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## Supplementary material

- 2 Table I: Characteristics of the 122 satellite images used for SLA measurements. For Landsat images,
- the pixel size is 15 and 30 m for the panchromatic and multispectral modes respectively (LT5 =
  Landsat 5 TM, LE7 = Landsat 7 ETM+). For SPOT images the pixel size is 2.5, 5 or 10 m for the
- 5 panchromatic mode (P) and 10 or 20 m for the multispectral mode (XS) depending on the satellite. For
- 5 panelitoinate mode (1) and 10 of 20 m for the multispectral mode (AS) depending on the saterific
- 6 ASTER images the pixel size is 15 m.

Date	Sensor	Path-Row		Date	Sensor	Path-Row
31/08/1984	LT5	196-028 and 196-029	-	24/08/2001	SPOT-2 XS	050-259
09/09/1984	LT5	195-028 and 195-029		29/08/2001	SPOT-1 XS	051-257
02/08/1985	LT5	196-028 and 196-029		07/09/2001	ASTER-1	195-029
11/08/1985	LT5	195-028 and 195-029		02/10/2001	LE7	195-028 and 195-029
28/09/1985	LT5	195-029		02/08/2002	LE7	195-029
09/09/1986	LT5	196-028		18/08/2002	LE7	195-028
05/10/1986	SPOT 1 P	051-258 and 051-259		14/09/2002	SPOT-5 XS	051-258
17/10/1986	LT5	195-028		05/10/2002	LE7	195-028 and 195-029
09/09/1987	LT5	196-028		12/08/2003	ASTER	195-029
18/09/1987	LT5	195-029		13/08/2003	LT5	195-028 and 195-029
27/08/1988	LT5	195-028 and 195-029		22/08/2003	SPOT-2 P	052-259
12/09/1988	LT4	195-028 and 195-029		23/08/2003	SPOT-5 P	051-257 and 051-259
26/09/1988	SPOT-1 XS	050-259		21/09/2003	LT5	196-029
30/07/1989	SPOT-1 P	051-259		14/08/2004	ASTER	195-029
13/08/1989	LT5	195-029		27/08/2004	SPOT-5 XS	051-259
20/09/1989	SPOT-1 P	052-257 and 052-258		08/09/2004	LE7	195-028 and 195-029
01/09/1990	SPOT-2 XS	051-259		08/09/2004	ASTER	195-028 and 195-029
10/09/1990	LT5	195-028		01/08/2005	ASTER	195-027 and 195-028
19/08/1991	LT5	196-029		10/08/2005	LE7	195-028
25/08/1991	SPOT-2 P	052-257		02/09/2005	LE7	196-028 and 196-029
30/08/1991	SPOT-2 P	051-258 and 051-259		05/09/2006	LE7	196-028 and 196-029
05/08/1992	LT5	196-028		21/09/2006	LE7	196-028 and 196-029
17/09/1992	SPOT-1 XS	051-259	-	16/10/2006	LE7	195-028 and 195-029
21/09/1992	SPOT-1 XS	051-257 and 051-258		31/07/2007	LE7	195-028 and 195-029
26 07 1993	SPOT-1 XS	050-259		24/09/2007	LE7	196-028 and 196-029
02 09 1993	SPOT-2 XS	051-257		19/10/2007	LE7	195-029
09/08/1994	SPOT-3 P	052-257 and 051-259	-	19/10/2007	ASTER	196-028 and 196-029
15/08/1994	SPOT-3 P	050-259 and 052-259		18/08/2008	LE7	195-028 and 195-029
31/08/1995	SPOT-2 XS	051-259		02/09/2008	SPOT 5 XS	051-257, 052-258, 052-259 and 051-260
31/07/1996	SPOT-3 P	052-259		07/09/2008	SPOT 4 XS	051-259
08/08/1996	SPOT-2 XS	051-257		15/08/2009	SPOT-5 XS	052-257 and 052-258
30/09/1997	SPOT-1 XS	051-257, 051-258, 051-259 and 051-260		06/09/2009	LE7	195-029
26/08/1998	SPOT-4 XS	052-257		22/09/2009	LE7	195-028 and 195-029
30/08/1998	SPOT-4 XS	051-259 and 052-258		29/09/2009	LE7	196-029
02/09/1999	LE7	196-029		30/09/2009	LT5	195-028
11/09/1999	LE7	195-028 and 195-029	-	31/08/2010	LE7	196-028 and 196-029
12/08/2000	LE7	195-028		09/09/2010	LE7	195-029
26/08/2000	SPOT-1 XS	051-257		15/09/2010	SPOT-5 XS	052-258
28/08/2000	LE7	195-029		16/09/2010	ASTER	195-027, 195-028 and 195-029
				23/09/2010	SPOT-4 XS	050-259

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8 Table II: ELA of each one of the 43 glaciers for each year of the 1984-2010 period. Underlined data
9 are calculated using the bi-linear regression method detailed in section 2.2.3.

Year	Trient	Tour S	aleina	rgentièr	Tour SaleinaArgentièreTàlèfre Pré Bar Tr	Fre Dar	Triolet	L'oving a A													
1984	2642	2561	<u>2631</u> 7605	2700	2696	2800	2709	<u>2581</u> 7170	2943	2530	2777	2394	2842	2685	2715	2552	2480	2797	2756	2609	2763
1986		3084	3067	2787	3213	3153	3112	2975	3342	3078	3066	2862	3099	3006	3065	3014	2917	3169	3035	2953	3073
1987		2653	2861	2668	2735	2939	2935	2630	3127	2756	2737	2612	2869	2837	2849	2691	2804	2884	2926	2872	2897
1988		2714	2928	2761	2996	3039	3048	2859	3263	3015	3090	2831	3056	3053	2824	2680	2549	3017	2984	2853	2930
1989		2801	3019	2805	3103	3092	3157	2942	3293	3157	3185	3135	3150	3073	3044	3026	2959	3059	3026	2887	3077
1990		3118	3144	2861	3204	3091	3224	3225	3368	3358	3365	3250	3286	3396	3125	3190	2978	3268	3165	3034	3116
1991		2822	2056	2818	2100	1667	0010	2814	3172	2994	3096	2120	2913	2147	3114	9105	2070	3303	3127	3146	3114
1993		2840	2000	20102	3209	3044	3026	3026	3236	3056	3033	2896	3148	2415	1000	0775	2855	3106	1410	2010	2082
1994	2965	2715	2910	2770	2918	3024	2932	2755	3157	2825	2870	2810	2831	2935	2875	2935	2901	3088	2941	2871	2925
1995		2612	2719	2674	2777	2781	2752	2640	3012	2767	2838	2656	2785	2767	2773	2804	2697	2948	2853	2761	2823
1996		2701	2879	2732	2962	3014	2965	2728	3165	2959	3034	2838	2944	2943	2850	2881	2774	3025	2930	2838	2900
1997		2810	2956	2747	3035	3052	3016	2805	3238	2968	3042	2946	3183	3036	2904	3051	2952	3176	3041	2961	3012
1998		3099	3051	2834	3167	3074	3106	3237	3504	3306	3476	3143	3082	3093	3072	3044	2951	3235	3148	3156	3090
2000	2947	2/08	2167	2/40	8/67	3034	2073	2682	3126	2033	1007	2672	2910	3000	1882	3043	1067	3175	3064	5002	3048
2001		2707	2871	2665	2905	3034	2881	2594	2938	2745	2824	2664	2789	2917	2813	2595	2626	2892	2797	2704	2767
2002		2785	2926	2754	2965	3031	2993	2741	2937	2787	2796	2708	2861	2879	2880	3004	2822	2998	3020	2868	2950
2003		3153	3112	2894	3167	3140	3089	3180	3550	3417	3609	3235	3313	3150	3202	3352	3086	3281	3162	3187	3159
2004		3044	3068	2851	3157	3132	3075	3174	3498	3415	3596	3275	3287	3170	3108	3216	2995	3341	3173	3134	3098
2005		3046	3134	2866	3141	3092	3038	3165	3269	3080	3042	3213	3163	3125	3186	3204	2990	3307	3175	3048	3095
2002		2869	5028	2840	3043	3044	3000	2740	9655	5082	3048	1267	5151	3114	2005	2962	2662	3170	2085	C667	2006
2008		2015	1062	2855	2112	2037	3001	06412	3711	3016	1000	10/7	3085	3013	2117	2136	2007	3758	2130	2007	3041
2009		3139	3116	2014	0065	3145	3103	3052	3616	2394	1667	2773	3758	3375	3045	3045	3036	3281	3076	3080	3075
2010	2892	2832	2854	2770	3029	2935	2959	2811	3249	3004	3047	2842	3034	2914	3117	3030	2972	3190	3115	2930	3071
Year 4	ArcelinG	d Méa	n Pelve	Vallonn	ArpontM	rpontMahure Géb	ébroul.	3aoune (R	ochem.St	SorlinO	uirlies	iroseLa	utaretMi	It de L. S.	elle Ca	sset Bla	nc Val. P	ilatVio	lett. Rot	ties Sélé	Pilatte
1984	2643	2878	2683	2879	2951	2864	2927	2780	2900	2784	2755					105 301	6 302			1.00	
1985	2783	2894	2678	3162		2899	2973	2816	2985	2870	2847					143 309	1 329				
1986	3096	3068	3143	3262	3164	3141	3014	3015	3151	3074	2936										
1987	3008	2958	2852	3287		2976	2985	2954	3012	2905	2804										
1988	3007	3022	2757	3282		2880	2954	3013	3043	2849	2782										
1989	3096	3064	3209	3303		3156	3081	3102	3160	3165	2919										
1990	3109	3172	3246	3346		3247	3095	3140	3251	2010	2920										
1992	3076	3173	3170	3331		3159	3076	3169	3227	3059	2935										
1993	2977	3042	3187	3286		2977	2942	3039	3097	3011	2891									512 55	
1994	3007	2991	3129	3253		3068	2941	3004	3047	2836	2769										
1995	2818	2884	2932	3043		2858	2825	2881	2939	2689	2698										
1007	2050	1067	1662	3158		5057	1167	2667	5006	8/87	80000										
1998	3117	3194	3274	3290		3165	3084	3142	3214	3173	2977										
1999	3036	3043	3204	3281		3130	2990	3101	3155	2970	2863									50 	
2000	3058	3090	3162	3288		3136	3004	3047	3189	3034	2898										
2001	2762	2828	2876	2987		2878	2848	2852	2882	2780	2750										
2002	2938 2923 3 3173 3730	2923	3097	3108	2992	2998	2988	3001	3014	3107	3059	3066	3028 2	2925 3	3141 30	3035 3085	5 3159		3038 30 3366 34	3020 3070	2810
5002	C710	0010	1100	0700		0070	5610	4010	2010	0070	+/00										
2005	3128	3176	1070	2797		C17C	3108	3167	3261	6175	3041										
2006	3054	3119	3195	3277		3199	3041	3115	3173	3060	2968										
2007	3018	3044	3149	3279		3101	3010	3122	3194	3194	2981										
2008	3079	3063	3262	3300		3186	3063	3124	3216	3010	2831										
2009	3127	3121	3303	3304		3288	3138	3178	3235	3241	3056									47 3160	3153
2010	2875	3126	3071	3124		3284	3037	3132	3167	2939	2958									65 3084	2803