Geophysical Research Abstracts
Vol. 17, EGU2015-4342-1, 2015
EGU General Assembly 2015


# Impacts of Coal Seam Gas (Coal Bed Methane) Extraction on Water Resources in Australia

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While extraction of methane from shale gas deposits has been the principal source of the recent expansion of the industry in the United States and Europe, in Australia extraction of methane from coal bed methane deposits (termed 'coal seam gas' in Australia) has been the focus to date. The two sources of methane share many of the same characteristics including the potential requirement for hydraulic fracturing. However as coal seam gas deposits generally occur at shallower depths than shale gas the potential impacts of extraction and hydraulic fracturing on surface and groundwater resources may be of even greater concern for coal seam gas than for shale gas.

In Australia an Independent Expert Scientific Committee (IESC) has been established to provide scientific advice to federal and state government regulators on the impact that coal seam gas and large coal mining developments may have on water resources. This advice is provided to enable decisions to be informed by the best available science about the potential water-related impacts associated with these developments. To support this advice the Australian Government Department of the Environment has implemented a three-year programme of research termed 'bioregional assessments' to investigate these potential impacts. A bioregional assessment is defined as a scientific analysis of the ecology, hydrology, geology and hydrogeology of a bioregion with explicit assessment of the potential direct, indirect and cumulative impacts of coal seam gas and large coal mining development on water resources. These bioregional assessments are currently being carried out across large portions of eastern Australia underlain by coal reserves. Further details of the program and results to date can be found at http://www.bioregionalassessments.gov.au.

In this presentation the methodology for undertaking bioregional assessments will be described and the application of this methodology to six priority bioregions in eastern Australia will be detailed. Results of the programme to date will be provided (being nearly two years into the three-year study) with a focus on the preliminary results of numerical groundwater modelling. Once completed this modelling will be used to evaluate the impacts of the depressurisation of coal seams on aquifers and associated ecological, economic and socio-cultural water-dependent assets.