Título: ATMOSPHERIC MERCURY: LONG-TERM (LATE PLEISTOCENE ¿ HOLOCENE) VARIATIONS IN MERCURY ACCUMULATION RECONSTRUCTED USING ENVIRONMENTAL ARQUIVES

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Resumen: The principal aim of this PhD research is to gain further insights into the variations in atmospheric Hg deposition over long timescales (late Pleistocene and Holocene) in the northern and southern hemispheres, by the use of environmental archives (peat and lake sediments). For this purpose, ve archives from different areas of the world and with records that operate at different time scales were studied: Rano Aroi (Easter Island, Chile), Pinheiros (Estado de Minas Gerais, Brazil), Lago Hambre (South Patagonia, Chile), Limnopolar Lake (South Shetland Islands, Antarctica) and Sandhavn (South Greenland). These records have been studied previously by geochemical, paleoclimatic and palynological means, enabling the multi-proxy approach that is needed for the assessment of a subject with the complexity of Hg cycling. This work pays special attention to understanding the processes involved in Hg deposition and accumulation, the interactions between these processes and the spatial and temporal variability in their relative importance. Furthermore, the research included a methodological assessment that aimed to select a suit of relatively cost- and time-ef cient methodologies, which is necessary for

multi- core/multi-site studies. Eight factors were identi ed as the main drivers of Hg concentration - through deposition-uptake and also through accumulation - in the peat and lake sediments studied: anthropogenic pollution, volcanic activity, organic matter decomposition, catchment processes, (lake) primary productivity, atmospheric Hg depletion events, vegetation type and direct and indirect climatic effects. Essentially, lake sediments and peatlands are environmental archives that can be used as records of atmospherically deposited Hg, thus providing a ¿picture¿ of the Hg cycle. However, the use of such archives as Hg atmospheric records is conditioned by factors that operate in different geographical and temporal scales. Thus, the Hg determined in the samples does not directly re ect atmospheric deposition, but results of changing combination different factors.