

Table S2: Compiled dataset of measured lake areas and volumes.

Glacier or Lake	Location	Survey date	Study	Lake Area (m <sup>2</sup> )	Volume (x 10 <sup>6</sup> m <sup>3</sup> )
Abmachimai Co	Himalaya (Tibet)	1987	Sakai (2004, 2012)	560000	19
Ape Lake	British Columbia, Canada	1984-85	Gilbert and Desloges (1987)	2770606	92.78
Bashkara	Caucasus, Russia	2005?	Petrokov et al. (2007)	65000	0.74
Bashkara	Caucasus, Russia	2008	Petrokov et al. (2011)	85000	1
Briksdalsbreen	Norway	1979	Duck and McManus (1985)	47100	0.314
Briksdalsbreen	Norway	1982	Duck and McManus (1985)	45300	0.282
Cachet II	North Patagonia	2008-9	Casassa et al. (2010), Loriaux & Casassa (2013)	4045000	200
Chamlang south	Himalaya (Nepal)	2009	Sawagaki et al. (2012)	870000	35.6
Checquiacocha	Cordillera Blanca, Peru	2008	Emmer and Vilimek (2013)	351600	12.855
Dig Tsho	Himalaya (Nepal)	1999	Mool et al. (2001)	500000	10
Gelhaipuco	Tibet	1987-8	Mool et al. (2001), Yao et al. (2012)	548000	25.5
Goddard	British Columbia, Canada	1994	Clague and Evans (1997)	210000	4
Godley	Southern Alps, New Zealand	1994	Warren and Kirkbride (1998)	1650000	85.72
Godley	Southern Alps, New Zealand	1994	Allen et al. (2009)	1700000	102
Hazard / Steele	Yukon, Canada	1974	Collins and Clarke (1977)	880000	14
Hazard / Steele	Yukon, Canada	1979	Clarke (1982)	1274000	19.62
Hidden Creek Lake	Alaska	1999-2000	Cunico (2003)	822492	21.23
Hooker	Southern Alps, New Zealand	1995	Allen et al. (2009)	700000	41
Hooker	Southern Alps, New Zealand	2002	Allen et al. (2009)	900000	59
Hooker	Southern Alps, New Zealand	2009	Robertson et al. (2013)	1220000	50
Imja	Himalaya (Nepal)	1992	Fujita et al. (2009)	600000	28
Imja	Himalaya (Nepal)	2002	Fujita et al. (2009)	864000	35.8
Imja	Himalaya (Nepal)	2009	Sakai (2004, 2012)	1010000	35.5
Imja	Himalaya (Nepal)	2012	Somos-Valenzuela et al. (2013)	1210000	63.8
Imja	Himalaya (Nepal)	2012	Somos-Valenzuela et al. (2014)	1257000	61.6

Ivory	Southern Alps, New Zealand	1986	Hicks et al. (1990)	73000	1.45
Ivory	Southern Alps, New Zealand	1976	Hicks et al. (1990)	98414	2.02
Ivory	Southern Alps, New Zealand	1980	Hicks et al. (1990)	117931	3.52
Laguna Safuna Alta	Cordillera Blanca, Peru	2001	Hubbard et al. (2005)	343152	21.3
Lake No Lake	British Columbia, Canada	1999	Geertsema and Clague (2005)	5000000	720
Lapa	Caucasus, Russia	2006	Petrakov et al. (2007)	28000	0.143
Lapa	Caucasus, Russia	2010	Petrakov et al. (2011)	40000	0.2
Leones	North Patagonia	2001	Harrison et al. (2008), Loriaux and Casassa (2013)	19501000	2454.61
Llaca	Cordillera Blanca, Peru	2004	Emmer and Vilimek (2013)	44000	0.274
Longbasaba	Himalaya (Tibet)	2009	Yao et al. (2012)	1218700	64
Lower Barun	Himalaya (Nepal)	1993	Sakai (2004, 2012)	600000	28
Lugge	Himalaya (Bhutan)	2002	Sakai (2004, 2012)	1170000	58.3
Maud Lake	Southern Alps, New Zealand	1994	Allen et al. (2009)	1300000	78
Miage	Alps, Italy	2003	Diolaiuti et al. (2005)	35900	0.34
Mt Elbrus	Caucasus, Russia	2000	Petrakov et al. (2007)	89000	0.55
MT Lake	British Columbia, Canada	1982-3	Blown and Church (1985)	41600	0.496
Mueller	Southern Alps, New Zealand	2002	Allen et al. (2009)	500000	4.3
Mueller	Southern Alps, New Zealand	2009	Robertson et al. (2012)	870000	20
Nef	North Patagonia	1998?	Loriaux & Casassa (2013), Warren et al. (2001)	5133000	770.71
Ngozumpa	Himalaya (Nepal)	2009	Thomson et al. (2012)	300000	2.2
Ngozumpa 2	Himalaya (Nepal)	2008	Sharma et al. (2012)	185100	3.296
Ngozumpa 3	Himalaya (Nepal)	2008	Sharma et al. (2012)	427900	10.573
Ngozumpa 4	Himalaya (Nepal)	2008	Sharma et al. (2012)	572900	77.3
Palcacocha	Cordillera Blanca, Peru	2009	Emmer and Vilimek (2013)	528400	17.325
Palcacocha	Cordillera Blanca, Peru	2009	Somos-Valenzuela and McKinney (2011)	518426	17.33
Paqu Co	Himalaya (Tibet)	1987	Sakai (2004, 2012)	310000	6
Petrov Lake	Tien Shan	1978	Sevast'yanov and Funtikov (1981); Loriaux and Casassa (2013)	1630000	20

Petrov Lake	Tien Shan	2003	Engel et al. (2012)	3660000	53.4
Petrov Lake	Tien Shan	2006	Janský et al. (2010)	3905000	60.309
Petrov Lake	Tien Shan	2006	Engel et al. (2012)	3800000	59.2
Petrov Lake	Tien Shan	2008	Engel et al. (2012)	3880000	62
Petrov Lake	Tien Shan	2009	Janský et al. (2009), Loriaux and Casassa (2013)	3900000	63.96
Quangzonk Co	Himalaya (Tibet)	1987	Sakai (2004, 2012)	760000	21.4
Quitacocha	Cordillera Blanca, Peru	2011	Emmer and Vilimek (2013)	130400	3.232
Rajucolta	Cordillera Blanca, Peru	2004	Emmer and Vilimek (2013)	512700	17.546
Raphsthren, Bhutan	Himalaya (Bhutan)	1984	Sakai (2004, 2012)	1380000	66.83
Tam Pokhari	Himalaya (Tibet)	1992-3	Mool et al. (2001), Yao et al. (2012)	470000	21.3
Tararhua	Cordillera Blanca, Peru	2008	Emmer and Vilimek (2013)	358000	4.238
Tasman	Southern Alps, New Zealand	2009	Robertson et al. (2012)	5960000	510
Thulagi	Himalaya (Nepal)	1995	Sakai (2004, 2012)	760000	31.8
Thulagi	Himalaya (Nepal)	2009	Sakai (2004, 2012)	940000	35.37
Tsho Rolpa	Himalaya (Nepal)	1993	Sakai (2004, 2012)	1390000	76.6
Tsho Rolpa	Himalaya (Nepal)	2009	Chikita et al. (1999), Sakai (2004, 2012)	1540000	85.94
Tulsequah	British Columbia, Canada	1958	Marcus (1960)	3861900	229

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