

The Charcoalab Project

Global warming, climate change and the greenhouse effect are hot topics being discussed all over the world. You can't turn on the news or pick up a newspaper without some reference to the changes occurring in our environment! Today, more than ever, there is a global effort to make the necessary changes in our lifestyles before they irreversibly threaten the climate of our planet. With the Charcoalab Project you can learn more about these issues and contribute to research by participating in an experiment being carried out all over the world!

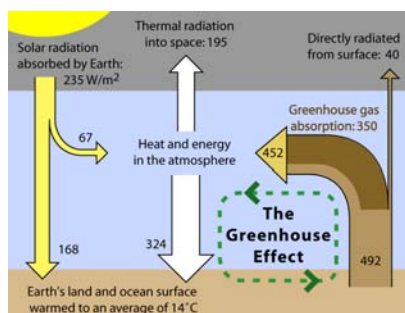
So what is the problem?

Recently, scientists have discovered that human industrial activities have been making the Earth's temperature rise at a rate faster than ever seen before. This phenomenon, called global warming, results from a build up of greenhouse gases (such as carbon dioxide, methane and hydrogen) from the industry, gas and coal fired power plants and transport.

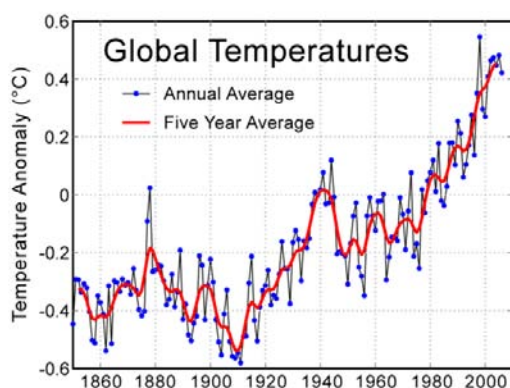
These gases trap the heat on the planet (much like the glass walls of a greenhouse) hence greenhouse effect! This has many negative consequences on our environment, such as the 10 listed on the right and which are already being observed around the world.

Why is this problem so important today ?

The greenhouse effect



Global Warming



10 warning signs and effects of global warming

- Rise in Temperature**
Since 1980 the earth has experienced 19 of its 20 hottest years on record, with 1998 being the hottest and 2002 and 2003 coming in third.
- Drought**
Warmer temperatures could increase chances of drought. Greater evaporation, particularly during summer and fall could worsen drought conditions for wildfires.
- Wildfires**
In 2002 the western US experienced its 2^d worst wildfire season in the last 50 years; more than 7 million acres burned. In some states it was their worst season.
- Rain**
Warming temperatures increase the energy of the climatic system and causes more intense rainfall. In some areas this causes severe flooding, mudslides and landslides.
- Health**
Diseases carrying mosquitos are spreading as climatic shifts allow them to survive in formerly inhospitable areas. Malaria has now been found in higher elevations never seen before.
- Melting ice**
According to NASA, the polar cap is now melting at the alarming rate 9% per decade. Arctic ice thickness has decreased 40% since the 1960's.
- Rising sea levels**
Sea levels have already risen 4 to 8 inches (10 to 20 cm) and are estimated to rise 19 more inches (48 cm) by 2100. Rising sea levels will result in the loss of coastal wetlands and barrier islands.
- Ecological disruption**
At least 279 species of plants and animals are already responding to global warming. Species geographic ranges have shifted to the poles at an average rate of 4 miles per decade.
- Heat waves**
In 2003, extreme heat waves caused more than 20,000 deaths in Europe and more than 1,500 deaths in India.
- Hurricanes**
Warmer water in the oceans puts more energy into tropical storms, making them more intense and potentially more destructive.

The carbon cycle

Take one of the most important greenhouse gas: carbon dioxide (CO_2). The carbon it contains is found everywhere on the planet, in the atmosphere, oceans and soil, from the plants and animals to the fossil fuels such as oil and coal deep in the ground.

During their development, plants store carbon which is then released into the atmosphere or remains stored in the soil when the plant dies and decomposes. The part of carbon which is trapped in the soil becomes (after thousands of years) fossil fuel. The carbon released into the atmosphere is used by the next generation of organisms, following a natural “carbon cycle” which has lasted for millions of years in the pre-human era.

Why doesn't it work anymore ?



Fossil fuels

Coal



Fuel oil



Natural Gas Plant



Humans' destructive activities

These days, by mining and burning the fossil fuels for energy, humans have added huge amounts of CO_2 into the air that simply cannot all be absorbed by the plants on the Earth.

This imbalance is worsened by deforestation, an activity which continues to be carried out by populations all over the world for the purpose of building cities and obtaining energy (by burning wood)... adding even more CO_2 into the atmosphere while, at the same time, reducing millions of acres of forests which could have otherwise absorbed it!

Think now of the relationship between the greenhouse gases and the phenomenon of global warming, and you will easily understand why the Earth is currently experiencing a dramatic climate change.

What can we do about it ?

Charcoal as a carbon sink

The IBI (International Biochar Initiative) has begun to promote the concept of putting the carbon that is stored in plants safely back into the ground. This is achieved by adding charcoal in the soil, a product with a very high carbon content (typically three times its weight!) obtained after burning plants with limited oxygen. By burying charcoal into the soil, all this carbon is retained underground instead of being released as CO_2 into the atmosphere as a greenhouse gas!

Is that the only benefit of charcoal ?



Rice hull charcoal sample

Charcoal as a fertilizer

Moreover, charcoal acts like a fertilizer in the soil, so that plants grow better and can absorb even more carbon from the atmosphere. This could explain the high fertility of *Terra Preta*, an Amazonian soil enriched with charcoal by indigenes thousands of years ago.

We would like to prove this positive aspect, so that farmers might be encouraged to use charcoal all over the world, producing more crops and restoring the planet's soils to their former health.

How can we help ?



Plants growing on *Terra Preta*

Impressive!

Look at the difference between a plant growing on normal soil and a plant growing on charcoal!



Normal soil (left) - Charcoal soil (right)

Don't believe it ? Try it yourself!

Main Steps of your Charcoalab Experiment:

1. **Order your Charcoalab kit.**
Look at the bottom of the page to see how to order your kit!
2. **Prepare your plantation.**
Carefully follow the instructions provided in the kit and set up your plantation.
3. **Look after your plants.**
It is particularly important that you don't forget to water the plants!
4. **Observe your plants.**
Do you see a difference between the plants growing in normal soil and plants growing in charcoal ?
5. **Send us your results.**
VERY IMPORTANT! Register your observations and results on the website, to contribute to the world-wide research!

Your Participation

Do you want to participate to this world-wide project ?

With the Charcoalab Project, you can easily create soil enriched with charcoal, grow your own test plants and observe the differences compared to a normal plantation!

You just need to order your Charcoal Kit and follow the instructions! On the internet, you will be able to register your results, see the progress of the Charcoalab project and share experience with other participants.

Don't wait anymore, order your Charcoalab kit today!



Starting the Charcoalab Project

Order your Charcoalab

1. Connect to the website <http://www.charcoalab.org>.
2. Visit the page *Order a Charcoalab Kit*.
3. Follow the instructions.
4. Wait for your Kit and...ENJOY!

If you have any question, send a mail to info@charcoalab.org

Our partners:



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