

Published: 4 May 2011

Adaptation: call for national concrete database

Understanding how climate change could affect the deterioration of the basic building block of much of Australia's infrastructure – concrete – is crucial to ensuring major assets such as roads, ports and buildings continue to perform up to expectations, according to a CSIRO report.



Credit: Xiaoming Wang, CSIRO

'To better understand how climate change might influence infrastructure maintenance and construction, we need to establish an accurate national database on the rate [of], and factors involved in, the deterioration of concrete infrastructure,' says the report's lead

author, CSIRO Climate Adaptation Flagship's Dr Xiaoming Wang.

'Failure to consider the effects of climate change may compromise the safety of concrete structures, but overcompensating in our efforts to adapt for climate change may unnecessarily increase costs.'

One of the major threats to concrete's longevity is carbonation, which occurs when atmospheric carbon dioxide penetrates concrete structures, exposing steel reinforcements to corrosion.

Another serious threat to concrete durability is corrosion caused by chloride penetration, which causes cracking, delamination and spalling (surface chipping), especially in marine and coastal areas.

'Currently the primary assumption in construction design is that environmental conditions will be similar to those of the past,' says Dr Wang.

'[But] increased atmospheric carbon dioxide, in addition to a changing climate – including 'chronic' factors such as temperatures and humidity, and 'acute' factors such as extreme weather events – will alter environmental exposure of most concrete infrastructure over its relatively long lifetime.'

From **ECOS** online <http://www.ecosmagazine.com/?paper=EC10089>