The NATO Science for Peace and Security Programme

CountryFlyer 2022

August

Developing Practical Cooperation through Science

The NATO Science for Peace and Security (SPS) Programme is open to scientists and experts from Australia.

The NATO SPS Programme enables close collaboration on issues of common interest to enhance the security of NATO and partner nations by facilitating international efforts to meet emerging security challenges, supporting NATO-led operations and missions, and advancing early warning and forecasting for the prevention of disasters and crises.

The current SPS Key Priorities include:

- *Counter-Terrorism;*
- *Energy Security;*
- *Cyber Defence;*
- *Defence against CBRN Agents;*
- *Environmental Security;*
- *Security-related Advanced Technology;*
- *Border and Port Security;*
- *Human and Social Aspects of Security*.

Additionally, the SPS Programme helps to promote *regional security* through scientific cooperation among partners. The Programme also helps to *prepare* interested eligible nations for NATO membership. SPS activities often have a high *public diplomacy* value.

AUSTRALIA

Building on dialogue and cooperation that has been progressing since 2005, NATO and Australia signaled their commitment to strengthen cooperation in a joint political declaration in June 2012. This was reaffirmed through the signature of an individual Partnership and Cooperation Programme (IPCP) between NATO and Australia. In recent years, Australia has become increasingly involved in the SPS Programme with activities focused on the Key Priorities of **Security-related Advanced Technology, Counter-Terrorism, and Energy Security.** There are currently three ongoing activities with Australia under the framework of the SPS Programme.

Cooperative Activities

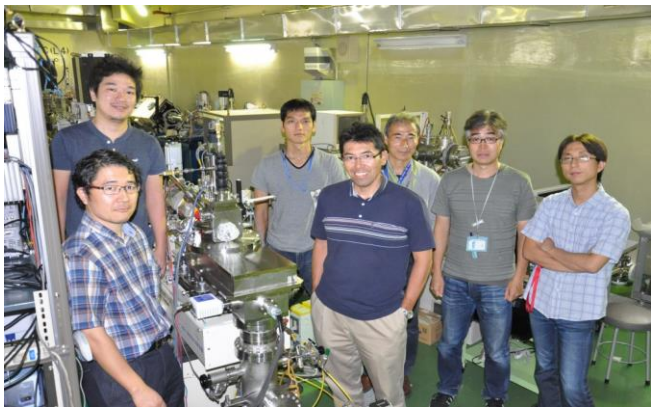
HIGH ALTITUDE BALLOON –BORNE RADAR

This MYP, launched in 2017, developed and delivered a prototype of a Synthetic Aperture Radar system carried by a High Altitude Platform and Balloon. The new technology built a miniaturized radar system mounted on a novel platform employing high-altitude balloons. The system is low-cost and easily deployable without compromising the performance of the system to provide wide surveillance coverage from a safe distance. *This project was completed in November 2021 and was led by scientists from Australia and Italy.* [ref. G5322].

HARMONIZED ENERGY MONITORING AND CAMP SIMULATION TOOLS FOR ENERGY EFFICIENCY

Launched in 2018, this MYP aimed to reduce fossil fuel consumption in deployable camps. To reach this goal, the project developed and deployed universal energy monitoring kits and a camp simulation model that will allow the assessment and forecasting of the energy balance of camps in an interoperable way. It will allow nations to make informed decisions to optimise camp equipment and procedures for efficient power production and consumption, as well as for energy storage and management. To measure and collect energy data of various camps in a harmonised way, five standard energy monitoring kits have been assembled. The standardization of measurements and harmonisation of data are important tasks to ensure that the energy monitoring as well as the data collection will be interoperable among systems and nations. This is especially important for the planning and implementation of multinational deployed camps, such as those in NATO-led exercises and operations. *This project was completed in 2022 and led by experts and scientists from Australia, Canada, Germany, the Netherlands and USA.* [ref. G5525].

ENGINEERING SILICON CARBIDE FOR ENHANCED BORDER AND PORT SECURITY (E-SiCure)



Developing swift and effective methods to detect the illicit trafficking of nuclear materials has become an issue of increasing importance for national and regional security. The completed E-SICURE MYP developed and tested a prototype of a state-of-the-art silicon carbide (SiC)-based radiation detector. Due to the global shortage of helium-3 isotopes, SiC was singled out as the most promising semiconductor material for the new-generation detector. It gives the detector enhanced capabilities in responding to thermal and fast neutrons. This MYP was completed in 2019, and a follow up project building on its achievements was launched in 2020. *This project was led by scientists from Australia, Croatia, Japan, Portugal, and Slovenia.* [ref. G5215].

GASES AND ANALYTES WITH TERAHERTZ SENSORS (GATES)

This project aims to develop a solution for rapid detection of a broad range of gaseous and biological species in low concentrations for security applications, environmental monitoring and drug discovery. This project is developing and fabricating a compact, micro-structured polymer optical fibres enhanced, metamaterial terahertz gas sensor (broadband and portable). To this end, it will develop a tailored micro-structured polymer optical fibres' enhanced metamaterial and demonstrate its high-sensitivity cryogenic detection. The novelty of this fibre-based approach over existing technology lies in the flexibility, compactness, and reduced complexity in a device that can be immediately integrated with existing systems. Rapid and sensitive terahertz frequency gas and molecule detectors (typically operating in the range of 0.1-10THz) are, in fact, at the forefront of current research efforts, as they would ideally allow an unambiguous identification of chemicals and compounds at extremely low concentration levels. *This project, launched in December 2020, is led by scientists from Australia and Slovakia*. [ref. G5795]