

IP4.02: Improved air quality, forecasting and assessment (led by UTas & CSIRO)

Research in IP4 explores how air quality in Australia, while generally good, continues to cause significant health impacts from bushfire smoke, planned burns, wood-heaters, and local industrial pollution.

During 2021, researchers in IP4 worked with stakeholders and partners to co-design a series of impactful research projects under the 'improved air quality, forecasting and assessment' research theme for our SCaW Hub. These stakeholders and partners included the Department and other research-users such as state environment departments, local government, NGOs, Indigenous groups and other NESP hubs. This engagement included virtual meetings, a survey (completed by 80 participants), an interactive workshop involving 45 participants, and presentations to national bodies including the Healthy Environment and Lives Network, the Australia New Zealand Aerosol Symposium and the Climate Adaptation cross-cutting program of the Climate Systems NESP Hub.

The projects proposed here by IP4 for Research Plan No 2 (RP2) have arisen from the extensive stakeholder consultation undertaken by the IP4 team as part of Research Plan No 1 (RP1). These projects will address four key questions that arose from the co-design survey, workshop and conversations that occurred during RP1, and include:

- 1) How will a changing climate and emissions reduction measures impact sources of air pollution and secondary pollutant formation?
- 2) How can we reduce exposure to woodheater smoke?
- 3) How can we ensure that sensor networks produce useful information?
- 4) How effective are the interventions currently being rolled out aimed at reducing exposure to poor air quality?

The low participation of Indigenous researchers in the RP1 process of IP4 also led us to propose the question, how can we increase engagement of Indigenous researchers and stakeholders in air quality discussions and research?

To address these issues, IP4 proposes four multiyear projects.

The ultimate outcome of this research over the course of the NESP program will be the reduction of exposure of Australian communities to poor air quality. This outcome contributes to Goals 3 and 11 of the UN Sustainable Development Goals by reducing mean annual levels of particulate matter in cities and reducing mortality rates attributed to household and ambient air pollution.

This research will result in greater participation in air quality research and uptake of research outcomes by Indigenous researchers and stakeholders, with the production of a roadmap forward to continue the conversation to build relationships between the IP4 team and Indigenous researchers and communities. The research will provide the tools and knowledge that will empower all scales of government to undertake a co-ordinated approach to interventions that will reduce exposure to air pollution and save lives. Outputs in RP2 that will contribute to this outcome are the improved guidance on the use of HEPA filters for air quality in public spaces, guidelines on the selection and use of low-cost sensor networks for the management of local air quality problems and a roadmap for interventions to reduce exposure to woodheater smoke. Finally, the research in this project will enable government to plan for the impacts of a warming climate on future air quality and to maximise the co-benefits of reducing emissions and improving air quality.

IP04.02.01 – IP04.02.04 Projects

Project	Milestones - Outputs	Timeline (from Jul 2022)	Due date	Responsible person
IP4.02	Contract signing		01-Jul-22	Melita Keywood
	RP3 proposal		23-Aug-22	Melita Keywood
	Contribution to RP2 Annual Summary Report including progress on the outputs listed in the Pathway to Impact Table		01-Apr-23	Melita Keywood
	IP4.02.01 Lets talk about smoke A roadmap forward for further conversations and if appropriate, the development of project ideas to carry out in further years of this project.		15-May-23	Erin Dunne
	IP4.02.02 – How will a changing climate and emissions reduction measures impact sources of air pollution and secondary pollutant formation? A short report outlining the design of several future modelling studies that will provide a lens on how altered we can expect air quality to be under future emission scenarios in Australia		15-May-23	Kathryn Emmerson
	IP4.02.03 Woodheaters: developing and testing novel solutions to a persistent problem Roadmap of novel interventions / actions for implementation in years 2 and 3 (RP3 and RP4)		15-May-23	Fay Johnston
	IP4.02.04 Intervention options and low-cost sensor networks to improve awareness, and reduce exposure to, air pollution Short report on progress towards development of guidance on the use of HEPA filters to improve air quality in public spaces and the selection and use of low-cost sensor networks for the management of local air quality problems.		15-May-23	Donna Green