How to Reverse Desertification and Turn the Sahara Desert Green

by Bill McNulty

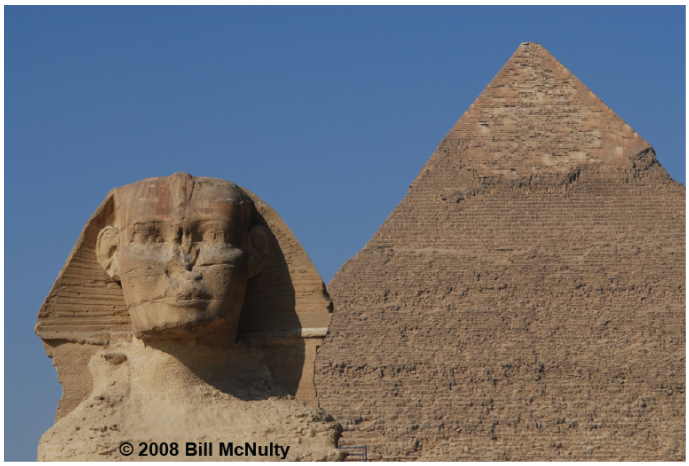

Fig. 1 The Sphinx as the Air God Shu

Ancient Egypt and the North African Continent used to be a fertile land with wild animals, grasslands, savannas and sustainable croplands. With the growth of the population and unchecked bad land management the forests, grasslands and croplands were cut down, eaten or dried up and eventually turned to dust. The trees and brush that dotted the landscape of Ancient Egypt were cut down to provide shelter, fuel and food for the Ancient Egyptians. This destruction of North African vegetation eventually lead to the creation of the Sahara Desert.

In Ancient Egypt numerous Gods and Goddesses were worshipped to help Egyptians in their daily lives. Tefnut was one of the Ancient Egyptian Goddesses who was called upon to bring rain and moisture to the lands of the Ancient Egyptians. We need to invoke Tefnut's help today to create rainfall in the Sahara and alter the environment to bring rains to the Sahara and other desert regions around the World. This article will outline solutions to reverse desertification and reintroduce fauna into deserts around the World.

Reversing Desertification

In the last Century the Midwest of the United States was almost turned into a desert. Large clouds of black topsoil were blown across the Midwest and some of them passed thru Washington, DC and ended up in the Atlantic Ocean. Franklin D. Roosevelt and Hugh Bennett came up with a solution that prevented the Midwest from becoming a desert. Their solution included the formation of the Civilian Conservation Corps and the Soil Conservation Service. These two agencies helped prevent the Midwest and other areas of the U.S. from becoming full blown deserts. By planting millions of trees and

changing farming practices they helped reduce the loss of topsoil from bad farming management methods and stopped the desertification of the U.S. We need to renew this effort and expand upon it to other parts of the World.

A new soil enhancement system has been developed by Kristian Morton Olesen and his son Ole Morton Olesen. Their patented system turns barren desert sand into fertile soil in a matter of hours. This process can turn desert lands into productive and fruitful land when combined with irrigation waters. You can find info about their liquid nanoclay mixture system at www.desertcontrol.com.

The two systems described above can be used to help reverse desertification with the addition of water in the form of rainwater or irrigation water.

It may be possible to reverse desertification in North Africa and other desert locations by changing the albedo or reflective sunlight that reaches the ground and creating islands of temperature differential in desert areas. By creating areas of temperature differential it may be possible to bring rainfall where none currently falls.

The basic principle of this new idea is that for cloud formation over a desert to occur a temperature differential between land and air masses combined with certain environmental conditions needs to be present before clouds will form. If clouds don't form when their basic constituents are present in the atmosphere then a temperature differential between the land and air temperatures may lead to cloud formation and supersaturation of clouds. Once supersaturation occurs eventually rainfall will fall to the ground. By creating areas of temperature differential between the land and air masses it may be possible to start cloud formation and rainfall in desert areas around the World.

How Rain Clouds are Created

For rain clouds to form a combination of factors need to be present in the environment before they are born, mature and eventually release their rain to the ground below.

Only recently have we come to realize that a seed particle, a humidity threshold, water vapor, a specific temperature range, particulate matter in the atmosphere and other factors are needed to create rain clouds. When these components are present we should see the formation of rain clouds and their release of rain to the ground below. But, in desert environments and over Oceans these environmental components don't lead to the creation of rain clouds and rainfall.

I believe a temperature differential between the land and air temperatures can trigger cloud formation when the environmental triggers for cloud formation are present. The Tefnut Rain Concept provides the missing seed needed for rain cloud formation when all environmental conditions needed to form rain clouds are present.

How Islands Form Clouds

You can watch clouds form on the Eastern side of Caribbean Islands as a temperature differential between the air mass flowing over an island and the change of temperature

of the land mass occurs as the the prevailing winds stimulate cloud formation. Sometimes these island formed clouds fill with excess moisture and dump rain on the windward side of an island. These island formed clouds aren't seen year round but, they can bring enough rain to sustain island vegetation that can vary from desert-like to lush tropical forests depending on whether the foliage is located on the windward or leeward side of an island. Normally the areas with the most rainfall occur on the western or leeward side of Caribbean Islands due to this cloud forming phenomenon. If there is a large mountain or elevation located in the middle of an island the rain will generally accumulate on the eastern side of the mountain leaving the western side of the island the drier side of the island.

For most of the year the winds over Caribbean Islands cross from the Southeast and bring rain and cooling breezes to the Western and Northwest sides of these islands. Without the temperature differential between the land and air masses over Caribbean Islands, combined with a certain set of conditions, cloud formation and rainfall would be non-existent during certain times of the year. This temperature differential caused by the air flowing over the Islands is essential to cloud formation and rainfall and provides needed moisture when certain environmental conditions are present.

Why do these rain clouds form over Caribbean Islands and not the open ocean? That's the magic question. Is it the upthrust of the winds as they come across the vast expanses of the Atlantic Ocean and are bumped up into the lower atmosphere, the temperature differential created between the ocean air and the land temperatures, a combination of these factors or an unknown factor? I believe the temperature differential between ocean temps and land temps help create a large number of clouds and rainfall over Caribbean Islands.

Fig. 2 Clouds form over a Bahamian Island from the Windward side of the Island

Watching clouds forming over Islands led me to wonder why clouds don't form over the Sahara when cloud forming components are present. You can see satellite images of clouds and rainfall across Central Africa while Northern Africa doesn't show the slightest

blip of cloud formation. Granted some of the necessary factors for cloud formation may be missing in Northern Africa but, I believe the missing component that prevents cloud formation over this desert area is a temperature differential. Without a temperature differential between the land and air masses clouds will not form when cloud building components are present over desert regions.

Creating Temperature Differential Islands in the Desert

The only large area of temperature differential encountered by desert winds that roll across Northern Africa is provided by the Nile River and Delta, the Fayum Oasis, Lake Nasser and some large cities in Libya and Algeria. The Nile River follows a Northern path across North Africa and provides a thin strip of fertile lands and cooler temps across the great expanse of North Africa. The Nile River isn't wide enough to provide the temperature differential stimulus needed to create clouds in North Africa as the prevailing winds blow from the East.

The quickest way to change the flora and fauna of the Sahara Desert may be to paint it. By using a temporary paint/food coloring to create areas of temperature differential you should be able to create clouds. Once these clouds are formed they will need to be induced to create rainfall.

By creating artificial Temperature Differential Islands(TDI) you should be able to create clouds when certain cloud forming components are present. These TDI could be created by painting the sands with a food coloring applied by planes, helicopters or water trucks. If the TDI theory doesn't work they will be eliminated the next time a dust storm scours the desert and removes the food coloring and turns it into green dust that will be carried away by the wind.

Painting the desert would be a geoengineering feat that is easy to assess whether it works and it wouldn't create a long lasting environmental disaster if it doesn't. The proof would be easy to observe from the ground and backed up by satellite imaging from numerous infrared and lightning sensors currently circling the Globe.

These artificially painted islands of temperature differential should provide a seed for the creation of rain clouds as the winds blow across North Africa and over these artificial areas of temperature differential. Hopefully, these clouds would eventually pick up enough nucleation material and moisture to turn into rain clouds and eventually release their excess moisture as rain.

Invoking Zeus and the Creation of Lightning

Nikola Tesla once observed that rainstorms don't start without a lightning strike. Of course, most of us have seen rainfall come from a storm system where lightning doesn't make an appearance. But, Tesla may be right in regards to the development of intense rainstorms. Lightning strikes seem to increase the intensity of cloud systems leading to supersaturation and eventually cause them to release excess moisture as rainfall.

Another missing factor in cloud making in the Sahara is the lack of paths for current to flow from clouds to the ground. When the atoms that make up a cloud bump against each other they create a charge that builds up in the clouds. This excessive electrical charge needs a path to discharge the energy. This excess electrical energy in clouds can travel up, down or sideways. The tops of trees and buildings provide the pathways for air to ground lightning strikes in locations around the world. But, these pathways are virtually non-existent in the Sahara. Therefore, we need to create or provide artificial pathways for air to ground lightning strikes.

Electrical energy that is discharged downward from clouds is called cloud to ground lightning. Excess electrical energy discharged upwards, above clouds, can take the form of discharges known as sprites and elves. Excess electrical energy discharged between clouds is normally referred to as heat lightning. When lightning discharges are numerous the constant charging and discharging that occurs between clouds and the ground can lead to bigger and more violent weather. To create rain in desert areas we want to induce lightning and create volatile cloud systems that will eventually lead to rainfall.

For rain clouds to form a continual charging and discharging of energy from the cloud tops to the ground is required which leads to supersaturation of clouds and the eventual release of rainfall.

Lightning can be artificially stimulated to discharge by means of a rocket and attached wire apparatus at a testing facility near the University of Florida. A rocket is fired into a cloud where researchers believe an excess of charge exists that can be released as bolt(s) of lightning. The UF Research Labs ability to create lightning virtually on demand is a necessary part of their research. We need to create a similar situation over deserts where moisture laden clouds can be stimulated to grow into cumulonimbus clouds and eventually release their excess moisture as rainfall.

Balloons or kites flown in the path of possible rainstorm clouds, or cumulus clouds, can facilitate the transfer of energy between clouds and ground. These balloons or kites would need to be attached to wire tethers that could be moved around into the path of developing storms. Balloons or kites can also be placed in anticipated paths of cumulus clouds at semi-permanent locations depending on the prevailing winds and distance from a TDI.

Benjamin Franklin was a pioneering researcher in the field of lightning and its relation to electricity. If Franklin was able to use random clouds flying across his Philadelphia neighborhood for his experiments we should be able to anticipate where potential rain clouds will form downwind from a TDI.

Bringing Rain to Deserts Around the World

By creating areas of a temperature differential between air flowing over deserts and the ground I believe it is possible to create rainfall where none falls today. If we can create areas of changing temperatures across deserts we should be able to create rain clouds

and bring rain to deserts around the World. Planting drought resistant trees, such as acacia trees, could help make these temperature differential islands a permanent feature in deserts.

It would be great if McCormick & Co. and the Olesens would collaborate to create temperature differential islands in a desert somewhere around the World. McCormick could provide the food coloring to stain the desert sands and the Olesens could provide a liquid stimulus for a fertile soil to bring growth to barren deserts.

The first such TDI could be located between Lake Nasser and the Toshka Lakes as a testing platform which should lead to rainfall and a change of the environment of North Africa. Once the first TDI is established and creates rainfall on the Sahara landscape seeds hidden in the seed bank should take hold and provide conditions which will lead to a continuous source of rain across the Sahara and a lasting change from sand dunes to grasslands, savannah and eventually crops and forests.

Hopefully, someone will create Temperature Differential Islands to bring rains across the World's deserts. With our increasing population and decreasing arable lands changes are necessary to prevent future famines and food catastrophes. Let's hope Temperature Differential Islands will provide a geoengineering solution with a broad impact to improve the situation of millions living in or near the World's deserts.