Sand Flux in a Desert Site of Mongolia

E.Munkhtsetseg[1], M.Shinoda[2], J.Gillies[3] and Y.Shao[4]

[1] National University of Mongolia, Mongolia; [2] Nagoya University, Japan
[3] Desert Research Institute, Nevada, USA; [4] Cologne University, Germany

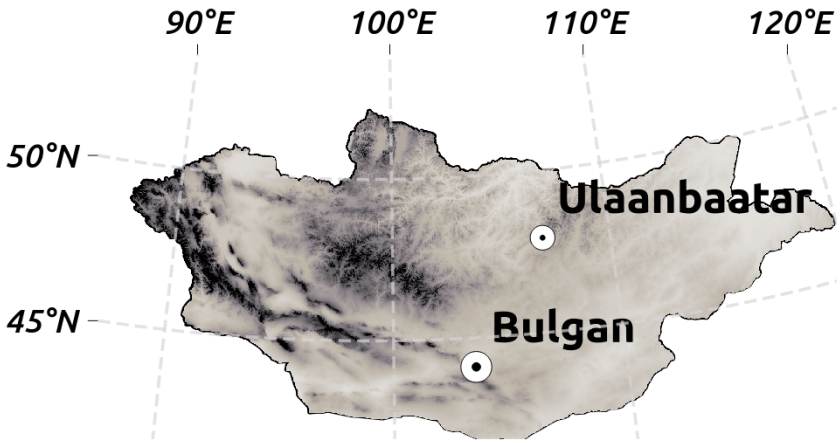
EGU General Assembly 2023

Study purpose

- To demonstrate atmospheric and surface conditions during DSS 2011 Apr 24, Apr 28-29.
- To illustrate sand flux vertical gradients using BSNE sand trap
- To determine parameters for Q /Sand flux/

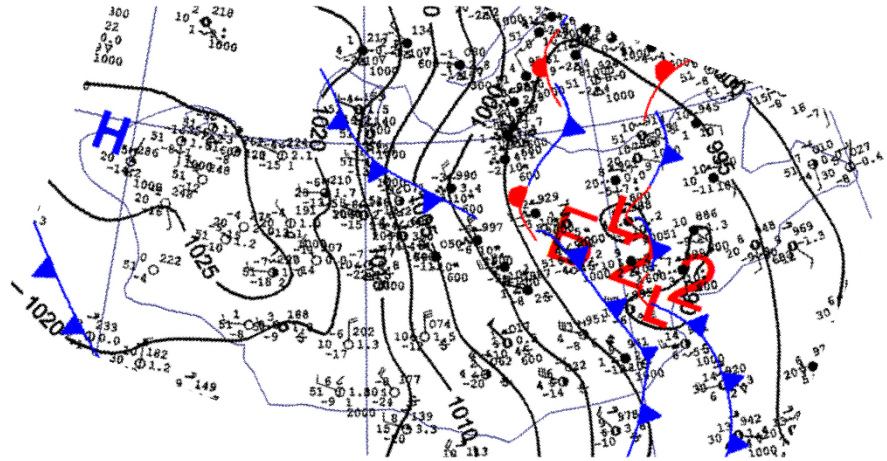
Sand flux measurement by BSNE

a)



A site location in ASTER DEM map of Mongolia

b)



Weather chart on 8 am April 29, 2011 (by IRIMHE)

c)

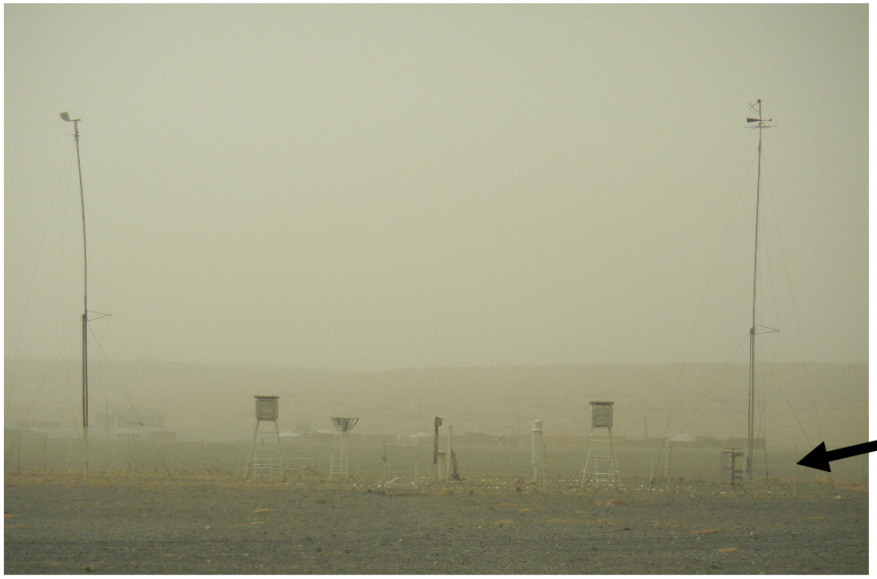
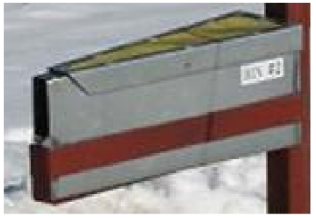


Photo of Bulgan site on 9 am April 29, 2011

d)

BSNE
(installed on Mar, 2009)

e)



A bin
(a compartment of BSNE)

Sand flux calculations

[1] q(z) = c*exp(a+bz);
Bagnold, 1941

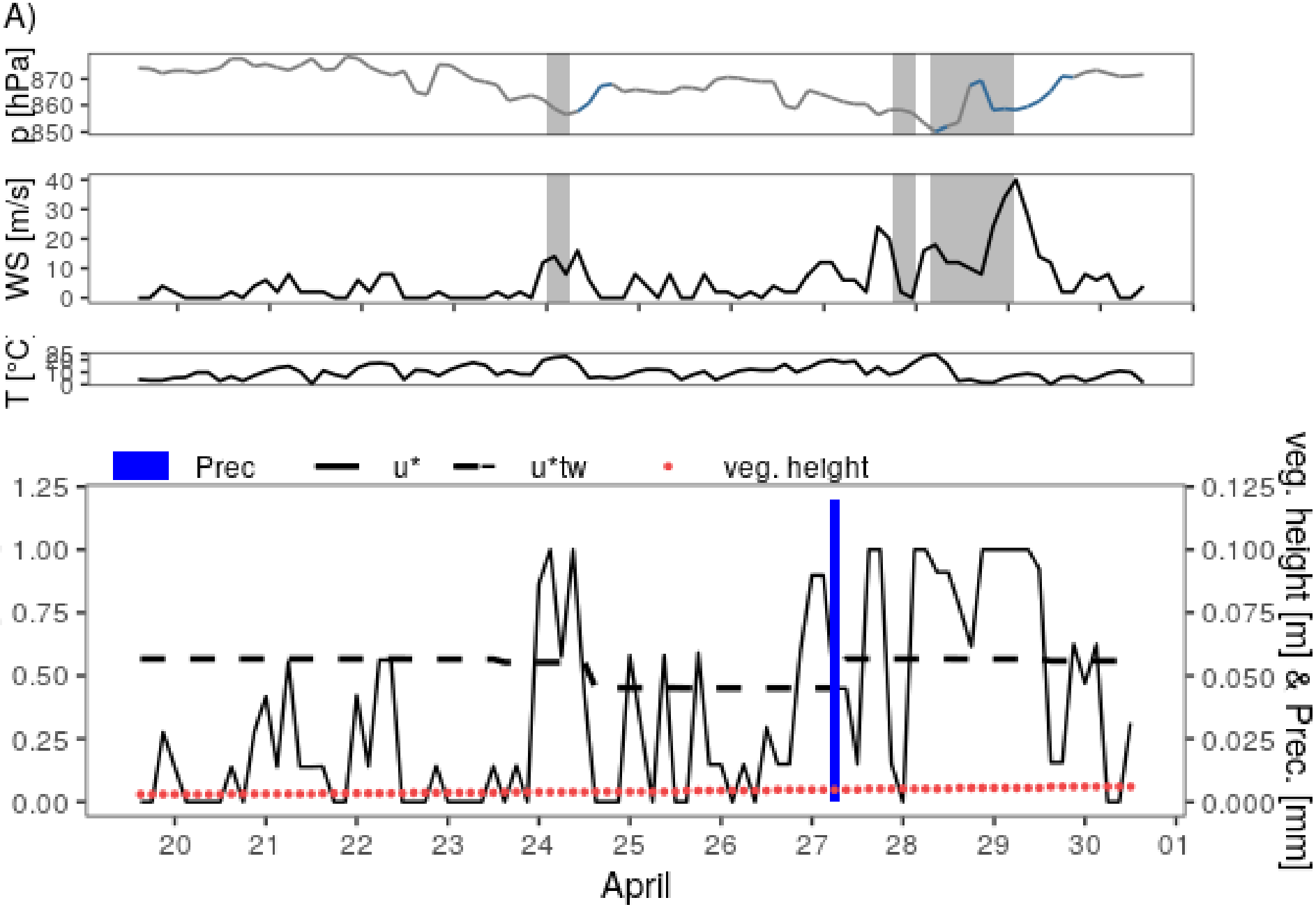
[2] q(z) = qo*exp(-z/z[q]);
Martin and Kok 2017

Q = qo*exp(-z/zq)==> Q=qo*zq"

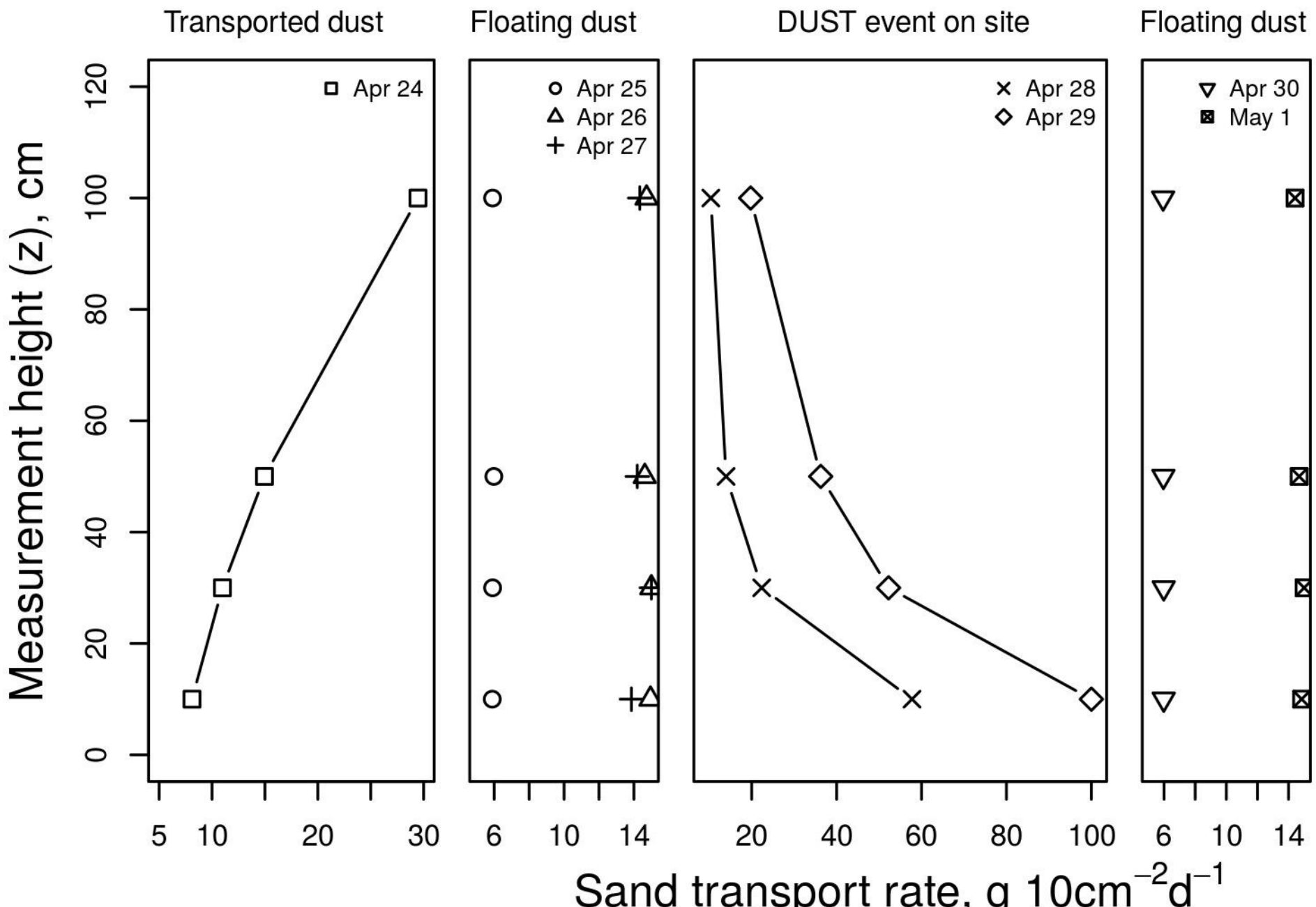
$$q(z) = q_0 \exp\left(-\frac{z}{z_q}\right)$$

$$Q = \int_{z=0}^{z=\infty} q(z)dz = q_0 z_q$$

Atmospheric and land surface conditions

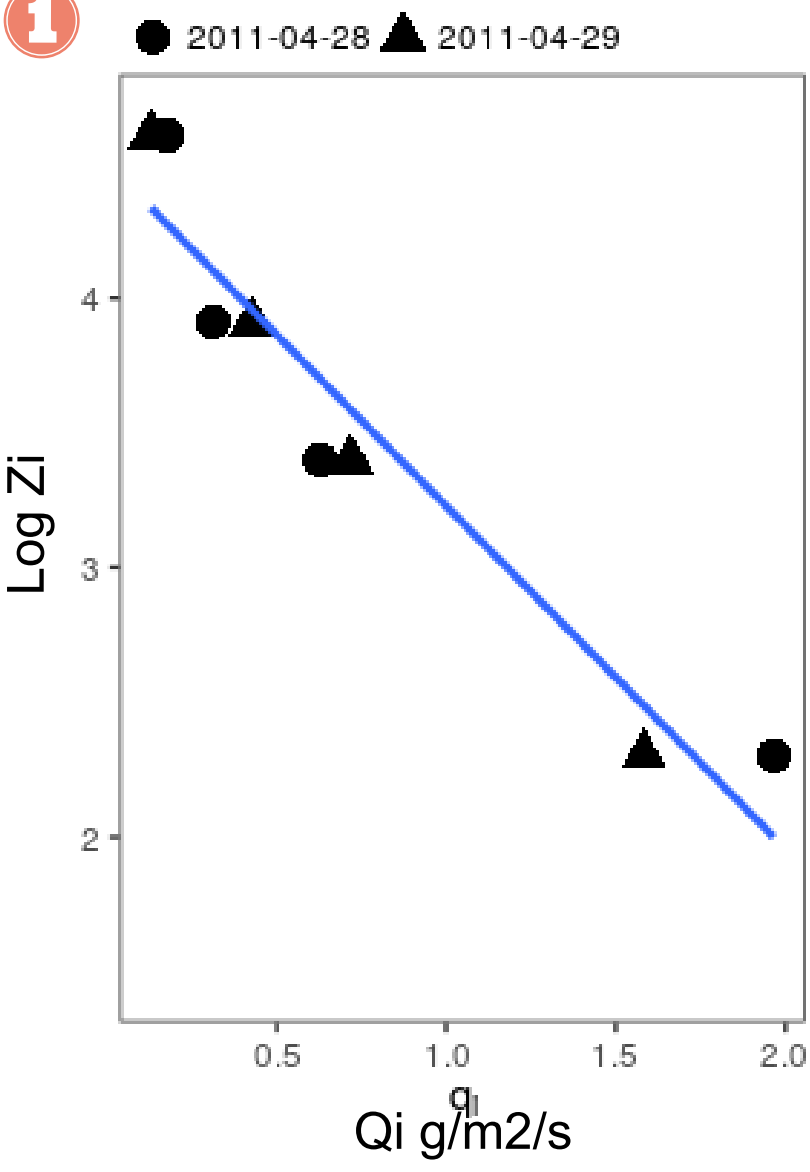


Sand flux vertical gradients



The determined saltation height (Zq) and sand flux (Q)

1

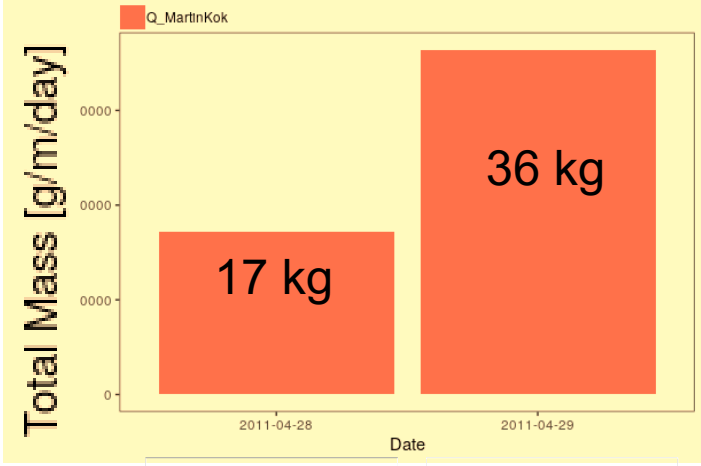


2 Table: Retrieved qo using the Zq

Date	Zq (m)	qo	Q (g/m/s)
04/28/11	0.37	1.81	0.68
04/29/11	0.36	1.88	0.67

Using equation: Q=qo*Zq

3



04/28/11 04/29/11