9th International Earth Science Olympiad (IESO)

13-20, September 2015, Poços de Caldas, Brazil

The 9th edition of International Earth Science Olympiad (IESO) that involved the brilliant high school students from all over the world was held this year in Poços de Caldas, Brazil. As in all the competitions there is a winner, but in this Olympiad there is space even for cooperation and to enhance friendly relation between participants in order to grow up a network of a future generation of connected geoscientist.

IESO is one of the major activities of the International Geoscience Education Organization (IGEO; <http://www.igeosci.org/>). IGEO is part of IUGS and actively participate at IUGS events.

The principal objectives of IESO are to raise higher secondary school students' interest in earth science, to enhance earth science in schools, to forge friendship among young learners from different countries and to promote international cooperation in exchanging ideas and materials about earth science and earth science education.

IESO is quite a complex events, usually spread over 7-10 days with different but interconnected agenda for students, mentors and observers. During these days students do several activities related to the test and cultural and geological trip, including visiting local schools and interact with native students. The mentors spend most of the time in meetings in order to evaluate and approve the final version of the test, discuss the main structure of IESO and manage the planning of the future editions.

Both written and practical test were conducted to evaluate

students' knowledge in the subject areas of geosphere, hydrosphere, atmosphere and earth in space.

The 9th IESO, organized by the Federal Institute for Education, Science and Technology of South of Minas (Ifsuldeminas) during 13th-20th September, 2015 (<http://ieso2015.ifsuldeminas.edu.br>) was attended by 85 students, 6 guest students, 43 mentors and 37 observers from 27 countries, 22 of them with full team.

The theme of this year was "Soil" which is related to the theme chosen for International Year of 2015 by Food and Agriculture Organization (FAO). The logo of IESO 2015 is a triangle to resemble the flag of Minas Gerais States, with the colors of Brazilian flag plus a maroon line to represent soil, the theme of 9th IESO.

Ifsuldeminas organized IESO 2015 with just 10 months' notice. It accepted the challenge to replace the designate country that resigned for financial issue. Much of the success owes to the enthusiastic efforts of the Rector Marcelo Bregagnoli who participated at IESO 2014 as observer with the Brazilian team. Ifsuldeminas have a young and well qualified staff that used to organize big high schools events as the Agriculture Brazilian Olympiad for agriculture high school; they provided all the logistic support. The scientific committee was composed of professors of Ifsuldeminas and many others professionals from others institutions like Unicamp, USP, UNIFAL, Embrapa, UFRRJ, UFRJ, UFJF and UNIFEI.

The location of IESO 2015 was the city of Poços de Caldas in

IESO 2016 participants from 27 countries.

Students participating in written, practical and field tests.

Minas Gerais State. Poços de Caldas is approximately 260 km to São Paulo and 480km to Rio de Janeiro in the South East of Brazil, almost 350 km from Atlantic Ocean. Poços de Caldas began to be known in the XVIII century due to the discovery of thermal spring. This water has several health effects and after 1872 a town start to grow up around the place were occupied by a growing city. The historical city center has three main buildings, the baths that was the reason for people to come in Poços, the casino where people spend free time and night, and the Hotel Palace that host the tourist and host even the IESO participants.

Poços de Caldas is interesting even from a geological point of view because the city is located inside a volcanic caldera. The border of the caldera is still visible, it is few hundred meters more higher than the surrounding area and climbing the ring is possible to see from there all the circle of the border of the caldera that have a diameter of around 30 km. The 75 and 80 Ma old alkaline massif of Poços de Caldas is one of the biggest around the world. An extensive hydrothermal alteration of the alkaline massif has resulted in mineralization of uranium, thorium and zirconium that are economically interesting for exploitation as well for the deposit of bauxite.

The international teams arrived on the 13th of September in São Paulo airport from where they travelled to Poços de Caldas. After dinner the students get a first opportunity to socialize presenting themselves and their country.

The 9th IESO was inaugurated on the 14th of September, in the main hall of the Casino building with all the delegates in formal or traditional dressing attended the open ceremony. Several authorities

spoke in this ceremony. They include Professor Marcelo Bregagnoli, the rector of IFSULDEMINAS and the event host, Rajasekhariah Shankar, the President of the International Organization of Education in Geosciences (IGEO), Marcelo Feres, Secretary of Vocational and Technological Education of the Ministry of Education / professional and technological education secretary (Secretaria de Educação Profissional e Tecnológica/ Ministério da Educação - SETEC/MEC), Luciano Toledo, the Director of Development of SETEC/MEC, and Roberto Greco (Unicamp) as chair of the IESO 2015 scientific committee. During the ceremony dancers presented local Brazilians dances.

During the ceremony flags of all the participating countries namely, Brazil, Australia, Austria, France, Germany, India, Indonesia, Israel, Italy, Japan, Kazakhstan, Korea, Norway, Portugal, Romania, Russia, Spain, Sri Lanka, Taiwan, Thailand, Ukraine and the United States, Argentina, Bolivia, Iran, Malawi, Paraguay and South Africa were unfurled.

The students were engaged in written and practical test. This year, for the first time, the written pass before the IESO through an international examination board that assess, modify existing test and proposed new ones. On the day of the practical test, students went to the field where they tried to understand the type of rocks, the contact relations between them and analyze which of the earth system process they could recognize for their formation and others task related to earth rotation, hydrology and meteoric condition.

Later on students were involved in the International Team Field Investigation. Several students with mixed nationalities were grouped together and then each group received a special task to investigate

Closing ceremony of the 9th IESO. From left to right Prof. Marcelo Bregagnoli, Rector of the local organizing institution of IESO 2015, Prof. Shankar Rajasekhariah, Chair of IGEO and Prof. Kenichiro Hisada, organizer of IESO 2016

in order to prepare for an oral presentation.

The teams explored local rocks formation, local thermal phenomena as well local soil.

The theme of Earth System Project of this year was El Niño and its interrelationship with the earth system in Brazil, the output of this work was a poster presentation assess by an international jury. Student enjoyed a lot to work together, they collaborated in a constructive way and they produce poster presentations of excellent quality.

Meanwhile the mentors and observers were mainly occupied in meeting in order to assess and translate the test and discuss about future IESO. They even had some moments of relax as and when they visited local agriculture schools and get information about local crops and learn more about the interaction of basalt rock and tropical climate in order to produce the red soil that permit the productions of this precious coffee.

As usual, all the delegates, students, mentors and observers visited local schools where they interacted with local students and teachers.

Finally, on the 20th of September, the award ceremony was organized in the Casino hall. Based on the performance of the students in the tests they were awarded gold, silver and bronze medals at the rate of 10%, 20% and 30% respectively, related to the total number of students. The students received bronze medals from Deputy Mayor of Poços de Caldas, Nizar El-Kathib, and the Embrapa researcher,

Alfredo Barreto Luiz, silver medals from the under-secretary of Higher Education of the State of Minas Gerais, Márcio Rosa Portes, and General Coordinator of Planning and Management of the Federal Network, Nilton Nelio Cometti and gold medals from Professor Marcelo Bregagnoli and the president of IGEO, Rajasekhariah Shankar.

The highest score was scored by South Korea student Seung Wong Jung. The countries that get the best performance, Taiwan, South Korea and Indonesia, received a Crystal trophy that is one of the typical artisanal handcraft of Poços de Caldas. Best groups in the International Team Field Investigation and Earth System Project were awarded with gold, silver and bronze medals as well. Students that participated at IESO are already winners of their national Olympiad so the purpose of giving so many medals as incentive to motivate them towards earth science. Another unofficial, but most appreciated award was the “most charismatic student”, three students were awarded with this special recognition.

Towards the end of the ceremony Brazil handed over the organization of IESO to Japan that will host the next edition. A new symbol was added to the IESO, a musical instrument called “maraca” that is typical of the Native American culture.

Previous IESO's were held in South Korea (2007), the Philippines (2008), Taiwan (2009), Indonesia (2010), Italy (2011), Argentina (2012), India (2013) and Spain (2014) and in total 48 countries attended. Next one will be in Japan and we call all the readers to help to set this national olympiad and participate at the next IESO. For more information please log on to: <http://www.ieso-info.org/>

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