

TITLE: Data presented in the paper "Plants face the flow in V-formation: a study of plant patch alignment in streams"

CREATOR: Loreta Cornacchia, Andrew Folkard, Grieg Davies, Robert Grabowski, Johan van de Koppel, Daphne van der Wal, Geraldene Wharton, Sara Puijalon, Tjeerd Bouma

### Figure 1 Histograms.csv

Description of absolute and relative distances between neighbouring patches of *Callitriche platycarpa*, and their patch size (width, length).

ID	: Identification of neighbouring patch pair
PatchU_Width	: Width of upstream patch (in m)
PatchU_Length	: Length of upstream patch (in m)
PatchD_Width	: Width of downstream patch (in m)
PatchD_Length	: Length of downstream patch (in m)
LongitDist_Abs	: Absolute distance between the upstream edges of the two patches in the streamwise direction (in m)
LongitDist_Rel	: Relative distance between the upstream edges of the two patches in the streamwise direction (ratio between absolute longitudinal distance and patch length)
TransvDist_Abs	: Absolute distance between the lateral edges of the two patches in the spanwise direction (in m)
TransvDist_Rel	: Relative distance between the lateral edges of the two patches in the spanwise direction (ratio between absolute transversal distance and patch length)

### Figure 2 Flow velocities.csv

Configuration	: Patch configuration number
Xq	: Streamwise location of the measured vertical hydrodynamic profile (in mm)
Yq	: Spanwise location of the measured vertical hydrodynamic profile (in mm)
Vel_X	: Depth-averaged flow velocity ( $\text{m s}^{-1}$ ) in the streamwise direction
Vel_Y	: Depth-averaged flow velocity ( $\text{m s}^{-1}$ ) in the spanwise direction
RelativeVel_X	: Relative flow velocity (expressed as relative to a measurement point located 0.5 m upstream of patch U)

### Figure 3 3D plots.csv

Dataset of the flow velocity and turbulence measurements around the vegetation patches in the field manipulation experiment, showing the effect of increasing relative longitudinal and transversal distance.

Configuration	: Patch configuration number
T_d	: Relative transversal distance
L_d	: Relative longitudinal distance
Uin_50	: Depth-averaged flow velocity ( $\text{m s}^{-1}$ ) measured 0.5 m upstream of patch U.
Uin_btw	: Depth-averaged flow velocity ( $\text{m s}^{-1}$ ) in between the patches
RelU_btw	: Flow velocity in between the patches, expressed as relative to the measurement point located 0.5 m upstream of patch U.
TKE_PatchD	: Turbulent Kinetic Energy ( $\text{m}^2 \text{s}^{-2}$ ) upstream of patch D
Unext_P1	: Depth-averaged flow velocity ( $\text{m s}^{-1}$ ) next to patch U
RelU_nextP1	: Flow velocity upstream of patch U, expressed as relative to the measurement point located 0.5 m upstream of patch U.

#### Figure 4 A B Drag velocity.csv

Relationship between drag force and flow velocity in the field manipulation experiment and in a laboratory flume study (Puijalon et al., 2011).

Configuration	: Patch configuration number
T_d	: Relative transversal distance
L_d	: Relative longitudinal distance
Individual	: Identification number of <i>Callitriche platycarpa</i> individual
SurfaceArea	: Total surface area (m <sup>2</sup> ) of each <i>Callitriche platycarpa</i> individual
Velocity measurement	: Depth-averaged flow velocity (m s <sup>-1</sup> ) during the drag
Drag_N	: Measured drag force (in N) acting on the plant shoot
Drag_N_m2	: Drag force relative to plant total surface area
Dataset	: Source of the drag measurement ('Field': this study, 'Lab_Puijalon2011': laboratory experiment described in Puijalon et al., 2011)

#### Figure 4 C D Patch occurrence.csv

Probability of observed patch occurrence around an existing vegetation patch, in relation to the experimental drag measured in the same position.

Drag_N_m2	: Drag force relative to plant total surface area (N m <sup>-2</sup> )
Probability_percent	: Probability of patch occurrence (%), based on the combination of the observed frequency distributions of relative longitudinal and transversal distances
Log_probability	: Log-transformed probability of patch occurrence

#### Figure 5 Drag patch.csv

Drag_N_w_patch	: Drag force (in N) for a plant located in the upstream part of the patch
Drag_N_wo_patch	: Drag force (in N) for a single plant
Drag_mN_w_patch	: Drag force (in mN) for a plant located in the upstream part of the patch
Drag_mN_wo_patch	: Drag force (in mN) for a single plant
Configuration	: Patch configuration number

#### Figure 6 Patch angles.csv

TimePeriod	: Start and end of vegetation survey period
Angle_deg	: Direction of growth (angle in degrees) of new vegetation patches in each time period, with respect to the nearest existing patch
Distance_m	: Distance of growth of the newly occurring vegetation, with respect to the nearest existing patch

Dec08\_ExistingPatches.shp

Shapefile of existing vegetation patches found at the start of the survey period  
(December 2008)

Jul09\_NewPatches.shp

Shapefile of new vegetation patches occurring at the end of the survey period (July  
2009)

Jul09\_ClonalGrowth.shp

Shapefile of the lateral expansion of initial vegetation patches through clonal growth  
by the end of the survey period (July 2009)

Sept09\_ExistingPatches.shp

Shapefile of existing vegetation patches found at the start of the survey period  
(September 2009)

Jan10\_NewPatches.shp

Shapefile of new vegetation patches occurring at the end of the survey period  
(January 2010)

Jan10\_ClonalGrowth.shp

Shapefile of the lateral expansion of initial vegetation patches through clonal growth  
by the end of the survey period (January 2010)

Jul10\_NewPatches.shp

Shapefile of new vegetation patches occurring at the end of the survey period (July  
2010)

Jul10\_ClonalGrowth.shp

Shapefile of the lateral expansion of initial vegetation patches through clonal growth  
by the end of the survey period (July 2010)