Metadata for the Data used in the article:
Landscape process domains drive patterns of CO_2 supply and evasion from river networks.

Authors

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Table 1. Description of the dataset.

Title of dataset	*High spatial resolution measurements of Co2 evasion in the Miellajokka catchment*
URL of dataset	*Data is being submitted in the Swedish National Data Service, full URL will be available upon and eventual acceptance of the article*
Abstract	*Streams are important emitters of CO_2 but extreme spatial variability in their physical properties can make upscaling very uncertain. Here we determined critical drivers of CO_2 evasion at scales from 30 to 400 m across a 45-km stream network in northern Sweden. We found that turbulent reaches never have elevated CO_2 concentrations, while less turbulent locations can potentially support a broad range of CO_2 concentrations, consistent with global observations. We also found that the predictability of stream pCO_2 is greatly improved when we include a proxy for soil-stream connectivity. Catchment topography shapes network patterns of evasion by creating hydrologically linked 'domains' characterized by either high water-atmosphere exchange or strong soil-stream connection. This template generates spatial variability in evasion that is important to consider when upscaling. To overcome this complexity, we provide the foundations of a mechanistic framework of CO_2 evasion by considering how landscape process domains regulate transfer and supply.*
Keywords	*Upscaling CO_2 evasion; terrestrial-aquatic linkages; spatial variability; river process domains.*
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Usage Rights	*publicly available and free to use*
Geographic region	*Miellajokka catchment, Abisko region in northern Sweden*
Geographic coverage	*68º21'39'' 18º55'37'' ; 68º15'53'' 19º03'02''*
Temporal coverage - Begin date	*11-07-2016*
Temporal coverage - End date	*20-07-2016*
General study design	*Field survey of hydrological and chemical parameters within a stream network. Catchment properties modelling for wet area quantification*
Methods description	*We sampled 168 locations in this stream network between 11th and 20th of July 2016. The distance between sampling points was between 30 and 100 m for 1st order streams, between 100 and 200 m for 2nd order streams, and between 200 and 400 m for 3rd and 4th order streams. At each sampling site, we measured water depth and velocity every 0.2 m along transects using an electromagnetic flow meter (model 801 EC Meter; Valeport, Devon, U.K). We also measured pCO2 in-situ using a handheld device (Vaisala DM70, Helsinki, Finland) adapted for wet environments as in Johnson et al. (2010) and water temperature with a hand-held thermometer. Stream discharge was calculated as the product of the cross-section area and the velocity of the stream. See methods in the publication for the details on the calculations of CO2 evasion and k600*
Quality control	*CO2 logger was calibrated before the measurements in the field. In each point within the transect in each site, 10 measures of water velocity were taken and integrated over the water column.*
Additional information	*Any additional information that may help future users of the data not included in the above rows, or in the table below.*

Table 2. Description of the variables in the dataset.

Column name	Definition	Units
siteID	*ID code of each site*	*none*
Time_date	*Time and date of sampling*	*HH:MM DD//MM/YYYY*
destination_node	*The site to which each site drains into*	*none*
SWEREF99_X	*Longitude coordinates in the SWEREF99 system*	*Meters*
SWEREF99_Y	*Latitude coordinates in the SWEREF99 system*	*Meters*
Strahler_order	*Strahler stream order of the site*	*None*
elevation_m	*Elevation above the sea level of each site*	*Meters*
SegmentLength_m	*Length of the stream segment above each site, to the next site or the stream start*	*Meters*
slope	*Slope of the stream above the site*	*unitless*
W_cm	*Width of the stream*	*Centimeters*
D_cm	*Depth of the stream*	*Centimeters*
V_m_s	*Velocity of the water in the stream*	$m\ second^{-1}$
Q_m3_s	*Discharge of water in the stream*	$m^3\ second^{-1}$

catchment_m2	*Cumulative catchment area of each site*	m^2
AREA_subcatchment_m2	*Added catchment area form the previous site*	m^2
wet_areas_percentage	*Percentage of wet areas within the AREA_subcatchment*	*percentage*
Temp_C	*Water temperature*	*Degrees Celsius*
k600_md	*Gas transfer velocity*	$m\ d^{-1}$
atm_pressure_atm	*Atmospheric pressure in the site*	*atmospheres*
kco2_md	*Gas transfer velocity for CO2*	$m\ d^{-1}$
CO2_ppm	*Partial pressure of CO2*	*Parts per million*
CO2_uM	*CO2 concentration*	$\mu mol\ L^{-1}$
FluxCO2_molm2	*CO2 evasion*	$Mol\ m^{-2}\ day^{-1}$
FluxCO2_gm2_d1	*CO2 evasion*	$gC\ m^{-2}\ day^{-1}$
TotalFlux_segment_gC_d-1	*Total CO2 evaded for the whole reach (CO2 evasion *area stream)*	$gC\ day^{-1}$