

CHILDREN'S  
TELEVISION  
WORKSHOP™

# Weather Tamers™

The Enlightening  
Game of Weather Control.



CBS Software, A Unit of CBS Inc., Greenwich, CT 06836

2L-0208

HANDBOOK

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### WHY ARE CTW GAMES DIFFERENT?

Since 1968, Children's Television Workshop (CTW) has demonstrated that one of the greatest vehicles for learning is fun. The computer activities developed by the CTW Software Group for CBS Software continue this tradition, drawing on the interactive capability of the computer.

### THE GOALS OF CTW GAMES

These computer games have extended the goals pioneered by CTW in television with *Sesame Street*, *The Electric Company*, and *3-2-1 Contact*. Friendly and engaging, they encourage constructive play and active learning. CTW games allow players to experiment and explore, to think and solve problems, and to practice skills while they are having fun. Each one is designed to be a family experience—where everybody plays together and learns from each other.

### COMPUTERS AND LEARNING

Equally important, the computer has brought an exciting new dimension to electronic learning—that of interaction. A great deal of planning and research have gone into making these games responsive to players of different ages and learning styles. Whenever possible, the level of difficulty, pacing, and direction of the games are under the control of the player. *As the player responds to the computer, the computer responds to the player.*

**WEATHER TAMERS** is a simulation of weather patterns in North America. The information used has been gathered from actual weather sources like the National Weather Service. The simulation behaves according to a set of rules that are similar to those that govern actual weather conditions.

**WEATHER TAMERS** gives players a chance to learn through their own initiative, and encourages players to use elements of scientific thinking such as gathering data, developing hypotheses, making predictions, and observing outcomes.

**WEATHER TAMERS** is designed to encourage group interaction and learning through game play. As players experiment and share information, the learning process becomes more rewarding. **WEATHER TAMERS** stimulates cooperation and interplay among the whole family.

#### ATTENTION:

To load **WEATHER TAMERS**, see inside back cover.

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# Weather Tamers™\*

## An invitation from Stormy Blowaway, famed Right Honorable W.T. (Retired)

*In the early days, we were called "Weather Changers." We used science and technology to make changes in the weather. But soon, there were too many of us making too many changes.*

*World governments finally agreed upon a more systematic approach. But by then, the effects on world ecology and economy were profound. The world had learned a costly lesson. An international organization emerged—The Meteorological Association—to set up air and ground rules for all future weather changing.*

*I was one of the early pros. We were dubbed "Weather Tamers" and the phones began to ring as clients called for our services. We paced ourselves, allowing just a few changes each day.*

*Soon, with worldwide resources, the Meteorological Association launched an elaborate network of weather satellites and weather control stations. Each day we learned more about the world's weather and how to control it. And around the world, groups of all kinds hired Weather Tamers to create the weather they wanted.*

*Yet, even as the Golden Age of Weather Control crept over the horizon, we pros were often fooled by the elaborate and constantly changing patterns of sun, heat, cold, wind, humidity, and pressure that make up the world's weather. We still are.*

*Now we want you to join the elite ranks of Weather Tamers. Nature will provide you with the tools of your trade—temperature, humidity, pressure, and wind. The Meteorological Association will provide the instruments you need to control and predict the weather. Clients will call—they always do. They talk about the weather but you will be able to do something about it.*

*To begin, we provide this WEATHER TAMERS HANDBOOK. As you read through it, you will learn to adjust and control the factors that make the weather system work. The Handbook is your guide to becoming a Master Weather Tamer. Read it as you manipulate the weather. It will give you the basics, but to really master the system, you must go beyond the fundamentals.*

*Do not be afraid to explore and experiment with the system. You can learn much by trying new combinations of factors, and then observing the effects. Weather Taming can be fun, especially if more than one Weather Tamer is involved. So go to it, and may the wind always be at your back.*



Stormy Blowaway  
Barre, Vermont  
June 16, 1999

## **Fundamentals**

**WEATHER TAMERS allows you to control, create, and manipulate the weather across North America.**

What power! What freedom!

With freedom, however, comes responsibility. You are allowed to fool with the Forces of Nature, but you will also be asked to create certain kinds of weather for your clients.

You will pit your skills against other Weather Tamers. The one with the highest credit total on the last day of the cycle is the winner.

Each Weather Tamer will have from one to three clients for each round. Each client will request a specific type of weather in a specific location.

Your goal is to analyze, create, and predict the weather according to your client's request.

**Remember: As you meddle with meteorology, you are experimenting with a system both awesome and complex. You are bound by its laws and eccentricities.**



As you further explore this system, each weather myth and mystery will become clear.



*You are trying to create and predict weather for the Day of Reckoning: 2 days from now. With 100 credits to begin, and a client fee to come, there are many ways to accomplish your goal. On any turn you can:*

**Get Data**—This option enables you to take regional readings in temperature, humidity, pressure, and wind—two at a time—and compare the results! Also, it enables you to review Client Calls and the Temperature Legend.

**Change**—You can boldly move a high or low, or change the temperature, pressure, and humidity in any part of the country! Make as many changes as you like—or can afford—during your turn.

**End Turn**—When you are finished exploring and making changes, select this option and pass your joystick to the next Weather Tamer. Once all Tamers have taken their turns, this option will cause the weather to cycle for one day. Then it's time to make predictions!

*After all changes are made, the weather cycles for one day and each Weather Tamer predicts the success of his or her own weather making.*

*It's Day Two now, and the Day of Reckoning is tomorrow!*

*Assess the outlook for each of your clients, and decide whether your Weather Taming efforts will work. Try to make an accurate call!*

Once all predictions are in, the weather will cycle again, and it will be either blue skies or stormy weather for every Tamer!

There are three possible outcomes; see how well you fared:

***Correctly created and predicted the weather.***

You're hotter than Albuquerque in July—and in for a handsome fee!

***Correctly predicted, but failed to create the weather your clients requested.***

You receive a percentage of the fee equal to your prediction.

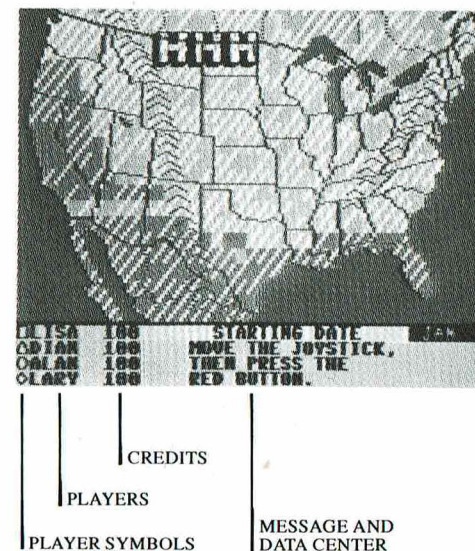
***Totally incorrect—You got misty and muffed the weather and the prediction.***

Don't sweat it; everyone has to start somewhere, and tomorrow is another day!

**Remember: Any time you deliver your client's weather you will get a higher fee!**

## GET YOUR BEARINGS

Where should a Weather Tamer begin? With a close look at the map, of course! Here is what you'll see.



Plug a joystick firmly into your computer's Control Port. Only one joystick will be used no matter how many Tamers are participating.



## TEMPERATURE

Colors, from icy gray to scorching red, represent temperature on the Weather Tamers map. The cooler colors, like blues and greens, mean cooler temperatures. And warmer ones, as you might have guessed, suggest soaring mercury. Below is a color key to help you get a grip on the temperatures—by degree, of course!

DEGREE RANGE (FAHRENHEIT)	COLOR
0-10	LIGHT GRAY
10-20	DARK GRAY
20-30	VIOLET
30-40	LIGHT BLUE
40-50	DARK BLUE
50-60	LIGHT GREEN
60-70	DARK GREEN
70-80	YELLOW
80-90	ORANGE
90-100	BROWN
100 AND UP	LIGHT RED

To see the on-screen Temperature Legend:  
Select GET DATA from the CHOICES menu.  
Then choose CLIENT REVIEW & TEMP. LEGEND  
and press your joystick button.  
Select TEMPERATURE LEGEND, and when you press your joystick  
button, you will see the legend below the weather map.

## HUMIDITY

Water in the air can take many forms: clouds, fog, rain, even a hurricane. As you gain expertise as a Weather Tamer, your clients may ask you to deliver any one of them!

Here is how three kinds of precipitation appear on the Weather Tamers map:

CLOUDS



RAIN



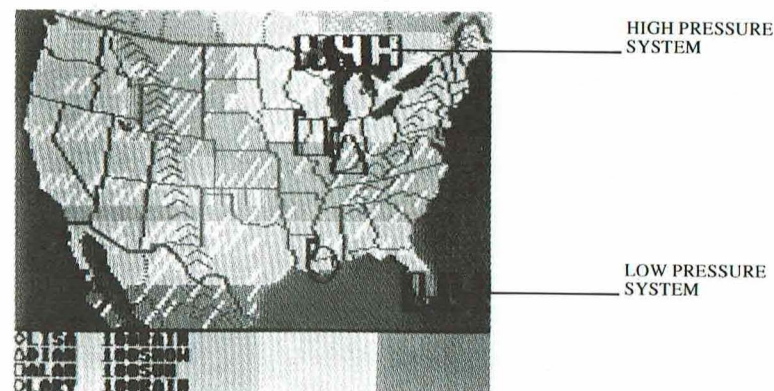
SNOW



## AIR PRESSURE

High and low masses of air pressure can be used to make changes in the weather system.

Guided by the prevailing westerlies, other winds, or you, they can change a cloudless sky into serious stormy weather or make cloudy skies clear. Highs and lows look like this:



## MENU CHOICES

Temperature, air pressure, humidity, and wind are the factors behind the system, but as a Weather Tamer, you have a few choices to make before leaping into heavy duty reading, testing, and Weather Taming.

### *How Many Weather Tamers Are There?*

Scan your family, neighborhood, or school to recruit likely candidates. Up to four Weather Tamers can play at once, but you can also choose to weather it alone, or work together in teams. Teaming up is a good way to become familiar with the basic principles of Weather Taming and an exciting way to play.

Use your joystick to select the number of teams. Press the joystick button to confirm your choice.

### ***Name That Tamer!***

It's your turn to add your name to the legions of Weather Tamers before you.

One at a time, each Weather Tamer or team of Tamers uses the keyboard to enter a name or initials (up to four letters) into the computer's meteorological log.

Press **RETURN** to go on.

### ***Which Level Would You Like To Play?***

Whether you are a first time Tamer or an old pro, there is a level to suit you in Weather Tamers.

INTRO offers the simplest challenges; a great place for rainmakers to get their feet wet. There is no cost for making changes in this level.

STANDARD poses trickier weather making feats since each change costs you energy credits.

ADVANCED adds the ultimate puzzle of difficult weather conditions like fog, sleet, and thunderstorms. Only the most weathered Weather Tamer can create tornadoes and hurricanes.

Use your joystick to select a level; press the button to go on.

### ***How Long Would You Like To Play?***

You can play for a few days or many more. Confer with your fellow Weather Tamers and choose your game length.

Short = 8 days/4 rounds

Medium = 16 days/8 rounds

Long = 30 days/15 rounds

Use your joystick to choose a game length; press the button to go on.

### ***How Many Clients Will Call?***

You can choose to juggle the weather for one, two, or three clients at once.

Use your joystick to select the number of clients; press the button to go on.

## ***Up and Running!***

Steady your barometers and get ready to go! Each team begins with 100 credits.

### ***Choose Your Starting Month***

You can begin at any time from January through December.

Move your joystick until you see the month you want. Press the button to confirm your choice.

### ***Choose Your Starting Date***

Decide when you would like to begin—and take it away!

Move your joystick until you see the day you want. Press the button to confirm your choice.

### ***And now the weather...***

Look sharp Weather Tamers!

Once you input your starting date, the weather map will change to reflect the season, and the conditions that suit it.



## WARMING UP

You have scanned the map and your Taming instincts are eager for control. Get ready, your first client calls will be coming in any minute.

Before taking on your first assignment, you may want to:

### *Take a Closer Look at the Map*

Today's weather tells one story, but things change fast in this business. Survey the temperature ranges nationwide. Do you see any hot spots or perhaps a surprising big chill? Note where they are! Also, watch out for any clouds, storms or unusual weather as your eyes travel across the continent.

### *Take Note of the Shape Next to Your Name*

Look at the shape to the left of your name. It will look like one of these:



The shape itself will be small but it has a big meaning. It is your shape and as you play, it will help you recall:

1. The location of each of your clients—Each time you get a client call, a symbol in your shape will appear on the map to mark your client's location.
2. The location of all other players' clients—Each team may have one, two, or as many as three clients to satisfy in a round. So, if there are four Weather Tamers with three clients each, 12 symbols will be on the map.
3. The order in which your clients call on you—Your symbols will appear in the same order as the calls from your clients, and the flags atop them will remind you of that order. If your symbol is a diamond, your calls will look like this:



Client 1



Client 2



Client 3

Now, you are almost ready to begin your career as a Weather Tamer! You can press the space bar and see the weather run continuously day by day. Press the joystick button to make it stop and begin play.

## CLIENT CALLS

Shine up your slicker, flex your fingers, and look sharp Weather Tamers. Your first client is about to call!

### Press the joystick button to see the first client call.

One at a time, all Weather Tamers will receive client calls. Each team's name will light up in yellow. When all your calls are in, press your joystick button to go on.



## CLIENT CALL GUIDELINES

- Where your clients are located on the map, how much they will pay you, and what kind of weather they will demand are questions as wide open as the cloudless sky.
- Your clients can hail (so to speak) from a city, state, or region anywhere on the map. They can be as local as Slippery's Snow Tires in Barre, Vermont or more broadly based like Glassbottom Boat Owners in Central Florida.
- Client fees will vary depending on your Weather Taming success. You begin with 100 credits and your first client will offer you 40. There are two ways to get ahead:

### *1. To Satisfy Your Client*

You must successfully create and deliver the requested weather so that it reaches your client's location on the last day of the cycle, two days from now. Therefore, plan your changes. If school kids want snow in Gatlinburg on Wednesday and your storm hits on Tuesday—you goofed!



But if you can deliver your client's call—you earn the full fee of 40 credits. Even better, a new client will call and offer a higher fee to perform some more meteorological magic. *With each successful call you make, you will get a new client and a higher fee.*

## 2. To Earn Your Fee For Predicting

You must correctly predict the weather for your client's location. You will receive a percentage of that fee to match the success of your prediction. So, even if your client requests rain and you were unable to create it, if you correctly predict 0% chance of rain you will earn 40 credits.

If you predicted 25% chance of rain, you are betting 25% of that 40-credit fee that it *will* rain and 75% of the fee that it will not. If it *does not* rain, you get 30 credits (75% of 40); if it *does* rain, you get 10 credits (25% of 40).

**Remember: If you cannot deliver the requested weather, your next client will offer the same fee.**

The kind of weather your clients request depends on the level of play.

At the INTRO and STANDARD levels, you will encounter client calls for simpler weather types like sun, snow, and rain; however, they may be requested for unseasonable times of the year. You may be asked to create snow in Miami—in August!

At the ADVANCED level, clients will call for difficult weather patterns like hurricanes, sleet, and fog.

Unseasonable client calls and all ADVANCED client calls will earn a BONUS of 100 credits for the Weather Tamer who handles them.

So be prepared, Weather Tamers. Client calls can come from anywhere and you never know what kind of weather will be demanded!

To review the Client Calls for this round:

- Select GET DATA from the CHOICES menu.
- Then choose CLIENT REVIEW & TEMP. LEGEND and press the joystick button.
- Select REVIEW CLIENT CALLS and press the button again. You will see a summary of the current Client Calls below the weather map. Bonus calls are printed in a black box. Press the button to go on.

## LAUNCH THAT SATELLITE

Your clients have made their requests, now it is up to you to deliver. Keep cool Weather Tamer! You have a weather satellite at your disposal.

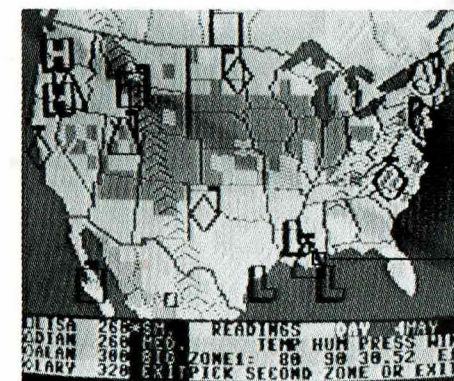
Satellites allow you to access special kinds of weather information which you can consider and compare before you make any changes. And using the weather satellite is free!

**Choose GET DATA from the CHOICES menu to summon your satellite. Then choose TEMP., HUM., PRESSURE & WIND, and press the joystick button.**

The satellite allows you to take temperature/humidity/pressure/wind readings in a small, medium, or big range in any two locations you select.

How might you use this satellite? Let's say that your client, Sidewalk Musicians, toot for sun in New Orleans. Launch your satellite. Your first choice might be to take a small reading in the area to get the specifics for your client's location.

**Select SMALL and press your joystick button. A small satellite will pop up in the center of the map. Use your joystick to move the satellite to your client's location and press the button to see your first reading.**



REMEMBER:

- = LISA'S CLIENTS
- △ = DIAN'S CLIENTS
- = ALAN'S CLIENTS
- ◇ = LARY'S CLIENTS

SMALL SATELLITE

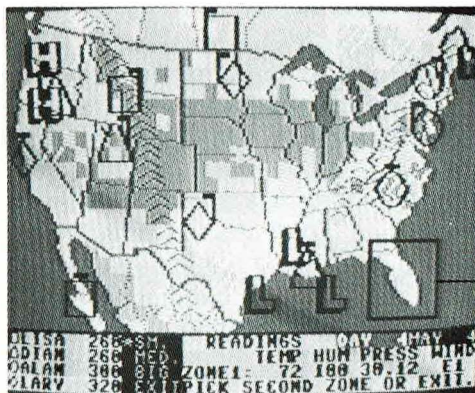
SIZE OF SATELLITE



Phew! It's 80 degrees with humidity at 90 per cent, and the pressure is 30.52! A very sticky situation!

Since the reading indicates wind from the East at a force of two, you decide to take another reading two units to the east. Remember, there are two days yet before the Day of Reckoning. This time though, you want the big picture.

**Select BIG and press your joystick button. A big satellite will appear on the map. Use the joystick to move it, and press your button once more for your second reading.**



BIG SATELLITE

It's a bit cooler over Northern Florida—but humidity is up to 100%.

Sun in New Orleans may be a tough call, but at least you have the information you need. You now know the current situation and what you need to change. You can refer to the Weather Tamers Principles section, page 22, or the Glossary, page 24, to help you use this information to create your client's request.

## WIND

There are two kinds of wind that should concern all Weather Tamers: prevailing winds and local winds.

**Prevailing Winds** move weather across the map. Knowing the speed and direction of prevailing wind movement will help you predict where the weather you make today will be tomorrow.

**Winds are named for the direction from which they blow.**

A westerly wind blows from west to east; an easterly from east to west.

Wind speed is measured in grid units on the map. Imagine a grid 40 units wide by 21 units high overlaying the map. For example, W2 represents a wind from the west at a speed of two units per day.

**Local Winds** occur when there is a difference in pressure between two adjacent areas. Air moves from a high pressure area into a low pressure area.

You can obtain information about the direction and speed of prevailing winds:

- Select GET DATA from the CHOICES menu.
- Then choose TEMP., HUM., PRESSURE & WIND and press your joystick button.
- Select satellite size and move it to the desired location with your joystick. Press the button again. The direction (W for West or E for East) and speed (0-4) will be displayed on the menu below the map.

**Remember: Allow for wind speed and direction as you create and deliver weather to your client, even though winds are difficult to predict and may change without warning.**

## MAKING CHANGES

Now that you are weather-wise, it's time to make a change. A change in the weather that is! But where do you start? Just remember that old Weather Tamer's saying: "Always begin with your feet on the ground and your head in the clouds!"

Choose CHANGE from the CHOICES menu to try your hand at meteorological meddling.

**Remember: Every change that you make in the STANDARD and ADVANCED levels will cost you credits; the changes are free in INTRO.**



### ***Move an Air Mass***

Let's say your client, the Unprepared Racers, request snow in Indianapolis. Begin by scanning the map. Luckily, there's a cold high and a wet low readily available for your use. The high is nicely positioned over South Dakota, but the low is hovering over Seattle. No problem. Being the ace Weather Tamer that you are, you can move that front in a minute.

Select MOVE HIGH or LOW from the CHANGE menu. A weather controller will appear in the center of the map.

Use your joystick to move your weather controller to that low, then press the button.

Use your joystick again to move the low just to the east or west of the high. Let's say just east of the Rockies. (Remember that prevailing wind!)

**Watch your credits as you move; they will decrease.** Press the joystick button to pin that low down. There you have it. The beginnings of the biggest blizzard Indy has ever seen.

Now it's time to work on the other elements that run the Weather Tamers system: temperature, humidity, and pressure.

### ***Change the Temperature, Humidity, or Pressure***

As a Weather Tamer, you know that snow requires low temperatures and high humidity (see PRINCIPLES, page 23). You also know that it is going to cost you unless you are playing at the INTRO level. But that's what credits are for!

Your costs will depend on two factors: the size of the zone you want to affect, and how dramatically you change conditions in that zone.

Choose CHANGE T/H/P from the CHANGE menu to get started. Then select what kind of change you would like to make, and press your joystick button.

Select the size of the zone you want to affect—small, medium, or big. Press your joystick button, and a weather controller will appear in the center of the map.

Use your joystick to move the weather controller to the desired location and press the button.

Here's an example:

Let's say you would like to dally with the temperature, pressure, or humidity just west of Indiana. Move your controller right there, and press the joystick button.

Moving your joystick up or down raises or lowers the temperature, humidity, or pressure. **Depending on the size of your zone, each degree of change will cost you credits.** Press your joystick button to register that change. This change will not show on the map until tomorrow's weather is displayed, but if you GET DATA for this area, you will see that the conditions have changed.

**Remember: the difference between drizzle and snow is all a matter of degree.**

**Also remember: Weather Tamers like you can create hurricanes at the drop of a hat and heat waves are at your fingertips.**

*If you need ideas, tips, or taming strategies, see PRINCIPLES starting on page 22. Above all, experiment; that is what will make you the best Weather Tamer you can be.*

When you are finished making changes, select EXIT to return to the CHOICES menu. Then choose END TURN and pass the joystick to the next Weather Tamer or team of Tamers.

## **FIGURE THAT FORECAST**

All your changes are in, and it's time to make your best guess about the success of your taming efforts.

Once the last Weather Tamer makes the final change for this round, and chooses END TURN from the CHOICES menu, the weather will cycle to the next day.

Scan the map to check weather trends in your client's regions.

*Will the sun shine for Sidewalk Musicians in New Orleans? Or are you all wet as a Weather Tamer?*

*Can the Unprepared Racers in Indy count on you to deliver that snow? Or will your changes throw the storm way off track?*



## NOW MAKE YOUR PREDICTION!

The success of your Taming efforts is yours to predict. And the fee you earn depends on the accuracy of your prediction.

One by one, each Tamers' client calls will appear:

☐ LISA 100

**CHANCE: 100%**

**DAY 7 MAY 5**

☐ DIAN 100

**Sidewalk musicians toot for sun in New Orleans.  
Use joystick and press button.**

Lisa, what's your call? You have lowered humidity and checked the winds—seems like the chance of sunshine is hot.

Move your joystick up or down to make your prediction. You can make 5 kinds of forecasts: 0, 25, 50, 75, or 100 percent chance of achieving your client's weather.

Lisa, blue skies seem to be coming your way, so go for it! Enter a 100 percent prediction.

Press your joystick button to confirm your prediction, and your next client call (or the next player's client call) will appear.

☐ LISA 100

**CHANCE: 25%**

**DAY 7 MAY 5**

☐ DIAN 100

**Unprepared racers request snow in Indianapolis.  
Use joystick and press button.**

Dian, you have aligned your high and low where you want them but the temperature is still a bit warm and the winds aren't exactly blowing your way. Hedge your bets.

You might try predicting a 25% chance of snow. If it does not snow, you will receive 75% of your fee. If it does snow, you will get 25% of the fee your client offered.

Press your joystick button to confirm your prediction, sit back, and watch that weather cycle!

## The Day of Reckoning

### CAST YOUR FATE TO THE WIND

Once the last Weather Tamer enters his or her prediction and presses the joystick button to confirm it, the weather will cycle for one more day and display:

☐ LISA 100

☐ DIAN 100

**DAY 8 MAY 6**

**AND NOW...  
THE DAY OF RECKONING!!!**

How did each of you do for each of your clients? A glance at the map gives you a general idea, but you want all the facts.

Press the joystick button to see how you fared with your Taming *and* your forecast.



## SEE WHAT THE WIND BLEW IN!

One by one, each Tamer's client calls and results appear. Based on the success of a Tamer's work, three things may occur:

1. If the weather and the prediction match the call the Tamer receives the fee for weather making plus an additional fee for predicting and a new client at a higher fee.
2. If only the prediction matches the resulting weather the Tamer receives a percentage of the fee to match the accuracy of the prediction, and is rehired at the same fee by another client.
3. If neither the weather nor the prediction matches the call, the Tamer gets another client at the same fee.

Let's see how our pair of Tamers made out!

□ LISA 100

C:40/P:100%/B:000

DAY 8 MAY 6

△ DIAN 100

The Sidewalk Musicians toot for  
sun in New Orleans.  
TODAY'S WEATHER: SUN

Good work Lisa! A sax player from Bourbon Street—wearing shades of course—will appear and cheer for you. You will get a new client next round and a higher fee too!

How did you do, Dian? Clouds do cover Indianapolis but did it snow? Remember, you guessed it would not even though you tried to make it happen!

□ LISA 100

C:40/P:25%/B:000

DAY 8 MAY 6

△ DIAN 100

The Unprepared Racers requested  
snow in Indianapolis.  
TODAY'S WEATHER: CLOUDS

You didn't make the weather your client wanted, but you made a good prediction Dian! You predicted 25% chance of snow, and it is cloudy. You get 75% of the fee or 30 credits. You will get another client at the same fee next round.

## ON THE HORIZON

As a tried and tested Weather Tamer, you may wonder, "What comes next?"

With a few days of Weather Taming to your credit, you are eager to try some more. Luckily, round two is just about to roll in.

Once all Weather Tamers view their results and receive their fees, round two will begin. Here's what happens:

### A New Order

Based on each Tamer's new credit total, the order in which Tamers participate may change. The Tamer with the highest credit total will go first this time and his or her name will be highlighted in yellow. The other Tamers will fall into place according to their new totals.

### A New Day Dawns

Round two will begin on round one's Day of Reckoning. As before, Weather Tamers will be asked to create or predict effects for two days from then.

### New Clients, New Fees

On day one of every new round, Tamers will receive a new set of client calls. The fee that each one earns depends on that Tamer's success in the previous round.

What is there to do now but begin at the beginning? Scan the map and make readings and changes as your clients and credits allow—it's up to you.

**Be confident and daring. Feel free to try anything under the sun. Remember, you're a weathered Weather Tamer, and the skies of North America are at your command.**



# Weather Tamers Principles

## Principle #1

### CHANGE

*"What you see is not what you get!"*

To create weather in one area on any given day, you must make changes before that day somewhere else on the map.

Sound complicated? Not when you understand how the weather system works and how it changes every day. Once you have read these Weather Principles, you will be able to make any kind of weather, anywhere on the map.

## Principle #2

### MOVEMENT

*"Weather moves, whether or not you do."*

Weather is a dynamic system. It constantly changes. All of the parts are connected so what happens in one place, sooner or later, affects the weather in other places.

Conditions close to any place on the map will have the greatest influence on the weather in that place. Conditions farther away may have an effect, especially if prevailing winds are blowing from that direction.

## Principle #3

### THE BIG THREE

*"The Big Three in Weather Taming are temperature, humidity, and pressure."*

Every type of weather under the sun is a combination or interaction among these three factors. Weather is the state of the temperature, humidity, and pressure in a given place on a particular day.

Control the Big Three and you control weather. But remember, temperature, humidity, and pressure all affect one another. A change in one may change the other two.

## Principle #4

### TEMPERATURE

*"Cool is heavy! Hot is all wet!"*

Temperature determines two important qualities of air:

1. Hot air can hold more moisture than cold air.
2. Cold air weighs more and exerts more pressure than hot air.

This means it takes more moisture to create rain on a hot summer day than on a cold fall night. And you can create a high pressure area by reducing the temperature, or a low pressure area by raising it.

## Principle #5

### HUMIDITY

*"Too much of a good thing will rain on your parade."*

You can feel the difference between a hot, muggy day in New York, and a hot, dry day in Phoenix. This is because the amount of humidity (water vapor) in the air makes it feel wet or dry. When the humidity reaches 100% and still more water vapor enters the air, precipitation occurs. You can cause precipitation by raising the humidity or by lowering the temperature. Likewise, you can dry things up by lowering the humidity or raising the temperature depending upon the surrounding conditions.

## Principle #6

### PRESSURE

*"You take the high pressure and I'll take the low pressure and I'll make it storm before you."*

High pressure systems are created when colder air settles to the ground and exerts more pressure on the earth. Large areas of high pressure (called **highs**) usually bring fair weather.

Low pressure systems are formed when warmer air rises and exerts less pressure on the earth. Low pressure systems (called **lows**) usually mean cloudy or stormy weather.

You can cause major changes in the weather by moving highs and lows from one location to another. When you move a high or low you move all of the weather conditions associated with it.

## Principle #7

### WIND

*"Weather is so awesome that it will blow you away!"*

Winds come from the combined effects of heat from the sun and the rotation of the earth. In the northern part of North America, westerlies (winds from the west) drive weather patterns across the continent from the west to the east. In the southern part of the continent, the pattern is reversed, and winds generally move from east to west.

## Principle #8

### NATURE

*"Weather is a mixed up thing."*

Weather on any day is the result of averaging conditions from the previous day and for surrounding areas. The mixing of weather conditions from adjacent areas makes each new day's weather unique.

When a Weather Tamer tries to predict or create weather it is important to remember that even extreme changes will average out over time. But also remember that even small changes may be enough to cause dramatic effects when the conditions are right.



## Glossary\*

**Clouds:** Condensed water vapor that forms when moist air (near 100% humidity) is cooled. (70-99% H)

**Cold Wave:** Unseasonably cold temperatures. (50° below normal or below 21°)

**Fog:** A cloud of moist air that rests on the ground. It can be caused by cold air passing over warm, moist regions or by cold air passing over warm water. (Above 40° T/90-99% H/Below 30.80P)

**Hail:** Frozen raindrops that form in thunderclouds when they are supercooled. (50°-70° T/100% H/Below 29.50P)

**Heat Wave:** Unseasonably warm weather conditions. (50° above normal or above 89° T)

**High Pressure Area (High):** Masses of cool air generally associated with clear skies and fair weather.

**Humidity:** The amount of moisture in the air.

**Hurricane:** Powerful, slow-moving storm that sometimes forms around a low over warm ocean waters. (Above 79° T/100% H/Below 29.50P)

**Low Pressure Area (Low):** An area of low pressure that forms when warm air rises, generally associated with storms and rain.

**Pressure:** The weight of the air pressing on the earth (measured in inches of mercury ranging from 29.00 to 31.50 in WEATHER TAMERS).

**Rain:** Large droplets of water which form when the air is supersaturated. (Above 32° T/100% H)

**Relative Humidity:** The percentage of moisture in the air when temperature is taken into account. The highest relative humidity is 100%, and the lowest is 0%.

**Sleet:** Tiny pieces of ice formed when rain falls from a layer of warm air through a layer of freezing air. (33°-42° T/100% H)

**Snow:** Crystallized water vapor surrounding a tiny piece of dirt or dust. (Below 33° T/100% H)

**Sunny Weather:** Clear skies, usually occurring in a high pressure area. (Below 70% H)

**Temperature:** The amount of heat in the air (measured in degrees Fahrenheit ranging from 0 to 125 in WEATHER TAMERS).

**Thunderstorm (Storm):** Happens when warm, moist air rises through cooler air. Large clouds form that produce rain, lightening, thunder, and winds. (Above 49° T/100% H/Below 30.00P)

**Tornado:** Forms around a low pressure area when two air masses of different temperatures and humidities collide. The result is a whirlpool of wind that forms a funnel shape as it rises from the ground. (Above 39° T/Below 29.30P)

**Weather:** The condition of the atmosphere created by the interaction of temperature, humidity, and pressure.

**Wind:** The movement of air from high pressure to low pressure areas. Two kinds of wind exist in the WEATHER TAMERS system: prevailing winds and local winds. Prevailing winds move from west to east or east to west pushing weather systems across the map. Their direction and speed can be obtained through the weather satellite. Local winds are the ones that clients may demand. They occur when there is a pressure difference between two adjacent areas on the map of at least .80 inches of mercury.

\*The values of T (temperature), H (humidity), and P (pressure) necessary to create each weather condition in WEATHER TAMERS appear in bold after the definition.

## CTW Software Group Development Team for WEATHER TAMERS™\*

Harold Byrd  
Cathy Chang  
Jim Clark  
Daniel E. Cohn  
Mary Ann Dzuback

Bill Eberle  
Lisa Feder  
Michael Feldman  
Jack Kittredge  
Seth Meyers

Dan Oehlsen  
Peter Olotka  
Alan Shapiro  
Diane Sivertsen  
Mark Sutton-Smith

Special thanks to the members of the CTW Game Players Group: Glen, Robin, Chris, Ethan, Hector, Lisa, Noah, Daisy, Robert, and Whani.

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## HOW TO RUN WEATHER TAMERS

1. Insert the disk into the drive and close the drive door.
2. Turn on your TV or monitor and adjust the volume.
3. Now turn on your computer.

Type: **LOAD "CBS," 8**

When you see the word "Ready", type: **RUN**  
WEATHER TAMERS will appear on your screen.