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Dr. Kevin Govender
Office of Astronomy for Development (OAD)
Cape Town, South Africa

October 20, 2013

Proposal for the creation of an Andean Regional Office of Astronomy for Development

Dear Dr. Govender,

The purpose of this letter is to submit a proposal for the creation of the Andean Regional Office of Astronomy for Development (ROAD). If the proposal is successful, we expect to have a functional node starting on January 1st 2014.

This node will encompass six countries: Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela. The main initiative for this proposal has been lead by several institutions in Colombia, Venezuela and Ecuador. The current form of this proposal is the result of meetings and discussions started in 2012.

Attached to this letter you will find the full body of the proposal (16 pages) and two support letters on behalf of the ROAD Coordinator and the Task Force 2 Coordinator.

We look forward to receiving the reply of the OAD steering committee to our proposal.

Sincerely,

Dr. Jaime E. Forero-Romero
Assistant Professor

Proposal towards the establishment of an Andean Regional Office of Astronomy for Development

October 20, 2013

Contents

1 Rationale

The countries in the Andean Region (Bolivia, Colombia, Chile, Ecuador, Peru and Venezuela) represent a common language block in South America. They share similar social conditions and goals for scientific development.

The astronomical development in each of these countries can be efficiently achieved through regional cooperation. With the leadership of Chile and Venezuela in aspects of professional astronomy and Colombia for public outreach, it is possible to develop strategies to strengthen the professional research, education and popularization of astronomy in the Andean region. This development effort requires the commitment and shared effort from different institutions.

An Andean Regional Office of Astronomy for Development (ROAD) can serve this goal. It will strengthen ongoing collaboration efforts, create channels of communication and develop new strategies to exchange knowledge and human resources in the region.

2 Objectives

- Foster the goals of the International Astronomical Union (IAU) Strategic Plan in the Andean region
- Serve as partner to the Office of Astronomy for Development (OAD), the IAU and other international organizations to plan and implement relevant projects in the Andean region.
- Create public forums where the project management of all development activities can be communicated and evaluated.
- Initiate and coordinate fund-raising activities for regional development activities.
- Create new institutional alliances among countries in the region to exchange knowledge and human resources.

3 Core Values

- Balance. The ROAD projects must have a balance among different areas (research, education, outreach) and target countries.
- Without borders. Priority will be given to projects that involve two or more ROAD countries.
- Transparency. All Andean ROAD projects will be transparent to the public in their conception, execution and evaluation.

4 Outline of the main Andean ROAD projects

4.1 Task Force 1 (Universities and Research)

Andean School on Astronomy and Astrophysics

Every year we will hold a school aimed at advanced undergraduate students and graduate students. The main subjects of the school have to be broad enough allowing a large student participation. This venue will also serve as a upstanding scenario to invite tutors from abroad and strengthen new institutional collaborations with the Andean ROAD. For the year 2014 the school will be hosted in Ecuador close to the dates for the Colombian Congress of Astronomy and Astrophysics.

Andean Peer Network

Establishment and maintenance of an information bank of researchers in the region. The main objective is to forgather contact information of colleagues that can serve as project referees or partners in new proposals. The mailing list associated to this network will also serve as a platform to exchange information concerning fellowships, scholarships and open positions.

Massive Open Online Courses and the Virtual Andean Astronomy Seminar

Experiment and establish the feasibility of creating Massive Open Online Courses at the advanced undergraduate level. In parallel, we want to develop the infrastructure (and community interest) to hold regular seminars to be

attended by students and researchers in the region. A requirement for this will be creation of efficient communication channels between researchers and students.

Andean Graduate Program

Establish the feasibility of creating and funding a Masters course with the objective of offering the students with an excellent background in Astronomy and Astrophysics, while tapping on the resources of different institutions in the region. The model for this project is the AstroMundus program in the European Union where a consortium of 5 Universities in 4 Countries offer a Master Program.

Andean Postdoctoral Program

Establish and fund a Postdoctoral program for scientists to work in two different countries in the region for a period of 2-3 years. The main motivation for this program is to serve as a way to help astronomers abroad to find a permanent position in the region.

Exploration Working Groups

Establish working groups that will explore ways to initiate research programs on a Andean scale. The first two suggested groups are Astroparticle Physics (with emphasis on cosmic ray physics) and Radioastronomy.

4.2 Task Force 2 (Astronomy for Children and Schools)

Teaching Astronomy in Schools

Creation of astronomy groups and clubs in primary and secondary schools, replicating examples of projects already implemented in Colombia, Venezuela and Chile working together with Regional and Education Secretaries. Such groups would be part of a network of students interested in astronomy, astronautics and space sciences.

Continuous participation in global projects

Such as CERES S'COOL , Rocks around the world, Eratosthenes, The Galileoscope, Dark Sky Awareness, Astronomers Without Borders, From

Earth to the Universe, International Space Week, Noches de Galileo, International Asteroid Search Campaign.

Regional network of school planetariums

Made by the teachers attending GTTP and UNAWE workshops, replicating experiences from UNAWE Venezuela.

Teacher Training Projects

UNAWE, Galileo Teacher Training Program (GTTP), Network for Astronomy School Education (NASE) and Constellation, to strengthen teacher training to educate in astronomy, gathering previous experiences obtained from UNAWE, GTTP and NASE programs in the andean countries. Local astronomers and experts from the ROAD are invited to expand the network to more cities in other countries. Both programs will receive support and qualification from Universities and Research Groups active in education, astronomy and space sciences.

Teaching resources for children and teenagers

Continue using UNAWE methodology and resources to work with children in schools, based on the experiences from UNAWE Venezuela, Colombia and Chile and build a regional network. Printed resources such as booklets and magazines, following the example from Venezuela with a production of over 545.000 magazines and 545.000 booklets (including a Planisphere, Solar System Mobile, Astrorule, Spectroscopye, Solar Clock, Quadrant, Telescope and Lunar Map)

Olympiads and Contests

- Regional, National and International Astronomy Olympiads (i.e. Volos, Greece, in 2013)
- Family, children and teenage involvement learning through games: Astronomy Family Marathons promoted through public institutions such as libraries and Education Ministries and Secretaries in the ROAD cities and regions.

Inclusion programs

New projects and teaching tools to facilitate the access of hearing impaired and blind communities to astronomy and space sciences topics. Ex: Astronomy for the blind, special shows for Planetariums and puppet activities, Science in sign language experiences.

Interdisciplinary activities

Ethnic revisions to recover forgotten indigenous traditions through archeoastronomy and ethnoastronomy approaches. Ex: La Chakana in Chile, and Perú; special studies on Inca cosmovision conducted in Perú, Bolivia, Ecuador and Venezuela; Muisca Solar Observatory in Colombia.

4.3 Task Force 3 (Astronomy for the Public)

Special shows

We want to develop special shows to be projected at planetariums and science museums from the region, highlighting ancestral traditions from indigenous tribes and founding communities from South America. These shows would be shared between the Local and Regional Networks of Planetariums, such as "Asociación de Planetarios del Cono Sur", and the growing "Red de Planetarios de Colombia".

Major public astronomy meetings

We will support participation in large astronomy events at each country.

- Stargazing events, star parties. Exchange of experiences in the implementation, financing and evaluation of results in conducting public events.
- Astronomy Family Marathons promoted through public institutions such as libraries and Education Ministries and Secretaries in the ROAD cities and regions.
- Celebrations. Participation and promotion of public events associated with astronomy global events. (Astronomy Day, Yuri's Night, Astronomers Without Borders, Space Week, Dark Sky Day, etc). Network connection in simultaneous events.

- Dark sky preservation campaigns.

International events

- Encuentro Regional Andino de Astronomía en Isla de Pascua - 2015
- Continuation of the projects promoted for 2014 mentioned above.
- Communicating Astronomy for the Public - IAU - Medellín - 2015.
- Support to the andean participation at the CAP 2015 Event to be held in Explora, Medellin. Attendance by representatives from each country to the CAP 2015.

4.4 Joint Projects between all Task Forces

Common web presence

This is a joint project of all task forces. Create a web-page that presents the ROAD activities and future calls for proposals [1].

Ask an astronomer

This is a joint project of TF1 and TF3. Create a youtube channel to receive astronomy question from all the Spanish-speaking world and post the answers as short clips from astronomers working at Institutions part of the Andean ROAD.

Astronomy in the classroom

This is a joint project of TF1 and TF2. Explore the feasibility to establish Astronomy as part of the curricula at the school level.

5 Budget

We foresee the following costs per year, one year after the establishment of the ROAD activities.

[1] A draft webpage can be found in `http://comunidad.udistrital.edu.co/nodoandinodeastronomia/`

Description	Justification	Amount (KEuro)
TF1. Andean School	Mostly travel and accommodation for students and speakers.	30
TF1. Andean Peer Network	Initial work by programmer and designer. Maintenance by students and postdocs.	4
TF1. MOOCs	Work by programmer, designer, video/audio. Cost per course.	8
TF1. Andean Graduate Program (Feasibility Study)	Travel. Organization of small meetings.	4
TF1. Andean Postdoctoral Program	Annual postdoc salary plus research expenses	45 ($\times$ 5)
TF1. Exploration Working Groups	Travel support for each group. Organization of small meetings.	10 ($\times$ 2)
TF2. Regional network of school planetariums	Material exchange. Travel.	30
TF2. Teacher training programs	Travel support. Meeting organization.	60
TF2. Teaching resources for children and teenagers	Construction/Purchase. Distribution.	60
TF2. Olympiads and contests	Organizational costs. Travel.	30
TF2. Inclusion programs	Construction/Purchase of materials . Distribution.	20
TF3. Planetarium meeting	Travel costs	10
Interdisciplnary Activities	Support to different projects	15
Ask an astronomer	Production of one monthly video.	5
Astronomy in the classroom	Travel support. Organization of small meetings.	10
Total		531

We will look for these funds with different agencies/foundations. We will plan accordingly during the first year of activities.

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For the first year of activities we foresee the following expenses:

Description	Amount (Euro)
TF1. Small grants (200 Euro each) for students that wish to travel to another country in the Andean ROAD to pursue an internship or attend a scientific meeting.	1000
TF2. Budget for the Eratostenes project, that aims to measure the radius of the Earth with the collaboration of high-school students all over the continent.	500
TF2. Budget for diverse activities during 2014.	500
TF3. Contributing budget to support an Andean meeting of Planetaries	1000
Printing and distribution of posters publicizing the Andean ROAD	350
Overhead costs at Universidad de los Andes over the 5000 Euro of seed funding.	1650
Coordinator's travel to Chile and Peru to advertise the Andean ROAD and meet with local people.	2000
Total	7000

5000 Euro are expected to be received by the OAD as seed funding. The 2000 Euro that cover the Coordinator's travel to Chile and Peru will be covered by Universidad de los Andes.

6 Governance

Responsible Institution

Universidad de Los Andes (Bogotá, Colombia)

ROAD Coordinator

Mr. Jaime E. Forero-Romero, PhD
Assistant Professor
Universidad de Los Andes

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Oversight Committee

The oversight committee will evalute the Andean ROAD accomplishments. It will be composed by 4 people as follows.

1. OAD Representative: Kevin Govender (South Africa)
2. International TF1 Evaluator: Gustavo Bruzual (Mexico)
3. International TF1 Evaluator: Jan Tauber (Netherlands)
4. International TF2/TF3 Evaluator: Cecilia Scorza (Germany)

Executive Board

The executive board will be composed by 4 people as follows.

1. ROAD Coordinator. 1 position 14% full time. Jaime E. Forero Romero (Colombia)
2. Coordinator Task Force 1. 1 position 20% full time. Ericson López (Ecuador)
3. Coordinator Task Force 2. 1 position 33% full time. Luz Angela Cubides (Colombia)
4. Coordinator Task Force 3. 1 position 33% full time. Germán Puerta (Colombia)

The institutional letters of support on behalf of Jaime E. Forero-Romero and Luz Angela Cubides are attached to this proposal. We expect that there will be support from the Bogota Planetarium in the form of professional time up to a third of a full time employee. It should be noted that the person at that

institution (German Puerta) who will be our main contact point already serves on the OAD Task Force on Public Outreach so the commitment is already present.

Core functions of the Executive Board

1. Decide on the acceptance of new collaborators to the Andean ROAD.
2. Create an annual action plan for the Andean ROAD.

Organizing committees

There will be three organizing committees, one for each Task Force. The committees will have one person from each country in the Andean ROAD. That person must belong to one of the Collaborating Institutions. The ROAD coordinator and the specific Task Force coordinator will also take part in the decision making process of each committee. The committee members will be renewed every year. The coordinators should stay in their role at most for one year and a half.

Core functions of the organizing committees

1. Collect the basic information required to create annual action plan in line with the IAU Strategic Plan and the needs expressed by the Institutions composing the Andean ROAD.
2. Decide on the priority of projects to be implemented in the annual action plan.
3. Track the progress with the leaders of each project in the annual action plan and the IAU Strategic plan.
4. Pursue new collaborations or organize activities with existing or emerging institutions both domestically (at the level of each ROAD's country) and internationally.

Andean ROAD Collaborators

Only institutions (Universities, Research Institutes, Research Divisions, Planetariums, Museums) or associations are considered as collaborators of the Andean ROAD.

Individuals can join the Andean ROAD as volunteers. In this group we in mind four major groups. (1) undergraduate/graduate students in the ROAD countries, (2) graduate students and postdoctoral researchers nationals of the Andean region working abroad, (3) school teachers working in the ROAD countries and (4) any volunteer willing to support the goals of the Andean ROAD regardless of their country of origin.

Process to join the Andean ROAD

Institutions must direct a one page Letter of Intent (LoI) to the members of the Executive Board stating their intention to join the Andean ROAD and naming one (1) person of contact. Once this petition is approved unanimously by the Executive Board, a Memorandum of Understanding (MoU) will be signed between the new collaborating Institution and the Responsible Institution. In order to accept the application every TF1 institution must be partnered with a TF2/TF3 institution, and viceversa each TF2/TF3 must have a TF1 partner in the same country.

There are three reasons to have these conditions. First, we want to foster lasting processes over the ROAD lifetime; this motivates us to have institutions, not individuals, as ROAD collaborators. Second, we want to avoid previous experiences whereby an individual or an institution act on a covert way on the name of whole national communities; this motivates the two stage (Loi+MoU) process. Third, we want to motivate direct collaboration between institutions with different backgrounds (TF1 and TF2-TF3) to ensure a balance across task forces; this motivates the partnering mechanism.

Volunteers only have to express their interest to become collaborators. They are not limited to live in the Andean ROAD countries. The Executive Board will enable a tool to reach volunteers as they are needed to implement different programs.

Appendices

A Institutions, organizations and individuals supporting this proposal

The following institutions and organizations support this proposal and are committed to follow the process to join the Andean ROAD. The name of an Institution's representative is in parenthesis.

TF1 institutions and organizations

- Observatorio Astronómico de Quito de la Escuela Politécnica Nacional, Ecuador (Dr. Ericson Lopez)
- Universidad Nacional de Chimborazo, Ecuador (Dr. Marlon Danilo Basantes Valverde)
- Universidad San Francisco de Quito, Ecuador (PhD Dennis Cazar Ramírez)
- Universidad de los Andes, Colombia (Dr. Jaime E. Forero-Romero)
- Universidad Industrial de Santander, Colombia (Dr. Luis Núñez)
- Universidad del Valle, Colombia (Dr. Cesar A. Valenzuela-Toledo)
- Observatorio Astronómico Universidad de Nariño, Colombia (MSc. James Perenguez Lopez, MSc. Karla Patricia Reyes Sánchez)
- Universidad del Cauca, Colombia, (Msc. Iván Enrique Paz Narvaez)
- Observatorio Astronómico Nacional, Facultad de Ciencias, Universidad Nacional de Colombia (Prof. Giovanni Pinzón Estrada)
- Universidad Distrital, Bogotá Colombia (Ing. Edilberto Suárez Torres)
- Red de Estudiantes Colombianos de Astronomía (María Camila Remolina Gutiérrez)
- Grupo Astronomía - Universidad Nacional de Ingeniería, Perú (Diego Berrocal Chinchay)

- Instituto Venezolano de Investigaciones Científicas (IVIC), Venezuela (Dr. Jose M Ramirez)
- Centro de Investigaciones de Astronomía (CIDA), Venezuela (Dra, Katherine Vieira)
- Universidad Simón Bolívar. Venezuela (Dr. Haydn Barros)
- Universidad Nacional Experimental del Táchira, Venezuela (Dr. Ramón Eveiro Molina Guillén)

TF2/TF3 Institutions and organizations

- Institución Armando Luna Roa, Chocó, Colombia (Esp. Martha Cecilia Palacios Mena)
- Colegio Nuestra Señora del Rosario Funza, Colombia (Profesor Juan Carlos Arias Cañón)
- Planetario de Medellín, Colombia (MSc Carlos Augusto Molina Velásquez, Luz Angela Cubides Gonzalez)
- Asociación Astronáutica Colombiana, Colombia (Aldo Esteban Sabogal)
- UEN Tibaldo Almarza Rincón, Venezuela (Lic. Lybia Mora)
- Agrupación de Aficionados a la Astronomía La Chakana, Chile (Jonathan Moncada Calabrano)
- Comunidad Astronómica Aficionada CAACH, Chile (Prof. Maritza Arias Manríquez)
- UNAWE-Venezuela (Enrique Torres)
- Universidad Pedagógica experimental Libertador, Núcleo Monagas, Venezuela (Profesor Freddy Oropeza)

Individuals supporting this proposal

- Dr. Jan Tauber, European Space Agency, Scientific Support Office, The Netherlands
- Dr. Cecilia Scorza, Haus der Astronomie, Germany
- Dr. Antonio Pereyra, Instituto Nacional de Pesquisas Espaciais (INPE), Brasil
- Rosario Moyano Aguirre, Astronomía Sigma Octante Bolivia
- Dr. Nicolás Vásquez, Escuela Politécnica Nacional, Ecuador
- Miguel Garcia, MSc, Escuela Politécnica Nacional, Ecuador
- Phd Mario Armando Higuera, Observatorio Astronómico Nacional, Universidad Nacional de Colombia
- Ángela Patricia Pérez Henao, Astronomy Kids Club y Planetario de Bogotá, Colombia
- Juan Sebastián Florez Suancha, Universidad de Antioquia, Colombia
- León J. Restrepo Quirós , Universidad de San Buenaventura/GTTP Colombia, Colombia
- Dr. Rigoberto Casas Miranda, Universidad Nacional de Colombia, Colombia
- Dr. José Alejandro García Varela, Universidad de los Andes, Departamento de Física, Colombia
- Dr. Beatriz Eugenia Sabogal Martínez, Universidad de los Andes, Departamento de Física, Colombia
- Diana Milena Navarro, IED Fernando Mazuera, Colombia Cristian Góez Therán, Olimpiadas Colombianas de Astronomía y Astrofísica, Colombia
- Ing Edgar Quintanilla Piña, Universidad Industrial de Santander. Grupo Halley Sede Socorro. Colombia

- Malory Agudelo Vásquez, Universidad de Antioquia, Colombia
- Juan Carlos Beamín M., Instituto Astrofísica, Pontificia Universidad Católica de Chile

B Brief description of the coordinating institution

Universidad de los Andes (Uniandes) is located in Bogotá, Colombia. It is a private University founded in 1946. Currently it is the top University in Colombia as reported by the QS 2013-2014 and Times Higher Education 2013 University Rankings. It also ranks among the top 4 in Latin America and the top 300 on a global scale.

Uniandes hosts a Faculty of Sciences with 5 departments: Biology, Chemistry, Geosciences, Mathematics and Physics. The Physics Department has an active graduate school and also hosts postdoctoral researchers. One of the research groups in the Physics is focused on Astronomy and Astrophysics, composed by 4 Faculty (3 PhD, 1 MSc) with research interests in instrumentation, observational astronomy and computational astrophysics. The Astrophysics Group also manages a small observatory dedicated mostly to outreach and motivating undergraduate students into astronomy.

In July 2013 Universidad de los Andes hosted and gave finantial support to the Workshop Astronomía en los Andes [2]. This Workshop received researchers from all the countries participating in this ROAD proposal and also included the participation of the TF2 and TF3 coordinators in the current proposal. This meeting helped us to survey the status of Astronomy in the region and design a blueprint for its development in the region. Submitting the current proposal was one of the main goals of the workshop.

C Names and affiliations of the committee members for the year 2014

TF1 Committee

- Nicolás Vasquez (EPN, Ecuador)

[2] `http://workshopastronomia.uniandes.edu.co/`

- Luis Otiniano (CONIDA, Peru)
- Giovanni Pinzón (OAN, Colombia)
- Mirko Raljevic (UMSA, Bolivia)
- Eduardo Unda-Sanzana (SOCHIAS, Chile)
- Kathy Vieira (CIDA, Venezuela)

TF2 Committee

- Angela Patricia Pérez (UNAWE, Colombia)
- Enrique Torres (IVIC, Venezuela)
- Manuel de la Torre (Olimpiadas de Astronomía, Bolivia)
- Javier Ramirez (Planetario de Lima, Perú)

Supporting committee (Mauricio Chacón (Colombia), Leonardo Ariza (Colombia), Juan Carlos Arias (Colombia), Alvaro Cano (Colombia), León Restrepo (Colombia), Ymmer Vanegas (Venezuela), Freddy Oropeza (Venezuela), Rosario Moyano (Bolivia), Angel Carranza (Perú), Fernando Camacho (Perú), Maritza Arias (Chile), Maria Paz Cornejo (Chile), Johnatan Moncada (Chile))
[3]

TF3 Committee

- Carlos Molina (Colombia)
- Johnny Cova (Venezuela)

Supporting committee (Cristian Goez (Colombia), Carlos Quintana (Venezuela))

NB. Due to the large size of the TF2 and TF3 community in Chile, the process to select their representatives in the corresponding committees will be completed by 2014.

[3]The mentioned coordinators have been proposed by the participants of the weekly virtual meetings held since April 2013 taking into account their networking skills and compromise, and are supported by the committee members mentioned below. As of the end of September 2013, there have been representatives from Venezuela, Perú, Bolivia, Chile and Colombia constantly active during the TF2 meetings, but so far there has been no participation from the TF2 community in Ecuador.

parque explora MEDELLÍN

September 6th, 2013

Dr. Kevin Govender
Office of Astronomy for Development
International Astronomical Union (IAU)

Dear Dr. Govender,

The purpose of this letter is to express our commitment to continue working towards the establishment of the Andean Regional Node.

Since February of this year we started supporting the creation of the node by consolidating the survey of activities conducted in Venezuela, Bolivia, Peru, Ecuador, Chile and Colombia to promote education in astronomy for children and schools (Task Force 2).

Parque Explora has devoted 1/3 of the work schedule of Luz Angela Cubides, Coordinator of Astronomy from the Planetarium of Medellín, to structure the TF2 activities included in the current proposal.

We want to continue supporting this remarkable effort as a stepping-stone to strengthen the education and outreach in astronomy from a regional perspective.

Yours truly,

Azucena Restrepo Herrera
Executive Director
Parque Explora

Universidad de los Andes
Facultad de Ciencias

Bogotá, September 11, 2013

Dr. Kevin Govender
Office of Astronomy for Development
International Astronomical Union

Dear Dr. Govender,

The purpose of this letter is to express the support of Universidad de los Andes to the establishment of the Andean Regional Office of Astronomy for Development (ROAD).

Our support has been materialized since last July 2013 when we hosted the Workshop "Astronomy in the Andes" to congregate astronomers from all the Andean ROAD countries: Bolivia, Chile, Ecuador, Peru, Venezuela and Colombia. This meeting served as a sort of unofficial kick-off meeting, preparing the way to the ROAD's official creation that we hope will take place in Florianapolis, Brazil, by the end of the year 2013 during the Latin-American Regional Meeting of the International Astronomical Union.

Additionally, Universidad de los Andes fully supports Dr. Jaime E. Forero-Romero, Assistant Professor in the Physics Department, in his role as the ROAD Nominal Coordinator as stated in the current proposal.

We will continue giving our support to this international initiative with the goal to strengthen the networks for scientific research, education and outreach in the Andean region.

Sincerely,

SILVIA RESTREPO R.
Dean
Faculty of Sciences

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