

NATO Science for Peace and Security (SPS) Programme

Update of Cooperative Activities with ISRAEL

Update: April 2008

Introduction

ISRAEL has been involved in the NATO Science for Peace and Security (SPS) Programme since 1996. 194 Israeli scientists had a leading role with responsibility for a team of experts in SPS funded activities.

In 2006, ISRAEL agreed with NATO nations on an Individual Cooperation Programme. In chapter 2, item 23, it is mentioned that cooperative studies for preventing conflicts related to scarcity of resources will be conducted. In addition projects related to emerging risks to the environment and society will be initiated.

Awards in 2007

A list of activities awarded in 2007, in which Israeli scientists have a leading role, is attached as ANNEX 1. Peer-reviewed by the SPS Advisory Panels and subsequently approved by NATO nations and finally by the chairman of the SPS Committee, ASG-PDD, these activities will be launched within two years following the award.

Upcoming events

Technical Workshops and Training Courses are included in the Calendar available at www.nato.int/science.

Ongoing SFP Projects

Unlike the above mentioned events, SFP projects have a longer duration, normally 3-5 years. These projects are aiming at problem solving and capacity building. While NATO SPS covers direct costs, such as equipment, consumables, travel and training, the nations involved cover the overhead costs, such as salaries, running costs and maintenance and tax. For many projects, nations also contribute additional funds. Mediterranean Dialogue countries are expected to support the implementation of project results.

A list of ongoing projects, in which Israeli scientists have a leading role, is attached in ANNEX 2.

Examples of Activities

Detection of Peroxide-Based Explosives

(ref. SFP-980873)

In the first project in this area, researchers from Israel and the United States have cooperated to develop a rapid detection system for peroxide-based explosives. The project aims at detecting the explosive triacetone triperoxide (TATP), which is being

used increasingly in home-made explosive devices. TATP and other peroxide-based explosives can act as effective initiators of explosions, precluding the need for commercial detonators. This study seeks to develop not only sensitive field methods but also remote detection methods. The development of remote, rapid detection schemes requires the complete chemical and physical characterization of the family of peroxide explosives.

Online Contamination Monitoring of Drinking Water Supply Systems

(ref. SFP-981456)

A joint effort has been undertaken by scientists from Israel and the United States to develop a strategy to monitor water distribution systems, with particular attention to developing a new technology for the identification of bacteria in drinking water. During the coming months, a "reference database" will be constructed and an allele-specific probe for bacterial identification will be selected. Since the beginning of the project the investigators have worked closely with municipality of Tel-Aviv which has been identified as a major end-user.

Behaviour Learning in Surveilled Areas with Feature Extraction

(ref. SFP-982480)

Since March 2007, investigators from Israel and Italy have been working on ways to automatically identify abnormal behavioural traits in people in areas under surveillance. The project has involved the development of computer vision algorithms to analyze human body form and gait. Machine learning techniques to detect abnormal behaviour patterns are also being developed. Since the start of the project a new approach for modelling human gait has been developed along with a tool for detecting and tracking certain features. Ways of analyzing a person's trajectories have been developed in order to infer behaviours.

High-Recovery Desalination Process for Brackish Groundwater

(ref. SFP-982481)

Beginning in July 2007, investigators from Israel, Jordan and the United States have worked on a project to demonstrate a desalination process for brackish groundwater. The major innovation in this work is the method proposed to prevent scaling, i.e., the precipitation of sparingly soluble salts on the surface of the polymeric membrane. The participants will build demonstration desalination pilot plants in Jordan and Israel that should extract 90-95% of brackish groundwater and generate ~50 m³/day of product water. By exploiting brackish ground water to such a high degree and reducing brine volumes, these demonstration plants will relieve pressure on existing water sources.

Natural and Anthropogenic Aerosol Pollution in the Gulf of Aqaba

(ref. SFP-982161)

Scientists from Israel, Jordan and the United States, are co-operating in a project to assess the impacts of aerosol pollution on the ecosystems of the Gulf of Aqaba. They have estimated the input of nutrients, trace metals and other pollutants into the atmosphere, in order to determine the impact they have on marine ecosystems. This effort has involved the integration of field, laboratory, modelling and remote sensing data. Work has begun on a conceptual ecosystem model, which will constitute the final product for the end-users, including the Environment Ministries of both Israel and Jordan.

Nationally Funded Activities

In addition to NATO-funded activities, the SPS Programme facilitates the development of Nationally Funded Activities, formerly called “CCMS Studies”. More information is available at www.nato.int/science. In 2007, Israeli experts participated in the following Nationally Funded Activities (dates of recent meetings given in brackets):

- “Clean Products and Process (Phase II)”
Azerbaijan, Croatia, Egypt, Georgia, Israel, Moldova, Russian Federation, Ukraine
(5-10 May 2007 in Porto, Portugal)

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Awards made in 2007 to Scientists from ISRAEL

Annex 1
Country Report, April 2008

Ref. No	Panel	Prog	Activity	Title	Co-Directors	Institute	Town	Country
983267	TOPDOWN	IO	ARW	Water Scarcity, Land Degradation and Desertification in the Mediterranean Region - Environment and Security Linkages	Safriel, Uriel	Hebrew University of Jerusalem	Jerusalem	Israel
					Rubio, Jose L.	Universitat de Valencia	Valencia	Spain
982723	ICS	MD	ARW	Autonomy and Security in Communication Networks	Orda, Ariel	Technion	Haifa	Israel
					Tassiulas, Leandros	University of Thessaly	Volos	Greece
982958	HSD	MD	ARW	Human Rights versus Public Security in NATO and Mediterranean Dialogue countries : Coping with Radicalism and Terror Activities among Inmates	Adato, Orit	Inter Disciplinary Center (IDC), Herzelia ICT	Shoham	Israel
					Cameron, Tony	Scottish Prison Service	Edinburgh	United Kingdom
					Wozniak, Ed	International Corrections and Prisons Association	Edinburgh	United Kingdom
982974	CBP	MD	ARW	8th Seminar "Porous Glasses-Special Glasses": Porous Glass Technology for Detection of Chemical Agents	Roizin, Yakov	Tower Semiconductor Ltd.	Migdal Haemek	Israel
					Rysiakiewicz-Pasek, Ewa	Wroclaw University of Technology	Warsaw	Poland
982979	ESP	MD	ARW	Enhancing Security in the Middle East through Regional Cooperation on Renewable Energy	Mor, Amit	Eco Energy Ltd.	Herzliya Pituach	Israel
					Mason, Michael	Centre for Environmental Policy and Governance	London	United Kingdom
983066	HSD	MD	ARW	Security and Governance in the Fight against Terrorism	Press-Barnathan, Galia	Hebrew University of Jerusalem	Jerusalem	Israel
					Masala, Carlo	Universität der Bundeswehr Munchen	Neubiberg	Germany
983091	HSD	MD	ARW	Old Threat, New Channels - The Internet as a Tool for Terrorists	Sharan, Yair	Tel-Aviv University	Tel-Aviv	Israel
					Dienel, Liudger	Nexus Institute for Cooperation Management	Berlin	Germany
983137	HSD	MD	ARW	Conflict Resolution and Community Development : Toward a Methodological Integration	Zalzburg, Ofer	Young Israeli Forum for Cooperation	Jerusalem	Israel
					Birk, Michaela	TRANSFORM	Berlin	Germany
983230	HSD	MD	ARW	Medical Response to Terror Threats	Shapira, Shmuel C.	Hadassah University Hospital	Jerusalem	Israel
					Richman, Aaron	The Institute of Terrorism Research and Response	Philadelphia, PA	United States
982725	ICS	MD	ASI	Mining Massive Data Sets for Security	Tishby, Naftali	The Hebrew University - Givat-Ram	Jerusalem	Israel
					Best, Clive	Joint Research Centre	Ispra	Italy

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982981	ICS	MD	ASI	Engineering Methods and Tools for Software Safety and Security	Harel, David	Faculty of Mathematics and Computer Science	Rehovot	Israel
					Broy, Manfred	Technische Universitat Munchen	Garching	Germany
983028	CBP	MD	ASI	Integrating Crystallography in the Fight Against Bioterrorism	Sussman, Joel L	Weizmann Institute of Science	Rehovot	Israel
					Spadon, Paola	University of Padova	Padova	Italy
983172	CBP	MD	ATC	New Techniques for the Detection of Nuclear and Radioactive Agents	Alfassi, Zeev B.	Ben Gurion University of the Negev	Beer Sheva	Israel
					Aycik, Gul Asiye	Mugla University	Mugla	Turkey
982862	ESP	MD	CLG	Evaluation of the Seawater Solubility of Fe in the Eastern Mediterranean Aerosol	Herut, Barak	National Institute of Oceanography	Haifa	Israel
					Nimmo, Malcolm	University of Plymouth		United Kingdom
					Kubilay, Nilgun	Middle East Technical University	Erdemli	Turkey
983009	CBP	MD	CLG	Design of Chemical Sensors and Detoxifying Drugs for Protection against Nerve Agents	Ben-Tal, Nir	Tel Aviv University	Tel Aviv	Israel
					Haliloglu, Turkan	Bogazici University	Istanbul	Turkey
983032	ESP	MD	CLG	Analysis of Contaminant Transport through Heterogeneous Combined Subsurface-Groundwater Flow Systems	Russo, David	The Volcani Center	Bet Dagan	Israel
					Fiori, Aldo	Universita di Roma Tre	Rome	Italy
983049	ICS	MD	CLG	Grid Vulnerability Assessment Center (GrIVAC)	Tel-Zur, Guy	Ben Gurion University of the Negev	Beer-Sheva	Israel
					Heymann, Elisa	Autonomous University of Barcelona (UAB)	Cerdanyola del Valles	Spain
					Miller, Barton	Univ. of Wisconsin-Madison	Madison, Wisconsin	United States
983122	CBP	MD	CLG	New Devices for Ultra-violet Detection	Dashevsky, Zinovi	Ben Gurion University of the Negev	Beer-Sheva	Israel
					Chernyak, Leonid	University of Central Florida	Orlando, FL	United States
					Aleksiejunas, Ramunas	Institute of Materials Science & Applied Research	Vilnius	Lithuania
983180	ESP	MD	CLG	Methodologies for Locating Disaster Response Facilities for Effective Distribution of Emergency Supplies	Hassin, Refael	Tel Aviv University	Tal Aviv	Israel
					Salman, Fatma Sibel	Koc University	Istanbul	Turkey
					Ravi, Ramamoorthy	Carnegie Mellon University	Pittsburgh, PA	United States

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983150	CBP	MD	SFP	Detection of Explosives in Cargo by Neutron Resonance Radiography	Vartsky, David	Soreq NRC	Yavne	Israel
					Dangendorf, Volker	Physikalisch-Technische Bundesanstalt (PTB)	Braunschweig	Germany
982481	ESP	MD	SFPP	Demonstration of a Novel High Recovery Desalination Process for Brackish Groundwater	Gilron, Jack	Ben Gurion University	Beer Sheva	Israel
					Greenberg, Alan R.	University of Colorado	Boulder	United States
					Bani-Hani, Aiman	Water Authority of Jordan	Amman	Jordan
LEGEND								
Panel	CBP	Chemistry/Biology/Physics						
	ESP	Environmental Security						
	HSD	Human and Societal Dynamics						
	ICS	Information and Communications Security						
	TOPDOWN	NATO-Initiated Activity						
Prog	IO	Initiated by an International Organization						
	MD	Mediterranean Dialogue						
Activity	ARW	Advanced Research Workshop						
	ASI	Advanced Study Institute						
	ATC	Advanced Training Course						
	CLG	Collaborative Linkage Grant						
	SFP	Science for Peace Planning Grant						
	SFPP	Science for Peace Project						

ISRAEL Ongoing SFP Projects					
Ref. No	Title	Co-Directors	Institute	Town	Country
980873	Rational Detection of Peroxide-Based Explosives According to their Chemical and Physical Properties	Kosloff, Ronnie	The Fritz-Haber Inst. for Molecular Dynamics	Jerusalem	Israel
		Oxley, Jimmie	University of Rhode Island	Kingston	United States
		Almog, Joseph	Casali Institute of Applied Chemistry	Jerusalem	Israel
		Arusi-Parpar, Talya	Soreq NRC	Yavne	Israel
		Keinan, Ehud	Technion-Israel Institute of Technology	Haifa	Israel
		Tamiri, Tsippy	Israel Police Headquarters	Jerusalem	Israel
		Zeiri, Yehuda	Ben-Gurion University of the Negev	Beer-Sheva	Israel
981023	Microarray-Based Detection of PlantViral and Viral-Like Pathogens	Czosnek, Henryk	Inst. of Plant Sciences & Genetics in Agriculture	Rehovot	Israel
		Barba, Marina	Plant Pathology Research Institute	Rome	Italy
		Anfoka, Ghandi	Al-Balqa' Applied University	Al-Salt	Jordan
		Caglayan, Kadriye	Mustafa Kemal University	Antakya	Turkey
		Hadidi, Ahmed	U.S. Department of Agriculture	Olney	United States
		Mazyad, Hamed	Agricultural Research Center	Giza	Egypt
981128	New Geophysical Approach to Prediction of Sinkhole Hazards related to the Drop of the Dead Sea Level and Human Activity	Ezersky, Michael	Geophysical Institute of Israel	Lod	Israel
		Camerlynck, Christian	Universite Pierre et Marie Curie	Paris	France
		Al-Zoubi, Abdallah	Al-Balqa Applied University	Salt	Jordan
		Alem, Zafer	Jordan Valley Authority	Amman	Jordan
		Bruner, Ilan	Ecolog Engineering Ltd.	Rehovot	Israel
		Legtchenko, Anatoly	Institute de Recherche pour le Developpement	Bondy	France
981456	Drinking Water Supply Systems Security Using Online Contamination Monitoring	Ostfeld, Avi	Technion - Israel Institute of Technology	Haifa	Israel
		Lansley, Kevin	University of Arizona	Tucson	United States
		Kashi, Yechezkel	Technion - Israel Institute of Technology	Haifa	Israel
		Schechter, Israel	Technion - Israel Institute of Technology	Haifa	Israel
		Walt, D.R.	Tufts University	Medford	United States
981786	Development of a Novel Sensing Technique Based on Nanomechanics for Rapid Detection of Bioagents	Nemirovsky, Yael	Technion-Israel Institute of Technology	Haifa	Israel
		Raiteri, Roberto	University of Genova	Genova	Italy
		Skladal, Petr	Masaryk University	Brno	Czech Republic
		Willner, Itamar	The Hebrew University of Jerusalem	Jerusalem	Israel
		Zaitsev, Vladimir	Kiev Taras Shevchenko University	Kyiv	Ukraine
981812	Heterosubtypic Totally Human Monoclonal Antibodies for Passive Immunization and Therapy during an Influenza Pandemic	Lobel, Leslie	Ben Gurion University of the Negev	Beer Sheva	Israel
		Roberts, Norbert J.	The University of Texas Medical Branch	Galveston	United States
		Balicer, Ran	Ben Gurion University of the Negev	Beer Sheva	Israel

ISRAEL Ongoing SFP Projects					
Ref. No	Title	Co-Directors	Institute	Town	Country
		Grotto, Itamar	Ben Gurion University of the Negev	Beer Sheva	Israel
		Trakht, Ilya	Columbia University	New York	United States
981883	The Protection of the Gulf of Aqaba from Anthropogenic and Natural Stress in the Face of Global Climate Change	Iluz, David	Bar-Ilan University	Ramat-Gan	Israel
		Ediger, Dilek	TUBITAK, Marmara Research Centre	Gebze-Kocaeli	Turkey
		Al-Najjar, Tariq H.	University of Jordan	Aqaba	Jordan
		Bat, Levent	University of Ondokuz Mayis	Sinop	Turkey
981939	Novel Approach to Improvement of Ultra-Violet Detectors for Homeland Defence	Cahen, David	The Weizmann Institute of Science	Rehovot	Israel
		Chernyak, Leonid	University of Central Florida	Orlando, FL	United States
		Aleksiejunas, Ramunas	Institute of Materials Science & Applied Research	Vilnius	Lithuania
		Gartsman, Konstantin	Weizmann Institute of Science	Rehovot	Israel
981964	Organic Optical and Electronic Sensors: Sniffing Out Chemicals	Van der Boom, Milko	Weizmann Institute of Science	Rehovot	Israel
		Fragala, Ignazio L.	Universita Di Catania	Catania	Italy
		Gulino, Antonino G.	Universita di Catania	Catania	Italy
982161	Monitoring Natural and Anthropogenic Aerosol Pollution and its Impact on Ecosystems in the Gulf of Aqaba	Karnieli, Arnon	Ben Gurion University of the Negev		Israel
		Paytan, Adina	University of California Santa Cruz	Santa Cruz	United States
		Al-Najjar, Tariq H.	University of Jordan	Aqaba	Jordan
		Post, Anton	Interuniversity Institute for Marine Science	Eilat	Israel
982220	Real Time Surface Current Measurements to Protect the Gulf of Aqaba (Eilat) against Man-Induced or Accidental Oil and other Toxic Spills	Genin, Amatzia	The Hebrew University of Jerusalem	Eilat	Israel
		Monismith, Stephen	Stanford University	Stanford	United States
		Gildor, Hezi	Weizmann Institute of Science	Rehovot	Israel
		Manasrah, Riyad	Marine Science Station	Aqaba	Jordan

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982376	Electromagnetic Signature of Edge-Structures for Unexploded Ordnance Detection	Heyman, Ehud	Tel Aviv University	Tel Aviv	Israel
		Graglia, Roberto D.	Politecnico di Torino	Torino	Italy
		Babich, Vasilii M.	Steklov's Mathematical Institute, RAS	St. Petersburg	Russia
		Uslenghi, Piergiorgio L.E.	University of Illinois	Chicago	United States
982381	Societal Security and Environmental Impacts Concerning Mariculture in the Red Sea.	Badran, Mohammad	University of Jordan & Yarmouk University	Aqaba	Jordan
		Krost, Peter	Coastal Research and Management , CRM	Kiel	Germany
		Angel, Dror	Recanati Institute for Maritime Studies	Haifa	Israel
982480	BE SAFE (Behaviour Learning in Surveilled Areas with Feature Extraction)	Tishby, Naftali	The Hebrew University - Givat-Ram	Jerusalem	Israel
		Cucchiara, Rita	University of Modena and Reggio Emilia	Modena	Italy
982481	Demonstration of a Novel High Recovery Desalination Process for Brackish Groundwater	Gilron, Jack	Ben Gurion University	Beer Sheva	Israel
		Greenberg, Alan R.	University of Colorado	Boulder	United States
		Bani-Hani, Aiman	Water Authority of Jordan	Amman	Jordan