

Forecast Cloudy with a Slight Chance of Showers: Overview and Background

Overview:

It is June 2, 1944. You have been appointed as a meteorologist for the Allied Central Command. You are charged with the job of advising General Dwight D. Eisenhower, the Supreme Allied Commander, on the weather conditions in the European Theatre. Your present responsibility is to forecast weather conditions and assess the risk posed by the weather if an invasion of Europe is to be attempted. You will be given a set of weather conditions and have to determine whether those conditions are safe or pose too much of a risk for an invasion of the Normandy coast. You must justify your position with an educated conclusion using your understanding of physical geographic phenomenon.

Background:

Read the following information to prepare for your meeting with General Eisenhower:

Known as one of the greatest military secrets of all time “Operation Overlord,” the cross-Channel invasion of the northern coast of France on June 6, 1944, called for cunning, prudent, and assiduous planning by the American, British and Canadian troops, commonly known as the Allies. So much secrecy was necessary that those in charge of the coordinated attacks by sea and air were not informed of their landing destinations until the final moments of preparation. In fact, the entire plan was dubbed “Operation Neptune” on all documents after September 1943 to uphold the utmost confidentiality. The ultimate goal of this substantial undertaking was to liberate Paris, the capital of France, and open a second western front during World War II. Shrewd leadership was necessary to facilitate the invasion as well as proper tactical knowledge of the terrain and weather conditions for safe troop movement.

Of major importance was the wellbeing of those on the mission. Three separate teams, the Royal Meteorological Society, the Royal Navy, and the U.S. Air Force, collaborated to provide the best weather forecast possible. The invasion had already been postponed a month in order to assemble more troops. Weather predictions on the nights of June 3/4 and June 4/5 indicated that the weather between June 5 and 7, 1944, would provide the best conditions for invasion during the month of June. Favorable tidal conditions would not be present again until June 18, 19, or 20. With a very narrow window of opportunity the Supreme Allied Commander had to make a decision. The invasion must occur immediately or the war may be lost.

What do you think are the best weather conditions for the invasion?

- 1.
- 2.
- 3.
- 4.
- 5.

Forecast Cloudy with a Slight Chance of Showers: Becoming a Meteorologist

Take notes as you learn about the weather conditions necessary to consider when planning an invasion. You should include pictures as well as key words. A dictionary may be used after the lecture to clarify terminology.

Phases of the Moon

Pressure Systems

Tides

Winds

Clouds

Visibility

Forecast Cloudy with a Slight Chance of Showers: Acting as a Meteorologist

Analyzing Weather: Your group will receive an envelope with 6 different weather conditions. As a group, you must reach consensus and decide if the given conditions are appropriate for a successful invasion and advise General Eisenhower on a course of action.

1. What phase is the moon in? _____

Explain why you would advise General Eisenhower to attack or not attack given this phase of the moon.

2. What type of pressure is present? _____

Explain why you would advise General Eisenhower to attack or not attack given this type of pressure.

3. What type of tide is present? _____

Explain why you would advise General Eisenhower to attack or not attack given this type of tide.

4. What type of wind is present? _____

Explain why you would advise General Eisenhower to attack or not attack given the wind conditions.

5. What type of cloud cover is present? _____

Explain why you would advise General Eisenhower to attack or not attack given the cloud conditions.

6. What is the visibility? _____

Explain why you would advise General Eisenhower to attack or not attack given the visibility.

***Forecast Cloudy with a Slight Chance of Showers:
Final Decision***

Should General Eisenhower proceed with the attack? Explain why or why not using all of the information you have gathered.

Was your group in agreement to attack Normandy on June 6, 1944? Explain why or why not.

Full Moon	Waxing Gibbous
First Quarter	Waxing Crescent
New Moon	Waning Crescent
Third Quarter	Waning Gibbous

Low Pressure	High Pressure
Low Pressure	High Pressure
Low Pressure	High Pressure
Low Pressure	High Pressure

Low Tide

High Tide

Low Tide

High Tide

Low Tide

High Tide

Low Tide

High Tide

20 MPH Winds	8 MPH Winds
15 MPH Winds	6 MPH Winds
25 MPH Winds	3 MPH Winds
18 MPH Winds	2 MPH Winds

1 Mile Visibility	4 Miles Visibility
2 Miles Visibility	2 Miles Visibility
.5 Mile Visibility	3 Miles Visibility
3 Miles Visibility	5 Miles Visibility

Partly Cloudy

Partly Cloudy

Cloudy

Clear

Clear

Partly Cloudy

Cloudy

Cloudy

Background Information

Planning Stages

During the Teheran Conference in November of 1943 the planning stages for a cross-Channel invasion of the European continent began. The initial time decided upon was May of 1944. Such a massive operation would require the collaboration of multiple ground, sea, and air troops from the major Allied countries. Prior to December 1943, General Dwight D. Eisenhower was commander of Allied Forces in North Africa and the Mediterranean Sea, but in lieu of the upcoming operation to invade Germany, he was promoted as the Supreme Allied Commander of the European Theatre on January 14, 1944. In the beginning stages of planning "Operation Overlord," D-Day symbolized the day of attack and was given no official date in order to keep the plans top secret.

Reasons for Invasion

Important to the Allied cause in the war was relieving pressure on the eastern front where Joseph Stalin's Soviet troops were fighting to rebuff attacks from Adolf Hitler's Nazi soldiers. A two-front war would force the Germans to spread thin their military units to protect the multiple fronts. Furthermore, attacking Germany from the west would quite possibly alleviate concerns that Stalin would sign a separate peace with Hitler leaving the Americans, British, and other Allied nations to fight a harsh battle over the European continent.

Invasion Facts

Five separate invasion sites were utilized: American troops were to land at two Normandy beaches code named "Utah" and "Omaha," British troops were instructed to land on "Gold" and "Sword" beaches, while the Canadians were responsible for taking "Juno" beach. The invasion force consisted of nine battleships, twenty-three cruisers, one hundred and four destroyers, and seventy-one other large landing crafts, in addition to the use of transports, mine sweepers, and merchantmen amounting to nearly five thousand ships. When attempting to come ashore, the Allied troops faced obstacles and barriers such as concrete structures, land mines, and steel rails entrenched in the sand. Past that, soldiers would have to scale limestone cliffs up to one hundred fifty feet in height while dodging machine gun bullets from German pillboxes.

Outcome

After two days of holding their position on the beach and suffering severe counterattacks from the Germans, the Allied forces were successful in securing the beach with reinforcements. This sustained effort opened the French coast for an invasion of Nazi Germany from the western front. It is nearly impossible to discount the bravery that the soldiers who stormed the beaches on D-Day exhibited. Likewise, it is absurd to disregard the importance of strategy in planning the invasion in order to save thousands of lives. Knowing and attending to the weather gave the Allied forces the advantage when seeking to invade a continent dominated almost exclusively by the Axis powers on what history has recorded as "the longest day."

Writing Prompt:

On a half sheet of paper students respond to the following prompt:
What is the most significant factor that contributed to your decision on whether or not to invade? Explain your rationale in a well-written paragraph.

Secondary and Primary Source Materials from the Met Office (British Meteorological Service)

<http://www.metoffice.gov.uk/corporate/pressoffice/anniversary/dday.html>

Operation Overlord needed specific minimum conditions:

- D-Day should be within one day before, to four days after a full moon
- D-Day itself should have quiet weather, followed by three quiet days
- Winds should be less than force 3 (8-12 m.p.h.) onshore, and force 4 (13-18 m.p.h.) offshore
- Cloud cover should be less than 30% coverage below 8,000 feet
- Visibility should be more than three miles
- Cloud base should be generally above 3,000 feet

Weather Conditions Present June 6, 1944

Captain J.M. Stagg, the Supreme Headquarters, Allied Expeditionary Force advisor who met directly with General Eisenhower at least twice daily, was able to suggest that the morning of June 6, would be an appropriate time to launch the D-Day invasion. Stagg concluded from his many reports that a full moon would be present providing good visibility, the skies would be clear or partly cloudy, there would be light winds, and a low tide. The original low pressure system that had moved eastward on June 4, was forecasted to have a “gap” of good weather caused by a high pressure trough that was following the rapidly moving cold front associated with the low pressure system. All of these conditions allowed for the best possibility of success in all aspects of the invasion.

The first observation from the Normandy beachhead was from Sword Beach, north of Caen, for 1500 Double British Summer Time, some 7.5 hours after the first landings. It was mainly sunny, with a northwesterly wind at Force 4, small amounts of broken cumulus cloud above 4,000 feet, good visibility and a temperature of 59 degrees Fahrenheit (15 degrees C).

Quotes from the Allied Leaders

Asked for his opinion by Eisenhower, Field Marshal Montgomery said: “I would say ‘Go!’” The order was given. For a second time, a decision had been made on the basis of a weather forecast which was very different from what the commanders could see and hear for themselves. Nevertheless, the forecast was maintained and the order confirmed after a briefing early the next morning. As he had in North Africa and Sicily, Eisenhower, having taken the best available meteorological advice very carefully,

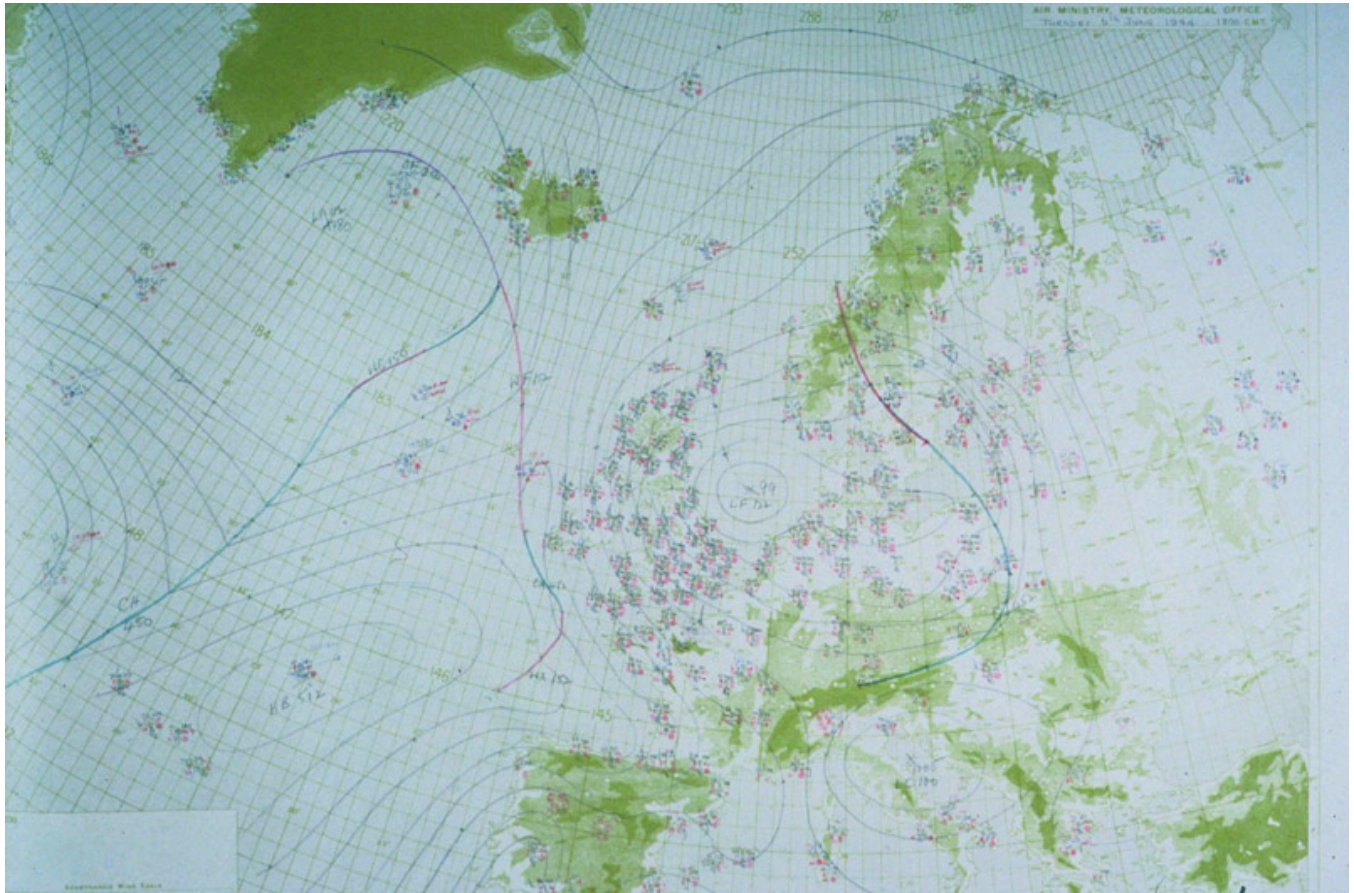
was again knowingly launching an invasion in weather which many thought unsuitable.

Later, in a memorandum accompanying an official report to Eisenhower on the meteorological implications of 6 June as the day chosen for the invasion. Stagg commented that had Neptune been delayed until the next suitable tides the troops would have run into the worst Channel weather for 20 years. "Eisenhower wrote across the bottom of the memo: "Thanks, and thank the Gods of War we went when we did."

On D-Day, Churchill told the House of Commons that Operation Neptune was "the most complicated and most difficult that has ever taken place. It involved tides, winds, waves, visibility, both from the air and sea standpoint, and the combined employment of land, air and sea forces in the highest degree of intimacy and in contact with conditions which could not and cannot be fully foreseen."



Drawing a Weather Chart for D-Day



Weather Chart for D-Day

Primary Sources from Library of Congress

D-Day Landing



[http://lcweb2.loc.gov/cgi-bin/query/i?pp/ils:@field\(NUMBER+@band\(cph+3c11201\)\):displayType=1:m856sd=cph:m856sf=3c11201](http://lcweb2.loc.gov/cgi-bin/query/i?pp/ils:@field(NUMBER+@band(cph+3c11201)):displayType=1:m856sd=cph:m856sf=3c11201)

Dwight Eisenhower giving orders to American paratroopers in England.



[http://memory.loc.gov/cgi-bin/query/i?ammem/presp:@field\(NUMBER+@band\(cph+3a26521\)\):displayType=1:m856sd=cph:m856sf=3a26521](http://memory.loc.gov/cgi-bin/query/i?ammem/presp:@field(NUMBER+@band(cph+3a26521)):displayType=1:m856sd=cph:m856sf=3a26521)

ALL ARMY'S LAND IN FRANCE; IN THE HAVRE-CHERBOURG AREA; GREAT INVASION IS UNDER WAY

ROOSEVELT SPEAKS Says Rome's Fall Marks 'One Up and Two to Go' Among Axis Capitals

WARNS WAY IS HARD Asks World to Give the Italians a Chance for Recovery

WASHINGTON, June 6.—President Roosevelt today said that the fall of Rome marks "one up and two to go" among Axis capitals.

Conferees Accept Cabaret Tax Cut

WASHINGTON, June 6.—A House-Senate conferees today agreed to cut back the cabaret tax from 30 to 20 per cent, but eliminated a provision exempting service men and women from the levy.

FEDERAL LAW HELD RULING INSURANCE Supreme Court, 4-3, Decides Subject to Trust Act

WASHINGTON, June 6.—The Supreme Court today held that the insurance companies of the country will receive \$27,000,000,000 and insured persons and beneficiaries will receive \$6,000,000,000 in an installment plan.

PURSUIT IN ITALY Allies Pass Rome, Cross Tiber as Foe Quits Bank Below City

PLANES JOIN IN CHASE 1,200 Vehicles Wrecked—Eight Army Battles Into More Towns

ROME, June 6.—The Allies' air and motorized infantry passed through Rome today without encountering the "Feroce" River and proceeded with the grim task of destroying the battered German armor striking to the north.

Railway Yards Bombed Five Hundred American Heavy Bombers Blasted Railway Yards at Four Points in Northern Italy

WASHINGTON, June 6.—Five hundred American heavy bombers blasted railway yards at four points in northern Italy today.



FIRST ALLIED LANDING MADE ON SHORES OF WESTERN EUROPE

General Eisenhower's armies invaded northern France this morning. While the landing points were spotted, the Germans said that troops had gone ashore near Havre and that fighting had begun.

Italy's Monarch Yields Rule To Son, but Retains Throne

NAPLES, June 5.—Victor Emmanuel III stepped aside as King of Italy today, as he previously had said he would do upon the liberation of Rome.

PARADE OF PLANES CARRIES INVADERS Witnesses Say First 'Chiefs' Met Only Light Fire When They Landed in France

LONDON, Tuesday, June 6.—The British Broadcasting Corporation today reported that the first group of planes from the United States Ninth Air Force Group carried out a successful landing in France.

EISENHOWER ACTS U. S., British, Canadian Troops Backed by Sea, Air Forces

MONTGOMERY LEADS Nazis Say Their Shock Units Are Battling Our Parachutists

Communique No. 1 On Allied Invasion

Under the command of General Eisenhower, Allied naval forces, supported by strong air forces, began landing Allied troops and completing troops on the northern coast of France.

War News Summarized

The liberation of Rome is no way showed the Allied progress of the land and dispersed German armor in Italy yesterday.

POPE GIVES THANKS ROME WAS SPARED

VATICAN CITY, June 6.—Pope XII appeared on the balcony of St. Peter's at 8 P. M. today to thank God that Rome had been spared from the ravages of war.

ALLIED WARNING FLASHED TO COAST

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Eisenhower Instructs Europeans; Gives Battle Order to His Armies

Following are the texts of a statement by Gen. Dwight D. Eisenhower broadcast to the people of western Europe and the Order of the Day to the Allied Expeditionary Force as recorded by The New York Times and the Columbia Broadcasting System.

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