



Climate and Environmental Security





DEFENCE RESEARCH CAPABILITY CATEGORY: **CLIMATE AND ENVIRONMENTAL SECURITY**

UWA Competitive Advantage

- Multidisciplinary teams to address not only technical and biological aspects of the environment, but also economic, social, behavioural, policy and decision-making aspects.
- Expertise across the key environmental issues, including climate change, renewable energy, soil degradation, land restoration, water, vegetation, pollution and natural hazards.
- Research into the Economics of natural hazard events including how to measure the intangible social and environmental outcomes and their mitigation options, and integrate these in decision support platforms that weigh up the financial, social and environmental benefits and costs of mitigation decisions.
- Research into coastal ocean influence on climatic, biological and geological processes, Aquatic Ecology and Ecosystem Studies. With a focus on the study of water resources (water and wastewater), ecological engineering and environmental engineering, with an emphasis on the development of innovative technologies.
- Integrated Coastal Analyses and Sensor Technology (ICoAST) is developing technologies and workflows, collecting and analysing data from drones and autonomous vessels of nearshore variables including bathymetry, waves and currents. These data are key for understanding coastal ocean processes, marine habitat dynamics, and have a range of defence applications.
- Research on the occurrence, roles and food-security implications of dangerous fungal, bacterial and viral threats in food crops, livestock pastures and plant produce in Australia to ensure the security of associated livestock and food chains.
- Research on nutrient uptake and ion toxicity in the soil-plant-water-microbe continuum, including work on major nutrients, micronutrients and toxic ions, aluminium, arsenic, zinc and sodium.

Research and expertise on environmental issues and climate change that will facilitate the planning and effective implementation of the Defence response to climate related threats. This includes research on climate change, renewable energy, water, pollution and natural hazards.

UWA has world-recognised researchers active in climate and environmental research from a variety of discipline areas, including physical sciences, biological sciences, engineering, medicine, and social sciences.



Outcomes and Impact

- Identification and elimination of threats from the evolution of dangerous new races of fungal and bacterial toxin profiles resulting from increasingly changing climates and farming systems.

Capabilities and facilities

- UWA's Oceans Institute, the Institute of Agriculture, the Centre for Environmental Economics and Policy, and the Centre for Energy.
- Strong operational and scientific links with the multidisciplinary Cooperative Research Centre for Water Sensitive Cities (CRCWSC) established in 2012.