Hydrological Sciences Journal essentials on units and notation

Units

(a)   Use SI units or SI derived units.

(b)   Use s, min, h and d (rather than sec, mins, hr/hrs, day/days) for second, minute, hour and day, respectively. Do not abbreviate week, month or year, which are non SI units.

(c)   Use L (not l) for litre; use hm^3 (not Mm^3) for million cubic metres (Mm = million m, $Mm^3 = 10^{18}$ m^3).

(d)   Multiplication of units should be indicated by a space, e.g. N m, and division either by negative exponents (e.g. m s^{-2}) or by use of the solidus (oblique line, e.g. m/s^2); however repeated use of the solidus (e.g. m/s/s) is not permitted. The convention adopted must be used consistently throughout.

(e)   Prefixes of units such as M (mega = 10^6) and μ (micro = 10^{-6}) have no space between (e.g. μs, MW). Note that any power to a unit applies also to the prefix. Note also that the prefix kilo is lower case k (e.g. km, not Km—the upper case K is the symbol of the kelvin).

(f)   All units should be typeset using upright (Roman) fonts, not italic or bold.

(g)   Numerals should also be typeset using upright fonts. The symbol for the decimal marker is preferably the dot (the comma is also permitted). To facilitate reading, numbers may be divided in groups of three using a thin space (e.g. 12 345.6). Neither dots nor commas are permitted as group separators.

See more information about the use of SI in http://physics.nist.gov/cuu/pdf/sp811.pdf

Mathematical notation

Example:

$$r_{xy}(k) = \frac{s_{xy}(k)}{s_x s_y} \text{ with } s_{xy}(k) = \frac{1}{n}\sum_{i=1}^{n-k}(x_i - \bar{x})(y_{i+k} - \bar{y}) \tag{1}$$

(a)   Single-letter variables, user-defined function names and parameters should be italic (e.g. x, Y, $f(x)$, β).

(b)   However, multi-letter variables should not be italic (e.g. RMSE). Also, common, explicitly defined, functions should not be italic, whether their symbols are single-letter (e.g. $\Gamma(x)$ for the gamma function, B(y, z) for the beta function) or multi-letter (e.g. ln x, exp($x + y$)).

(c)   Textual subscripts or superscripts should not be italic (e.g. x_{max}, T_{min} where 'max' and 'min' stand for maximum and minimum, respectively).

(d)   Mathematical constants should not be italic (e.g. e = 2.718…, π = 3.141…, $i^2 = -1$). Also, mathematical operators should not be italic (e.g. dx in integrals and derivatives, Δγ for the difference operator on variable γ).

(e)   Vectors, matrices and vector functions should be bold and either italic for single-letter symbols or upright for multi-letter symbols. In particular, vectors are usually denoted with lower case letters (e.g. ***x***, ***ω*** as vectors; ***f***(***x***) as a vector function of a vector variable) and matrices with upper case letters (e.g. ***A***, **KH** as matrixes; ***AB*** as the product of matrices ***A*** and ***B***, ***A***^{T} as the transpose of ***A***, det ***A*** as the determinant of a square matrix ***A***).

(f)   To distinguish between random variables and their realizations, either use upper case symbols for the former and lower case for the latter (e.g. $P(X = x)$), or underline the random variables (e.g. $P(\underline{x} = x)$). The latter notation, known as the Dutch convention, is safer to avoid ambiguity when vectors and matrices are also in use in context (e.g. in $P(\underline{x} = x)$ $\underline{x}$ is a vector random variable, while ***X*** would be reserved to denote a realization of a random matrix $\underline{X}$).

(g)   Do not use the hyphen (-) as a minus or subtraction sign; use the en-dash (–) instead. Also do not use the letter 'x' or the symbol '*' as a multiplication sign; either use the symbol '×' or middle dot (·) between numerals, or use a thin space (or even no space) between variables.

(h)   For simple expressions in the body of the text, solidus (/) should be used to denote a fraction, rather than a horizontal line, e.g. $(x + y)/2\pi = z$ rather than $\frac{x+y}{2\pi} = z$.

(i)   Write complex exponential functions in the form: exp(...), e.g. $\exp((a + by^2)^{1/2})$ rather than $e^{(a+by^2)^{1/2}}$. Note that nested parentheses are permitted (even recommended) for grouping.

See more information about mathematical notation in the ISO 80000-2 Standard (Mathematical Signs and Symbols to Be Used in the Natural Sciences and Technology; not in open access) and in the Unicode Technical Report #25 (Unicode Support for Mathematics; http://www.unicode.org/reports/tr25); for the Dutch convention (aka van Dantzig convention) see http://dx.doi.org/10.1111/j.1467-9574.1966.tb00488.x