RECONSTRUCCIÓN DE ELA AABI EN GLACIARES DE LA CUENCA PARÓN (CORDILLERA BLANCA)

Álvaro Navarro [1,2]*, Jose Úbeda [1,2,3], Nelson Santillán [4], Luzmila Dávila [5], Ronald Concha [3], Alejo Cochachín [4], Jesús Gómez [6], Rolando Cruz [2], Lucas Torres [5]

[1] Grupo de Investigación en Geografía Física de Alta Montaña (GFAM) de la Universidad Complutense, Madrid, España.
[2] Guías de Espeleología y Montaña (GEM), Madrid, España.
[3] Instituto Geológico Minero y Metalúrgico (INGEMMET), Lima, Perú.
[4] Unidad de Glaciología y Recursos Hídricos. Autoridad Nacional del Agua (ANA), Huaraz, Perú.
[5] Instituto Nacional de Investigación en Glaciares y Ecosistemas de Montaña (INAIGEM), Huaraz, Perú.
[6] Parque Nacional Huascarán. Servicio Nacional de Áreas Naturales Protegidas por el Estado (SERNANP), Huaraz, Perú.
**E-mail: alnafru@gmail.com*

Abstract

This work presents the results of the test of the Area x Altitude Balance Index (AABI) method used to extrapolate to other glaciers in the basin of the Paron lake the data obtained in 2014 in the Artesonraju glacier using the direct glaciological method (GD). On the one hand, the Equilibrium Line Altitude deducted by monitoring (monitoring ELA or ELAm), through stakes in the ablation zone and snow pits in the accumulation zone was ELAm = 5129 m. Then, with the mass balance data of the Artesonraju glacier, the following monitoring ELAs were deduced, extrapolated to other glaciers in the Paron basin: ELAme = 4806 m (Chacraraju glacier); ELAme = 5402 m (Pisco glacier) and ELAme = 5454 m (Huandoy glacier). In addition, the geomorphological ELA was reconstructed. This ELAg is statistically representative for the four glaciers, deduced from geomorphological variables by the Area x Altitude Balance Ratio (AABR) method. Thus, ELAg = 5177 m was obtained. The variation between ELAg and the average ELA of monitoring (ELAm and ELAme) was quite small (21 m) suggesting that the results are quite reliable, despite having been obtained through different methods. It is a pioneering work that represents the first practical application of the AABI method. The possibility of extrapolating mass balance monitoring data to other glaciers would address the major drawbacks of observing the impact of climate change on glaciers, due to the large number of ice masses or their difficult access. This work suggests the demand to continue developing this line of research.

Keywords: *Glaciares, Cambio climático, Parón, ELA, AABI.*