SEE Networks promoted by UNESCO

Information note

We are repeating often the phrase: "*Think globally, act locally*". This means, that all global issues like climate changes, depletion of the natural resources of water, oil, coal, ores and others, appearance of new dangerous diseases **have always local expression**. Every nation and every region should look for solutions adapted to the local specific manifestations of the global problems and they need scientific expertise.

Given the relative weaknesses of the national S&D&I systems in Southeast Europe, it seems that the national Centres of excellence should be strengthen *via* networking with complementary entities in the neighbouring countries thus attaining a mass closer to the critical one. **The building of expertise on regional scale** is mandatory, *e.g.* in health care, quality food and nutritional additives production and control, the environment and biodiversity preservation, weather forecasting and adaptation to the climate changes, the prevention of local natural disasters, clean and sustainable energy production, efficient transportation systems, etc. This is a *conditio sine qua non* both for providing advice to the Governments and securing innovative ideas for the local public and private economies.

This policy approach has been recommended more than 10 years ago at a Conference in Venice organised by UNESCO- ROSTE (now BRESCE)[1]. A strong accent has been put on the regional co-operation and creation of regional networks, which might be considered as distributed Centres of excellence or competence. More extensive co-operation within and among the European regions, in general, and with and within Southeast Europe in particular was seen as a warranty for securing regional relevant expertise, and breeding ground for innovative ideas and new talents.

Following this idea and further EU incentives since 2003, several regional networks have been created namely in astronomy, mathematical and theoretical physics, molecular biology and genetics, microbiology and virusology, and earthquake hazards mitigation. An efficient collaboration has been set up among the National Electronic Networks for Research and Education. UVO-ROSTE supported also the creation of the Interacademy Council of the Academies in Southeast Europe and kept in the following years its active support mainly to the networks of astronomy and theoretical and mathematical physics.

[1] Reconstruction of Scientific Co-operation in Southeast Europe, International Conference of Experts, Proceedings, eds. Pierre Lasserre, Simeon Anguelov, Iulia Nechifor, Rosana Santesso, UNESCO ROSTE, 2001

Southeastern European Network in Mathematical and Theoretical Physics

The SEENET MTP Network

Short History

The initiative for the establishment of SEENET-MTP NETWORK has been agreed by the participants of the UNESCO-Venice sponsored BALKAN WORKSHOP BW2003 *"Mathematical, Theoretical and Phenomenological Challenges Beyond the Standard Model: Perspectives of Balkans Collaboration",* Vrnjacka Banja, Serbia, August 29 - September 3, 2003, http://bw2003.seenet-mtp.info/

The Network has been a natural continuation of Prof. Julius Wess` initiative: Scientists in Global Responsibility (Wissenschaftler in Global Verantwortung – WIGV), started in 1999.

Within the years 2004-2012 the Network joined (see http://www.seenet-mtp.info/):

- 20 institutions from 11 SEE countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Republic of Moldova, Romania, Serbia, The former Yugoslav Republic of Macedonia, Turkey and Ukraine;
- 13 partner institutions all over the world;
- About 300 individual members.

Objectives of the Network

- Strengthening the co-operation among universities, research institutions and individual scientists across South Eastern Europe (SEE);
- Development of educational and research activities in the region and improvement of the interregional cooperation through networking, organization of scientific events and mobility programs;
- Encouraging the communication between educators, students and gifted pupils motivated for natural sciences, by new approaches to teaching physics and sciences, by promotion of science through exhibitions, popular lectures, publications, meetings and contests;
- Supporting the capacity building in science and technology in the region, by creating and updating a database of existing research and teaching capacities in Physics and Mathematics;

The main area of scientific interest is related to all the fields of *Mathematical and Theoretical Physics*.

Leading and Administrative Structures

The following structures ensure the scientific and administrative coordination of SEENET MTP activities:

- Representative Committee (RC) - one member for each network node:

- Executive Committee (EC) – one representative for each country in the Network;

- Scientific Advisory Committee (SAC) – renowned scientists all over the world;

- Permanent SEENET MTP Office;

- President and Executive Director of the Network.

The relation between all these structures is specified by the Terms of references accepted in November 2005:

- The *Representative Committee (RC)* has the role of preparation and implementation of the Network activities. It consists in representatives of nineteen from twenty Network nodes (Bogazici University, Istanbul did not delegate a new representative since 2010).

- The *Executive Committee* has as main objectives elaboration of the Network Program, its implementation and widening of the Network financial basis. Depending of the budget, the EC meets regularly once per year. The EC actually consists of 10 representatives from 10 countries, Turkey is being not represented.

- The *Scientific-Advisory Committee* (SAC) has as responsibilities: consideration of research project proposals submitted by the nodes; supporting the activities and the development of SEENET-MTP co-operation with other international institutions and organizations. It comprises a number (actually 19) of outstanding scientists from both SEE region and all over the world (http://www.seenet-mtp.info/committees/scientific-advisory-committee).

The first coordinator of the SAC was Prof. J. Wess (LMU/MPI Munich) 2003-2007, and the running coordinator is Prof. Goran Senjanovic (ICTP Trieste).

The *Permanent SEENET-MTP Office* is responsible for administration of the Network and, additionally, for maintaining and improving the official **website,** http://www.seenet-mtp.info. It is established at the Faculty of Science and Mathematics, University of Nis, Serbia

In accordance with the decisions made at the last meeting of the Representative Committee of the Network (August 2011) and Executive Committee (September 2012), leading structure of the Network is as follows:

President of the Network: Prof. Radu Constantinescu, University of Craiova, Romania.

Executive Director of the Network: Prof. Goran Djordjevic, University of Nis, Serbia.

MAIN ACTIVITIES AND RESULTS

Joint research and scientific publications, organization of scientific meetings and scientific mobility, capacity building and promotion of science for youth have been the main activities of the Network since its establishment in 2003.

A comprehensive list of the *conferences, schools, and workshops* organized or supported by the Network could be found at http://www.seenet-mtp.info/category/events/network-meetings.

As far as *research and publications,* the contacts, exchange and joint conferences with leading groups and researchers had as a result about 100 common publications with a proper acknowledgement of the Network`s support, and even several joint projects. The publications include monographs, books, special issues of the SCI journals and Proceedings.

Promotion of sciences, in particular of Physics, has been done through:

- Popular lectures and publications targeting a large audience;
- Contests addressed to undergraduate students and gifted high school pupils;
- In-service training of science teachers through symposia and conferences on modern topics in physics.

E*xchange and mobility* programs allowed during last 8 years, about 160 exchanges of researchers and students completely or partially financed by the Network.

In order to highlight the *capacity building potential* of the SEE region, a map of the main educational and research organizations in Physics and Mathematics in 7 countries from the region has been achieved based on an electronic survey run by the Network and UNESCO Venice Office.

Cooperation of the Network with other organizations

The main organizations SEENET MTP is collaborating are: UNESCO Venice Office, UNESCO Paris, ICTP Trieste, European Physical Society (EPS), CERN, Balkan Physical Union (BPU) and Central European Initiative (CEI). We are investigating all other possible partnerships which could be helpful in accomplishing our objectives.

Future actions and expected results

In cooperation with UNESCO and the other potential partners, the Network is focused on establishing *a Balkan Research and Education Network in Physics and Mathematics*. Its future actions concern:

- Programs sustaining contacts and mobility of educators, researchers and young people from the Balkan states;
- Participation in EU Programs in the frame of Horizon 2020;
- Promotion of sciences and science education in the region.
- Joint research activities through the already existing working group - “Cosmology and String”, and support to establish the new one(s), as Physics Education group.

The main next event of the Network will be the meeting BW2013 – Beyond the Standard Models, 25 – 29 April, 2013, Vrnjačka Banja, Serbia, http://bw2013.seenet-mtp.info. It will mark the 10th anniversary of the Network and will gather experts and gifted students all over the world to discuss open problems and perspectives in the main topics of the Workshop, i.e. Particle Physics, Cosmology and regional and interregional cooperation in Science and Education.

Additional information about the SEENET-MTP Network is provided in the **Appendix 1** (the Network Nodes), **Appendix 2** (the Network Committees), **Appendix 3** (main publications of the Network) and **Appendix 4** (projects realized by the Network).

APPENDIX 1

List of the SEENET-MTP Network Nodes

1. Cankaya University (Ankara, Turkey)
2. Centre for Dynamical Systems, Geometry and Combinatorics, Mathematical Institute SANU, (Belgrade, Serbia)
3. Astronomical Observatory (Belgrade, Serbia)
4. Institute of Physics, Center for Theoretical Physics (Belgrade, Serbia)
5. Faculty of Physics, University of Belgrade (Belgrade, Serbia)
6. National Institute for Physics and Nuclear Engineering (Bucharest, Romania)
7. Institute for Applied Physics (Chisinau, Republic of Moldova)
8. Faculty of Physics, University of Craiova (Craiova, Romania)
9. Department of Physics, Bogazici University (Istanbul, Turkey)
10. Dept. Physics, Faculty of Sciences and Mathematics, University of Kragujevac, Serbia
11. Bogolyubov Institute for Theoretical Physics, National Academy of Science of Ukraine (Kyiv, Ukraine)
12. Department of Physics, Faculty of Sciences and Mathematics, University of Nis, Serbia
13. Department of Physics, Faculty of Science, University of Sarajevo, Bosnia-Herzegovina
14. Faculty of Science, University of Skopje (Skopje, The former Yugoslav Republic of Macedonia)
15. The Institute for Nuclear Research and Nuclear Energy (Sofia, Bulgaria)
16. Section of Nuclear & Particle Physics, Aristotle University of Thessaloniki (Greece)
17. Department of Mathematical, Physical and Computational Sciences School of Engineering, Aristotle University of Thessaloniki (Thessaloniki, Greece)
18. Faculty of Physics, West University of Timisoara (Timisoara, Romania)
19. Department of Physics, University of Vlora (Vlora, Albania)
20. Department of Theoretical Physics, Faculty of Sciences, Univ. of Zagreb (Zagreb, Croatia)

List of the SEENET-MTP Network Partners

1. Department of Physics & Astronomy, The Johns Hopkins University (Baltimor, USA)
2. Department of Physics, Faculty of Science and Mathematics (Banja Luka, Bosnia and Herzegovina)
3. Department of Physics, Buffalo Unversity (Buffalo, USA)
4. Physics Department, Mimar Sinan Fine Arts University (Istanbul, Turkey)
5. Mathematics Department, Lusofona University (Lisbon, Portugal)
6. Department of Theoretical Physics (F-1), Jozef Stefan Institute (Ljubljana, Slovenia)
7. Lab 170, ITEP (Moscow, Russia)
8. String Theory Group, LMU and MPI (Munich, Germany)
9. Algebraic Structures in Field Theory Group, CBPF (Rio de Janeiro, Brasil)
10. Theoretical Physics Department, Faculty of Physics, Sofia University “St. Kliment Ohridski” (Sofia, Bulgaria)
11. The High Energy, Cosmology & Astroparticle Physics Section, ICTP (Trieste, Italy)
12. Particle Physics Group, Inst. Theoretical Physics, Vienna Univ. of Technology, Austria
13. Department of Statistics, Faculty of Science, University of Warwick (Warwick, UK)

APPENDIX 2

List of members of the SEENET-MTP Network Committees

Executive Committee (EC):

- Boyka Aneva (Sofia, Bulgaria)
- Viorel Ciornea (Chisinau, Republic of Moldova)
- Goran Djordjevic, **Executive Director** (Nis, Serbia)
- Ilja Dorsner (Sarajevo, Bosnia and Herzegovina)
- Silvana Mico (Tirane, Albania)
- Marijan Milekovic (Zagreb, Croatia)
- Argyris Nikolaidis (Thessaloniki, Greece)
- Yurii Sitenko (Kyiv, Ukraine)
- Viktor Urumov (Skopje, The former Yugoslav Republic of Macedonia)
- Mihai Visinescu (Bucharest, Romania)

- **Representative Committee (RC):**

- Boyka Aneva (Sofia, Bulgaria)
- Viorel Ciornea (Chisinau, Republic of Moldova)
- Milan Cirkovic (Belgrade, Serbia)
- Radu-Dan Constantinescu, **President** (Craiova, Romania)
- Marija Dimitrijevic (Belgrade, Serbia)
- Goran Djordjevic (Nis, Serbia)
- Ilja Dorsner (Sarajevo, Bosnia and Herzegovina)
- Vladimir Dragovic (Beograd, Serbia)
- Miroljub Dugic (Kragujevac, Serbia)
- Ziya B. Güvenç (Ankara, Turkey)
- George Lazarides (Thessaloniki, Greece)
- Jorgo Mandili (Tirane, Albania)
- Marijan Milekovic (Zagreb, Croatia)
- Argyris Nikolaidis (Thessaloniki, Greece)
- Tonguc Rador, TBC (Istanbul, Turkey)
- Branislav Sazdovic (Belgrade, Serbia)
- Yurii Sitenko (Kyiv, Ukraine)
- Viktor Urumov (Skopje, The former Yugoslav Republic of Macedonia)
- Mihai Visinescu (Bucharest, Romania)
- Dumitru Vulcanov (Timisoara, Romania)

Scientific - Advisory Committee (SAC):

- Guido Altarelli (CERN, Geneva, Switzerland)
- Luis Alvarez-Gaume (CERN, Geneva, Switzerland)
- Ignatios Antoniadis (CERN, Geneva, Switzerland)
- Metin Arik (Istanbul, Turkey)
- Jonathan Bagger (Baltimore, USA)
- Loriano Bonora (Trieste, Italy)
- Lars Brink (Göteborg, Sweden)
- Emilian Dudas (Paris, France)
- Georgi Dvali (Munich, Germany)
- Nemanja Kaloper (Davis, USA)
- George Lazarides (Thessaloniki, Greece)
- Jan Louis (Hamburg, Germany)
- Dieter Luest (Munich, Germany)
- Alexei Morozov (Moscow, Russia)
- Sunil Mukhi (Mumbai, India)
- Kumar Narain (Trieste, Italy)
- Goran Senjanovic, **Coordinator** (Trieste, Italy)
- Ivan Todorov (Sofia, Bulgaria)
- George Zoupanos (Athens, Greece)

APPENDIX 3

List of main publications of the SEENET-MTP Network since its establishing

1. International Journal of Modern Physics, Conference Series, devoted to the JW2011 Scientific and Human Legacy of Julius Wess, Volume **13**, Number 1, Eds. M. Dimitrijevic, G. Djordjevic, G. Fiore and P. Schupp, World Scientific (2012).
2. Romanian Journal of Physics, Special issue based on papers presented at the Balkan Workshop BW2011 Particle Physics from TeV to Plank Scale, Volume **57**, Number 5-6, Eds. L. Alvarez-Gaume, G. Djordjevic, G. Senjanovic and M. Visinescu (2012).
3. Contributions to Defining Program Bases of the International Cooperation of the City of Niš in the Fields of Science, Education and Culture, Eds. G. Djordjevic and P. Cveticanin, the City of Nis (2012).
4. "Mathematics and Physics Scientific Research in Southeastern Europe and the need for Science Policy", Comparative analysis of finance, performance and international cooperation for independent research groups, academy affiliated research institutes and university affiliated units, prepared C. Craitoiu, S. Mihaiu and D. Voinea, Craiova (2012).
5. BSI2011 Balkan Summer Institute Book of Short Contributions, Eds. G. Djordjevic, Lj. Nesic and G. Senjanovic, Nis (2011).
6. "BES SEE Southeastern European Mathematics & Physics E-Survey Research Report", prepared R. Constantinescu, C. Craiţoiu, G. Djordjevic, G. Motoi and V. Ion., Craiova-Nis (2010).
7. Excellence in Basic and Engineering Sciences and Education - Physics and Mathematics in Southeastern Europe – EBES2010 Book of Short Contributions, Eds. G. Djordjevic, J. Manojlovic and Lj. Nesic, Faculty of Science and Mathematics University of Nis (2010).
8. Modern Trends in Strings, Cosmology and Particles, Eds. M. Cirkovic, G. Djordjevic and G. Senjanovic, Monograph Series, Publication Astronomical Observatory Belgrade, No **88**, Belgrade (2010).
9. SSSCP2009 Spring School on Strings, Cosmology and Particle, Book of Short Contributions and Extended Abstracts, Eds. M. Cirkovic, G. Djordjevic and Lj. Nesic, Nis (2009).
10. Fortschritte der Physik, Special issue, Vol. **4-5**, Eds. M. Buric, G. Djordjevic, M. Haack, D. Lust and G. Senjanovic (2008).
11. BW2007 III Southeastern European Workshop Challenges Beyond the Standard Model, Book of Short Contributions, Eds. G. Djordjevic, Lj. Nesic and M. Haack, Nis (2007).
12. SQ2007 Workshop New Methods in String Theory and Quantization, Abstract Book, Eds. G. Djordjevic and Lj. Nesic, Nis (2007).
13. Facta Universitatis, Series Physics, Chemistry and Technology, Special issue, Volume **4**, No 2, Eds. G. Djordjevic, Lj. Nesic and J. Wess (2006).
14. Mathematical, Theoretical and Phenomenological Challenges beyond the Standard Model, Eds. G.S. Djordjevic, Lj. Nesic and J. Wess, World Scientific, Singapore (2005).
15. QM2005 Workshop Quantum Models on Noncommutative and Deformed Spaces, Abstract Book, Eds. G. Djordjevic, Lj. Nesic and J. Wess, Nis (2005).
16. BW2005 II Southeastern European Workshop Challenges Beyond the Standard Model, Book of Short Contributions, Eds. G. Djordjevic, Lj. Nesic and J. Wess, Nis (2005).
17. BW2003 Mathematical, Theoretical and Phenomenological Challenges Beyond the Standard Model: Perspectives of Balkans Collaboration, Book of Abstracts, Eds. G. Djordjevic and Lj. Nesic, Nis (2003).
18. Modern Topics in Science, UNESCO bilingual Monograph issue, in press (Dosije, Belgrade).

APPENDIX 4

List of projects realized by the SEENET MTP Network since its establishing, bilateral and multilateral agreements between the SEENET-MTP Office in Nis and the partners

International Projects

1. UNESCO Project ``Mathematical Physics and Science Policy `` \No 4500180804 (2012), coordinator Prof. Radu Constantinescu.

2. ICTP Project "Cosmology and Strings", PRJ-09 (2011-2012), coordinator Prof. Goran Djordjevic.

3. ICTP Project "Cosmology and Strings", PRJ-09 (2010-2011), coordinator Prof. Goran Djordjevic.

4. UNESCO Project "Mathematical and Theoretical Physics SEE" \No. AFC 11-18 n.: 4500143843 (2010-2011), coordinator Prof. Goran Djordjevic.

5. UNESCO Project "Excellence in Basic and Engineering Sciences - Physics and Mathematics in South-East Europe" \No. AFC 09-50 4500085387 (2009-2010), coordinators Prof. Goran Djordjevic and Prof. Radu Constantinescu.

6. ICTP Project "Cosmology and Strings", PRJ-09 (2009-2010), coordinator Prof. Goran Djordjevic.

7. UNESCO Project "Training and Mobility Program SEENET-MTP" \No. 4500095012 (2009-2010), coordinator Prof. Radu Constantinescu.

8. ICTP Project "Cosmology and Strings", PRJ-09 (2008-2009), coordinator Prof. Goran Djordjevic.

9. UNESCO Project "Southeastern European Network in Mathematical and Theoretical Physics, Research-Training SEENET-MTP Network" \No. 875.922.8 (2008-2009), coordinator Prof. Goran Djordjevic.

10. UNESCO Project "SEENET-MTP Research-Training project in Mathematical and Theoretical Physics" \No. 875.854.7 (2007-2008), coordinator Prof. Goran Djordjevic.

11. UNESCO Project "SEENET-MTP Research-Training project in Mathematical and Theoretical Physics" \No. 875.834.6 (2006-2007), coordinator Prof. Goran Djordjevic.

12. UNESCO Project "SEENET-MTP Research-Training project in Mathematical and Theoretical Physics" \No. 875.914.5 (2005-2006), coordinator Prof. Goran Djordjevic

13. UNESCO Project `` Mathematical, Theoretical and Phenomenological Challenges Beyond the Standard Model: Perspectives of Balkans Collaboration`` \No. 875.728.3 (2003-2004), coordinators Dr. Goran Djordjevic and Dr. Ljubisa Nesic

Bilateral Projects

1. Bavarian Ministry for Science, Research and Art Project "The Scientific Exchange Project between the String Theory group of the Ludwig Maximilians University-LMU and the Max Planck Institute for Physics-MPI, Munich, and the Chair of Theoretical Physics, the Faculty of Science and Mathematics, Nis, the University of Nis", (2009-2011), coordinators Prof. Goran Djordjevic and Dr. Michael Haack (through the SEENET-MTP Office program)

Agreements between the SEENET-MTP Office Nis and the partners

1. Memorandum of Understanding on Scientific Exchange and Academic Cooperation between the Scuola Internazionale Superiore Di Studi Avanzati (SISSA) Trieste, Italy and the Faculty of Science and Mathematics University of Nis, the SEENET-MTP Office Nis (2012)

2. Agreement for Academic and Scientific Collaboration between The Abdus Salam International Centre For Theoretical Physics (ICTP) Trieste, Italy and the Faculty of Science and Mathematics University of Nis, the SEENET-MTP Office Nis (2012)

3. Convention for Academic and Scientific General Cooperation between the Faculty of Sciences and Mathematics, University of Nis (Serbia) and the Aristotle University of Thessaloniki, Greece through the SEENET-MTP Network (2010).

SEE-PhytoChemNet

SEE network in phytochemistry and chemistry of natural products for Green and Sustainable Growth

BACKGROUND FOR CREATION OF A NEW NETWORK AIMING AT BETTER AND SUSTAINABLE USAGE OF THE MEDICINAL AND AROMATIC PLANTS IN THE BALKANS

By the end of 19th Century and the first decades of 20th century chemically synthesized drugs gained popularity and became the basis of pharmaceutical industry. Over the years, however, they have been plagued by unwanted side-effects, toxicity and inefficiency. Adding to the emergence of new infectious diseases, the growing multidrug resistance of pathogenic microorganisms had prompted renewed interest in the discovery of potential drug molecules from medicinal plants. The enhanced interest towards "green" products encompasses also nutritive additives, cosmetics and, simply, bio-foods.

Being in a climatically favourable environment the Balkan Peninsula in general, and within it Bulgaria in particular, have a rich variety of plants with high potential not only in pharmacology but also in many other fields. For relatively poor countries with no sufficient organic and inorganic deposits in their soils, the phytochemistry and the chemistry of natural products offer to SEE countries a chance for developing sound economy based on knowledge with sufficiently high added value. Taking into account the dependence of the plant properties on the climate and other geographical characteristics the complementariness among the countries in the region and between them and other regions may be usefully exploited.

OBJECTIVES AND ACTIVITY

Under the aegis of UNESCO and IUPAC in the International Year of Chemistry 2011, with the encouragement of the Advisory Board of the International Basic Science Programme (IBSP) of UNESCO[2] and the support of the Division of Basic Sciences in the Sector of Natural Sciences of UNESCO and the UNESCO Venice Office (BRESCE), a new network in phytochemistry and chemistry of natural products for Green and Sustainable Growth (SEEPHYTOCHEMNET) has been established.

The Bulgarian Academy of Sciences proposed as its leading representative in **SEE Network PhytoChemNatProd** the Institute of Organic Chemistry with Centre of Phytochemistry of the Bulgarian Academy of Sciences (IOCCP-BAS).

It is a public research organisation, which performs basic and applied research in synthetic organic, organometallic and bioorganic chemistry, as well as in the application of spectroscopic and theoretical methods to investigate organic materials and natural products. Historically IOCCP-BAS has long-standing relations with UNESCO.

[2] Pre proposal presented at its 7th session of IBSP held at UNESCO HQ in Paris on 28th and 29th March 2011.

The Centre of Phytochemistry integrated later into the Institute of Organic Chemistry has been created *via* a Government programme in long-term collaboration with UNDP in the period 1977-1981, while UNESCO was appointed as International Implementing Organization. One of the main goals of the Centre was the establishing solid relations with analogous research and development organizations in Africa including joint training programmes for young specialists.

The work accomplished in the preparation and holding of the two meetings of SEE's experts in the field of phytochemistry and chemistry of natural products- one in May and other by the end of September 2011, achieved the goals necessary for the further successful development of the created network. They are as follows:

1) **The revitalization** of a strong core group of scientists and institutions in four SEE countries, which started more than 30 years ago to publish jointly, trust each other, being aware of the complementariness existing among their institutes and countries. These are: Bulgaria, Greece, The former Yugoslav Republic of Macedonia, and Serbia. It will serve as engine for successful structuring of the network. (a list of main joint publications is given in an annex).

2) **The reconsidering and strengthening** in the nine countries, which entered now into the network (Croatia, Bulgaria, Greece, The former Yugoslav Republic of Macedonia, Republic of Moldova, Romania, Serbia, Slovenia, Turkey), of the existing intra-national collaborations among the specialized groups covering practically the whole chain from the green plant to its practical utilization forming so-called **national hubs** of the network.

3) **The consensual formulation** of clear ideas about the potential of the regional biodiversity and the means to use it more efficiently.

4) **The identification** in the majority of the participating countries of relatively good working relations with the industries utilizing medicinal and aromatic plants.

5) **The creation** of an web-site exposing meta-dates with the possibility to extend rapidly to exchanging data in real time.

6) **The evaluation** of the potential for ramifications and connections to other networks: SEE-, pan European, and intercontinental by scales.

7) **The shared understanding** that the formulation of strategic vision at regional level needs knowledge of the situation in other regions helping to find comparative advantages. For that reason, from the very outset an active collaboration with other regional networks is looked for, at first place- with **Africa** and its sub-regions[3].

In favour of the claims formulated above are the following facts:

1) Consensual agreement on the structure of the network, the working methods and the representation in the Regional Steering Committee (RSC) and the Working Groups (WG).

2) Successful elaboration of a pilot project for joint research on some interesting *taxa* from the *Sideritis* family, submitted for financing to the participation Programme of UNESCO 2013-2014.

[3] This was also recommended by the Advisory Board of the IBSP.

3) Strengthening of the contacts with some industrial firms in pharmacology and functional foods aiming at elaboration of projects for direct industrial applications.

The founding meetings in 2011 of Southeast European Network on Phytochemistry and Chemistry of Natural Products for Green and Sustainable Growth (SEEPHYTOCHEMNET) clearly revealed the high potential existing in SEE for better sustainable usage of the medicinal and aromatic plants (MAP's) for economic growth and jobs creation as a mean for exiting from the actual crisis. There are prerequisites for constructing under the aegis of UNESCO of a regional center of excellence in the field of phytochemistry and chemistry of natural products comprising laboratories and research units in the participating countries, which are complementary in their competencies and capacities. The main accent should be on the mapping of the existing infrastructure and its upgrading taking stock on the specialization and intelligent complementariness.

In parallel with starting such a huge task of carrying out a thorough feasibility study, considerable work should be performed by the partners in the network on the structuring and strengthening of the relations among the components of this distributed Centre of excellence and the bioreserves existing in the region. This second but not less important task is also in the priorities of UNESCO encouraging the preservation of the biodiversity *via* its intelligent and sustainable usage.

LIST OF INSTITUTIONS INVOLVED

Bulgaria

Leading Institution: Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, BAS (IOCCP-BAS)

Research Units included in the national hub (national network):

1. Laboratory of Biologically active Compounds belongs to IOCCP-BAS branch in Plovdiv
2. Institute of Polymers, BAS
3. Institute for Biodiversity and Ecosystem Research, BAS
4. Institute for Microbiology, BAS
5. National Museum of Natural History, BAS
6. Joint Genomic center at Sofia University
7. Medical University, Chair of Medical Pharmacology
8. Sofia University, Department of Biology
9. Sopharma Pharmaceutical Company
10. Vitanea Nutritives Company

Croatia

1. Division of Organic Chemistry and Biochemistry, Ruđer Bošković Institute, Zagreb
2. Faculty of Chemistry and Technology, University of Split
3. Faculty of Food Technology and biotechnology, University of Zagreb
4. Faculty of Science, University of Zagreb

Greece
University of Athens, School of Pharmacy

Republic of Moldova
University of the Academy of Sciences of Moldova

Romania
National Institute of Research and Development for Biological Sciences/Stejarul Biological Research Center

Serbia
1. Faculty of Chemistry, University of Belgrade, Studentski trg 16, 11000 Belgrade, Serbia
2. Center for Chemistry, Institute for Chemistry, Technology and Metallurgy, Studentski trg 16, 11000 Belgrade, Serbia
3. Institute for Medicinal Plant Research "Dr. Josif Pančić", Tadeuša Košćuška 1, 11000 Belgrade, Serbia
4. Faculty of Science and Mathematics, University of Nis
5. Faculty of Chemistry, University of Kraguevac

Slovenia
1. Faculty of Pharmacy, University of Ljubljana
2. Faculty of Chemistry, University of Maribor

The former Yugoslav Republic of Macedonia
University Ss Cyril and Methodius, Skopje:
- Institute of pharmacognosy, Faculty of pharmacy,
- Instutute of Chemistry, Faculty of Natural Sciences and Mathematics,
- Institute of Biology, Faculty of Natural Sciences and Mathematics.

Turkey
Gazi University in Ankara

Sub-Regional European Astronomical Committee
(SREAC)

Created within the framework of the project "Enhancing astronomical research and observation in South-East Europe and Ukraine" of the UNESCO Regional Bureau for Education, Science and Culture in Europe (UNESCO-BRESCE)

The idea for the SEE collaboration in astronomy: To solve our problems TOGETHER for the benefit of all the community

The precursor of SREAC is the Sub-regional Branch of EAS, established in 2000 at Belogradchik Observatory by Bulgaria, The former Yugoslav Republic of Macedonia, Greece, Romania, Ukraine and Yugoslavia. This year, we'll celebrate 10 years of its establishment during the 7th SREAC meeting in Ohrid.

But, we had no funding then to solve our problems. After a discussion and consultations with the UNESCO-ROSTE (now BRESCE) officer Prof. Boksenberg, Bulgaria, Romania, Serbia and Montenegro, Turkey and The former Yugoslav Republic of Macedonia applied with a proposal to UNESCO-ROSTE for a new CCD camera for the 2m telescope at BNAO Rozhen to be used by researchers from these countries.

After that, in May 2004 Sub-regional European Astronomical Committee (SREAC) within the framework of the common project was established in Bucharest, Romania. The members then were: Bulgaria, The former Yugoslav Republic of Macedonia, Greece, Romania, Serbia and Montenegro, Turkey and Ukraine. Statutes were elaborated, webpage (www.astro.bas.bg/SREAC/), and a Newsletter began to be spread. Later, Armenia joined SREAC as Associated member. Recently, in 2009, Albania also joined SREAC as a full member. SREAC Newsletter began to be spread not only among the SREAC representatives, but to a wide mail list.

Aims

According to p.2 from the Statutes: "The main objective of SREAC is to elaborate and implement a sub-regional strategy for the development of astronomy in South-East Europe and Ukraine and to strengthen astronomical co-operation in the sub-region, and between the region and countries outside".

Actions

For this purpose, SREAC according p.3 of the Statutes carries the following:

- foster bilateral and multilateral collaboration between participating and other institutions;
- address issues concerning the training and mobility of young researchers in astronomy;
- organize sub-regional research workshops on given themes;
- identify priority areas for research co-operation and elaborate projects to be carried out by participating research institutions;

- prepare appropriate joint project proposals to be submitted to funding sources;
- identify ways and means of sharing experience and research facilities, including the preparation of inventories of expertise and infrastructure;
- seek better access to scientific literature and research data.

Funding by UNESCO

Till 2004 – we had no funding. Bulgaria, Institute of Astronomy, BAS organized 3 events by their own resources: two Balkan meetings (2000 and 2004), and one SEE School on "Photometry with Small Telescopes" at Belogradchik Observatory. End of 2003**:** Bulgaria, Romania, Serbia, The former Yugoslav Republic of Macedonia and Turkey applied to UNESCO-ROSTE (now BRESCE) with a project *"Enhancing astronomical research and observations in South-East Europe and Ukraine. The Rozhen Astronomical Observatory – Major facility for the South-East European region"* for a high-quality CCD camera for the 2m telescope at the Bulgaria National Observatory "Rozhen" to be used there by the countries participating in the project. The donated by UNESCO-ROSTE CCD camera was inaugurated in May 2005. Astronomers from The former Yugoslav Republic of Macedonia, Romania, Serbia and Turkey began to observe at Rozhen and Belogradchik Observatory

Second project funded by UNESCO-ROSTE (2006, 2007): "Enlargement of Collaboration in Ground-Based Astronomical Research in SEE Countries. Variable Stars Research and Studies of Small Bodies in the Solar System".

A Round Table discussion was organized at the Balkan Meeting at Rozhen Observatory, Bulgaria, June 2004, where UNESCO was presented by Profs. Boksenberg and Anguelov. The discussion was on the further development and enhancement of the quality of astronomy research in the region. A resolution was accepted and signed by the SREAC representatives with the idea we to apply with a big proposal to the UNESCO-IBSP program for equipment upgrade with a high-quality spectrometer (2m Rozhen) and other equipment for some important instruments in the region. The idea was supported by colleagues from Germany, France, Hungary and other European countries who took part in the project as "associated". It was a big project for several thousand USD. The project was redirected to UNESCO-BRESCE. Funding received for the 2 years was 45000 USD. Part of them were used for equipment, part – for Meetings and Schools.

Third project funded by UNESCO-BRESCE(2009,2010): "Collaboration in Astronomical Research in SEE Countries and Common Activities during IYA2009 and 2010".

Received funding: 25000 USD for a meeting, a school and for public events of celebration IYA2009. In 2010 are scheduled the 7th SREAC Meeting+conference at Ochrid, The former Yugoslav Republic of Macedonia and School on photometry in Athens, Greece.

Funding by other sources

- **Bulgarian NSF**: Contract DO 02-85/2009 won by a Bulgarian collective including IA, BAS, Sofia University and Shumen University, i.e. the whole professional astronomy in Bulgaria. New control electronics for the 2m telescope at Rozhen Observatory and partial funding for high-quality spectrometer. The first one is already in operation since end of 2009. **For the evaluators was important that "Rozhen" is not only national, but also regional center for astronomy.** In this way, SREAC with UNESCO fostered astronomical research in the region.
- **Regional Astronomical Centre for Research and Education.** This program is a part of the EU Roadmap for development of science and education. The Institute of Astronomy with NAO "Rozhen" and Belogradchik Observatory, Sofia University and Shumen University were invited by the Ministry of Education, Youth and Science, Bulgaria to present a common proposal and were evaluated by the ESF in 2009. They received the best score among the other candidates for Regional centers. For the moment, however, due to the financial crisis, this project is in a phase of hibernation.
- Serbia, Astronomical Observatory of Belgrade, with the support by Bulgaria and SREAC has recently won **Western Balkans REGPOT call** for building 1.5m telescope.
- The Aristotle University of Thessaloniki, Greece received funding under the **EU program for less developed regions** for building 1.2m telescope at Mt. Orlyakas close to the Albanian border. Bulgarian astronomers were invited for consultations on the instrument and the equipment.

Output

- Upgrade of the equipment in Bulgarian NAO "Rozhen". Possibility astronomers from the SREAC countries to use the Bulgarian telescopes, including the 2m one, what they continue to do since 2004. One colleague from FYROM, Dr. Gordana Apostolovska defended PhD Thesis based on observations obtained at the observatory and with a Bulgarian supervisor. As a result, the Bulgarian **NAO "Rozhen" is forming as a regional center for astronomy**. We have also successful applications for two 1m class telescopes (Serbia and Greece) that will be built during next years.
- More than 15 meetings were organized in the period 2000-2009 (Romania, Bulgaria, Turkey, Greece, Serbia, Ukraine), 3 schools (Bulgaria), 9 books with Proceedings were issued (5 of them in Romania, 2 – Bulgaria, 1 – Turkey, 1-Serbia). Most of them received full or partial financial support by UNESCO-BRESCE. Hundreds of papers were published for the period. Some of these papers include co-authors from other EU countries and elsewhere (see the reports to UNESCO-BRESCE).

Current problems

- We still haven't finished the upgrade of the 2m telescope at Rozhen: we need additional funding for the spectrometer for the 2m telescope at Rozhen that will be a very powerful modern tool for study of the stellar structure and evolution and will boost further the astronomy in the region.
- We hope, the Aristarchos 2.3m telescope will be also available for observations soon.
- The region still seriously suffers from the financial crisis. We need the UNESCO support for our educational activity and SREAC meetings, to be able SREAC to continue to function. In fact, due to the continuous support by the UNESCO Office in Venice since 2004, SREAC was able to function. With the present financial situation, we do not see other real possibility for funding of these activities. In this way, SREAC could have security and perspective at least for 2 years.

Conclusion

We try to use the SEE cooperation in astronomy and the UNESCO-BRESCE support to SREAC as much as possible to meet our goals – higher level of research and education in astronomy in the region. Such a level will attract more interest from countries outside the region to collaborate with us. We'll be able to apply and win competition in big EU etc. programs and also to meet the European strategy for development of science and education, part of which is the ASTRONET Strategy for development of astronomy in EU till 2020.