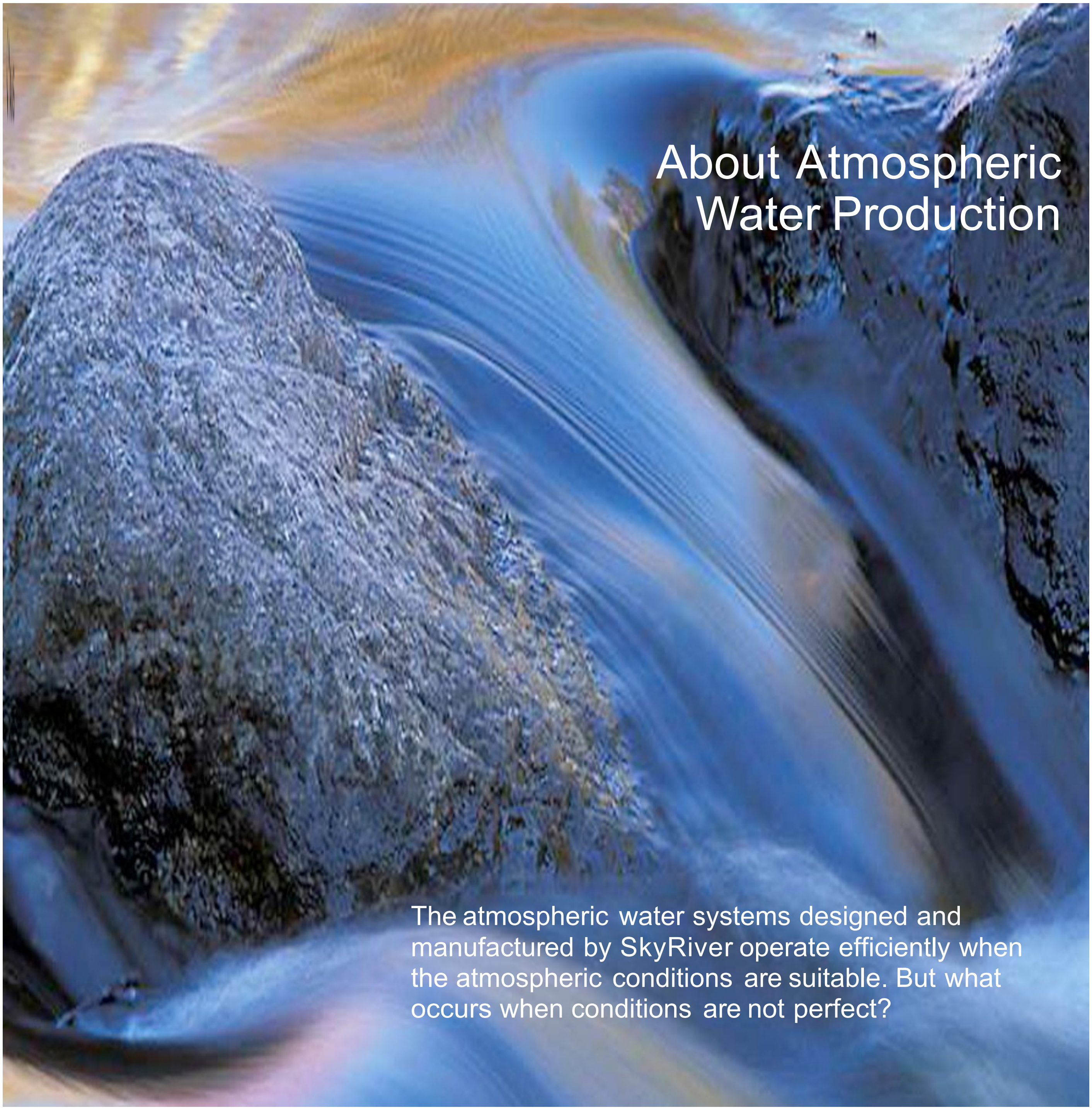


HOW THE STANDARD AW® AND COMMERCIAL AW™ SYSTEMS MAKE WATER

Measuring Humidity

Humidity refers to the amount of moisture in the air. You might be surprised to know that the air in our atmosphere has water in it at all times. In fact, there is more than 3.1 quadrillion gallons in water vapor that surrounds the earth.

Let's put that in perspective: 3,100,000,000,000,000 (3.1 quadrillion) gallons of atmospheric water is available at any given time throughout the world. That is 3,100 cubic miles of water, enough water to cover the entire earth about 1 inch deep. It is also the amount of water equivalent to about half of the water in the Great Lakes.

In fact, every day, 280 cubic miles, or 238 trillion gallons, of water evaporates (or transpires) into the atmosphere. You see, water never really disappears completely. Instead, water actually recycles through the environment.

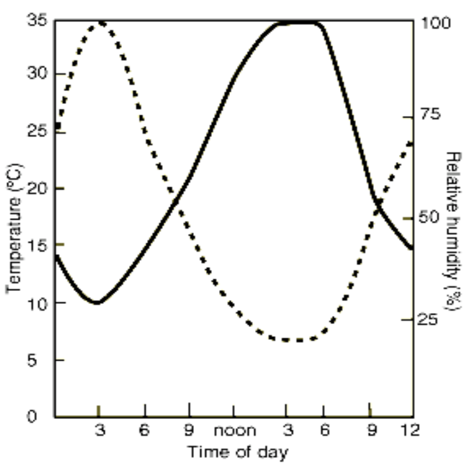
Air that is near the ground, or in close proximity to the ocean, lakes or major rivers, usually has more water in it than the colder air at higher altitudes, especially air that is not near any bodies of water. Air that is warmer can hold more moisture than air that is colder. So, ideally, the greatest amount of moisture in air is found in air near groundwater, lower in altitude, and in warmer climates.

Measuring the Amount of Water Vapor in Air

There are several different ways to measure and to express the amount of water in the air. Let's imagine we have a container of air containing moisture (water) in it. The temperature of our container of air is 80 degrees.

Relative Humidity:

"Relative humidity" tells how much water air is holding compared to how much it could hold at a certain temperature. If our container of air has a relative humidity of 50%, then that means the air is holding half of the amount of water a container of air at 80º F could hold. Relative humidity will change if the moisture in the air changes or if the temperature changes. (Humidity figures provided for the general public in newspapers are usually relative humidity percentages.



Above: Relative humidity varies significantly when the temperature changes, even when the actual amount of water vapor in the air remains the same.
Temperature ________
Relative Humidity _ _ _ _

Dew Point:

The "dew point" is a much more accurate indicator of the amount of moisture in the air and is the measurement used by most meteorologists. The dew point is the temperature at which the air can retain the greatest amount of moisture it can hold if cooled. Or, to explain it another way, the dew point is the temperature at which the relative humidity reaches 100%.

Confused?

Let's talk about our container of 80º F air. This air has water vapor in it. Remember that warm air will hold more water than cold air. If we start cooling our container of 80º air, it will eventually reach a temperature at which the air can no longer hold the water vapor in the air. Let's say that our container of air will condense into a cloud when we cool it to 50º. Then 50º is the dew point of our container of air. *Note that the dew point does not depend on the temperature, as does relative humidity.*

How are Temperature, Relative Humidity, and Dew Point related?

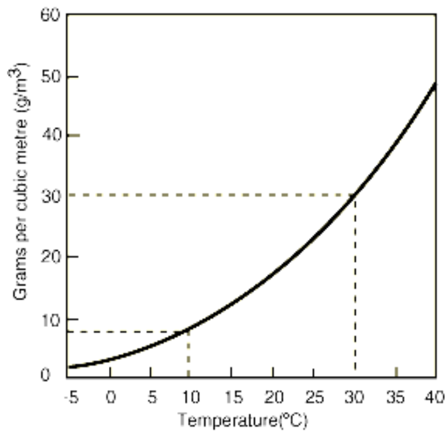
At constant temperature: Relative Humidity and Dew Point will increase/ decrease together

At constant Relative Humidity: Temp and Dew Point will increase/decrease together

At constant Dew Point: As Temperature increases, Relative Humidity will decrease; as Temperature decreases, Relative Humidity will increase. Remember, There is an upper limit to the amount of water vapor that can be present in a given mass of air. That is, there is a limit to the capacity of air to "hold" water vapor. When that limit is reached, we say that the air is saturated with water vapor.

Water vapor requires a solid surface onto which it is able to start condensing. In the atmosphere, microscopic, solid particles of dust, salt, ash, pollen, etc. suspended in the air provide solid surfaces onto which water vapor can start condensing. We call these tiny, solid particles condensation nuclei. Each becomes the center of a tiny droplet of liquid water. The aggregation of many, many of these tiny liquid water droplets suspended in the air constitutes a cloud.

So, to summarize, the dew point temperature is the temperature at which the air can now longer hold all of its water vapor, and some of the water vapor must condense into liquid water. At 100% relative humidity, the dew point temperature and real temperature are the same, and clouds or fog can begin to form. While relative humidity is a relative measure of how humid it is, the dew point temperature is an absolute measure of how much water vapor is in the air.



Above: the change in the amount of water vapor in saturated air as the temperature changes. The air's capacity to retain water vapor increases as air temperatures increase. For example, air with a temperature of 30°C can hold more than three times as much water vapor as air at 10°C.

Extracting Humidity: The Basics

Many times what we call science fiction is just the prelude for what will become reality. Frank Herbert described a unique "stillsuit" in his best-selling novel DUNE (1965). This suit extracted and re-filtered body moisture. In 1977, George Lucas released the first of the STAR WARS movies. In the beginning of the movie he introduces Luke Sywalker's and the desert planet Tatooine. Luke's Uncle and Aunt are "farmers" and use water extractors (evaporators) for their crops.

The principle of water extractors is simple: the air, even desert air that is considered "arid", still contains molecules of water. The Sahara Desert, for example, has an average relative humidity of 25 percent. The challenge is to find a way to pull that moisture out of the air. That is accomplished using dehumidification technology.

A dehumidifier removes moisture from the air. The technique condense moisture on a cold surface. Anyone who has poured a cold glass of iced tea on a hot, humid summer day knows that moisture will condense on the glass.

When air cools, it loses its ability to hold moisture. (In the case of the cold glass, the moisture in the air condenses right onto the glass. If the glass is left on a table long enough and if the air is very humid, a significant puddle of water will form.)

You may have noticed the same phenomenon in an air conditioner. The moisture in the air inside the room condenses onto the air conditioner's cold coils. If the air conditioner is mounted in a window unit, the water will drip out the back of the unit onto the ground.

A dehumidifier is simply an air conditioner that has both hot and cold coils in the same device. A fan draws air over the cold coil of the air conditioner to condense the moisture. The dry air then passes through the hot coil to heat it back up to its original temperature.

Purifying and Sanitizing Atmospheric Water

Dehumidified water is not necessarily safe to drink. Airborne contaminants as well as contamination from metals and other parts used to make a dehumidifier easily dissolve in condensed water. Water that is stored for any length of time gets “stale” and microbial growth increases.

Atmospheric water systems, like the Standard AW® and COMMERCIAL AW™, are designed to extract water in a

relatively efficient manner from moisture in the ambient room air. Then this water is passed by and through a number of filters to purify the water for drinking. In fact, the units sold by Atmospheric Water Systems create absolutely pure water completely free from air and water contamination. And these units keep the water clean and fresh.

How well to they work? As we have explained, the efficiency and effectiveness of atmospheric water generators is completely dependent on temperature and humidity conditions.

Atmospheric Water Climate Chart:

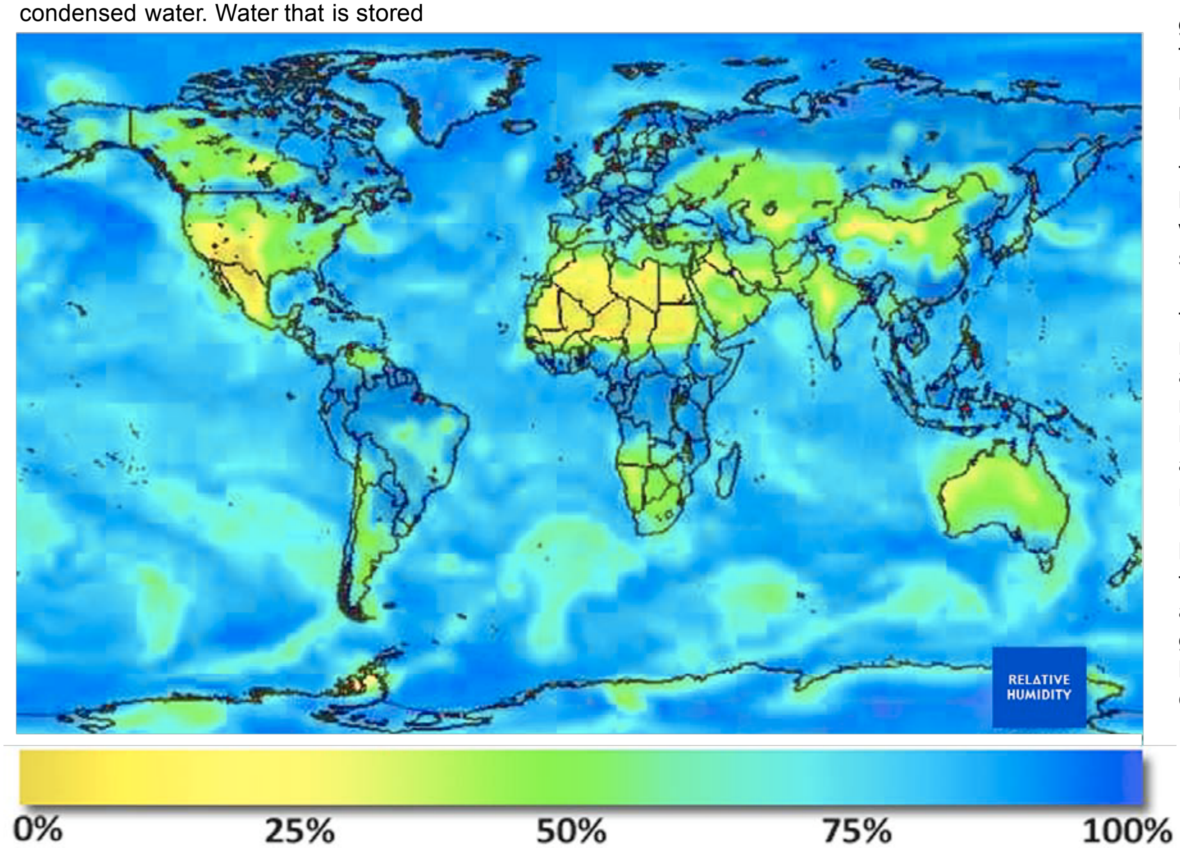
Making water efficiently and cost-effectively with an atmospheric water system is tied directly to consistent levels of humidity and a constant warm temperature. As humidity and temperature rise and fall, so does the water extracting characteristics of an atmospheric water system.

More humid climates obviously have a higher level of moisture in the air. Warmer air is capable of retaining higher amounts of water vapor. So, ideally, the warmer the temperature and the higher the relative humidity the greater the water production of the atmospheric water system.

Some areas of the world are more ideal for an atmospheric water system. Other areas of the world, where the air is dry and temperatures are lower simply cannot support reasonable year-round water production.

Atmospheric water generators are designed to extract water from a minimum level of 40% relative humidity and 70° F temperature. below this minimum “baseline” level, an atmospheric water generator will struggle to extract water.

The world map to the left indicates annual relative humidity averages. The color range, from yellow to blue, indicates relative average humidity percentages from 0% to 100%. The darker the blue color, the greater the water production of atmospheric water generators. Note that the highest population concentrations, with the greatest need for water, are those ares where atmospheric water systems will work the best.



A MODEL FOR EVERY APPLICATION

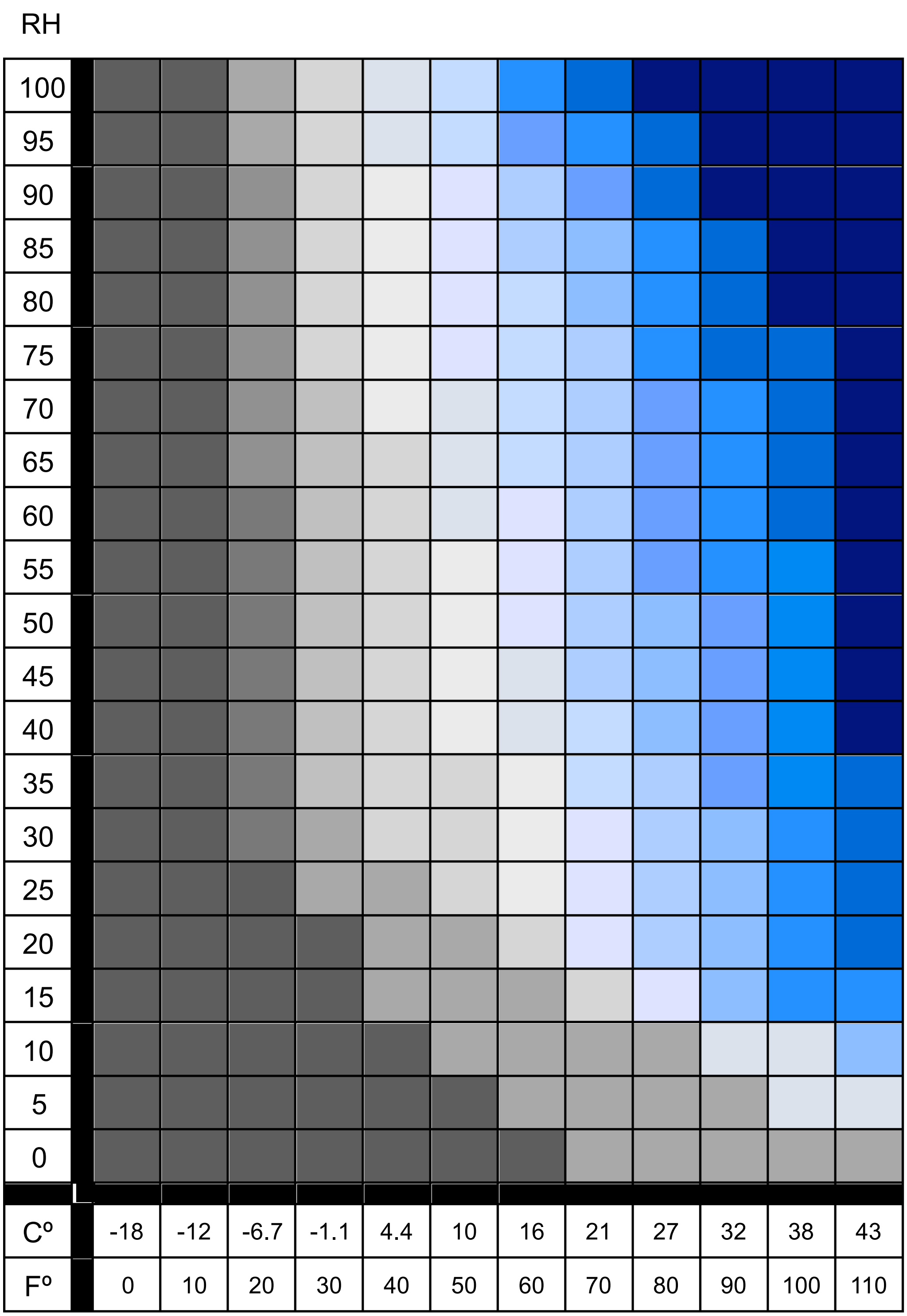
The SKYRIVER line of atmospheric water generators (AWGs) includes models for every consumer and commercial application. Our water production ratings are based on a relative humidity of 70% and an ambient air temperature of
80º F.

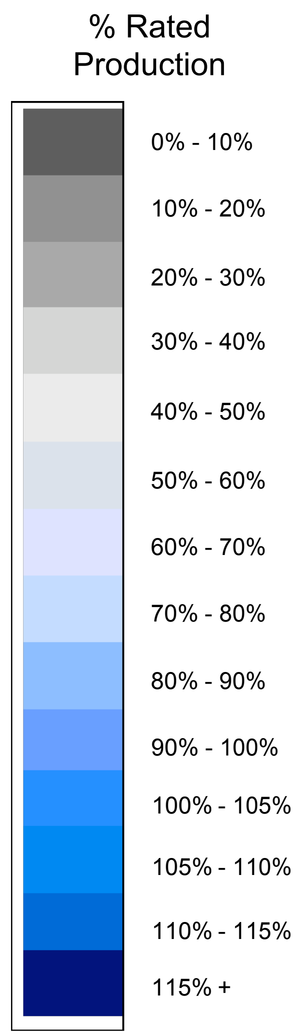
MODEL	WATER PRODUCTION PER DAY
CS250	250 LPD/>66 GPD
CS500	500 LPD/>132 GPD
CS1000	1000 LPD/>264 GPD
CS2500	2,500 LPD/>660 GPD
CS5000	5,000 LPD/>1,320 GPD
CS10000	10,000 LPD/>2,641 GPD
DH9	32 LPD/>8.5 GPD
DH9X	32 LPD/>8.5 GPD
DS10	32 LPD/>8.5 GPD
DS10X	32 LPD/>8.5 GPD
DS10CE	10 LPD/>2.6 GPD
DS10C	10 LPD/>2.6 GPD

The above atmospheric water production numbers are based on a relative humidity of at least 70% and ambient temperatures at a minimum of 26.7º C or 80% F. Please refer to the chart on the following page to determine variations in water production as temperature and humidity changes from one location to another. LDP = Liters Per Day; GPD = Gallons per Day. The amounts above are approximations and may vary.

STANDARD AW® & COMMERCIAL AW™ WATER PRODUCTION CHART

The chart below indicates the "% Rated Production" of each Standard AW® and COMMERCIAL AW™ atmospheric water generator. First determine your local ambient temperature and then determine the relative humidity. As these two points intersect, the color on the cart will provide an approximate water extraction percentage. By multiplying this percentage with the daily water production specification on the previous page, you will be able to determine the average water production of your SKYRIVER system.





Global Trends

There are a number of key trends to watch. First and foremost is the basic understanding that water has no substitute, unlike energy. and there is a fixed finite supply (only 2.5% of the worlds water supply is fresh and of that 70% is locked up in glaciers and permafrost).

Secondly, water is heavy (7lbs/gal) and is very expensive to move and not surprising there are large populations where fresh water is in short supply (e.g. middle east, western US, China and India). So like politics, water is local… and therefore not surprisingly very political and emotional asset. Accordingly that leads to water allocation and prioritization. Typically 70% of water supplies are allocated to agriculture with the balance going to municipal and industrial uses.

And finally, as in any valued commodity, the controlling metric is price. As the price of water rises, which it is at an increasing rate, alternative options become cost effective, driving investment and opportunity.

Jud Hill
Managing Partner
Summit Global Management, Inc.

1

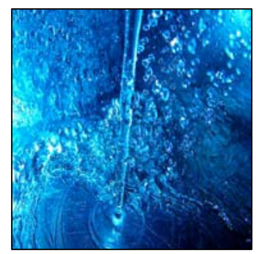
UNDERSTAND THE IMPORTANT BALANCE OF TEMPERATURE AND RELATIVE HUMIDITY

Your atmospheric water system is only able to generate pure drinking water when the conditions are right. Do not expect miracles when the air is too dry or the temperature of the air is too low. the secret to minimizing the cost per gallon is to know when it is perfect to run your atmospheric water generator.

2

ANALYZE YOUR REGIONAL AND LOCAL ANNUAL CONDITIONS

Water production is directly correlated to air moisture content and air temperature. Spend some time to research your daily and annual averages to determine when it is best to run your atmospheric generator. A great website to get daily and historical information is the Weather Underground. You can find data on virtually any city in the world: http://www.wunderground.com/



3

DETERMINE THE WATER PRODUCTION

Using the chart on the preceding page, determine the approximate daily water production for the Standard AW® or COMMERCIAL AW™ system you are considering. If your needs are less or more per day, the consider moving up to a higher producing unit or stepping down to a unit that produces less per day.