



HOME | NEWS | COMPENDIUM | RESOURCES | SC BLOG |
 Physics | Chemistry | Geology and palaeontology | Biology | Environment | Astronomy | Health | Technology

Scientists prove the geochemical origin of part of the CO2 emissions in semiarid climates



Science Centric | 12 April 2008 19:40 GMT

portable gas analyser

Monitor pollutant gas emissions from industrial processes
www.landinst.com

Business Opportunity - ES

Energy-saving business in Spain. Distributors of proven UK products.
www.Somars.com

CCC Carbon Fund

Invests in GHG emission reduction projects around the world
www.climatechangecapital.com

Carbon Footprint Analysis

Model Greenhouse Gas Emissions & Supply Chain Carbon Footprint
www.LLamasoft.com/Guru_GHG

The implementation of the Kyoto Protocol has raised, among other pressing matters, the need of getting to know the annual levels of carbon in different earth's ecosystems. Scientists connected with the CEAMA-Andalusian Centre for the Environment (University of Granada-Andalusian Council) are studying these levels in semiarid Mediterranean scrubland, situated in Eastern Andalusia, whose results are comparable to wide regions of the world.

These researchers have analysed for the first time the CO2 level in carbonated semiarid systems. The interest of the work lies in the knowledge of the CO2 production processes and their absorption and in the conservation of one of the richest ecosystems of Spain.

One of the most recent studied on the subject is the doctoral thesis 'CO2 interchanges between atmosphere and Karst ecosystems: Applicability of the commonly applied techniques,' read by Penelope Serrano Ortiz and led by Doctors Andrew S. Kowalski and Lucas Alados Arboledas.

The work, supported by the 'Carbon and water balance in Mediterranean thicket ecosystems in Andalusia: Effect of the climatic change' project, has permitted to quantify and identify the processes involved in carbon annual balance in a semiarid carbonated substrate ecosystem, situated in Sierra de Gador (Almeria). After three years of observation of this ecosystem (2004-2006), through the use of the most advanced techniques (attached photo), have permitted to estimate the annual carbon balance. The carbon balance of this type of ecosystem has been checked for the first time, revealing that it acts as a CO2 drain which assimilates approximately 25 g C m⁻² a year (between 10 and 20 times lower than arable land and tree ecosystems respectively).

What is the meaning of this in an area characterised by a scrubland vegetation and a dry climate? Up to now, when it came to devise measures to prevent climatic change, they used to value tree ecosystems especially; that is the origin of the emphasis made in the reforestation and forestation of neglected agricultural land. But little attention had been paid to other ecosystems, such as the thicket ecosystem object of this study, which represents more than half the forest area of Andalusia (where a great part of the biological diversity of the Mediterranean ecosystems gathers together).

In that respect, besides defining the CO2 assimilation capacity of the studied thicket area, Serrano's thesis has proved how rain distribution conditions the functional nature of the studied ecosystem and how the duration of the drought period and, therefore, the water content, determinates the duration of the CO2 geochemical emissions, through soil ventilation.

It proves that CO2 production is not only related to vegetation, but also to geochemical emissions which increase in dry seasons.

'The hypothesis formulated in this work - says Serrano - is that the emissions are a consequence of a ventilation phenomenon of the carbonated system's macro-pores, which appear to be connected with wind speed. In this line, certain studies on degasification phenomenon in caves and turbulent CO2 interchanges with the atmosphere, carried out by Sergio Sanchez Moral and Soledad Cuezva Robleno (Spanish Museum of Natural Sciences, CSIC) in the Altamira Cave, endorse the theory of the existence of CO2 geochemical flows in ecosystems situated in karst substrate.'

CO2 is one of the main greenhouse gases which contributes to the rise of earth's temperature. Serrano Ortiz's study is the first one focused on carbonated semiarid ecosystems and has proved that they act as CO2 drains, due to the action of the thickets, and as CO2 geochemical generators in dry periods (especially worrying if we reach the temperature rise predicted by climatic change models).

His work provides data of C (carbon) flows in key ecosystems for biodiversity conservation, as well as for the negotiations related to CO2 emissions.

Source: [Universidad de Granada](http://www.universidaddegranada.es)

Co2 Emissions

Determine, Mitigate and Offset Your Carbon Footprint!
www.pe-international.com

Stack Emissions

Ensure Compliance - View Product Specifications
www.Thermo.com/air

Similar

[carbon](#), [carbonated](#), [climatic](#), [ecosystem](#), [geochemical](#), [Mediterranean](#), [semiarid](#), [temperature](#), [vegetation](#)

LATEST | MOST POPULAR | ARCHIVE

Adobe starts initiative to develop CinemaDNG
 Microsoft Corporation announces new support for Silverlight by content companies
 GSI to investigate radiation risks for astronauts
 Quicker, faster, better calibration and machine calibration in the workplace from NPL
 Brazilians urged to follow Chinese wisdom on springs
 Researchers' discovery may help explain smoking-pancreatic cancer link
 Komodo dragon has space-age skull
 Brain research may lead to improved epilepsy treatments
 Second depression centre in U.S. opens
 IBM helps University of Missouri mirror real-world security threats and improve IT auditing curriculum
 Chip alliance delivers major semiconductor performance leap, power savings
 Seven months on a drifting ice floe
 Contract signed for ESA's Sentinel-3 satellite
 Physicists discover a new form of optical nonlinearity
 Sigma Designs and Microsoft collaborate on advanced IPTV system-on-a-chip
 ProTon Europe to be chaired by Dr Pat Frain

More recent stories...

Ancient sea reptile named for Calgary scientist after being unearthed at Syncrude mine
 NASA satellite detects powerful stellar explosion
 First organic molecule on extrasolar planet discovered with Hubble
 Two new planets discovered in a faraway solar system
 Earth's ecosystem has been complex for hundreds of millions of years
 Dramatic developments at Kilauea Volcano in Hawaii
 The missing link between whales and their four-footed ancestors discovered
 Strong as steel, transparent, but it is plastic
 Cassini finds an underground ocean on Titan
 Mystery behind how nuclear membrane forms during mitosis solved
 NIST building safety efforts mark fifth anniversary of RI nightclub fire
 Humans inhabited New World's doorstep for 20,000 years
 Odyssey orbiter has found evidence of salt deposits on Mars
 Fossil sea scorpion was bigger than man
 Remnant of the first European discovered in Spain
 Gulf Stream leaves its mark seven miles high

2007

— [I](#) [II](#) [III](#) [IV](#) [V](#) [VI](#) [VII](#) [VIII](#) [IX](#) [X](#) [XI](#) [XII](#)

2008

— [I](#) [II](#) [III](#)