

Making a mountain out of a plateau

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sinclair 2017

SPL-like LEMs predict that such surface should quickly disappear



Challenge the validity of the rules used to simulate mountain erosion & sediment dispersal



Goals

- **simulate preservation of these features (improve modelling of fluvial processes)**
- **better quantify mountain erosion & sediment transport from s2s**

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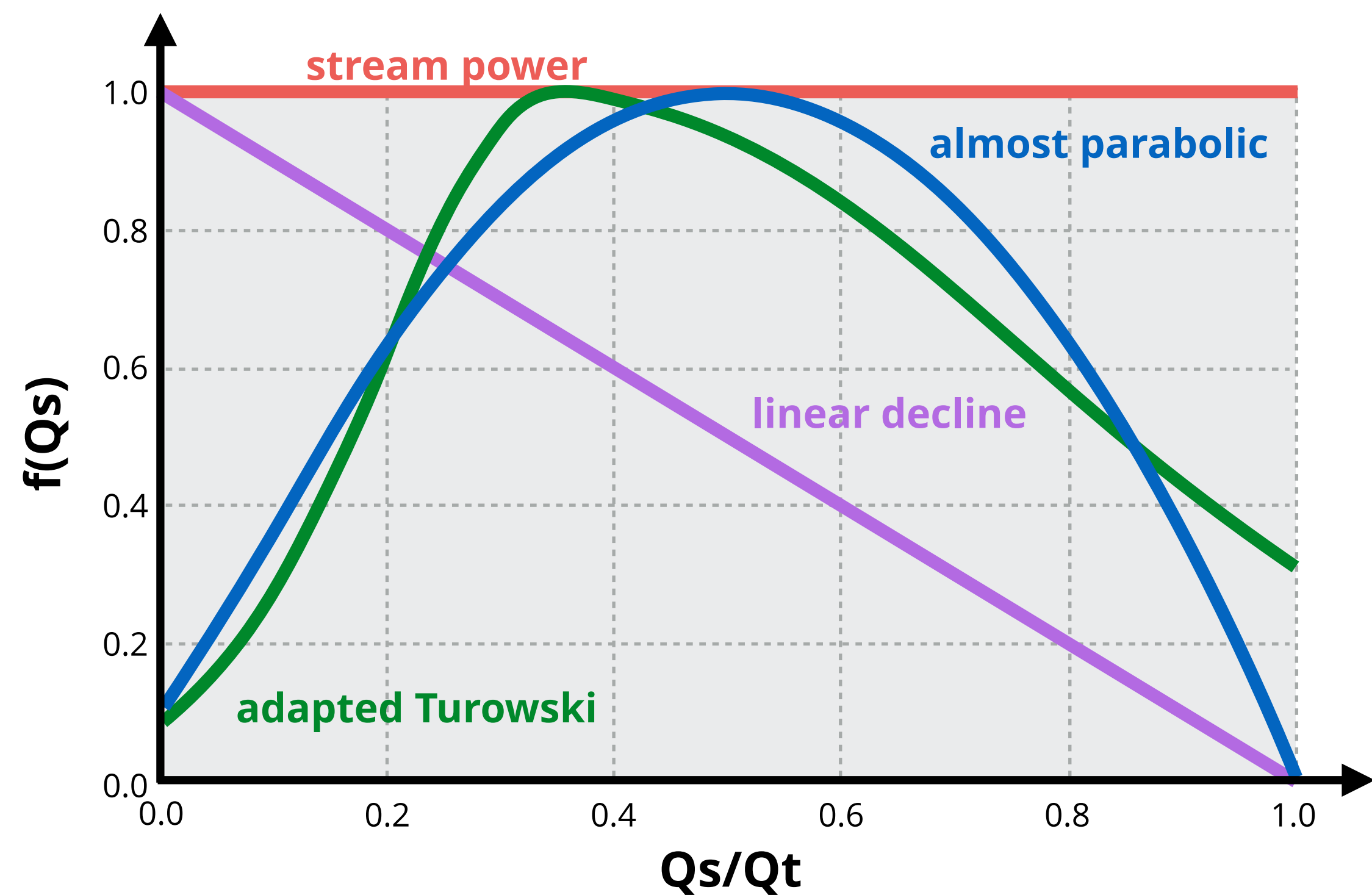
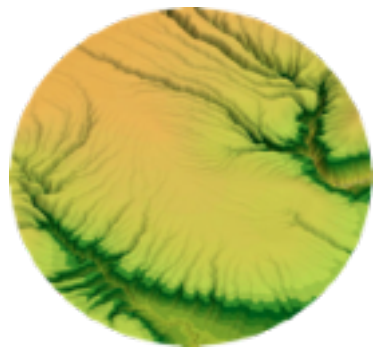
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Detachment (SPL) + tool & cover formulations



adapted from Hobley et al. [2011]

Parameters		Values
m_t		1.5
n_t		1
K_t	m^{3-2m_t}/yr	2.0×10^{-5}
K_{SP}	$m^{-(2m+1)}/\text{yr}$	4.0×10^{-5}
K_{SA}	$m^{-0.5}$	5.0×10^{-2}
K_{GA}	m^{-1}	7.0×10^{-3}
$m^{1,2,3}$		0.5, -0.25, 0
$n^{1,2,3}$		1, -0.5, 0
k_w	m^{1-3b}/yr^b	1
b		0.5

¹detachment-limited stream power model

²saltation-abrasion model

³generalised abrasion model

from Gasparini et al. [2006]

General form:

$I = K P^d f(Qs) (PA)^m S^n$ where: $f(Qs) = Qs/W (1-Qs/Qt)$