

**MIKE BASIN**

<b>Description</b>	For addressing water allocation, conjunctive use, reservoir operation, or water quality issues, MIKE BASIN couples the power of ArcView GIS with comprehensive hydrologic modeling to provide basin-scale solutions. The MIKE BASIN philosophy is to keep modeling simple and intuitive, yet provide in-depth insight for planning and management. In MIKE BASIN, the emphasis is on powerful simulation result visualization in both space and time, making it the perfect tool for building understanding and consensus. For hydrologic simulations, MIKE BASIN builds on a network model in which branches represent individual stream sections and the nodes represent confluences, diversions, reservoirs, or water users. The ArcView GIS interface has been expanded accordingly, e.g., such that the network elements can be edited by simple right-clicking. Technically, MIKE BASIN is a quasi-steady-state mass balance model, however, allowing for routed river flows. The water quality solution assumes purely advective transport; decay during transport can be modeled. The groundwater description uses the linear reservoir equation.
<b>Appropriate Use</b>	Water availability analysis : conjunctive surface and groundwater use, optimization thereof. Infrastructure planning: irrigation potential, reservoir performance, water supply capacity, waste water treatment requirements. Analysis of multisectoral demands: domestic, industry, agriculture, hydropower, navigation, recreation, ecological, finding equitable trade-offs. Ecosystem studies : water quality, minimum discharge requirements, sustainable yield, effects of global change. Regulation: water rights, priorities, water quality compliance.
<b>Scope</b>	All locations; surface- and groundwater systems; national or site-specific.
<b>Key Output</b>	Mass balances, detailed flow descriptions throughout the water system, water diversions, hydropower generation, hydropower tradeoffs to other operating objectives. Water quality descriptions of dissolved solids and water temperature.
<b>Key Input</b>	Overall system: Digitized river system layout, withdrawal and reservoir locations. Water demand: Time series of water demand, percentage of ground abstraction, return flow ratio, linear routing coefficient (irrigation only). Water supply: Unit naturalized runoff (time series), initial groundwater elevation, linear reservoir time constant, groundwater recharge time series. Hydropower: time series of withdrawal for hydropower, installed effect, tail water level, machine efficiency. Reservoir: Initial water level, operational rule curves, stage-area-volume curve, time series of rainfall and evaporation, linkages to users, priority of delivery, linkages to upstream nodes. Water quality: rate parameters, temperature, non-point loads, weir constant for re-aeration, transport time and water depth or Q-h relationship, concentrations in effluent.
<b>Ease of Use</b>	Relatively easy to use if user is familiar with ArcView software. Requires significant data for detailed analysis.
<b>Training Required</b>	Moderate training/experience in resource modeling required for effective use. Also requires working knowledge of ESRI's ArcView software.
<b>Training Available</b>	MIKE BASIN courses are arranged both regularly and upon request (see <a href="http://www.dhisoftware.com/mikebasin/Courses/">http://www.dhisoftware.com/mikebasin/Courses/</a> ).
<b>Computer Requirements</b>	ArcView 3.2 or 3.2a; Windows 98, NT, 2000, or XP operating system (MIKE BASIN may also run on Windows 95 and ME, but those operating systems are not officially supported by DHI); minimum 64 MB RAM (recommended); high resolution monitor, minimum 800x600 pixels; minimum 200 MB free disk space.

**MIKE BASIN (cont.)**

<b>Documentation</b>	Detailed documentation including on-line tours of the model available through their website: <a href="http://www.dhisoftware.com/mikebasin/Download/">http://www.dhisoftware.com/mikebasin/Download/</a> .
<b>Applications</b>	Has been used in Peru; Sabah, Malaysia; Gold Coast, Australia; Idaho and North Carolina, USA; Italy; Poland; Thailand; Sri Lanka; Senegal; Czech Republic; Zambia; and Tanzania.
<b>Contacts for Framework, Documentation, Technical Assistance</b>	DHI's Software Support Centre; Tel: +45.45.16.93.33 Fax: +45.45.16.92.92; e-mail: <a href="mailto:software@dhi.dk">software@dhi.dk</a> ; website: <a href="http://www.dhisoftware.com/mikebasin/">http://www.dhisoftware.com/mikebasin/</a> .
<b>Cost</b>	Licensed software cost US\$3000 per class set, US\$300 to update each set.
<b>References</b>	Contact DHI for references.