paddling, camping, cross-country skiing, stand up paddleboarding, mountaineering or ballooning if applicable and which, at the discretion of the Captain and Expedition Leader, may or may not be used. It is understood that refunds cannot be made to travelers who do not complete the services for any reason whatsoever. In the rare instance where on the final day for flight attempts the flight was still not successfully completed, the shipping company has the right to cancel the trip. The shipping company reserves the right to extend the final attempt day if weather conditions are improving. If the trip is cancelled: No refund will be provided if the flight is successfully completed regardless of which day of the itinerary it was executed. International airfare, domestic airfare, any additional services purchased or change fees, will not be refunded by the shipping company. The shipping company will provide a trip interruption letter to be submitted by the passenger to their insurance company for airfare, change fees, and other expenses incurred due to the trip interruption. The shipping company strongly recommends that all guests purchase changeable airline tickets and a travel insurance policy which includes trip delay, cancellation, and interruption insurance with airfare coverage. The shipping company reserves the right to send passengers on the charter plane the evening prior to the scheduled day. This may happen when they see a weather system that could cause a delay on subsequent days. For each day of the itinerary after Day 1, if there is a delay, all guests will be briefed by the shipping company ground staff on the flight status as they are waiting for a weather window to depart and could be required to leave with very little notice. All guests and staff will be on stand-by until approximately During the stand-by period you must be at the airport, or at another location designated by the ground staff to be ready to go if and when a suitably long weather window becomes available. On these days, the shipping company will provide additional night s hotel accommodation and meals. If the trip is cancelled, the shipping company will provide a final single night of hotel accommodation. Any additional hotel nights and meals will be the responsibility of the guest. The shipping company reserves the right to make exceptions to these timing guidelines. See the Notes section of individual trips for the details as contingency plans vary by departure date and ship. All meals, room charges, and any other expenses are the responsibility

of the guest. All other expenses related to a charter flight delay, including meals, room charges, and flight cancellation or rebooking fees, are the responsibility of the guest. The tour operator will make every effort to ensure your program takes place, but due to weather conditions, flying in this region can be difficult. The tour operator will not offer passengers a refund in the event of a trip delay or cancellation due to the charter flight being unable to depart as planned. It is strongly recommend that all expedition guests purchase a comprehensive travel insurance policy including trip delay, cancellation and interruption insurance, in addition to the required medical coverage. Please note that international airfare may not be covered by insurance in the event of a cancellation. Contact ExpeditionTrips to assist in selecting the appropriate travel protection. You may be required to be on standby and remain close to the hotel, as a weather window may open with very little notice. It is unlikely the expedition would be cancelled, but it is possible that weather could delay departure for a number of days. Consider purchasing flexible, changeable airline tickets, or booking a one-way flight home after completing the expedition, to help reduce ticket change fees. These delays may not be covered by travel insurance. Please note that a Medical Form signed by your doctor may be required for participation in certain trips. Rates are payable in USD unless indicated otherwise, and bank fees incurred e. Lower Deck Lower Deck â€” Approx. Superior Upper Deck â€” Approx. Cabin has a bathtub.

Chapter 2 : Flight Time from Houston, TX to Antarctica

The University of Texas at Austin, Institute for Geophysics. Sunlight tends to bounce off the white, reflective surfaces of glaciers and ice sheets, but the darker surfaces of dirty ground ice can absorb greater amounts of solar radiation.

Coastal Antarctic Permafrost Melting Faster For the first time, scientists have documented an acceleration in the melt rate of permafrost, or ground ice, in a section of Antarctica where the ice had been considered stable. The melt rates are comparable with the Arctic, where accelerated melting of permafrost has become a regularly recurring phenomenon, and the change could offer a preview of melting permafrost in other parts of a warming Antarctic continent. Instead, Levy documented through LIDAR and time-lapse photography a rapid retreat of ground ice in Garwood Valley, similar to the lower rates of permafrost melt observed in the coastal Arctic and Tibet. Landsat Image Mosaic of Antarctica. In contrast to glaciers and ice sheets, which sit on the ground, ground ice sits in the ground, mixed with frozen soil or buried under layers of sediment. After Levy and colleagues noted visible effects of ground ice retreat in Garwood Valley, they began to monitor the valley, combining time-lapse photography and weather-station data at minute intervals to create a detailed view of the conditions under which the ice, a relict from the last ice age, is being lost. Rising temperatures do not account for the increased melting in Garwood Valley. The Dry Valleys overall experienced a well-documented cooling trend from to , followed by stabilized temperatures to the present. Rather, Levy and his co-authors attribute the melting to an increase in radiation from sunlight stemming from changes in weather patterns that have resulted in an increase in the amount of sunlight reaching the ground. Time-lapse imagery of ice loss in Garwood Valley, Nov. The period represents the start and end of one summer season Nov. The views were generated with biannual LiDAR scans of the valley. Sunlight tends to bounce off the white, reflective surfaces of glaciers and ice sheets, but the darker surfaces of dirty ground ice can absorb greater amounts of solar radiation. Thick layers of sediment tend to insulate deeply buried ground ice from sunlight and inhibit melting. But thin sediment layers have the opposite effect, effectively cooking the nearby ice and accelerating melt rates. If Antarctica warms as predicted during the coming century, the melting and slumping could become that much more dramatic as warmer air temperatures combine with sunlight-driven melting to thaw ground ice even more quickly. The research was supported by a grant from the National Science Foundation. See the research paper at Scientific Reports: The Garwood Valley ice cliff. Scientists are about 50 meters in front of the cliff, which ranges from 10 to 15 meters tall. Ice cliff erosion since The solid white lines indicate infrared radiometer and sonic ranger field of view. Meteorology station in front of a meltwater stream coming off the ice cliff and the Garwood River. Photo by Joseph Levy. Ice loss at Garwood Valley ice cliff, Nov.

Chapter 3 : Institute for Geophysics

Austin is the capital of the American state of Texas. It is located in North America.

Supercontinents[edit] Aside from the conventionally known continents, the scope and meaning of the term continent varies. Supercontinents , largely in evidence earlier in the geological record, are landmasses that comprise more than one craton or continental core. Subcontinents[edit] Certain parts of continents are recognized as subcontinents, especially the large peninsulas separated from the main continental landmass by geographical features. The most notable examples are the Indian subcontinent and the Arabian Peninsula. Where the Americas are viewed as a single continent America , it is divided into two subcontinents North America and South America [34] [35] [36] or three with Central America being the third. Notable examples are Zealandia , emerging from the sea primarily in New Zealand and New Caledonia , and the almost completely submerged Kerguelen Plateau in the southern Indian Ocean. Microcontinents[edit] Some islands lie on sections of continental crust that have rifted and drifted apart from a main continental landmass. While not considered continents because of their relatively small size, they may be considered microcontinents. Madagascar , the largest example, is usually considered an island of Africa but has been referred to as "the eighth continent" from a biological perspective[clarification needed]. The Biodiversity Information Standards organization has developed the World Geographical Scheme for Recording Plant Distributions , used in many international plant databases. This scheme divides the world into nine "botanical continents". Some match the traditional geographical continents, but some differ significantly. Asia Minor , [41] The first distinction between continents was made by ancient Greek mariners who gave the names Europe and Asia to the lands on either side of the waterways of the Aegean Sea , the Dardanelles strait, the Sea of Marmara , the Bosphorus strait and the Black Sea. Division into three parts eventually came to predominate. Herodotus [47] in the 5th century BC, however, objected to the unity of Egypt being split into Asia and Africa "Libya" and took the boundary to lie along the western border of Egypt, regarding Egypt as part of Asia. He also questioned the division into three of what is really a single landmass, [48] a debate that continues nearly two and a half millennia later. Eratosthenes , in the 3rd century BC, noted that some geographers divided the continents by rivers the Nile and the Don , thus considering them "islands". Others divided the continents by isthmuses , calling the continents "peninsulas". These latter geographers set the border between Europe and Asia at the isthmus between the Black Sea and the Caspian Sea , and the border between Asia and Africa at the isthmus between the Red Sea and the mouth of Lake Bardawil on the Mediterranean Sea. Through the Roman period and the Middle Ages , a few writers took the Isthmus of Suez as the boundary between Asia and Africa, but most writers continued to consider it the Nile or the western border of Egypt Gibbon [citation needed]. In the Middle Ages, the world was usually portrayed on T and O maps , with the T representing the waters dividing the three continents. By the middle of the 18th century, "the fashion of dividing Asia and Africa at the Nile, or at the Great Catabathmus [the boundary between Egypt and Libya] farther west, had even then scarcely passed away". But despite four voyages to the Americas, Columbus never believed he had reached a new continentâ€”he always thought it was part of Asia. After reaching the coast of Brazil , they sailed a long way further south along the coast of South America , confirming that this was a land of continental proportions and that it also extended much further south than Asia was known to. Within a few years, the name "New World" began appearing as a name for South America on world maps, such as the Oliveriana Pesaro map of around â€” Maps of this time though, still showed North America connected to Asia and showed South America as a separate land. A small inset map above the main map explicitly showed for the first time the Americas being east of Asia and separated from Asia by an ocean, as opposed to just placing the Americas on the left end of the map and Asia on the right end. The word continent[edit] From the 16th century the English noun continent was derived from the term continent land, meaning continuous or connected land [56] and translated from the Latin terra continens. Thus Europe, Asia, and Africa is one great continent, as America is another. Hollandia Nova, map prepared by Joan Blaeu based on voyages by Abel Tasman and Willem Jansz , this image shows a French edition of Beyond four continents[edit] From the late 18th century, some geographers

started to regard North America and South America as two parts of the world, making five parts in total. Overall though, the fourfold division prevailed well into the 19th century. By the late 18th century, some geographers considered it a continent in its own right, making it the sixth or fifth for those still taking America as a single continent. However, it was still not uncommon for American atlases to treat them as one continent up until World War II. This section needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed. May Further information: Continental crust and Plate tectonics Geologists use the term continent in a different manner from geographers. In geology a continent is defined by continental crust: The craton itself is an accretionary complex of ancient mobile belts mountain belts from earlier cycles of subduction , continental collision and break-up from plate tectonic activity. An outward-thickening veneer of younger minimally deformed sedimentary rock covers much of the craton. The margins of geologic continents are characterized by currently active or relatively recently active mobile belts and deep troughs of accumulated marine or deltaic sediments. Beyond the margin, there is either a continental shelf and drop off to the basaltic ocean basin or the margin of another continent, depending on the current plate-tectonic setting of the continent. A continental boundary does not have to be a body of water. Over geologic time, continents are periodically submerged under large epicontinental seas, and continental collisions result in a continent becoming attached to another continent. The current geologic era is relatively anomalous in that so much of the continental areas are "high and dry"; that is, many parts of the continents that were once below sea level are now elevated well above it due to changes in sea levels and the subsequent uplifting of those continental areas from tectonic activity. This accounts for the great age of the rocks comprising the continental cratons. By this definition, Eastern Europe, India and some other regions could be regarded as continental masses distinct from the rest of Eurasia because they have separate ancient shield areas i. East European craton and Indian craton. Younger mobile belts such as the Ural Mountains and Himalayas mark the boundaries between these regions and the rest of Eurasia. There are many microcontinents, or continental fragments , that are built of continental crust but do not contain a craton. Some of these are fragments of Gondwana or other ancient cratonic continents: Other islands, such as several in the Caribbean Sea , are composed largely of granitic rock as well, but all continents contain both granitic and basaltic crust, and there is no clear boundary as to which islands would be considered microcontinents under such a definition. The Kerguelen Plateau , for example, is largely volcanic, but is associated with the breakup of Gondwanaland and is considered a microcontinent, [66] [67] whereas volcanic Iceland and Hawaii are not. The British Isles , Sri Lanka , Borneo , and Newfoundland are margins of the Laurasian continentâ€™only separated by inland seas flooding its margins. Plate tectonics offers yet another way of defining continents. Today, Europe and most of Asia constitute the unified Eurasian Plate , which is approximately coincident with the geographic Eurasian continent excluding India, Arabia, and far eastern Russia. India contains a central shield, and the geologically recent Himalaya mobile belt forms its northern margin. North America and South America are separate continents, the connecting isthmus being largely the result of volcanism from relatively recent subduction tectonics. North American continental rocks extend to Greenland a portion of the Canadian Shield , and in terms of plate boundaries, the North American plate includes the easternmost portion of the Asian landmass. Geologists do not use these facts to suggest that eastern Asia is part of the North American continent, even though the plate boundary extends there; the word continent is usually used in its geographic sense and additional definitions "continental rocks," "plate boundaries" are used as appropriate. The movement of plates has caused the formation and break-up of continents over time, including occasional formation of a supercontinent that contains most or all of the continents. The supercontinent Columbia or Nuna formed during a period of 2. The eight continents later re-assembled into another supercontinent called Pangaea ; Pangaea broke up into Laurasia which became North America and Eurasia and Gondwana which became the remaining continents. Highest and lowest points[edit] The following table lists the seven continents with their highest and lowest points on land, sorted in decreasing highest points.

Chapter 4 : What continent is Austin located on

Get this from a library! Antarctica. [John D Baines] -- Examines the geography, wildlife, resources, conservation, and potential development of the roughly circular continent that surrounds the South Pole.

Arrive in Ushuaia and enjoy a group transfer to your included hotel. Day 2 In the afternoon, transfer to the ship and the Expedition Team will get you settled aboard the ship as you sail into the Beagle Channel to start your Antarctic expedition. Day 3 – 4 Drake Passage Your days at sea are filled with presentations led by your Expedition Team who will prepare you for the wildlife and geology that you will experience, and the history of the area. In between presentations, spend time on deck looking for wildlife or chatting with your shipmates over a drink at the bar. The experience is beyond words, since few places are as untouched, unique and endearing as Antarctica. You will begin to appreciate why this region has long captivated the attention of explorers and travelers alike. Every time someone visits Antarctica, they witness something new or unexpected, which means that your expedition will be unlike any other—creating a unique, personal experience. Each day, you will take Zodiac excursions from the ship to explore local bays, channels and landing sites. Your Expedition Team will take care of you at each landing, whether you are hiking the Antarctic landscape, visiting a research station or consorting with penguin colonies. Keep a lookout for curious whales, such as minke, while on a Zodiac cruise. Each day and each landing will present a new collection of creatures to delight you and keep your camera busy. Amid the serene silence of Antarctica, noisy interludes become indelible memories, such as penguins squabbling over prized pebbles, or the boom and crack of a calving glacier. Every day will be different, having been carefully crafted by your Expedition Team to inspire and educate you about this wonderful part of the world. Day 9 – 10 Drake Passage The journey back across the Drake Passage provides you with some final opportunities to enjoy the crisp Antarctic air. Spend time on the deck watching for seabirds and scouting for whales, enjoy a few final presentations by your Expedition Team or simply relax and reminisce about your experiences. Day 11 Disembark after breakfast and transfer with your group to the airport. Notes Read this itinerary as a guide only; the exact route and program varies according to ice and weather conditions—and the wildlife you encounter. Flexibility is the key to the success of this expedition. ExpeditionTrips is not responsible for itinerary changes. Proof of coverage is required prior to embarkation. The shipping company will not be held responsible for delays due to force majeure. Any additional costs accrued will be the responsibility of the traveler. ExpeditionTrips can assist U.S. Other conditions may apply based on pre-existing conditions. A small group of kayakers will plan to go out multiple times per voyage instead of shore landings. The number of opportunities to kayak is weather dependent and will only be conducted during calm conditions. Prior kayaking experience is required for you to feel comfortable on the water, and you must have the capability to do a wet exit to participate. Beginners interested in kayaking should consider participating in the Paddling Excursion described below. Sign up for a one-time paddle on sit-on-top kayaks, which are stable and unencumbered—perfect for anyone with little to no experience with kayaking. Passengers are taken out in rotating groups on calm days with expert guides to connect with the sea. This is one of the best ways to experience Antarctica in an intimate manner, and take your expedition to the next level. A camping safety briefing onboard gets you fully prepped and ready for a night sleeping under the stars. Dress warmly and eat a hearty meal before you head out, as no meals are allowed on land. All equipment and instruction is provided, no tent required. This popular camping option has limited availability, so book early. Subject to change without notice. Included coverage is applicable only while traveling with the shipping company between the first and last day of the expedition. We strongly advise all passengers to purchase medical, cancellation and baggage insurance, and additional emergency evacuation coverage. Would you like to learn more about this trip or request availability?

Chapter 5 : Antarctica: Gravity Anomaly and Infrared Satellite Image

Sherman, Texas. Visit. Apply.

This represents the first real evidence of the origins of the North American continent, according to scientists who presented their findings Tuesday to the Geological Society of America and the Seismological Society of America. Their evidence indicates that North America was tucked between Antarctica and South America before the supercontinent known as Gondwanaland broke up into the continents we see today. Scientists have generally agreed for several years that all the continents were clustered around the South Pole until about million years ago. But they have been puzzled over how the pieces fit together, and the evidence presented here could help resolve that complex riddle. The conclusion is based primarily on the analysis of a billion-year-old rock formation that begins near Quebec in Canada and runs through the Adirondack Mountains, down through Texas and southern Arizona and across northern Mexico. The rock formation, known as the Grenville Front, later broke apart in a process that launched North America on its northward pilgrimage. Some of the rocks remained in North America, and others in Antarctica, enabling the scientists to conclude that the two continents were once united along the Grenville Front. Using a computer to reconstruct the world as it existed then, Ian W. Dalziel of the University of Texas pushed the continents back together "and lo and behold the Grenville Front forms a continuous feature," he said. Dalziel, who has made at least 20 expeditions to Antarctica, said the rock formation is the best evidence yet of the ancient history of North America. The findings are the latest chapter in a particularly rancorous debate that has raged through the world of geology and geophysics for the past half-century. When proposed, the theory of "continental drift" was considered so unscientific that it drove a bitter wedge into the scientific community. Over the years, so much evidence has emerged in support of the theory that virtually no expert seriously doubts it today, although it is known now as plate tectonics instead of continental drift. Scientists generally believe that the modern era began when the giant land mass at the South Pole mysteriously broke up, sending its pieces drifting off across the globe, although not all at the same time. India waited until about 90 million years ago to begin drifting away from Antarctica, and it collided with Asia about 50 million years ago. Moores, a geology professor at UC Davis. But the ocean floor is younger than the continents, and because no rocks from the seabed are more than million years old, the record runs out at that point. Thus, the best way to reconstruct the ancient history is through what has come to be known as the "ripped newspaper" technique. If you rip a newspaper apart, you can reconstruct it by placing the parts together so that the type can be read from one ripped section to another. Similarly, scientists look for unusual geological structures that are common to different areas of the globe. An ancient rock formation found on the coast of West Africa several decades ago was matched to a similar structure on a beach in eastern Brazil, convincing scientists that the two continents had once been joined. Other evidence of moving continents consists of plant and animal life found in regions so widely separated that they could not have migrated, yet so similar that they must have had common ancestors. Because geologists look to rocks for their evidence, there was much support shown here for two scientists who believe that the marble-like rocks of the Grenville Front reveal much about the orientation of the continents half a billion years ago. Dalziel said he does not have to look far from his home in Austin, Tex. He believes the gray granite rocks used to build the Texas state Capitol were formed near the South Pole long ago as part of the Grenville Front. The two scientists are planning other trips to Antarctica to bolster their findings. New evidence indicates that the Southwestern corner of what is now the United States rested along the eastern edge of Antarctica. The Grenville Front is a billion-year old rock formation found both in that region of Antarctica and across North America, indicating that the rocks were formed when the continents were aligned like this. The view from the South Pole perspective today. The current layout of the continents.

Chapter 6 : Antarctic Peninsula – Discovering the 7th Continent - calendrierdelascience.com

Texas may be suffering through a plus degree heat wave, but long ago, the weather may have been surprisingly different. In fact, Texas and sub zero Antarctica were linked billion years ago.

The process required accounting for over 2 billion unknowns. The flow of the Antarctic ice sheet from the continent into the sea is projected to be the biggest factor in sea level rise this century—a change that could flood hundreds of cities around the world, depending on the extent of ice sheet collapse due to global warming. Teasing out the probable ice sheet collapse scenarios from possible ones is a major focus for climate scientists around the world. But a hole in the research is proving to be a serious roadblock in this effort: However, quantifying uncertainty for Antarctic ice flow on the continental scale has been computationally prohibitive due to the size and complexity of the problem, says Tobin Isaac, a graduate student in the ICES CSEM program. Isaac is working to tackle the problem by developing an algorithm that can infer information about ice flow deep below the surface of Antarctic ice, and quantify uncertainty of the computed values by solving a so-called inverse problem: The key idea for overcoming the large-scale nature of the parameters is to recognize that the data provide only limited information about the model parameters, said Isaac, and to create algorithms that can extract this information at a cost that is proportional to only the information content in the data—as opposed to the data or parameter dimension. Accounting for these factors allows the inverse problem to be solved on modern HPC systems. Getting to the Bottom Satellites have been recording Antarctic ice flow at the surface of the continent for decades. However, to understand the behavior at the top, one has to look at interactions happening deep below—on average two kilometers below—where the ice meets the rocky Antarctic continent. Solving the inverse problem is the first step of the algorithm and a highly intensive process in and of itself: What comes next is identifying just how much these values can be trusted. Comparing these prior expectations with the calculated values, a method informed by Bayesian statistics, allows for the calculation of a distribution called the posterior distribution made up of the likelihood of various parameter values. Finding the distribution enables researchers to see what level of uncertainty is associated with certain parameter combinations. The problem is, the math and computational power required to find the underlying distribution of so many values is extensive. A common method for elucidating the underlying distribution is to simply draw samples of the parameters using Monte Carlo methods, a technique that, like a naturalist surveying variation in a wild animal population, randomly samples the parameters that make up the posterior distribution until the distribution trend emerges. So, Isaac turned to a different method of drawing out the probability associated with various parameters. Instead of sampling the data, he developed a way to search through it. By going through the vetting process, these values come with uncertainty attached. The method is scalable because it disassociates the number of algorithmic steps from the size of the data, the main problem that has prevented other methods from being applied to large-scale problems. Data that aids in the understanding of Antarctic ice flow will only grow in size. Proof Positive Isaac is quick to identify the algorithm as a framework for further research, rather than a ready-to-go research tool; there are still plenty of details to sort out before it could be used to inform a realistic model a major one being finding a way to sample the true posterior distribution, instead of a Gaussian approximation, while keeping the computations tractable. But even as a work-in-progress, the model of Antarctic ice flow produced by the algorithm contained some notable features that could be a flag for further research, Isaac said. For example, some regions demonstrated little variability in the basal friction, while others were particularly prone to high levels of uncertainty. It will just take people getting together to get the correct forms for all these different terms and go into it. And Hongyu Zhu, a CSEM student, is working on revamping the inverse problem portion of the algorithm to include temperature data, an important ice-flow influencer. The way the equations fundamentally describe movement of viscous material makes them useful for a wide range of application. This happens to include heated rock as well as ice. Although made up of mostly solid rock, the mantle behaves as a viscous fluid over geological time scales, enabling Stokes equations to be used to describe its movement.

Chapter 7 : Antarctica Cruise - Ocean Diamond | ExpeditionTrips

Austin is the capital of the state of Texas. It is located in North America.

What are the Mean, Maximum and Minimum elevations of the Antarctic continent? Change the Symbology of the elevation raster to "Classified", click the Classify Color Ramp names are accessible by right clicking on the color ramp and turning off the check mark next to the "Graphic View" option. The Symbology tab should look like the one shown below. The classification of elevations by 23 equal intervals of meters. The symbology tab, with elevations classified at m intervals and symbolized with the Elevation 2 color ramp. Clicking on the "Label" bar will allow formatting of the labels to show no decimal places, as seen in the Label field above. The resulting symbolized map should look like that Figure 5 below. Antarctic elevations, classified at m intervals and symbolized with the Elevation 2 color ramp. Vector layers overlie the elevation grid. This is just one of many possible ways to display the elevation raster. For appearance sake it would be nice to eliminate the irregular box that defines the boundary of the data regions the area displayed in teal color above, at zero elevation. We could selective symbolized, by classification, all areas of zero elevation with no color e. Before beginning any Spatial Analyst procedures always set the Options. Most functions within this extension create new grids rasters by performing operations on old grids. It is imperative that you set a Working directory, so that these new grids are saved in a place where you can retrieve them. Lacking a Working directory, they are written to the Windows temp folder, and will be erased when you close your project unless you remember to "Make permanent Do not to forget to do this before beginning any Spatial Analyst session. From the Spatial Analyst toolbar drop-down menu, select "Options An Analysis mask defines a region where an analysis will be performed - any raster cells outside of the analysis mask will be ignored during the analysis and, upon creation of the new raster, will have "no data" values. An analysis mask can be created from an existing raster see Desktop Help, analysis mask , or a vector polygon file can be used instead. In the Spatial Analyst Option window, use the drop down menu in the Analyst mask line to set the Analyst mask to the 5m coast polygon coverage. The Analysis extent also defines the area of an analysis, but when performing overlay analyses involving more than one raster can be set so that results are restricted the region where rasters overlap "Intersection of inputs"; the default or the entire region of rasters "Union of Inputs". The Cell size option specifies the raster cell size resolution of any new raster created during analysis. With analyses using two or more rasters, it is always best to set this to "Maximum of Inputs" the default so that the new raster does not have cells smaller than any of the input rasters this is the conservative approach; it does not require resampling of one or more of the input rasters. Leave this set at "Maximum of Inputs". Spatial Analyst Options window. Spatial Analyst Extension - Clipping a grid file To restrict the symbology of the elevation grid to the outline of Antarctica, we will clip the existing grid to the Analysis mask set above. This will create a new grid that has elevation values only within the mask: Open the Raster Calculator by clicking the drop-down menu on the Spatial Analyst toolbar and selecting "Raster Calculator Click "Evaluate" and wait while a new grid is made. Once completed, the new grid file is loaded into the table of contents and given the file name "Calculation". Note the absence of zero values beyond the coastline these cells are transparent. These are now "no data" cells. The result, when displayed as 9 equal intervals of elevation, will look something like Figure 8. The new elevation raster, showing "no data" cells in gray and elevations classified into 9 equal intervals. Undo what you just did i. The color ramp names - e. This step assures that the grid has a meaningful file name and is in a place where you can retrieve it. By "Making Permanent" you stored this file with a meaningful name. Spatial Analyst Extension - Creating a Hillshade raster A "Hillshade" is a grayscale rendering that shows shadows and highlights to produce a "shaded relief" map. Placing a hillshade behind a grid that is partially transparent makes the grid look three dimensional. To create a hillshade: The other parameters in this window can be left alone most are self explanatory, but see the Help file on Hillshade for details except for the "Output raster" line. The resulting map should now look something like Figure 9. The solid light blue areas are ice shelf vector polygons with white outlines that lie on top of the other layers. Yellow similarly shows rock outcroppings. The highest point in Antarctica is the Vinson Massif a. Mount

Vinson, in the Ellsworth Mountains. Vinson and give its latitude and longitude, in decimal degrees. The selection tools in the Selection menu do not work with raster data. Change the symbology to highlight cells over and meters. To get locations in decimal degrees, you can set the display units of the Data Frame in the Data Frame Properties window. This raster shows topography beneath the ice and bathymetry of the sea floor to 60 degrees South latitude. As above, clip this raster to the "coast05" polygon coverage. Symbolize the new raster with a color ramp; the "Precipitation" ramp, inverted, works well for bright colors. You should end up with something that resembles Figure Antarctic sub-ice bedrock topography, including regions beneath the permanent ice shelves. Cooler colors are lower elevations, warmer higher. The solid black lines mark the shoreline of the continent and edges of ice shelves. Small bright yellow spots mark areas of outcropping rock. What are the mean, maximum and minimum elevations for the continent? Use the Symbology tab in the Layer Properties for the clipped elevation raster. Spatial Analyst Extension - Creating a binary raster What parts of the above map are below sea level, what parts above? We can, of course, symbolize the raster to show this, but it can also be done another way. To enhance the appearance of "shorelines", we can also produce and overlay a zero elevation contour. To produce a binary raster, we will use a Conditional Statement in the Raster Calculator. Explain, in words that include "if Use ArcGIS desktop help and search "conditional statement" for explanations of similar examples. Symbolize the new contour line in black with a 0. Order the table of contents so the contour line is visible. Your result should resemble Figure Antarctic sub-ice topography, showing regions below present sea level in blue. A suggestion of water depth is provided by the selected color ramp and hillshade raster beneath. Looks like a terrific place to go fishing. Give your answer in a list of steps. How thick is the ice at South Pole? Click the Calculate statistics button. The resulting statistics fig. The units for the results are in the units of the spatial reference, in this case meters. Results of ice volume calculation in 3D Analyst. What is the surface area, in square kilometers, of Antarctic ice? Spatial Analyst Extension - Antarctic topography after ice removal and isostatic rebound Like a ship lightened of its load, on some time scale melting of the south polar ice cap will result in the rise "rebound" of the underlying continent. The total amount of rise can be modeled as being directly proportional to the thickness of the ice and the ratio of the density of the underlying mantle to that of the ice. Specifically, for individual raster cells: To obtain an elevation raster for the continent that includes this elevation difference, we will: Multiply an ice thickness raster by 0. Step 1 multiplies a integer raster ice thickness by a floating point value, resulting in a floating point raster. You do not need to save the result of step 1. DEM of Antarctica without ice after isostatic rebound. Black line is present Mean Sea Level contour. How do the mean, maximum and minimum elevations for the continent after isostatic rebound differ from those of the sub-ice topography before rebound c. Spatial Analyst - A map of "Greenhouse Antarctica", showing the effects of isostatic rebound and sea level rise Melting of the south polar ice cap, which contains for about To produce a map like Figure 11 that shows higher sea level we must: Create a binary raster of regions above and below sea level c. Create a shoreline i. Your final product will resemble Figure DEM of Antarctica after isostatic rebound and a sea level rise of Blue areas are below sea level.

Chapter 8 : Antarctica Continents Austin Tex, John Baines, John D. Baines.)

This composite satellite image of the Antarctic continent and surrounding ocean basins combines Geosat altimeter profiles of sea-surface topography in the Southern Ocean (south of 60°S) with Advanced Very High Resolution Radiometer (AVHRR) data from Antarctica.

Would you like to merge this question into it? MERGE already exists as an alternate of this question. Would you like to make it the primary and merge this question into it? MERGE exists and is an alternate of. It is located in North America. The Andes Mountains, South America. The Himalayan Mountain range, Asia. Name the continents or partial continents that are located in each hemisphere? There are seven continents and four hemispheres. Here are the locations this may all make more sense if you see it on a map: Africa stretches through both the Northern and Southern hemispheres, as well as the Eastern and Western hemispheres. Antarctica is in the South Pole, and within the Southern Hemisphere. It extends through the Eastern and Western hemispheres. Asia, like Africa, extends through all hemispheres. It is mostly within the Northern and Eastern hemispheres, but part of it Indonesia, which is considered a part of the Asian continent goes into the Southern hemisphere, while another part, Russia, extends through the Eastern hemisphere, and onward to the Western hemisphere. Australia is within the Southern and Eastern hemispheres only. Europe is mostly situated within the Eastern hemisphere, but entirely within the Northern hemisphere: North America is situated entirely within the Northern hemisphere, and it also within the Western hemisphere. South America-- the equator crosses through it, so it is in both the Northern and Southern hemispheres, and entirely within the Western hemisphere. I enclose a link to some maps of the continents and their locations. China is located in Asia, but there are way, way, way more than three countries in Asia.

Chapter 9 : What is the name of the continent in which Austin is located

Tracking data from Garwood Valley in the McMurdo Dry Valleys region of Antarctica, Joseph Levy, a research associate at The University of Texas at Austin's Institute for Geophysics, shows that melt rates accelerated consistently from to , rising to about 10 times the valley's historical average for the present geologic epoch, as documented in the July 24 edition of Scientific Reports.

This lively, modern city, widely viewed as the "Live Music Capital of the World" is a major high tech center and home to the University of Texas main campus. Austin first named Waterloo came to life in as a small village on the banks of the Colorado River. In Waterloo was chosen as the capital of the newly independent Republic of Texas. The city was later renamed Austin after Stephen F. Austin, a man revered as the "Father of Texas. Outdoor activities and shopping are the orders of the day, followed by barbecues and fine dining choices. But when that Texas sun finally sets, the bars, clubs, honky tonks and musical venues across Austin especially on 6th Street will all light up the night till the wee-hours of the morning. Scholz Garten, located in the downtown district of Austin, is the oldest continuously operating restaurant in Texas and also the oldest business in all of Texas. They opened for business just after the Civil War! The State Capitol of Texas, one of the most beloved and admired landmarks in the state, was completed in and is actually 14 feet higher than the United States capitol. Because the hills to the west are mainly limestone rock with a very thin covering of topsoil, portions of Austin are frequently subjected to flash floods from the runoff caused by thunderstorms. Attractions Austin is bursting with college sports fanatics, entertainment venues, filmmakers, musicians, singers, and of course, politicians. Congress Avenue Bridge Bats This is one of the most unusual and captivating spectacles nature has to offer, a major tourist attraction and a lesson about survival. Enjoy the amazing show every evening from April to October, when these tiny creatures soar into the night sky, offering an enchanting sight. Barton Springs Pool This spring-fed swimming pool, found within Zilker Park, spreads across 3 acres and is surrounded by lovely gardens and pecan trees. The pool is fed by underground spring waters that maintain a year-round temperature of about 68 degrees, perfect for swimming, floating or just timid toe-dipping. A popular attraction for decades, Barton Spring Pool is an Austin gem perfect for photo ops and lazy days. Everyone from families to singles party merrily, wishing a Happy Birthday to a statue of Eeyore dressed like the Statue of Liberty. The average age of the inhabitants of Austin is For every male, there are approximately 0. The majority of the population is white, which consists of Of the total population, 7.