Excercise: balance flux

January 2015

Constants

ELA	3000	**ELA_2**	3100	**rhoi**	910	**ELA position (m)**	
alpha	-10	**width W**	500	**Rate factor A**	7.5E-17		
s_0	3500	**surface slope k**	-0.176326981	**g**	9.81		
m	0.007	**dx**	100	**n**	3		
m_continental	0.0035			**sec to year**	31536000		

		Standard balance flux					ELA_2=3100		Continental climate		Debris covered glacier		
x-coordinate (m)	**Surface elevation (m)**	**Surface mass balance rate (m/a)**	**(Surface mass balance rate) * W * dx**	**Balance flux**	**Ice thickness (m)**	**Balance velocity (m/a)**	**Surface mass balance rate (m/a)**	**Balance flux ELA=3100**	**Surface mass balance rate (m/a)**	**Balance flux**	**Surface mass balance rate (m/a)**	**(Surface mass balance rate) * W * dx**	**Balance flux**
0													
100													
200													
300													
400													
500													
600													
700													
800													
900													
1000													
1100													
1200													
1300													
1400													
1500													
1600													
1700													
1800													
1900													
2000													
2100													
2200													
2300													
2400													
2500													
2600													
2700													
2800													
2900													
3000													
3100													
3200													
3300													
3400													
3500													

x-coordinate (m)	Surface elevation (m)	Surface mass balance rate (m/a)	(Surface mass balance rate) * W * dx	Balance flux	Ice thickness (m)	Balance velocity (m/a)		Surface mass balance rate (m/a)	Balance flux ELA=3100		Surface mass balance rate (m/a)	Balance flux		Surface mass balance rate (m/a)	(Surface mass balance rate) * W * dx	Balance flux	
3600																	
3700																	
3800																	
3900																	
4000																	
4100																	
4200																	
4300																	
4400																	
4500																	
4600																	
4700																	
4800																	
4900																	
5000																	
5100																	
5200																	
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6000																	
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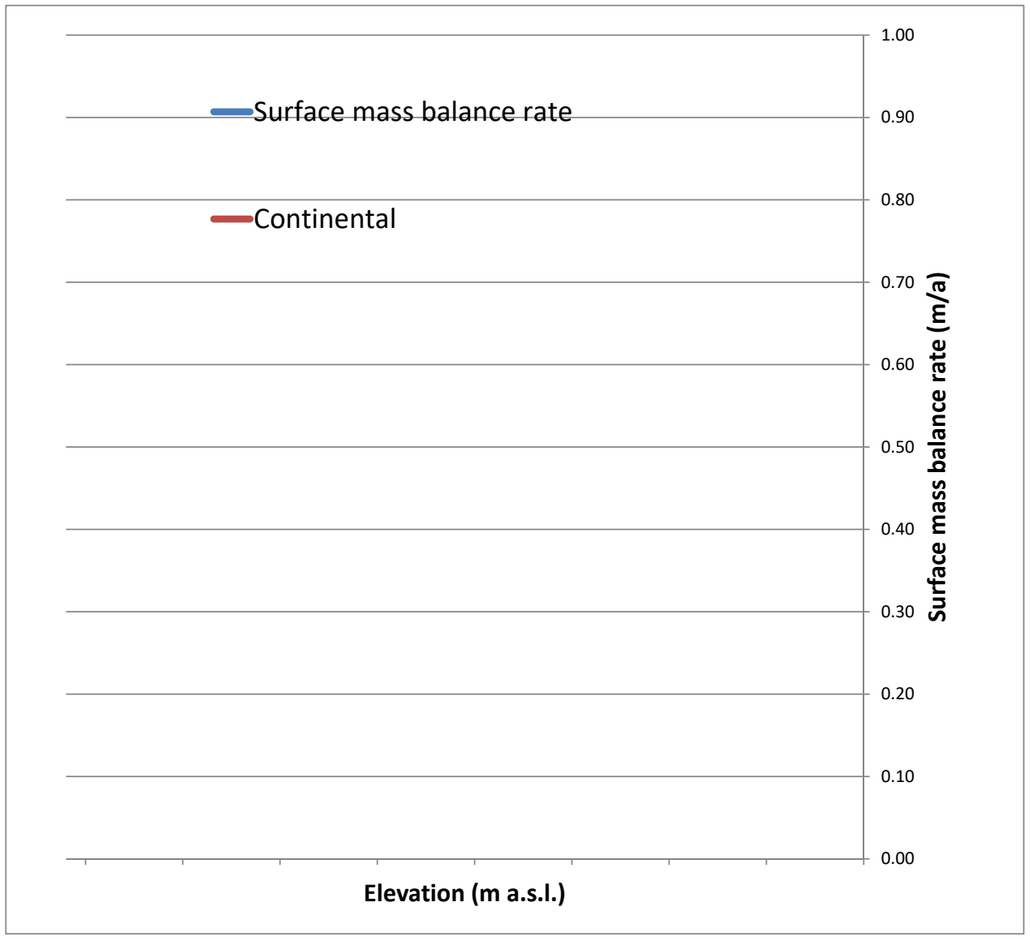
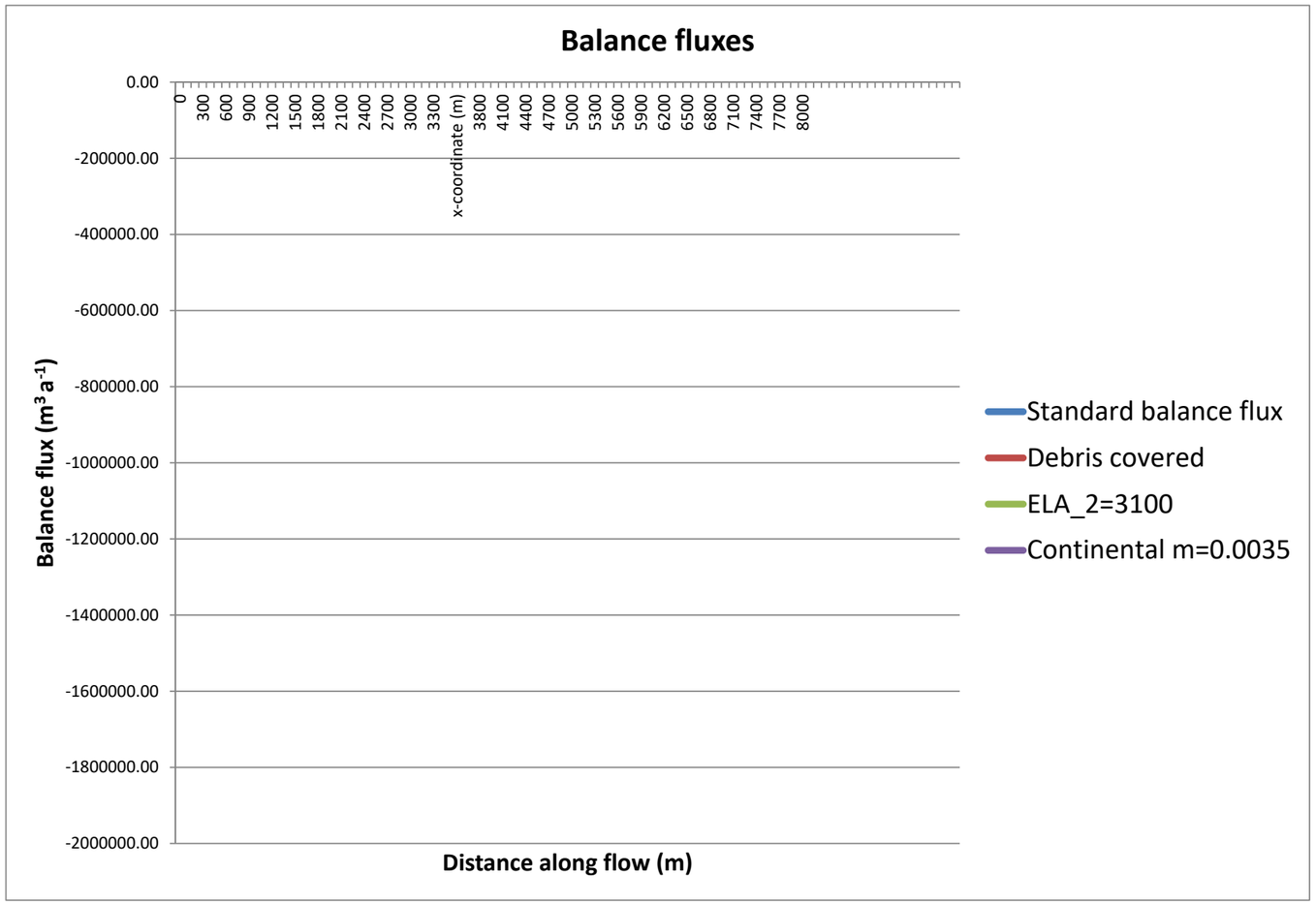
6700																	
6800																	
6900																	
7000																	
7100																	
7200																	
7300																	
7400																	
7500																	
7600																	
7700																	
7800																	
7900																	
8000																	


Surface mass balance rate
Continental
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Surface mass balance rate (m/a)
Elevation (m a.s.l.)


Balance fluxes
0.00
-200000.00
-400000.00
-600000.00
-800000.00
-1000000.00
-1200000.00
-1400000.00
-1600000.00
-1800000.00
-2000000.00
Balance flux (m³ a⁻¹)
0
300
600
900
1200
1500
1800
2100
2400
2700
3000
3300
3800
4100
4400
4700
5000
5300
5600
5900
6200
6500
6800
7100
7400
7700
8000
x-coordinate (m)
Distance along flow (m)
Standard balance flux
Debris covered
ELA_2=3100
Continental m=0.0035