Glossary

adjacent [*angrenzend o. benachbart*]:
Next to, nearby, or having a common endpoint or border.

advection [*Advection*]:
Transported by an imposed ambient current, as in a river or coastal waters.

ambient (fluid) [*umgebend(es Fluid)*]:
Existing or present on all sides. Ambient fluid is the fluid surrounding the region of interest.

application [*Anwendung*]:
An act of putting to use new techniques. A use to which something is put.

approach [*Vorgehensweise*]:
In science: a methodology applied to solve a problem.

assumption [*Annahme*]:
A fact or statement (as in a propostition, axiom, postulate, or notion) that is taken for granted (assumed).

average [*Durchschnitt*]:
A single value (as a mean, mode, or median) that summarizes or represents the general significance of a set of unequal values.

boundary condition [*Randbedingung*]:
A constraint applied to a differential equation at a physical location (boundary) in space.

buoyancy [*Auftrieb*]:
The tendency of a body to float or to rise when submerged in a fluid; the power of a fluid to exert an upward force on a body placed in it, also, the upward force exerted on the body.

coherent [*zusammenhängend o. kohrent*]:
Ordered of integrated in way that produces an interdependence.

control volume [*Kontrollvolumen*]:
The three-dimensional region defined by the boundaries of a system. Usually, a differential element used to derive conservation laws.

convection [*Konvektion*]:
Vertical transport induced by hydrostatic instability, such as the flow over a heated plate, or below a chilled water surface in a lake.

current [*Strömung*]:

The part of a fluid body (such as air or water) moving continuously in a certain direction.

decay [*Abbau o. Zerfall*]:

To decrease gradually in quantity, activity, or force.

density [*Dichte*]:

The mass of a unit volume.

derivation [*Ableitung o. Herleitung*]:

The act or processes of forming a physical relationship from basic, accepted relationships.

diffusion (molecular) [*Diffusion (molekulare)*]:

The scattering of particles by random molecular motions, which may be described by Fick's law and the classical diffusion equation.

diffusion (turbulent) [*Diffusion (turbulente)*]:

The random scattering of particles by turbulent motion, considered roughly analogous to molecular diffusion, but with eddy diffusion coefficients (which are much larger than molecular diffusion coefficients).

dilution [*Verdünnung*]:

The act of reducing the strength, or concentration by adding more liquid.

dispersion [*Dispersion*]:

The scattering of particles or a cloud of contaminants by the combined effects of shear and transverse diffusion.

dissolve [*lösen*]:

To cause to pass into solution.

droplets [*Tröpfchen*]:

Small drops (as of a liquid), such as rain drops, drops of oil, and others. The liquid-phase version of a gas bubble.

dye [*Farbstoff*]:

A soluble or insoluble coloring matter.

eddy [*Wirbel*]:

A current of water or air running contrary to the main current, especially, a circular current.

effluent [*Ausfluß o. ausfließend*]:

The fluid flowing out from a discharge.

entrainment [*Einmischung*]:

To draw in and transport (as solid particles or ambient fluid) by the flow of a fluid.

environmental impact statement [*Umweltverträglichkeitsstudie*]:

Legal document reporting the projected positive and negative results to the environment of a proposed engineering project.

equation [*Gleichung*]:

A mathematical statement of equality or inequality.

estuary [*Flußmündung o. Meeresbucht o. Ästuar*]:

  The a tidal region where fresh water (from continental sources) mixes with ocean water. The estuary is generally defined up to the point where salt concentrations equal the ambient ocean salinity.

evaporation [*Evaporation*]:

  The transport of water vapor from a water or soil surface to the atmosphere.

fluctuation [*Schwankung*]:

  A shirt back and forth uncertainly, or to ebb and flow in waves.

gauge (water gauge) [*Meßgerät (Wasserstandsanzeiger)*]:

  An instrument with a graduated scale or dial for measuring or indicating quantity.

impact [*Auswirkung o. Einfluß*]:

  The changes, both positive and negative, on a natural system due to an external influence (as an engineering project).

inertia [*Trägheit*]:

  a property of matter by which it remains at rest or in uniform motion in the same straight line unless acted upon by some external force

initial condition [*Anfangsbedingung*]:

  A constraint applied to a differential equation at a physical moment in time (generally at $t = 0$).

interface [*Grenzfläche*]:

  The boundary between two fluids.

jet [*Strahl*]:

  A momentum-driven boundary-layer flow. A usually forceful stream of fluid (as water or gas) discharged from a narrow opening or a nozzle.

manifold [*Verteiler- bzw. Sammelrohr*]:

  A pipe fitting with several lateral outlets.

mean [*Mittel*]:

  See *average.*

mixing [*Mischung*]:

  Diffusion or dispersion as described above; turbulent diffusion in buoyant jets and plumes; any process which causes one parcel of water to be mingled with or diluted by another.

momentum [*Impuls*]:

  A property of a moving body that the body has by virtue of its mass and motion and that is equal to the product of the body's mass and velocity.

nozzle [*Düse*]:

  A short tube with a taper or constriction used (as on a hose) to speed up or direct a flow of fluid.

order of magnitude [*Größenordnung*]:

  A range of magnitude extending from some value to ten times that value.

orifice [*Düse o. Öffnung o. Mündung*]:

An opening (as a vent, mouth, or hole) through which something may pass.

particle entrainment [*Teilcheneinmischen*]:

The picking up of particles, such as sand or organic detritus, from the bed of a water body by turbulent flow past the bed.

particle settling [*Teilchenabsetzen*]:

The sinking (or rising) of particles having densities different from the ambient fluid, such as sand grains or dead plankton. (In lakes and oceans the latter may be the dominant mechanism for downward transport of nutrients, often all the way to the bottom.)

persistent [*beständig*]:

Existing for a long or longer than usual time or continuously; continuing without change in function or structure. Also, degraded only slowly by the environment (as persistent contaminants).

plume [*Fahne*]:

A buoyancy-driven boundary-layer flow. A stream of fluid (as water or gas) with density different from the ambient, recieving fluid, discharged from a narrow opening or nozzle, or the fluid flow resultant from a discharge of heat.

plunge [*eintauchen*]:

To cause to penetrate or enter quickly and forcibly into something. To descend or dip suddenly.

pollutant [*Schmutzstoff*]:

A substance that makes physically impure or unclean. To contaminant especially with man-made waste.

porous media flow [*Strömung in porösem Medium*]:

Groundwater flow. Flow through a solid matrix containing many interconnected pores or cavities (voids).

port [*Öffnung*]:

An opening (as in a valve seat or valve face) for intake or exhaust of a fluid. See also *orifice.*

precipitation [*Niederschlag*]:

A deposit on the earth of hail, mist, rain, sleet, or snow; also the quantity of water deposited.

probability [*Wahrscheinlichkeit*]:

The chance that a given event will occur. The branch of mathematics concerned with the study of probabilities.

radiation [*Strahlung*]:

The flux of radiant energy, such as at a water surface.

random [*Zufall*]:

Without definite aim, direction, rule, or method; lacking a definite plan, purpose, or pattern.

residual [*Rest*]:

The remaining product or substance.

salinity [*Salzgehalt*]:

A measure of the salt content of seawater, specifically, the ratio of the mass of dissolved salts to the total mass of water and salt.

saturated [*gesättigt*]:

Being a solution that is unable to absorb or dissolve any more of a solute at a given temperature and pressure.

sewage [*Abwasser*]:

The raw refuse liquids or waste matter carried off by sewers.

sewage treatment plant [*Klärwerk o. Kläranlage*]:

The facility where sewage is prepared (cleaned) before releasing it into the environment as effluent.

shear flow [*Scherströmung*]:

The advection of fluid at different velocities at different positions; this may be simply the normal velocity profile for a turbulent flow where the water flows faster with increasing elevation above the bed of the stream; or shear may be the changes in both magnitude and direction of the velocity vector with depth in complex flows such as in estuaries or coastal waters.

shear stress [*Scherspannung*]:

A force exerted from one fluid layer to another, due to differences in their velocity, that tends to pull on, push against, or compress or twist the fluid body.

soluble [*löslich*]:

The property of being able to be dissolved in a fluid (the dissolving fluid is called the solute).

source [*Quelle*]:

The location and flux of a flow (usually of a contaminant or substance of interest).

spatial [*räumlich*]:

Relating to, occupying, or having the character of space. A spatial distribution is the description of the variation of a quantity in space. Compare with *temporal*.

standard deviation [*Standardabweichung*]:

A statistical quantity describing the degree of spread of a distribution. Defined as the square root of the variance. The variance is the mean of the squared deviations from the mean.

steady [*stationär*]:

In steady state, or unchanging. The mathematical representation is that the time derivative is zero.

stratification [*Schichtung*]:

The property of being stratified. An organization of a fluid body based on density. The most common form of density stratification is the stable form, where density decreases as height increases.

submerged [*abgetaucht*]:

   The state of being emersed within a fluid (as being underwater).

temporal [*zeitlich*]:

   Relating to, occupying, or having the character of time. A temporal distribution is the description of the variation of a quantity in time. Compare with *spatial*.

tracer [*Tracer*]:

   Any conservative (non-transforming) substance that moves exactly with the fluid (i.e. does not move relative to the fluid).

transformation [*Transformation*]:

   The changing of a chemical substance into another chemical substance, usually accompanied by the loss of the original substance (i.e. carbon dioxide transformed into oxygen by photosynthesis).

transport [*Transport*]:

   The movement of a parcel of water or tracer by advection, diffusion, or mixing.

unsteady [*instationär*]:

   Changing, or developing in time. The mathematical representation is that the time derivative is not zero. See also steady.

volatile [*flüchtig*]:

   Readily vaporizable at a relatively low temperature.

vortex [*Wirbel*]:

   See *eddy*.

vorticity [*Wirbelstärke*]:

   A vector measure of the local rotation in a fluid flow.

wake [*Nachlaufwirbel*]:

   The region of velocity deficit behind an object held stationary relative to an ambient fluid flow.

wastewater [*Abwasser*]:

   An effluent flow of fluid no longer of use. See also *sewage*.