

New approach to measuring carbon in forests

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CSIRO is collaborating in a NASA-funded project, using a CSIRO-designed instrument, to help develop new methods of measuring forest carbon stores on a large scale.

Forests are the world's main above-ground carbon store and are therefore critical in controlling the global carbon cycle. But estimating the amount of carbon stored in forests over a large scale is difficult. An American project is using the CSIRO-designed ECHIDNA instrument, together with airborne sensors, to provide a practical technique for broad-scale structural mapping of forests.

CSIRO carbon accounting expert, Dr Phil Polglase, says the project is important to international research efforts to provide improved estimates of carbon stored in forests.

“Australia, along with other countries, reports on its greenhouse gas emissions from the land-use sector and this research offers a new method to improve our carbon estimates across large scales,” Dr Polglase says.

The ECHIDNA is a patented ground-based light detection and ranging (LiDAR) instrument which CSIRO began developing in 2001. CSIRO later worked closely with Forest and Wood Products Australia during development and validation. The ECHIDNA has been used extensively to assess the three-dimensional structure of tree trunks, branches and leaves. These forest structural variables can be used to help estimate forest biomass.

The NASA project is extending this work by integrating the ECHIDNA with other LiDAR technologies, says CSIRO Remote Sensing scientist, Dr Glenn Newnham.

“We’re meeting the challenge of providing reliable biomass estimates over large areas by combining the detail from the ECHIDNA® on the ground with the broad-scale airborne LiDAR data,” Dr Newnham says.

“We’re expecting that this method will lead to more accurate and efficient mapping and monitoring of forest biomass and, as a result, a better understanding of the influence of forest carbon stores on the global carbon cycle.”

Source: CSIRO Australia

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