Three main wind systems differences

Although the term monsoon was originally defined for the Indian subcontinent, there are also monsoon circulats in other parts of the world, such as in Europe, Africa, Australia and the west coast of Chile and the United States. About 65% of the world's population lives in monsoon areas. The most famous monsoon circulation occurs over India and Southeast Asia. In summer, the air above the continent becomes much warmer than the water surface, causing the surface air of the water to move to land. The moist air from the water converges with dry air from across the continent and produces precipitation over the region. Additional lifting of hills and mountains causes abundant amounts of precipitation to occur, more than 400 centimeters in some locations! During the winter, the current reverses and the dominant surface flow moves from the land to the water. The Indian summer monsoon usually lasts from June to September. During this period, large areas of Western and Central India receive more than 90% of their total annual rainfall, while southern and northwest India receive 50%-75% of their total annual rainfall. In general, the monthly precipitation averages 200-300 mm, with the highest values observed during the heart of the monsoon season in July and August. 4. Monsoon circulation source: Homepage of the Cooperative Institute for Mesoscale Meteorological Studies Page 2 In the 'Basics' section you have seen the normal state in the Pacific ocean and also the deviations under El Niño conditions. (under the heading El Niño and in the worksheets in the section 'Basic Principles'). In the section 'More' - under the heading 'El Niño and SOI' you will get more information. After you've gone through the material in these two sections, you should be able to answer the following questions. The seasonal variation of the pressure patterns is called the Southern Oscillation. When this happens - every 3-6 years - the whole system plays in the Pacific. Page 3 You've read about El Niño and La Niña in the weather section: basics - Circulation Systems - El Nino and more - Large wind systems - El Nino & SOI . You should also have looked at the Worksheets 3, 4 & 5 in weather - basics - Circulation Systems on El Nino. Now let's look at La Niña: El Niño is world famous, not the other extreme of oscillation: La Niña bringing colder sea surface temperatures. And the third phase of ENSO is neither La Niña nor El Niño, just normal average. Do you remember the facts (1950s to 1997)? Page 4 The NAO has a long history. The missionary Hans Egede Saabye made observations in his diary as early as 1770 to 1778: When winter in Denmark was severe, as we observe it, the in Greenland in its way was mild, and At the same time, coherent fluctuations in temperatures, rainfall and pressure at sea level were documented, reaching eastward to Central Europe, south to subtropical West Africa and westward to North America. The fluctuations of NAO affect the climate from North America to Siberia and from the Arctic Ocean to the equator. NAO index The strength of the NAO is described by the NAO index. The NAO index is the difference in sea level pressure between two stations close to the centres of the Icelandic Low point and the Azores High. Stykkisholmur (Iceland) is used as the northern station, and either Ponta Delgada (Azores), Lisbon (Portugal) or Gibraltar are used as the southern station. This simple index clearly does not take into account the possibility that the centres of the actual pattern do not overlap with these locations, nor can it accurately record the seasonal variations in the NAO. However, there is an important advantage to using such an index, existing weather records make it possible to extend it back in time to at least 1864. When the index is correlated or deteriorated with recovered surface pressure data, the resulting north-south dipole pattern defines the spatial pattern of the NAO. Page 5 In 1923, a British scientist, Sir Gilbert Walker, discovered that when air pressure is high in the Pacific, it is low in the Indian Ocean from Africa to Australia, and vice versa. His findings, which he called the Southern Oscillation, were the first indication that weather conditions in far-flung parts of the tropical Pacific region are connected. Fifty years later, in the late 1960s, Jacob Bjerknes a Norwegian meteorologist and professor from the University of California at Los Angeles came up with the first detailed description of how El Niño works. He made the connection between Walker's Southern Oscillation and El Niño and this is now officially known as the El Niño/Southern Oscillation or ENSO for short. Page 6The different warming of our planet, depending on latitude and allocation of water and land is the driving force of the wind systems of our planet Earth. Monsoons and trade winds are examples of two such systems. Many of the traditional names of the wind zones have their roots from the time when sailing ships were used in the Middle Ages, when calm and storms could often decide life and death. The El Niño phenomena, which is based on pressure variants, in this case over the middle of the Pacific, has a strong influence on temperature and precipitation on several continents. However, the weather in Europe and the Mediterranean depends more on the North Atlantic Oscillation. In the following parts of this unit, more about these systems. About this page: author: Elmar Uhereklanguage reviewing: Sally Taylor, University of Leedslast update: 2005-07-15 1. Sailing ship: The Great Turk© Turk© Size 50 K Wind in simple terms is nothing but moving air. We all enjoy wind rustling through the leaves in our garden. It has also expanded the transport range and provided an energy source in the field of mechanical energy for the generation of electricity in windmills and recreation purposes in hot air balloons. Wind energy was also used in trips by sailors to guide their ships. When the wind is strong, they lead to the destruction of life and property in the form of cyclones and storms, causing forest fires, landslides etc. In this article we will learn about the causes of wind and destruction caused by wind. Types of wind blowing above the earth's surface can be classified into five main species: Planetary winds Trade winds The westerlies Periodic winds Monsoon winds Land wind Sea breeze Mountain and valley winds Planetary winds consist of winds spread over the lower atmosphere. Winds are regularly limited throughout the year in latitudinal belts, mainly in northeast and south-eastern directions or from high-pressure polar regions to low pressure areas. Trade winds These winds are also known as tropical easterlies and blow from the right in the northern hemisphere and to the left in the southern hemisphere due to Ferrel's Coriolis effect and law. They begin to blow from the subtropical high pressure areas to the equatorial low pressure belt. In the Northern Hemisphere, they blow up as northeast trade, and in the southern hemisphere they blow as southeastern trade. The Westerlies These winds are also known as Shrieking Sixties, Furious Fifties, and Roaring Forties. They blow from the subtropical high pressure belts to subpolar low pressure belts. The westernlies of the southern hemisphere are stronger and constant than the westernlies of the Nothern hemisphere. Periodic winds These winds periodically change direction when there is a change in the seasons. Below are the types of periodic winds: Monsoon winds: The temperature difference created by the Indian Ocean, the Arabian Sea, the Bay of Bengal and the Himalayan wall forms the basis of monsoon in the Indian subcontinent. Land wind: These winds blow from land to sea, which are not moisture, but dry and warm. Sea breezes: These winds blow from sea to land, causing some moisture. Mountain and valley breeze: Valley breeze is the hot air blowing from the valley that flows up to the slopes of the mountain slopes. In contrast, mountain breeze is the valley breeze that is the cold air from the mountain stream to the valley. Related article: Difference between land breezes and sea breezes Local winds The local winds include the sea and the land breeze created by the pressure difference between the air above the sea and the land regions. Loo is the local wind that blows in the northern part of How is wind measured? The wind has as well as direction, in order to measure this parameter, two different devices are used: These instruments are a common weather station instrument used for measuring the speed of the wind. Cup anemometer, hot wire anemometer, windmill anemometer, sonic anemometer, and laser doppler anemometer are the different types of anemometer. These devices are also known as weather vane, which is used to determine the direction of the wind. Related article: Causes of wind The main cause of wind production is the uneven heating of two regions. Below are the examples of unequal heating that we see around us: What is unequal heating between land and sea? Seawater is heated more slowly compared to land. As the temperature of the land rises, the air above it is heated by conduction. The density of warm air is less than the environment, causing it to rise, creating a vacuum in its place. The cooler air of the sea rushes to fill the vacuum, which makes for a cool coastal breeze. At night, the country cools down faster, creating a temperature difference between the temperature on land and those offshore. This temperature difference creates another drop in pressure, creating a land breeze. The flow of air between land and sea What is uneven heating between equator and pole? The equatorial and tropical areas (close to the equator) get the maximum heat from the sun; hence they are hotr than the polar regions. The air around this region is warmed up and rises to create a vacuum. Cooler air from the poles rushes to fill the vacuum. The wind does not flow in the north-south direction because a change in direction is caused by the rotation of the earth. The flow of air between equator and Pole pole