Manual for Package: sediment-transport
Revision 10M

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```

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```

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```
bed load transport rate according to meyer-peter-mueller
```

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```
bed load transport
method of van Rijn (1984)


d50 [mm] (converted to m)
d90 [mm] (converted to m)

d : depth
b : width
```

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```
bed load transport according to Wu
```

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```
analysis and prediction of fluvial sediment transport and
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```

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```
critical aspect ratio of a bifurcation
c.f. redolfi and pittaluga
```

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```
critical grain size for a given shear velocity
```

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```
critical shear Stress
```

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```
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aka critical shear stress ratio
aka shields curve
```

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```
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```

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```
analysis and prediction of fluvial sediment transport and
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```

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```
analysis and prediction of fluvial sediment transport and
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```

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```
ODE of the nodal point relation (time-derivative of branch cs-area)
```

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```
Nodal point relation for bifurcations, according to Wang
```

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```
sediment entering branches
```

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```
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```

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```

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```
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there is a problem with this relation, as soon as the bed of one
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the water level at the bifurcation changes, so the depth of the
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entirely independent
```

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cross section geometry of branches
```

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jacobian of the nodal point relation
semi-autogenerated
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```
phase diagram
```

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```

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staility analysis for a given configuration
```

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bar mode of a river according to crosato
```

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```
analysis and prediction of fluvial sediment transport and
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```

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```
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```

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```
chezy rougness according to engelund and fredsoe
```

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```

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function [theta,C] = skin_2_total_friction_eh(theta_t,Ct)
```

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```
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```

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```

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13 sediment-transport

```
analysis and prediction of fluvial sediment transport and
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```

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sediment transport by waves
```

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```
normalized shear stress, shear stress ratio
```

14 suspension

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```
adaptatoion lenght of bed morphology
```

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```
adaption length of the flow
```

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15.1 Hermite_profile

```
suspended sedimen profile in form of a hermite polynomial
```

15.2 fit

```
fit suspended sediment profile
```

15.3 predict

```
predict suspended sediment concentration
```

15.4 regmtx

```
regression matrix
```

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```
hermite profile
```

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```
parabolic-constant profile
```

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```

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```
predict suspended sediment concentration
```

16.4 regmtx

```
regression matrix
```

16.5 transform

```
transformation of vertical coordinate
```

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```
suspended sediment concentration profile
```

17.2 fit

```
fit the suspended sediment concentration profile
```

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17.4 predict

```
predict the suspended sediment concentration
```

17.5 regmtx

```
regression matrix
```

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```
rouse number (suspension number) for given grain siye and shear
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```

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```
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```

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```
transform the vertical coordinate
```

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```
vertical profile of the suspended sediment according to McLean
```

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```
Settling velocity
5.23d in julien-2010
settling velocity according to cheng
settling velocity in water
stokes settling velocity
d : [mm] diameter of sediment particle
ws : [m/s] settling velocity
```

```
          signed ws < 0 : falling
(Note: was R, radius in m)

valid for small particles
```

21.5 settling_velocity_to_diameter

```
invert settling velocity to diameter
```

21.6 stratification_parameter_rijn

21.7 stratification_parameter_wright_parker

21.8 stratification_profile_mclean

21.9 suspended_grain_size

```
suspended grain size distribution based on bed material grain size
    distribution

assumes that probability of suspension is inverse proportional to
    grain diameter
as in Engelund-Hansen transport relation
- no hiding effects considered
- no threshold for large grains applied
- no flocking considered
note: actual distribution varies with the depth

d     : [1xnd] grain size in arbitrary units (on linear, not on log
    scale)
h_bed : [nsxnd] fractions of sediment of size d
```

21.10 suspended_grain_size_non_linear

```
suspended grain size distribution based on bed material grain size
    distribution

assumes that probability of suspension is inverse proportional to
    grain diameter
as in Engelund-Hansen transport relation
- no hiding effects considered
- no threshold for large grains applied
- no flocking considered
note: actual distribution varies with the depth

d     : [1xnd] grain size in arbitrary units (on linear, not on log
    scale)
h_bed : [nsxnd] fractions of sediment of size d
```

21.11 suspended_grain_size_rijn

```
grain size of the suspended sediment according to van rijn,
    empirical
```

21.12 suspended_sediment_adaptation_length_claudin

21.13 suspended_transport_mclean

```
vertical profile of the suspended sediment according to McLean
u := us/kappa*log(z/z0);
I = 1/(int_a^h c dz int_a^h u dz) int_a^h c u dz
```

21.14 suspended_transport_rijn

```
suspended load transport according to van Rijn
```

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```
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```
directed sediment transport
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```
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for a given graqin size distribution
```

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```
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```
sediment transport according to engelund and hansen
```

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23.11 total_transport_rijn

```
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```

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```
total sediment transport according to wu 2000b
```

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```
analysis and prediction of fluvial sediment transport and
   morphodynamics
```

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```
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```

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```
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```