

DIVISION C - COMMISSION C4 / WORKING GROUP ASTRONOMICAL HERITAGE IN DANGER

CHAIR:

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GROUP MEMBERS:

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Jarita C. Holbrook (member IAU; Division C; Commission C4; Executive Committee WG Women in Astronomy, WG lead Ethnoastronomy & Intangible Heritage).

Gudrun B. E. Wolfschmidt (IAU member; Division C; Commissions C3 and C4; Past President of Commission C4 World Heritage and Astronomy).

TERMS OF REFERENCE:

The WG on Astronomical Heritage in Danger is a Commission C.4 (World Heritage and Astronomy) working group, under IAU Division C (Education, Outreach and Heritage). Reporting to the President of Commission C.4

TRIENNIAL REPORT 2021-2024

1. Motivation and Creation of the Working Group

The working group has been constituted at the beginning of 2016. The objective of the WG is to make a list of sites with relevant astronomical value for Humanity that are

currently at risk. The purpose of this list is to influence governments, nongovernmental organizations, international agencies, local authorities and decision makers to achieve protection and care of these sites.

DESCRIPTION OF THE WG:

The working group has been confirmed at the beginning of 2016. The objective of the WG is to make a list of sites with relevant astronomical value for Humanity that are currently in danger. The purpose of this list is to influence governments, nongovernmental organizations, international agencies, local authorities and decision makers to achieve protection and care of these sites.

During the year 2016 and 2017 we studied the ICOMOS' criteria for the elaboration of their list of World Heritage Sites at risk. We have seen that the idea of the list proposed by the Working Group has been different, since ICOMOS seeks to point out sites that have been declared by UNESCO as a World Heritage site and are at risk. This implies that UNESCO has checked with the local authorities about their commitment to the preservation of the site and discovered dangers to the site. The list in preparation by the WG includes sites connected to astronomy that have been identified by ICOMOS as being in danger, and additional sites beyond these that IAU experts have determined are endangered. In fact, the list is especially relevant in the case of sites that are not considered Humanity Heritage of UNESCO, since they are the most threatened. Also, many sites are part of living traditions and therefore change over time since they are in use. That is why, it is necessary to develop conceptions of "heritage" that dialogue flexibly with local ideas and practices. Beyond that, the list is designed to contain the basic information about the sites to align with what UNESCO requires for submission for world heritage status. The preliminary structure that has been designed to request such information is a provisional characterization that, in about 400 words, accounts the following information:

Name of the site:

Country:

Short description (including cultures involved, age, contemporary usage, etc.)

Astronomical Relevance:

Is it declared a World Heritage Site?:

Situation of danger (main threats):

Suggested actions to avoid danger:

During 2020 a great achievement has been to homologate and prepare to publish the list of sites of astronomical heritage that are at risk that we have gathered during these years of work. It is a set of 15 sites in America, Africa and Asia. We attach the list as an appendix to this report.

2. Main remarks during the years 2021 and 2023

One of the main goals of the WG is to influence the decision makers. This is a difficult objective to achieve due to the political complexity of situations related to heritage and its protection, which vary by country. This is clearly evident in the observations of the experts who contributed to the reports on endangered sites incorporated into the WG list. During 2021, Alejandro López participated, as advisor to the Dirección de Patrimonio Cultural Chaco, Argentina, in the meeting and workshops "Heritages are political. Between cosmovisions, science, art and ecology" developed in Resistencia and

Campo del Cielo, Chaco, from November 25 to 27, 2021. These meetings were held as part of the heritage process of the meteoric dispersion of Campo del Cielo. During this participation, it was sought to intervene in the negotiations on the concrete way in which Campo del Cielo will be formally integrated as national and provincial heritage, seeking to safeguard the participation of the local population, especially the Moqoit aboriginal people, and a broad understanding of Campo del Cielo as a cultural landscape with astronomical value for various human groups. As part of this process, during the year 2022 López coordinated the “NAUECQATAXANAQ: Programa de jóvenes guías moqoit para Campo del Cielo”, as an expert in cultural astronomy. This is a training program for young people of the Moqoit indigenous people of the Argentine Chaco. The objective is to train them as guides for the Campo del Cielo Meteorite Park, through interaction with elders from different Moqoit communities and courses on didactic tools and cultural astronomy taught by Alejandro López. The idea is, on the one hand, to build a way of appropriation by the young Moqoit generations of a space of great importance for this group but to which they have had a very restricted access in recent times; it also seeks to make visible the cultural, political and historical relations of the Moqoit with the meteorites; It is an opportunity of economic income for these young Moqoit and a way for the Moqoit to receive part of the economic benefits of tourism; it also seeks to intensify the exchange between youth and elders -especially in the context of the growing migration of young people to peri-urban areas-. All this is carried out in collaboration with the Dirección de Patrimonio Cultural Chaco and funding obtained from the Consejo Federal de Inversiones in Argentina. Three training camps were held, with the participation of young people, elders and community leaders (November 12-13, November 19-20 and December 3-4, 2022). Audiovisual recordings were made and a “Guía de Campo del Cielo” was prepared for use by future Moqoit guides. During the year 2023 López, as coordinator of the “NAUECQATAXANAQ: Programa de jóvenes guías moqoit para Campo del Cielo”, led a series of assisted tourist guiding practices for the young moqoit guides, on October 7-8 and November 11-12. These practices included participatory evaluation and reflection workshops following them. Cooperative organization meetings were also held on September 23, October 28 and November 18. Together with the young guides, a group logo and presence on networks were created (http://www.instagram.com/guias_moqoit?igsh=ZX1vYW52cHMxaHAX and <https://www.facebook.com/guias.moqoit?mibextid=ZbWKwL>).

Another important advance in this regard is the participation of several members of this WG (Steven Gullberg, Alejandro López, Jarita Holbrook, Javier Mejuto) in the new IAU-RAS-AAS committee on sensitive astronomical sites. We believe that the perspective of our WG can add much to a committee that seeks to influence the way in which professional astronomers relate to situations where there are conflicts between large astronomical consortia and facilities and the local population. Considering the character of “astronomical heritage in danger” that these places have for many local populations can provide a more comprehensive perspective on the conflict situations described. As part of this joint work with the new committee, these four members of WGAHD were speakers at the Ninth Communicating Astronomy with the Public Conference (CAP) 2021, organized by the International Astronomical Union (IAU) in virtual format, from 24 to May 27, 2021, presenting the oral presentation (which is in press to be published as part of the minutes of this meeting): “Listening to Other Voices: Culturally Sensitive Sites Group”, whose authors are Alejandro M. López, Javier Mejuto, Annette S. Lee, Jarita Holbrook, and Steven R. Gullberg. <https://www.communicatingastronomy.org/cap2021/>. These same four members were speakers at the 238th Meeting of the American Astronomical Society

(AAS), presenting the oral presentation "New Initiative: Working Group on Culturally Sensitive Sites", authored by Annette S. Lee, Jarita Holbrook, Javier Mejuto, Steven R. Gullberg, and Alejandro M. López. Virtual modality, from June 7 to 9, 2021.

In line with this objective, during this year Alejandro López published a work entitled: "Cultural Astronomy: A scientific framework to understand academic astronomy as part of the Social World", In R.M. Ros, B. Garcia, S. Gullberg, J. Moldon & P. Rojo, eds. Proceedings of the International Astronomical Union, 15(S367), Cambridge University Press, Cambridge, UK: 235-244. doi:10.1017/S1743921321001046. This paper addresses the issues of astronomical heritage at risk, and the links between this and colonialism, education and 'development'.

In the same direction, Thomas Hockey chaired a Task Force of the American Astronomical Society [AAS] charged with recommending whether or not the AAS should formally designate relevant historical sites and how it might do so. The Task Force's 2022 report recommended that the AAS do so, with suggestions regarding on-line, physical, and event record of such designation.

Light pollution, and in general the progressive and rapid disappearance of access to dark night skies, is a growing problem in terms of humanity's astronomical heritage. It is a problem that affects a large part of astronomical heritage across the board. We understand that it is important to include it from the perspective of astronomical heritage in danger, beyond other approaches to the problem that are carried out by the IAU. In this sense, Duane Hamacher has published two articles:

- Noon, K.; De Napoli, K.; Swanton, P.; Guedes, C. and Hamacher, D.W. (2023) Safeguarding Indigenous Sky Rights from Colonial Exploitation. In Routledge Handbook of Social Studies of Outer Space, edited by Juan Francisco Salazar and Alice Gorman. New York: Routledge
- Hamacher, D.W.; De Napoli, K.; and Mott, B. (2023) Whitening the Sky: light pollution as a form of cultural genocide. In Stories of the Sky, Proceedings of the 18th Annual Sophia Centre Conference, edited by John McKim Malville. Lampeter, UK: Sophia Centre Press.

He also, during 2022, developed a new university course that he will teach for the first time in December 2023:

PHYC30025: Safeguarding Dark Skies (University of Melbourne). It is taught between physics, biosciences, and design.

Ukraine astronomical heritage in danger:

War, in addition to causing innumerable damages and losses of all kinds, is also an important factor in generating dangers for astronomical heritage. The current war in Ukraine is no exception. During 2021 Gudrun Wolfschmidt, member of the WG, has worked in the IAU List "Outstanding Astronomical Heritage". For that initiative she has researched and compiled information (history, architecture, instruments, cultural heritage and astronomical relevance) about 7 sites (including branch observatories outside of the city center) in Ukraine. Mykolaiv, Kyiv, Odessa and Simeiz are on the Unesco Ukraine tentative list (2008), criteria (ii), (iv) and (vi), cultural heritage.

Unfortunately we have no information about the status, the threats these sites may be

facing during the current war, or if the observatories are currently in danger or destroyed, or if they are still in good condition. The present situation requires that the astronomical community pay attention to the possible effects of the war on these observatories. Gudrum understands that of all of them, Kharkiv and Mykolaiv are the most in danger.

This is the list of them, with their links in the Portal to the Heritage of Astronomy:

169 – Lwiw (Lemberg) Observatory (1771 and 1912)

<https://www3.astronomicalheritage.net/index.php/show-entity?identity=169&idsubentity=1>

170 – Kyiv Observatory (1845)

<https://www3.astronomicalheritage.net/index.php/show-entity?identity=170&idsubentity=1>

171 – Kharkiv Observatory (1808)

<https://www3.astronomicalheritage.net/index.php/show-entity?identity=171&idsubentity=1>

172 – Mykolaiv (Nikolaev) Observatory (1821)

<https://www3.astronomicalheritage.net/index.php/show-entity?identity=172&idsubentity=1>

173 – Odessa Observatory (1871)

<https://www3.astronomicalheritage.net/index.php/show-entity?identity=173&idsubentity=1>

174 – Simeiz near Yalta, Crimea (1908)

<https://www3.astronomicalheritage.net/index.php/show-entity?identity=174&idsubentity=1>

174 – Crimean Astrophysical Observatory in Nauchny, Crimea (1945).

<https://www3.astronomicalheritage.net/index.php/show-entity?identity=174&idsubentity=1>

In reference to our goal of achieving greater visibility in the academic expert community, in 2022 we will hold a round table on astronomical heritage at the joint meeting of the Oxford Conference-VIII Jornadas Interamericanas de Astronomía Cultural “ ‘Living skies’ / ‘Cielos vivos’, Astronomies, cultures and societies / Astronomías, culturas y sociedades co-organized by the Sociedad Interamericana de Astronomía en la Cultura and the International Society for Archaeoastronomy and Astronomy in Culture, in the Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, La Plata, Argentina, from October 31 to November 4, 2022, This important event (the Oxford conference is the largest world event in cultural astronomy and this is the first time that it will be held in conjunction with a SIAC meeting) was a critical opportunity to meet the goal of engaging the global community of experts in cultural astronomy around the issue of astronomical heritage at risk.

In this same direction, Alejandro López was invited speaker at the round table “Astronomia cultural e patrimônio: questões em torno da base espacial em terras quilom-

bolas em Alcântara”, coordinated by Priscila Faulhaber, in the framework of the 33rd RBA Reunión Brasileira de Antropología (August 28 to September 3, 2022), presenting the contribution “Cadenas celestiales: Un marco general para pensar los conflictos entre instalaciones astronómicas y poblaciones locales” and being part of the subsequent debate together with Marcio D’Olne Campos (Unicamp), Davi Pereira Junior (University of Texas at Austin), and Dorinete Serejo Morais (Mabe). 31/08/2022.

An important issue is to achieve expert visibility, especially among young researchers. For this reason, it is a key contribution to introduce the discussion of endangered astronomical heritage in undergraduate and graduate courses. During 2022 we did so in the following courses:

- Alejandro López Postgraduate Course “Una antropología del cielo: introducción a la astronomía cultural” in the Maestría en Antropología, Facultad de Filosofía y Humanidades, Universidad Nacional de Córdoba, Argentina, from July 11 to 15, 2022, with a total of 45 hours.
- Alejandro López unit “Aproximación antropológica” in the graduate and postgraduate seminar “Introducción a la astronomía en la cultura”, Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, Argentina. 19/04/2022 al 07/06/2022, 6 classes of two hours each.
- Alejandro López Course “Sociology of knowledge & Ethnoastronomical Methodology” (3 hs duration) in the IX Escuela Interamericana de Astronomía en la Cultura-X La Plata International School on Astronomy and Geophysics (LAPIS), held in the Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, La Plata, Argentina, from October 24 to 28, 2022.

Related to this goal, in 2023 the members of the group participated of the following conferences:

- López, Alejandro M., oral presenter at the International Astronomical Union Symposium 386 ‘Dark sky and astronomical heritage in boosting Astra-tourism around the globe’ held in Addis Ababa, Ethiopia, 13-17 Nov 2023. Oral presentation: “Indigenous peoples and sky stones: tourism and astronomical heritage in contexts of inequality”.
- López, Alejandro M., oral presenter at the Segundas Jornadas de Epistemología e Historia de la Astronomía, organized by the Observatorio Astronómico / Facultad de Filosofía y Humanidades, UNC, 23-24 November 2023, Córdoba, Argentina. Oral presentation: “Nuevos aportes y reflexiones en torno a los asterismos moqoit”.
- López, Alejandro M., oral presenter at the Annual Conference of the Society for the Social Studies of Science (4S) 2023 “Sea, Sky, and Land Engaging in Solidarity in Endangered Ecologies”, organized by the Society for Social Studies of Science, Honolulu, USA, 8-12 November, 2023. Oral presentation: “Embodied knowledge: Bodies, Objects and Intangible Astronomical heritage”
- López, Alejandro M., oral presenter at the IX Jornadas Interamericanas de Astronomía Cultural, organized by SIAC, Pisté, México, 19-21, October, 2023. Oral presentation: “Luces y sombras del patrimonio y el turismo astronómico: análisis desde la experiencia de Campo del Cielo”.
- González-García, A.C., oral presenter at the SEAC annual meeting, ‘Between Ancient and Modern Astronomy’, organized by SEAC, Warsaw, Poland, 6-9, September, 2023. Oral presentation: “Astronomical significance of the orientation of early ceremonial complexes in Gulf Coast Region of Mexico”.

- González-García, A.C., oral presenter at the SEAC annual meeting, ‘The Apprehension of Time and Space among the Celts’, organized by SEAC, Warsaw, Poland, 6-9, September, 2023. Oral presentation: “Astronomical significance of the orientation of early ceremonial complexes in Gulf Coast Region of Mexico”.
- González-García, A.C., oral presenter at the EAA-Americanist Group annual meeting, organized by INCIPIT,CSIC, April 2023, Oral presentation: ‘Tres entornos, tres cielos, tres cosmovisiones’.

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- López, Alejandro M., Undergraduate course “Una Antropología de los cielos”. Elective course for the Licenciatura (Bachelor’s degree) in Anthropology, Facultad de Filosofía y Letras, Universidad de Buenos Aires.
- López, Alejandro M., Course “Sitios con Astroturismo. Sudamérica” with Barthelemy D’Ans Aleman ” (2 hs duration) at the X Escuela Interamericana de Astronomía en la Cultura- organized by SIAC, at the Gran Museo del Mundo Maya, Mérida, México, 16-18, october, 2023.

Also, during these years, we do some **actions of public communication of the problems linked to the astronomical heritage in danger.** For example:

- Alejandro López was interviewed by Lucía Dozo for the Ñ supplement of Clarín newspaper, about the Campo del Cielo meteors and their relationship with the Moqoit indigenous People. This article appeared on February 25, 2022 in the digital version of the supplement (sembradio de estrellas en el sudoeste chaqueño) and in reduced form on February 26, 2022 on page 8 of the printed version of the supplement.
- López, Alejandro M. “La construcción social del cielo: Pensando la astronomía cultural desde el Chaco argentino”, Nucleos. Revista Científica UNNOBA, año 9 (n° 10 septiembre); 1-16. Published 10/19/2023. ISSN 2408-4492. <https://publicacionescedi.unnoba.edu.ar/index.php/revistanucleos/article/view/79>.
- González-García, A.C., “Arqueoastronomía Pitiusa: el Cielo de nuestros antepasados”, Jornades d’Astronomia, Ibiza (Spain), 29/09/2023 Agrupació Astronòmica d’Eivissa
- Urrutia-Aparicio, M., Belmonte, J.A., González García A.C. “El Celaje del Camino de Santiago”. *Astronomía* (2023), 286, 39-44.

During this period the members of the group made these related **academic publications:**

- Dal Zovo, C., Parcero-Oubiña, C., González García A.C., Güimil-Fariña, A. Mapping human mobility and analysing spatial memory: palimpsest landscapes of movement in the Gobi-Altai Mountains, *Mongolia Journal of Arthropological Archaeology*, (2023) 71, 101516 <https://doi.org/10.1016/j.jaa.2023.101516>
- Gianotti, C.,González García A.C., Gazzán, N., Cancela-Cereijo, C., Sotelo, M. Knowledge of the Sky among Indigenous Peoples of the South American Lowlands –

First Archaeoastronomical Analyses of Orientations at Mounds in Uruguay. *Land*, (2023) 12, 805 <https://doi.org/10.3390/land12040805> CLAVE: A104

- López, Alejandro M. (2022) “El cielo entre nosotros: Patrimonio y dinámicas socio-culturales en el Chaco Argentino”, In Lía Ferrero y Eduardo Restrepo (eds.) *Memorias del VI Congreso de la Asociación Latinoamericana de Antropología: “Desafíos Emergentes. Antropologías desde América y El Caribe”*, Vol. 6, Thematic axis 15 “Procesos étnicos e interculturalidad: cosmologías, espacio de creencias políticas-religiosas y espirituales nativas”, Symposium 128 “Políticas patrimoniales y conocimientos indígenas sobre el campo de relaciones cielo-tierra”, coordinated by Priscila Faulhaber, Alejandro M. López and Ricardo Moyano (conference held in 2020), pp. 443-452, Asociación Latinoamericana de Antropología, Montevideo. ISBN: 978-9915-9333-5-1

- Higginbottom G., González García A.C., Vilas-Estévez B., López-López V., Criado-Boado, F. Landscapes, orientation and celestial phenomena on the “Coast of Death” of NW Iberia. *Journal for the History of Astronomy*, (2023) 54(1), 76-106 <https://doi.org/10.1177/00218286221151183>

3. Future

1. The collection of basic data to make up the list of astronomical heritage sites of humanity in danger is just beginning. It is necessary to achieve greater dissemination of the initiative among the academic community, especially among those engaged in cultural astronomy. We also hope to achieve an exchange with the WGs of Astronomy and Development and Education.

2. Also it is necessary to achieve greater visibility within the community of professional and amateur astronomers. In this sense, it is key to put them in contact with the results of the investigations of those who dedicate themselves to cultural astronomy. This can show them the relevance of issues related to identity, ethnic and cultural conflicts and colonialism for astronomical heritage. It is an interdisciplinary task that requires the collaboration of experts from different areas of knowledge. It also requires dialogue with local communities and first-hand knowledge of their knowledge, values and challenges.

3. It is important to expand the number of group members in the next few years. Given its interdisciplinary nature it becomes crucial to find more agile mechanisms to incorporate people who do not belong to the IAU and / or are not astronomers.

4. Another point of great importance is that the future WG work should help to promote that the astronomical developments (such as observatories) driven by universities or international consortiums favor the visibility of local astronomical traditions and traditional astronomical sites and landscapes. Similarly, we believe that the activity of the WG should promote that these astronomical developments incorporate, from their very first stages, specific and effective protocols of informed prior consultation. In this sense we think that the astronomers who participate in the development of these projects should have the list as an input that allows them to see other ways of looking at the sky and provides cultural relevance of the sky importance for teaching diverse students. For this reason, in the next few years, we hope to be able to increase the number of sites on the list and publicize them. We think that the collaboration with the IAU-RAS-AAS committee on sensitive astronomical sites must be increased.

Alejandro López
Chair of C4 WG Astronomical Heritage in Danger
March 2023