

Summary of Changes

This document summarizes the main changes introduced in the revised manuscript relative to the EGUsphere discussion paper (EGUsphere-2025-1198). Line numbers refer to the revised manuscript and are provided as approximate ranges.

Section	Revised manuscript (lines)	Type of change	Description
Abstract	L1–L25	Rewritten	Abstract rewritten to clarify the distinction between cryospheric reserves and resources and to reflect the final NCI framework.
Introduction	L45–L120	Expanded	Expanded to strengthen the hydrological context of arid Andean basins and better motivate the cryospheric watershed classification.
Section 2.2	L210–L320	Major revision	New conceptual framework describing cryospheric reserves versus resources and their contrasting hydrological response times.
Section 3.2	L410–L480	Revised methodology	Ice-volume estimation updated using the Farinotti et al. (2019) global consensus ice-thickness product for debris-free glaciers.
Section 3.5	L520–L640	New methodology	Physically based viscoplastic approach following Cicoira et al. (2020, 2021) implemented for rock glaciers and other ice-rich permafrost landforms.
Uncertainty analysis	L650–L720	Revised	Uncertainty assessment revised to include mapping uncertainty following Paul et al. (2013) and cryoform-specific uncertainty ranges consistent with recent literature.
Discussion	L820–L980	Rewritten	Discussion restructured to emphasize hydrological implications and watershed prioritization under different climatic scenarios.

Minor textual edits, reference updates, and stylistic corrections were applied throughout the manuscript to improve clarity and consistency.