

DOWNLOAD PDF FORECASTING THE WEATHER (WATCHING THE WEATHER)

Chapter 1 : Watching the skies - how weather forecasting works in F1

Students observe weather, build an operational weather station, collect and compare data, create an "extreme" weather forecast, and write first-person accounts of a storm. Older students research and write reports about extreme weather.

Draw conclusions about the effects of weather Compare and contrast different weather forecasts Use maps to analyze different weather conditions Complete and record an online weather script Write a first-person report from the center of a storm Materials Analyze: A video-recording device Lesson Directions Day 1 Step 1: Questions or prompts you may want to use include: What does a TV weather reporter do? Where does weather information come from? How is a news story about the weather different from a weather forecast? Is reporting the weather a science? What types of weather cause weather alerts to be issued? Either show a video of a weather forecast, or have students come to this session prepared to discuss report they had previously watched. Discuss the information the reporter focused on air temperature, wind speed, humidity, etc. Days 2-3 Step 1: Tell students they will now have the opportunity to try their hand at being a weather reporter. Direct students back to Analyze: A Weather Watch Activity where they should select one weather condition to analyze, study the maps provided, answer the questions, and generate a script. With younger students, you may want to involve parent volunteers to help students record their work. Have students share their videos with the class over the next few days. Ask students and parents to send in props from home. Students will need the props for activities in day six. Props might include microphones, umbrellas, winter wear, a fan for wind, Styrofoam peanuts for snow, or a hard hat for an earthquake. Day 4 Step 1: Before class begins, write a list of different types of extreme weather and natural disasters, such as hurricanes, tornadoes, blizzards, and earthquakes on the board. Explain to students that while they were fortunate to do their forecasts from nice dry and warm "studios," many reporters actually conduct their forecasts from the middle of the action - outdoors. Discuss why reporters might be outside. What are the advantages of these reports? What are the downsides? Inform students that they are now going to be working with a small group to give a live report from the center of one of the storms, just like the pros. Point to the list of extreme weather conditions you have written on the board. Assign students to groups of three. One person will act as a news anchor in the studio, the second will be reporting from the center of a storm, and the third will be a cameraman. All three will collaborate writing their script. Have students select their roles before they start working. Using the computers, allow students to visit the extreme weather site appropriate for the type of weather they will be reporting about. Referring to the in-depth areas and first-person accounts, especially, have student take notes about conditions they would encounter if they were standing in the middle of that weather system. Day 5 Step 1: Discuss the components that should go into an eyewitness account of weather stories. If necessary, prompt students on the importance of including sensory information such as what they see, feel, or hear. Have students draft, revise, and complete their weather report. Before they begin writing, however, clearly define the roles of each person in the group. With older students you might discuss the fact that one newsperson, usually a veteran, is safe and warm in the newsroom while another, often a less experienced reporter, is in the center of severe conditions. The person in the studio introduces the story by telling the viewers about the Storm of the Century. This portion of the script should include background information and an introduction of the reporter on the scene. Reporter on the Scene: This person is trying to give a serious report on the dangerous conditions while they are in the center of the storm. Obstacles this reporter may face include being blown around by gale force winds, the ground shaking during an earthquake, or snow piling up in front of him during a blizzard. This person will be responsible for taping both the news anchor and the reporter. Day 6 Step 1: Let students rehearse their scripts, using props from school or brought in from home for special effects. During rehearsals, advise students how someone might react to different weather conditions e. Have students videotape their weather reports in small groups. Finally, students will share their videotaped presentations with the class. Lesson Extensions Students can work individually to create their own scripts and videotape a report

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at home with the help of family members or friends. Invite a local television meteorologist to visit your school to speak about how the science of weather forecasting is meshed with the logistics of television. Post Instructional Evaluation What else could have been done to make this a more successful experience for the students? Lesson Assessment Were students able to analyze the maps of different weather conditions to create a weather forecast? Were students able to effectively navigate the site in order to complete their online weather forecast? Was the extreme outdoor weather report written in first person? Did students incorporate appropriate weather conditions in their first-person report? Did students in the small groups work well together? Was the work shared equally? Standards This Weather Watch activity meets national standards by providing students with opportunities in the following areas: Math National Council for Teachers of Mathematics: Selects and uses appropriate instruments and technology to measure in real-world situations Generalizes a pattern, relation, or function to explain how a change in one quantity results in a change in another Analyzes real-world data to recognize relationships using graphic models generated by technology Reading and Language Arts International Reading Association IRA and the National Council of Teachers of English NCTE: Plans and implements investigative procedures Uses equipment and technology Collects data by observing and measuring Analyzes and interprets information to construct reasonable explanations from direct and indirect evidence Communicates valid conclusions Constructs graphic structures of information using tools including computers to organize, examine, and evaluate data Analyzes and reviews scientific explanations Represents the natural world using models and identifies their limitations Technology Technology Foundation Standards for Students:

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Chapter 2 : The Weather Network - US coverage

Read this book to find out all about forecasting the weather. Each book in the Watching the Weather series looks at a different kind of weather. Discover what creates each kind of weather.

Home Make a Weather Forecast Review information about weather symbols shown below. Then study the online weather maps to see what can learn about current and predicted weather. Most fronts extend from low-pressure centers. Cloud Cover Each circle represents a weather station. The circle at each station is empty if skies are clear. A line within the circle or a half-filled circle means "partly cloudy. The more barbs at the end of each arrow, and the longer they are, the harder the wind is blowing. Each long barb is 10 knots about 11.5 mph or 18.5 kph. Each short barb is half that amount. A barb that looks like a triangle is blowing at 50 knots about 58 mph or 80 kph. Air Temperature The number to the upper left of each station is the air temperature in degrees F for U. Dew Point The number to the lower left of each station is the dew point temperature in degrees F for U. The higher the dew point, the more water vapor there is for producing rain or snow. Barometric Pressure The number to the upper right of each station is the barometric pressure. Since the pressure goes down with altitude, this reading has been adjusted to show the pressure as if the station were at sea level. The typical sea-level pressure is a little bit more than millibars. The number is in kilopascals kPa , which is the same as millibars. The number has been compressed to fit the map by lopping off the first one or two digits which are always a "10" or a "9" and omitting the decimal point before the last digit. For example, the code "1013" would mean 1013 hPa. Put it all together! See if you can find any lines that go around centers of high and low pressure. They are called isobars; they connect stations with equal barometric pressure, so you can see where the highs and lows are. The wind usually follows the isobars, with a slight trend in the direction of the low pressure area. Look at the wind direction around your forecast city. Is the air blowing from colder areas toward your city, or is warmer air moving in? Will clouds or precipitation be coming, and if so, a lot or a little? Will there be rain, sleet, or snow? Study the satellite images Satellite images show the amount of cloud cover. Clouds can act like a blanket helping to keep night warmer if the sky is clear. But clouds during the daytime can block the sun and keep temperatures cooler. What does the image show? Is there much cloud cover? Do you think it will increase or decrease, based on what you have learned from the weather maps?

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Chapter 3 : Weather Forecast & Reports - Long Range & Local | Weather Underground

The Weather Channel and theinratdunvilla.com provide a national and local weather forecast for cities, as well as weather radar, report and hurricane coverage WATCH: Outlook for the weekend and beyond.

Ancient forecasting[edit] For millennia people have tried to forecast the weather. For example, it might be observed that if the sunset was particularly red, the following day often brought fair weather. This experience accumulated over the generations to produce weather lore. However, not all[which? It was not until the invention of the electric telegraph in that the modern age of weather forecasting began. He also promoted the development of reliable tide tables around British shores, and with his friend William Whewell , expanded weather record-keeping at British Coast guard stations. Robert FitzRoy was appointed in as chief of a new department within the Board of Trade to deal with the collection of weather data at sea as a service to mariners. This was the forerunner of the modern Meteorological Office. A storm in that caused the loss of the Royal Charter inspired FitzRoy to develop charts to allow predictions to be made, which he called "forecasting the weather", thus coining the term "weather forecast". His warning service for shipping was initiated in February , with the use of telegraph communications. The first daily weather forecasts were published in The Times in As the electric telegraph network expanded, allowing for the more rapid dissemination of warnings, a national observational network was developed, which could then be used to provide synoptic analyses. Instruments to continuously record variations in meteorological parameters using photography were supplied to the observing stations from Kew Observatory â€” these cameras had been invented by Francis Ronalds in and his barograph had earlier been used by FitzRoy. History of numerical weather prediction It was not until the 20th century that advances in the understanding of atmospheric physics led to the foundation of modern numerical weather prediction. He described therein how small terms in the prognostic fluid dynamics equations governing atmospheric flow could be neglected, and a finite differencing scheme in time and space could be devised, to allow numerical prediction solutions to be found. Richardson envisioned a large auditorium of thousands of people performing the calculations and passing them to others. However, the sheer number of calculations required was too large to be completed without the use of computers, and the size of the grid and time steps led to unrealistic results in deepening systems. It was later found, through numerical analysis, that this was due to numerical instability. Broadcasts[edit] The first ever daily weather forecasts were published in The Times on August 1, , and the first weather maps were produced later in the same year. These included gale and storm warnings for areas around Great Britain. Harold Noyes in This was brought into practice in after World War II. George Cowling gave the first weather forecast while being televised in front of the map in TWC is now a hour cable network. Some weather channels have started broadcasting on live broadcasting programs such as YouTube and Periscope to reach more viewers. How models create forecasts[edit] An example of mbar geopotential height and absolute vorticity prediction from a numerical weather prediction model Main article: Numerical weather prediction The basic idea of numerical weather prediction is to sample the state of the fluid at a given time and use the equations of fluid dynamics and thermodynamics to estimate the state of the fluid at some time in the future. The main inputs from country-based weather services are surface observations from automated weather stations at ground level over land and from weather buoys at sea. The World Meteorological Organization acts to standardize the instrumentation, observing practices and timing of these observations worldwide. Research flights using reconnaissance aircraft fly in and around weather systems of interest such as tropical cyclones. The data are then used in the model as the starting point for a forecast. These equations are initialized from the analysis data and rates of change are determined. The rates of change predict the state of the atmosphere a short time into the future. The equations are then applied to this new atmospheric state to find new rates of change, and these new rates of change predict the atmosphere at a yet further time into the future. This time stepping procedure is continually repeated until the solution reaches the desired forecast time. The length of the time

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step chosen within the model is related to the distance between the points on the computational grid, and is chosen to maintain numerical stability. This can be in the form of statistical techniques to remove known biases in the model, or of adjustment to take into account consensus among other numerical weather forecasts. This guidance is presented in coded numerical form, and can be obtained for nearly all National Weather Service reporting stations in the United States. As proposed by Edward Lorenz in , long range forecasts, those made at a range of two weeks or more, are impossible to definitively predict the state of the atmosphere, owing to the chaotic nature of the fluid dynamics equations involved. In numerical models, extremely small errors in initial values double roughly every five days for variables such as temperature and wind velocity. Within any modern model is a set of equations, known as the primitive equations, used to predict the future state of the atmosphere. Additional transport equations for pollutants and other aerosols are included in some primitive-equation mesoscale models as well. Different models use different solution methods: This can be a valid way of forecasting the weather when it is in a steady state, such as during the summer season in the tropics. This method of forecasting strongly depends upon the presence of a stagnant weather pattern. Therefore, when in a fluctuating weather pattern, this method of forecasting becomes inaccurate. It can be useful in both short range forecasts and long range forecasts. If the pressure drop is rapid, a low pressure system is approaching, and there is a greater chance of rain. Rapid pressure rises are associated with improving weather conditions, such as clearing skies. Along with pressure tendency, the condition of the sky is one of the more important parameters used to forecast weather in mountainous areas. Thickening of cloud cover or the invasion of a higher cloud deck is indicative of rain in the near future. High thin cirrostratus clouds can create halos around the sun or moon , which indicates an approach of a warm front and its associated rain. The approach of a line of thunderstorms could indicate the approach of a cold front. Cloud-free skies are indicative of fair weather for the near future. The use of sky cover in weather prediction has led to various weather lore over the centuries. Nowcasting meteorology The forecasting of the weather within the next six hours is often referred to as nowcasting. A human given the latest radar, satellite and observational data will be able to make a better analysis of the small scale features present and so will be able to make a more accurate forecast for the following few hours. Use of forecast models[edit] An example of mbar geopotential height prediction from a numerical weather prediction model In the past, the human forecaster was responsible for generating the entire weather forecast based upon available observations. Humans can use knowledge of local effects that may be too small in size to be resolved by the model to add information to the forecast. While increasing accuracy of forecast models implies that humans may no longer be needed in the forecast process at some point in the future, there is currently still a need for human intervention. What makes it a difficult technique to use is that there is rarely a perfect analog for an event in the future. It remains a useful method of observing rainfall over data voids such as oceans, [74] as well as the forecasting of precipitation amounts and distribution in the future. A similar technique is used in medium range forecasting, which is known as teleconnections, when systems in other locations are used to help pin down the location of another system within the surrounding regime. Temperatures are given in Fahrenheit. Most end users of forecasts are members of the general public. Thunderstorms can create strong winds and dangerous lightning strikes that can lead to deaths, power outages, [77] and widespread hail damage. Heavy snow or rain can bring transportation and commerce to a stand-still, [78] as well as cause flooding in low-lying areas. Knowledge of what the end user needs from a weather forecast must be taken into account to present the information in a useful and understandable way. In addition, some cities had weather beacons. Increasingly, the internet is being used due to the vast amount of specific information that can be found. Severe weather alerts and advisories[edit] A major part of modern weather forecasting is the severe weather alerts and advisories that the national weather services issue in the case that severe or hazardous weather is expected. This is done to protect life and property. Other forms of these advisories include winter weather, high wind, flood , tropical cyclone , and fog. Specialist forecasting[edit] There are a number of sectors with their own specific needs for weather forecasts and specialist services are provided to these users. Terminal

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Aerodrome Forecast Because the aviation industry is especially sensitive to the weather, accurate weather forecasting is essential. Fog or exceptionally low ceilings can prevent many aircraft from landing and taking off. This reduces the distance required for takeoff, and eliminates potential crosswinds. Marine weather forecasting Commercial and recreational use of waterways can be limited significantly by wind direction and speed, wave periodicity and heights, tides, and precipitation. These factors can each influence the safety of marine transit. Consequently, a variety of codes have been established to efficiently transmit detailed marine weather forecasts to vessel pilots via radio, for example the MAFOR marine forecast. Agriculture[edit] Farmers rely on weather forecasts to decide what work to do on any particular day. For example, drying hay is only feasible in dry weather. Prolonged periods of dryness can ruin cotton , wheat , [96] and corn crops. While corn crops can be ruined by drought, their dried remains can be used as a cattle feed substitute in the form of silage. For example, peach trees in full bloom can have their potential peach crop decimated by a spring freeze. Different indices, like the Forest fire weather index and the Haines Index , have been developed to predict the areas more at risk to experience fire from natural or human causes. Conditions for the development of harmful insects can be predicted by forecasting the evolution of weather, too. Utility companies[edit] An air handling unit is used for the heating and cooling of air in a central location click on image for legend. Degree day Electricity and gas companies rely on weather forecasts to anticipate demand, which can be strongly affected by the weather. They use the quantity termed the degree day to determine how strong of a use there will be for heating heating degree day or cooling cooling degree day. Cooler temperatures force heating degree days one per degree Fahrenheit , while warmer temperatures force cooling degree days. Weather forecasts can be used to invest in the commodity market, such as futures in oranges, corn, soybeans, and oil. A group based at Camp Bastion provides forecasts for the British armed forces in Afghanistan. Military weather forecasters provide pre-flight and in-flight weather briefs to pilots and provide real time resource protection services for military installations. Naval forecasters cover the waters and ship weather forecasts. The United States Navy provides a special service to both themselves and the rest of the federal government by issuing forecasts for tropical cyclones across the Pacific and Indian Oceans through their Joint Typhoon Warning Center. Air Force forecasters cover air operations in both wartime and peacetime operations and provide Army support; [] United States Coast Guard marine science technicians provide ship forecasts for ice breakers and other various operations within their realm; [] and Marine forecasters provide support for ground- and air-based United States Marine Corps operations.

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Chapter 4 : Live Broadcast (During active weather only) - The Weather Network

Active weather, storm watch live video streaming. Live Broadcast (During active weather only).

Get the latest local weather forecast news delivered directly to your phone or tablet. Prepare with real time severe weather reports and live radar maps. Extreme weather alerts and forecast information is available wherever you are! Get daily local weather news and extreme weather alerts so you can live life with confidence. The Weather Channel provides accurate real time reports that can help you plan up to 15 days in advance. Hurricane season means you need to stay safe! Live maps and forecast radar updates will prepare you for any severe storms or local extreme weather alerts. Weather the storm with real time updates! The top 5 features from The Weather Channel: Real time alerts - Plan your day up to two weeks in advance! Hurricane alerts - Stay prepared and alert for hurricane season with detailed severe weather updates to help you weather any storm. Severe weather alerts from thunder to severe storms. Hurricane season is here - ensure you stay safe no matter the extreme weather! Stay alert and plan winter outdoor activities with confidence. Check the daily forecast and come rain, shine or even thunder, you will be prepared for whatever the day throws at you! Get detailed information on sunset times, cold and flu reports and the latest forecast radar updates. Find the best possible running conditions by analyzing the temperature and examining detailed wind speed updates to help you plan your perfect route! Get high-risk allergy alerts and medical advice to help you beat them! Keep informed on the latest weather news. Be alert and get all of the forecast radar updates you need to plan and stay safe. Real time news about wind speed, thunder and live maps mean that you can make the most out of your day! Download The Weather Channel today to get any weather alert, big or small delivered directly to your smartphone or iPad.

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Chapter 5 : Latest Weather and Extended Forecast - CNN

To predict the weather without a forecast, start by figuring out which direction the wind is blowing. Easterly winds suggest that bad weather is heading your way. Next, watch for signs of high humidity, such as frizzy hair, curling leaves, and swollen wood, which may indicate that a storm is close by.

We are actively reading your feedback and constantly working to improve your app experience to help you see weather like never before. Here are some of the enhancements that you will see in our latest update: Back by popular demand! Introducing an intelligent module that provides you with the five conditions that will affect you each season. We are actively working on improving the readability of our app, so stay tuned for more improvements in the next couple of updates. Be a force of nature. Update The Weather Channel app now. We updated the daily graph on the home screen to make it easier for you to see your 5 day forecast at a glance. Introducing daily personalized weather stories. A new visual way to see everything you need to know about your daily forecast. Siri can now help you check your forecast with nothing but the sound of your voice. Checking your forecast has never been easier! Get faster access to detailed weather information. Prefer the old navigation? You can still swipe down for more content. We are introducing a beautifully designed weather app that has been carefully crafted with you in mind. See more weather information at a glance with new narratives, weather graphs and instant insights. Know when there is an upcoming change in the weather, then subscribe to push notifications to stay informed. We are introducing a beautifully designed weather app that has been carefully crafted for with you in mind. As always, we appreciate your feedback. Please email us at iphonesupport@weather.com. If you like these changes, please let us know by rating and reviewing us in the App Store! We want to hear from you! Email us at iphonesupport@weather.com. Let us know how you like these changes by rating and reviewing us in the App Store! Check our air quality data to plan your outdoor activities or to protect you and your family from air pollution. Coming to more countries soon! You may not have been affected by it, but we fixed it to make your experience better. E-mail us at iphonesupport@weather.com. Check out our updated and optimized home screen and detail pages! Check out our new edge-to-edge design! Sign up for push messages for snow squalls and dust storms! Now you can see both cold and flu reports on one map of your local area. Get the same reliable and accurate forecast on a larger screen and in both Portrait and Landscape modes. Nov 5, Version

Chapter 6 : National Hurricane Center

theinnatdunvilla.com severe weather offers weather watches and warnings for the US on this severe weather map and on your local theinnatdunvilla.com forecast page.

Chapter 7 : Atlantic 2-Day Graphical Tropical Weather Outlook

The Weather Channel Live October 10, Watch Hurricane Michael Make Landfall in Florida Live theinnatdunvilla.com Now you can watch The Weather Channel on all of your devices!

Chapter 8 : Weather forecasting - Wikipedia

*This free course, *Watching the weather*, describes how meteorological observations are made looking upwards from the surface of the Earth, looking downwards from satellites in space and from aircraft and balloons within the atmosphere.*

Chapter 9 : 4 Ways to Predict the Weather Without a Forecast - wikiHow

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Latest weather conditions and forecasts for the UK and the world. Includes up to days of hourly forecast information, warnings, maps, and the latest editorial analysis and videos from the BBC.