INCO-CT-2005- 016663

BEOBAL

BEO Centre of Excellence Research Capacity Improvement for Sustainable Environment and Advanced Integration into ERA

SSA

PRIORITY 6: Global Change and Ecosystems

Periodic Activity Report

Period covered: from 01.04.2005 to 31.03.2006

Date of preparation: 10.05.2006

Start date of project: 01.04.2005

Duration: 30 months

Coordinator:
Prof. D.Sc. Jordan Stamenov

Co-coordinator and project manager:
Assist. Prof. Dr. Boyko Vachev

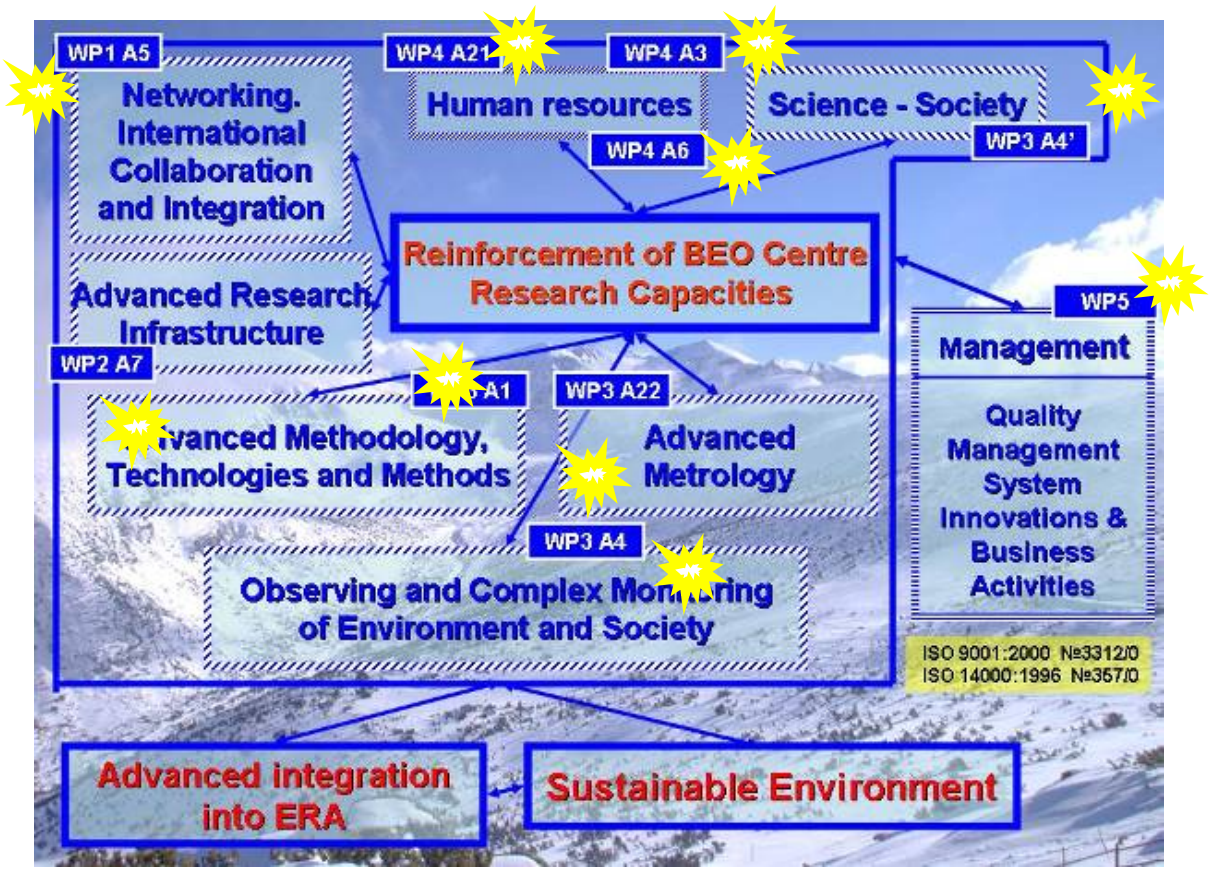
Project coordinator organisation name
Institute for Nuclear Research and Nuclear Energy,
Bulgarian Academy of Sciences

Revision 1

"BEO Centre of Excellence Research Capacity Improvement for Sustainable Environment and Advanced Integration into ERA"

INRNE 6th Framework Programme of EU project (*INCO-CT-2005-016663*)

BEOBAL Executive summary



The main purpose of these projects is in next years BEO Moussala to be developed as/for:

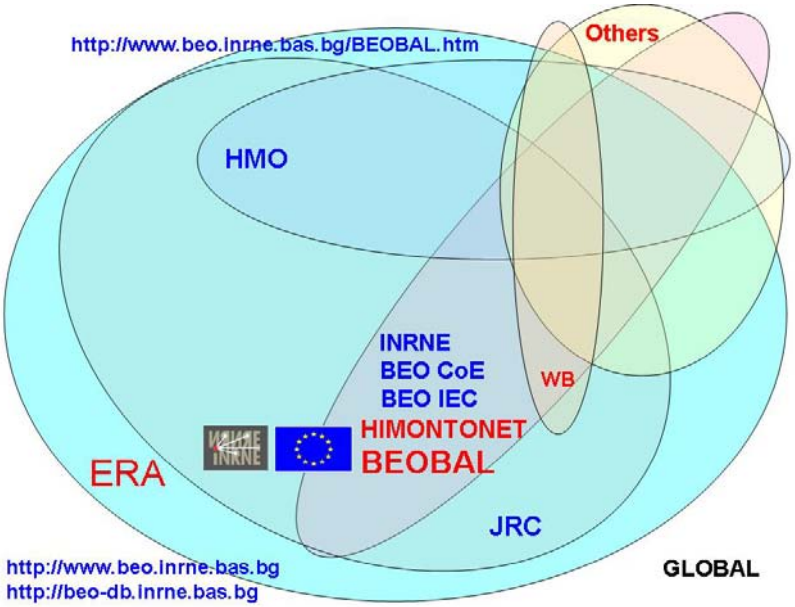
- an observatory attracting the scientists from abroad and to be included as "research infrastructure for transnational access"
- the regional station of GAW (Global Atmosphere Watch) programme of Wold Meteorological Organization
- implementation and development of advanced methodology, technology, methods and advanced metrology
- enhancement of observing and complex monitoring of global change and ecosystems
- diversification, broadening and enhancement of international collaboration and cooperation
- advanced Human Resources long-term management and stimulate of youth in science
- active science communication by advanced Science – Society interaction policy
- application and development of advanced management system
- reinforcement of S&T equipment and systems of BEO CoE directed to enhancement of the research infrastructure of European importance

The basic fields of current and future work and studies at BEO Moussala and in BEO Centre of Excellence are:

- **Global change**
- **Aero - Space weather**
- **Sustainable development**
- **Measurement devices and systems development and enhancement.**

WP1: ***Networking.*** *Diversification, broadening and* ***enhancement of international collaboration*** *and cooperation.* **Operational goal A1** (Networking, International Collaboration & Integration and Reinforced Research Infrastructure)

Objectives ***Networking. Diversification, broadening and enhancement of international collaboration and cooperation*** towards to reach real European integration.
The special attention is paid and a substantial part of work is directed to the joint activities with Balkan institutions, deepening of international collaboration, networking and integration in the space of ERA with European centers of excellence - JRC institutes (**ITU**, Karlsruhe, Germany, **IES**, Ispra, Italy, **IRMM**, Geel, Belgium), European High Mountain observatories (**HMO**), large international institutions of European and global importance like **CERN** and other leading European institutes, traditional and new INRNE partners (**INP**, Prague, Czech Republic, **INFN**, Torino, Italy, **INS**, Izmir, Turkey).



Study visits: 7
2 in Western Balkan counties institutes - INP, Tirana, Albania; VINS, Vinca, Serbia; CETR, Podgirica, Montenegro; IF, Skopje, FYRO Macedonia; **1** in INP, Prague, Czech Republic; **1** in INS, Izmir, Turkey and **3** in Bern university, PSI and HAFS Jungfraujoch &Gornegrad, Switzerland; UFS Schneefernerhause, Zugspitze and Hochenpeissenberg Observatory, Germany.

During these visits BEOBAL project has been presented. As a result several protocols, memorandums and agreements have been signed, and agreements for collaboration, joint research and exchange of information have been reached.
Special regional task was directed to the activities with **Balkan countries** (see table 1).
Joint work programme with the JRC institutes (in the framework of NUSES initiative and BEOBAL project) (see table 1)
Bilateral cooperation and joint cooperative agreements with European HMO (in the framework of HIMONTONET, BEOBAL, ACCENT, EUSAAR and other EU projects and initiatives) (see table 1).
Deepening of international collaboration, networking and integration in the space of ERA with **large international institutions of European and global importance and INRNE traditional and other new partners**. (see table 1)

Table 1

Title/Subject	Date	Participant/ Lecturer/ Visitor	Content/Work	Main Output
INP, Tirana, Albania	01.09-04.09.2005	J.Stamenov, B.Vachev	BEOBAL project has been presented, protocol has been signed and agreements for collaboration, joint research and exchange of information have been reached.	**Protocol of intends**; scientific visit of Dr. Civici with **protocol** about joint realization of new XRF portable device
VINS, Vinca, Serbia	05.09-06.09.2005	J.Stamenov, B.Vachev	BEOBAL project has been presented and agreements for collaboration, joint research and exchange of information have been reached	**Two FP6 projects proposals** in INCO-WBC Specific Support Action call (FP6-2004-INCO-WBC/SSA-3) - EMON and RE-ALARA
CETR, Podgirica, Montenegro	07.09-08.09.2005	J.Stamenov, B.Vachev	BEOBAL project has been presented and agreements for collaboration, joint research and exchange of information have been reached	**ASO project proposal** with Montenegrin CETR and Austrian SO BEOBAL partners
IPH, Skopje, FYRO Macedonia	09.09-10.09.2005	J.Stamenov, B.Vachev	BEOBAL project has been presented and agreements for collaboration, joint research and exchange of information have been reached	**Joint project proposal** for Macedonian – Bulgarian call
INS, Izmir, Turkey	26.03.06-02.04.06	A.Damianova	Discussions and definition of the areas of collaboration and preparation of proposals for joint research projects in the area of environmental investigations	**Memorandum** signed and joint research project proposal in National science foundations
INRNE, Sofia - ITU, JRC, Karlsrhue, DE	6-9.03.06	A. von Zweidorf	Discussion of future joint activities and application of small portable measuring devices; signing	Sighing of **protocol of intends**
INRNE, Sofia - IRMM, JRC, Geel, Belgium		U. Waetjen	Discussion of 2 Ph.D. students 6 months visits and BEOBAL training seminar organisation and thematic	Force coming (May 2006) one 12 month Ph.D. student visit
INRNE, Sofia - IES, JRC, Ispra, Italy		M. de Cort	Negotiation of one 3 months visit in IES; discussion of future training seminar;	Force coming (May 2006) one 3 month visit
LS HMO, Kosice, Slovakia	18.09.-01.10.2005	A. Mishev, A. Bojukliiski	Information exchange connected with neutron detector operation	Agreed visit for joint research at BEO Moussala
HAFS Jungfraujoch&Gornegrad, Switzerland	28.11-04.12.2005	I. Penev	Discussion of the technology for measurement of airborn radioactive elements towards harmonization of measuring methods inside possible future collaboration. Discussion about exchange of neutron monitor data; Exchange about possibilities for common 14C and 222Rn measurements	**Invitation to BEO** to be included in collaboration "RING OF FIVE", European Trace Survey Station for Monitoring Airborn Radioactivity Liulin device common application and data
UFS Schneefernerhause, Germany	20.01-20.02.2006	P. Ivanov	Discussions about atmospheric monitoring. Recommendation to start measurements of total ozone by Dobson spectrometry	Proposition for data exchange between UFS and BEO Moussala in field of atmospheric monitoring. Improving of experience in field of data quality assurance.
Hochenpeissenberg Observatory, Germany		Ch. Angelov	Discussion about detail precipitation measurements: conductivity, pH, Ion Chromatography (anions and cations, SO_4^{2-}, NO_3^-, Cl^-, NH^+, Na^+, K^+, Ca^{2+}, Mg^{2+}) performed by DIONEX ICS 1000.	Recommendation for BEO to join EMEP network
Monte Cimone research station, Italy	25.03-25.04.2006	I. Kalapov, G. Bonchev	Exchange of experience, join field work, new methods and general organization of work of MC Research station.	**Collaboration minutes** and **DOOAS minutes**
INP, Prague, Czech Republic;	15.03-21.03.2006	Ch. Angelov, M. Gelev	Discussion of the first results from the application of new method for 14C estimation	Start of exploitation of similar installation for 14C measurement
INRNE – CERN, Switzerland	29.03-02.04.2006	W. Weingarten, H. Schoenbacher, P. Vojtila	Discussion of continuation of CERN – INRNE joint work in the field of environmental monitoring.	**Annex to the existing contract**
INRNE – INFN, Torino, Italy	27.03-02.04.2006	A. Zanini, L. Visca, O. Borla	Discussions of first results and future activities in the estimation of neutron flux with use of MCNP. Adjustment of w. programmes of visits of A. Mishev in INFN, Torino, I. Angelov and E. Malamova at T. Gridjia.	Adjastment of work plans of common activities till the end of 2006
INRNE – ITR, Leipzig, Germany	07.03-09.03.2006	A.Wiedensohler	Implementation of advanced methods in metrology of aerosol measurements	**Collaboration and twinning agreement**
EUSAAR,ACCENT FP6			Starting of new I3 project. Invitation to joint NoE as associate partner	Keek-of –Meeting
ALOMAR new proj.		I. Angelov, E. Malamova,	J. Stamenov, M. Gausa – Atmospheric trasparency	**Joint project proposal**

WP2: ***Reinforcement of S&T equipment and systems of BEO CoE***

Operational goal A2 (Networking, International Collaboration & Integration and Reinforced Research Infrastructure)

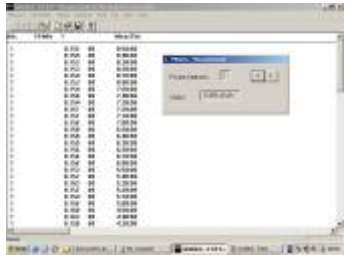
Objectives Reinforcement of S&T equipment and systems of BEO CoE directed to ***enhancement of the research infrastructure*** of European importance, connected with: global change observing, ecosystems monitoring, technological and natural risks (study, early detection and control) widely using new information technologies and platforms. The improving of systems for ***observing and complex monitoring*** in attempt to realize adequate management towards to reach sustainable environment. ***Improving BEO Moussala to a regional GAW station***, creating and improving by this way South - East European part of this network, joining ERA.

Upgrading and renewal of S&T equipment: 14

The following equipment is delivered and it is at stage of testing and measurements:

- Air quality monitoring system (NOx, CO, SO2, O3 analyzers, portable calibrator and data acquisition system);
- Aerosol instruments (according GAW requirements)
  Integrated nephelometer for determination of integral light-scattering coefficient of aerosol
- Systems for cosmic particles, radioactivity detection and complex environment monitoring
  Gamma background probe;
  Neutron detector;
  Muon telescope;
  Modernization of set of portable small devices for complex environmental monitoring (new gamma spectrometer)
- Modernization of computer network;
- Improvement of automatic weather station (new wind sensor);
- Upgrading of the system for uninterruptible emergency power supply;
- Improvement of equipment for radioaerosols research
- Improvemet and modernisation of video control and observing system
- Modernisation of electricity supply, thunder protection, transport and other technical infrastructure systems, ect.

Table 2

Type of equipment	Status, Date	Functional characteristics (specification)	Tender procedure	Data transfer	Illustrations
Environnement CE Mark Automatic System for Gas Concentration Measurements; ISO 9001:2000 & ISO14001	Test operation Start 07.12.2005	**NOx analyser:** Chemilumiscence technique ISO 7996/1985 & EN 14211; 0-0.05/0.1/0.2/0.5/1/2/5/10 ppm or auto ; Lower detectable limit (LDL) : 0.4 ppb; Response time (RT) (T90s) : 40 s min; NOx converter efficiency : 98.5% **SO2 analyser:** UV-fluorescence technique ISO 10498 & EN 14212; 0-0.05/0.1/0.2/0.5/1/2/5/10 ppm or auto; LDL: < 1 ppb; RT (T90) : 10 s min **CO analyser:** NDIR FC technique in accordance with ISO 4224 & EN 14626; 0-10/25/50/100/200 ppm or auto; LDL: < 0.05 ppm; RT (T90s) : 30 s min; **O3 analyser:** UV photometry technique in accordance with ISO 13964 & EN 14625; 0-0.05/0.1/0.2/0.5/1/2/5/10 ppm or auto; LDL: 0.4 ppb: RT (T90s) : 30 s min; **Portable calibration device**: fast and multipoint calibration of gas monitors by dynamic generation of standard gas at known volume content (method referenced by ISO standard n° 6349	Open tender 3 candidates	On screen and database output, Web integration is force coming	  
TSI 3563 Integrated nephelometer for mesuring of integral light-scattering coefficient of aerosol			Tender procedure with direct negotiation; GAW requirements and standards and 3 recommendations of leading experts		
Pixe Cascade impactor for particle size distribution for range 16 μm – 0.06μm;			Direct negotiation is force coming		
PM10 and PM2,5 device for aerosol measurements;			marketing survey stage		
Intelligent Gamma probe IGS421	Test operation started 09.12.2005	**Detector 2x GM tubes 20031E** Range: 10nGy/h … 2mGy/h Sensitivity: 1976 counts/min ~ mGy/h Detector background: 38 counts/min ~ 38nGy/h Energy range: 40 keV …1.25 MeV **Detector GM tube 20018E** Range: 0.1mGy/h … 10 Gy/h Sensitivity: 1.24 counts/min ~ μGy/h Energy range: 50 keV …1.25 MeV Sensitivity range: 10 nGy/h …10 Gy/h Accuracy: ~ 15% resp. to Cs-137 Operating temperature: -40 deg. C …+ 60 deg. C Dimensions, wight: 80/115mm x 635 mm; ~ 2300 g	No tender, 3 offers	On screen and file output, software and database integration is force coming	 
SNM15 **Neutron neutron detector**	Detectors in test operation	2 modules of 3 SNM-15 detectors SNM -15 detector: Dimensions 2mx15 cm diameter Filled with BF_3 enriched to 90% with B^{10} (pressure 1.2 atm); High voltage regime 2000-2200 V Moderator tube – 240x40 cm cylinder, approximativly 200 litters of glycerin; Data acquisition system - 6 channels of individual counters; 1 channel integrated sum.; Maximal counting rate 30 000 counts/s for each channel	No tender, direct negotiation		 

Type of equipment	Status, Date	Functional characteristics (specification)	Tender procedure	Data transfer	Illustrations
Moun telescope;	Test operation Start 28.04.2006	Threshold of energy 1 GeV Zenith angular interval ± 25° All others angular Intervals 0 … 45 ° Standard error/hour 0.5% Total effective detect area 1m2	No tender, direct negotiation	On screen and database output, Web integration is force coming	 
Rn low level analyzer;	Technical specification is evaluated	The device is based on the method of rotating filter. The instrument contains two measuring module, one with passive detectors (TLDs or track detectors) and another one with active (alpha spectrometric) detectors, which allows performing of discrete and continuous measurements.	No tender, Direct negotiation		
α-spectrometer;	Force coming evaluation of 3 offers	The upgrading consists of changing the electronic modules with more performing ones which will provide better resolution and will double the number of the simultaneously analyzed samples.	No tender, 3 offers		
Liulin - 6MB Modernization of set of portable small devices for complex environmental monitoring	Test operation 28.02.2006	**Hi - Tech Gamma spectrometer with wide range, incl. space application** - Dose range: 0.093 nGy – 1.56 mGy; - Flux range: - 0.01 – 1250 part/cm2s; - Energy loss range: - 0.0407 – 20.83 MeV; - Pulse height analysis range: - 9.25 mV – 5.0 V; - LET range: 0.135 - 69.4 keV/μ; - Temperature range: -20oC - +40oC; - Power consumption at normal operation: not more than 150 mA from 12 V - Spectrometer dimensions: 84x40x40 mm; weight 0.12 kg;	No tender, direct negotiation; recommen-dations of leading experts; wide international cooperation	Web based interface	 
2 PC NEC Power Mate ML7 **2 Laptops NEC Versa M350** Modernisation of computer network;	Operation	MB-uATX/LAN10,100,1000 & Video 128MB Shared &Audio Integrated on MB, Processor Bus 533/800 MHz, 4 DIMM DDR Slots Dual Channel up to 2GB at 400 MHz, 1 PCI Express 16X, 1PCI Express IX, 2 PCI, 6 USB, 1 Serial, 1 LPT, 1PS2, LAN PJ-45, CPU 2.93 GHz Celeron D335 LGA775, RAM 1 GB, HDD 160 GB SATA, DVD RW Dual Lair, Optical Mouse 3 But. USB, Keyboard PS2, FDD 3,5", 1.44MB, Cas… Tower Case 315 W Power Supply ATX NEC Versa M350, CPU 1.73GHz/2MB/533Mhz/Pentium M730, RAM DDR2x512MB, HDD 40 GB ATA 100, DVD RW Dual Layer, LAN 10/100/1000, Wireless LAN Mini PCI, Modem 56 K, 4 USB, IEEE1394 port, Audio out/Mic In, Modem RJ-11 port, LAN RJ-45 port, VGA Port, Infra red port, TV-Out, Connector for Duplicate port, 15" TFT XGA Screen 1024x768, Batt 4400 mAh	open tender INRNE; several candidates		  
Vaisala WINDCAP® Ultrasonic Wind Sensor WS425 Improvement of automatic weather station	Software adjustment and integration	**Wind speed** Measurement range: serial output: 0...65 m/s (0...144 mph, 0...125 knots); analog output: 0...56 m/s (0...124 mph, 0...107 knots) Starting threshold: virtually zero Delay distance: virtually zero Resolution: 0.1 m/s (0.1 mph, 0.1 knots, 0.1 km/h) Accuracy (range 0...65 m/s): ± 0.135 m/s (±0.3 mph, ±0.26 knots) or 3% of the reading, whichever is greater **Wind direction** Measurement range: 0...360° Starting threshold: virtually zero Delay distance: virtually zero Resolution: 1° Accuracy (wind speed over 1 m/s): ±2°	No tender, direct negotiation (improving of existing Vaisala automatic weather station)	Software adjustment; software integration is force coming	

Type of equipment	Status, Date	Functional characteristics (specification)/ Common description	Tender procedure	Data output	Illustrations
Upgrading of the UPS system for emergency power supply;	Operation; 10.12.2005	**Input** Nominal Input Voltage 230V; Input Frequency 50/60 Hz +/- 3 Hz (auto sensing) ; Input Connections Bulgarian BDS Schuko type; Input voltage range for main operations 160 - 285V ; Input voltage adjustable range for mains operation 151 - 302V **Output** Output Power Capacity 1980 Watts / 2200 VA; Max Configurable Power 1980 Watts / 2200 VA; Nominal Output Voltage 230V; Efficiency at Full Load 95% ; Output Voltage Distortion Less than 5% at full load ; Output Frequency (sync to mains) 47 - 53 Hz for 50 Hz nominal,57 - 63 Hz for 60 Hz nominal Crest Factor up to 5 : 1; Waveform Type Sine wave Output Connections	Open tender, INRNE	Log files	  
Improvement of equipment for radioaerosols measurements	Test operation	El. motor - 3kw, 3 phases House for el. motor, 140x80x90cm, material - special isolation against noise and vibrations Air turbine - 3000t/minp capacity - 1200m^3/h, possibility for reduction till 300-400m^3/h Filter device, 50x50cm, filter material ФППП-15 Effectiveness for aerosols in the frame 0.2 - 5mkm more then 95% House for filter device, steel 80x80x80cm	No tender		  
Improvemet and modernisation of video control and observing system	Operation 15.03.06		No tender, direct negotiation	BEO-db web	http://beo-db.inrne.bas.bg/moussala/images/index.html?asddd 
Electro generator Modernisation of emergency electricity supply	Test operation	Electro generator based on YaAZ – 204 engine, 30 kW, 400V	No tender, direct negotiation		
Improving of thunder protection system of BEO	Operation 10.10.05 Real tests are expected in late spring 2006		No tender, Direct negotiation	N/A	 
Modernisation of transport and other technical infrastructure systems, ect.	Operation 15.11.05	Reconstruction of storage building at cargo lift station			
UAZ 39094	1.07.05	4x4 combined truck auto;			  

WP3 ***Advanced methodology, technology, methods, metrology, observing and complex monitoring.***
Science – society interactions. **Operational goal A3, (Networking, International Collaboration & Integration and Reinforced Research Infrastructure), Operational goal C (Advanced Science – Society Interaction policy)**

Objectives: ***Implementation and development of advanced methodology, technology, methods and advanced metrology, observing and complex monitoring*** in the field of Global change and ecosystems and their regional and European projections and components including: impact and mechanisms of greenhouse gas emissions and atmospheric pollutants from all sources on climate, ozone depletion and carbon skins, towards to improve predictions and forecasts; operational forecasting and modelling, global change observing systems; especially environmental radioactivity, monitoring and assessment of technological and natural hazard and risks.
Advanced metrology development and implementation in the field of global change observing, environmental radioactivity and radioecology, radiochemistry and radionuclide analysis, based on the close collaboration with JRC institutes. ***Observing and complex monitoring*** of Global change processes and ecosystems in attempt to realize adequate management towards to reach sustainable environment. ***Advanced Science – Society Interaction policy*** towards to reach not only dissemination of the obtained research results but to succeed in the active communication and dialogue with the public organizations, government and NGOs. ***Improving responses to socio-economic needs of the country.***

Exchange of personnel and of results and joint experiments: **5**
2 visits in INP, Prague, Czech Republic; **1** visit to UFS Schneefernerhause, Zugspitze and Hochenpeissenberg Observatory; **1** visit to CERN, Geneva, Switzerland and **1** visit to Monte Cimone research station.

Visits for research activities: 9
(visits for joint research activities to BEO Centre of Excellence of scientists from leading European institutions, BEOBAL partners, EU and Balkan countries)
1 from INP, Prague, Czech Republic; **1** from ITF, Leipzig, Germany; **3** from INFN, Torino and Torino University, Italy; **1** from INS, Izmir, Turkey; **1** from INP, Tirana, Albania (seminar connected with "Small portable devices…" seminar – X-ray measurement device) and **2** from CERN, Geneva, Switzerland.

Conference activities 2
Methodological and Coordination Workshop, Bachinovo, 22-26 Oct. 2005, Bulgaria
More then **60** participants from **11** countries, **16** HMO, universities, institutes and representative of the Delegation of European Commission in Bulgaria have attended the workshop. See details at:

http://www.beo.inrne.bas.bg/BEOBAL/BEOBAL_Methodological%20Workshop.htm

The BEOBAL team participates active in the organization of INSINUME 3 symposium in Turkey (www.insinume2006.ege.edu.tr)

Science communication:

- Improvement of BEO web sites and development of BEOBAL web page

http://www.beo.inrne.bas.bg

http://beo-db.inrne.bas.bg

http://www.beo.inrne.bas.bg/BEOBAL.htm

- **1** CD, electronic, **2** web sites and **1** web page and other publications
- **2** Public lectures
- **5** Posters
- **5** Exhibitions, including participation in the world exhibition during the XX Olympic Games in Torino, Italy "High Mountain Research Stations – a Window to the Universe"
- Media activities (TV interviews, news, ect., journal papers, ect.)
- BEOBAL brochure (presented at initial version during the JRC Infoday in Sofia, 28.04.06), ect.

WP4: ***Improvement of Human Resources.*** **Operational goal B (Advanced Human Resources long-term Management)**

Objectives: ***Advanced Human Resources long-term management*** reaching and preserving European qualification level and creating the best home for young scientist, additionally attracting young scientist from other countries

Description of work Young students from Bulgaria will be attracted to work in the BEO Integrated environmental centre preparing PhD and Post doc studies devoted to the global change and environmental problems. Plan for a regular improvement of qualification level will be realized among the basic staff of the BEO CoE and BEO IEC.

The objective of this WP will be achieved primarily by the use of PhD (post doc) form of qualification, in the institutes – partners, INRNE and institutes and universities from BEO IEC, by use also of activity 2 (visiting fellows -hosting scientist from aboard for teaching and training activities) and activity 3 training for Ph.D. students and/or post-doctoral researchers

Hosting scientist from abroad for teaching and training activities: 6

Within the framework 6 training seminars have been organized:

- Environmental data quality management (1 lecturer, UFS Schneefernerhause, Zugspitze, Germany)
- Track detectors (1 lecturer, INP, Prague, Czech Republic)
- External exposure to natural radiation (1 lecturer, INP, Prague, Czech Republic)
- GRID technologies application in environmental and global change studies (2 lecturers, CERN, Geneva, Switzerland; INRNE, Sofia, Bulgaria)
- In situ measurements for complex environmental monitoring using portable equipment (4 lecturers, ITU, Karlsruhe, Germany, CLSTI and INRNE, Sofia, Bulgaria)
- Environmental monitoring and complex safety (4 lecturers, CERN, Geneva, Switzerland, INFN, Torino, Italy, NCRRO and NINH, Sofia, Bulgaria)

For details about BEOBAL training seminars see:

http://www.beo.inrne.bas.bg/BEOBAL/BEOBAL_events.htm

and BEOBAL web page

http://www.beo.inrne.bas.bg/BEOBAL.htm

Short stays for specialization: 4

2 visits in Lomnicky Stit observatory; **1** visit to INP, Prague, Czech Republic and **1** visit to Monte Cimone research station.

Young researcher's specialization: 2

2 specialisations are planned, agreed and will started in April, 2006 in the institutes of Joint Research Centre of European Commmission – **1** in IRMM, Geel, Belgium and **1** in IES, Ispra, Italy.


Institute for Nuclear Research and Nuclear Energy
BEO Centre of Excellence
BEOBAL FP6 project
training seminars
30 – 31 Mar 2006
"Environmental monitoring and complex safety"
27 – 28 Feb 2006
"In situ measurements for complex environmental monitoring using portable equipment"
19 Dec 2005
"Portable X-ray spectroscopy equipment"
16 – 17 Feb 2006
"GRID technologies application in environmental and global change studies"
14 – 15 Feb 2006
"External Exposure to Natural Radiation"
27 Jun 2005
"Data quality at GAW stations"
15 - 16 Jun 2005
"Track detectors"
Seminars are organised in the framework of
INRNE BEOBAL FP6
EC project INCO-CT-2005-016663
For information:
Boyko Vachev, tel.: +(359) 2 9746310,
vachev@inrne.bas.bg
http://www.beo.inrne.bas.bg

Track detectors

Dr. Karel Turek, NPI AS CR, Prague, Czech Republic

- Track-etch detectors – principles, processing, applications;
- Part B - Previous and recent studies. Colaboration NPI/INRNE

Dr. D. Pressyanov, SU St. Kl. Ohridski, Sofia, Bulgaria

- Traditions in the use of track methods at Physics Department at Sofia University

Assist. Prof. Metodi Gelev, INRNE, BAS, Sofia, Bulgaria

- Recent results from the processing of TEDs at LRPC

Data quality training seminar

Dr. Ludwig Ries, Federal Environmental Agency, Germany

- Data quality at GAW stations

Dr. Alexander Mishev, INRNE, BAS, Sofia, Bulgaria

- Data quality working programme

External Exposure to Natural Radiation

Prof. D.Sc. František Spurný, NPI AS CR, Prague, Czech Republic

- Source of the external exposure to natural radiation
- Dosimeter methods. Calibration
- External to natural sources – some examples

GRID technologies application in environmental and global change studies

Dr. Chris Jones, CERN, Geneve, Switzerland

- Basic GRID ideas and principles. GRID in particle physiscs and life scieneces
- Other GRIDs

Mr. Preslav Konstantinov, Ms Elena Puncheva, INRNE, BAS, Sofia, Bulgaria

- INRNE GRID activities
- INRNE GRID computer cluster demonstration

Portable X-ray spectroscopy equipment

Dr. Nicolla Civici, INP AAS, Tirana, Albania

Characteristics and applications of FPXRF system

In situ measurements for complex environmental monitoring using portable equipment

Dr. Andre von Zweidorf, ITU (DG JRC), Karlsruhe, Germany

- Combating Illicit Trafficking and Criminal Use of Radioactive and Nuclear Material. Activities of the Institute for Transuranium Elements
- Consequences of an Radiological Dispersal Event (RDE)

Dr. Boyko Vachev, Assist. Prof. Metody Gelev, INRNE, Sofia, Bulgaria

- Some INRNE activities in the field of Radiological Dispersal Device ("Dirty Bomb")

Dr. Alexander Strezov, INRNE, Sofia, Bulgaria

- Mobile nuclide identification techniques application for gamma-spectroscopic analysis of seized nuclear and radioactive materials. Gamma Detective (portable high purity Germanium detector) demonstration in seminar room

Dr. Tsvetan Dachev, CLSTR, Sofia, Bulgaria

- "Liulin" portable spectrometer

Environmental monitoring and complex safety

Pavol Vojtyla, CERN, Geneva, Switzerland

- Radiological environmental protection at CERN

Sevdalina Topalova, NCRRP, Sofia, Bulgaria

- National action plan "Environment – Health"

Kiril Slavov, NIMH, Sofia, Bulgaria

- Meteorological Aspects of Nuclear Accident and Bulgarian Emergency Warning System

Alba Zanini, INFN, Torino, Italy

- Neutron dosimetry by passive detectors: Environment and Medical Applications.
- Response of Photosyntetic organisms to radiation for space application