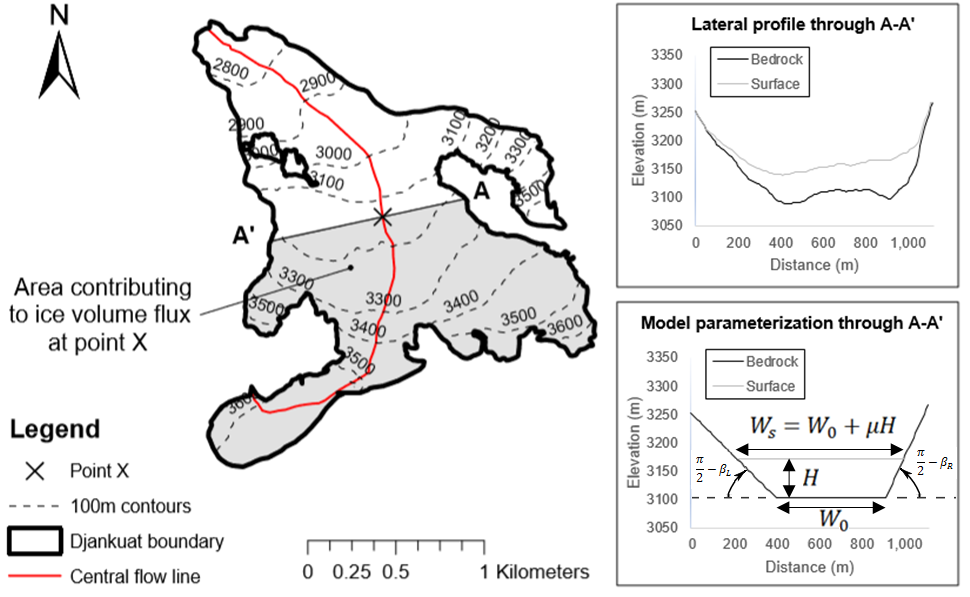
**Continuity equation:**

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| --- | --- |
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|  |  |

ice thickness (m), time (y), surface width (m), distance along flow line (m), ice volume flux (m^3 y^-1), local annual surface mass balance (m i.e. y^-1), diffusivity (m^3 y^-1), surface elevation (m), width of the bed (m), factor for the slope of the valley walls, ice density (kg m^-3), flow factor for internal deformation (Pa^-3 y^-1), flow factor for basal sliding (Pa^-3 m^2 y^-1).

The surface width is then:

The parameterization of the valley geometry, as will be used in the model, is illustrated below through a lateral profile in the middle section of the glacier:

**

**Vertically averaged horizontal velocity:**

**Surface velocity:**