

## River Kennet, United Kingdom

### Location

The River Kennet is located in southern England. It is a tributary of the River Thames which flows into the North Sea through London.



### Catchment description

A mainly pervious catchment (Chalk with significant Drift cover), but the lowest quarter is largely impermeable. A primarily rural catchment with scattered settlements (Newbury is the largest town); there is significant urban growth along the Kennet valley with a number of smaller towns including Hungerford and Marlborough.



### Key descriptors:

Catchment Area	1033.4 km <sup>2</sup>
Level of Station	43.4 m a.s.l.
Maximum Altitude	297.0 m a.s.l.
Mean flow	9.80 m <sup>3</sup> s <sup>-1</sup>
95% exceedance (Q95)	3.77 m <sup>3</sup> s <sup>-1</sup>
10% exceedance (Q10)	17.5 m <sup>3</sup> s <sup>-1</sup>
1961-90 Average annual rainfall	759 mm

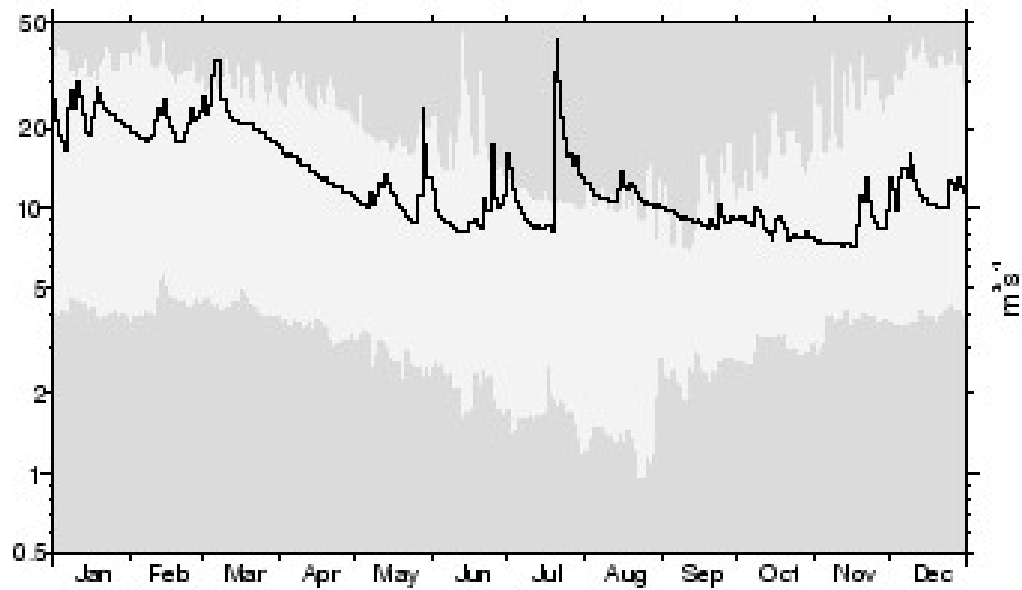
### Hydrological summary

The flow regime is dominated by the slow response of the groundwaters held within the catchment's chalk aquifers (see flow hydrograph). The featured year, 2007, contains a flow peak that is atypical of the recent record, but not unprecedented in the hydrology of the region. The River Enbourne, a tributary in the lower part of the catchment is more responsive because of the underlying clay geology.

There is little net impact of abstractions and discharges (e.g. a minor contribution to Kennet & Avon canal, some groundwater abstraction for public water supply, and abstraction for agriculture and industry).

## Hydrological Observatory description

Max. and min. daily mean flows from 1961 to 2008 excluding those for the featured year (2007; mean flow:  $13.60 \text{ m}^3 \text{ s}^{-1}$ )



### Data availability

Flow data are measured at the catchment outlet and at a network of additional stations by the Environment Agency of England and Wales. Monthly and daily flow, and information on flow peaks are available from the National River Flow Archive maintained by the Centre for Ecology and Hydrology. Information describing these sites and the period of record are shown below.

The flow monitoring at Theale is at a Crump profile weir (15.9m broad) equipped with pressure tapping (not used) & d/s recorder. A cableway was installed in 1999 but subsequently removed. Flow over the weir is modular up to  $24 \text{ m}^3 \text{ s}^{-1}$  and all but highest flows are contained within the structure of the weir. Bypassing occurs above  $29 \text{ m}^3 \text{ s}^{-1}$ , hence flood flows may be underestimated.

Data can be downloaded from <http://www.ceh.ac.uk/data/nrfa/index.html>.

# Hydrological Observatory description

Supporting data are also available, for example hydro-geological maps.

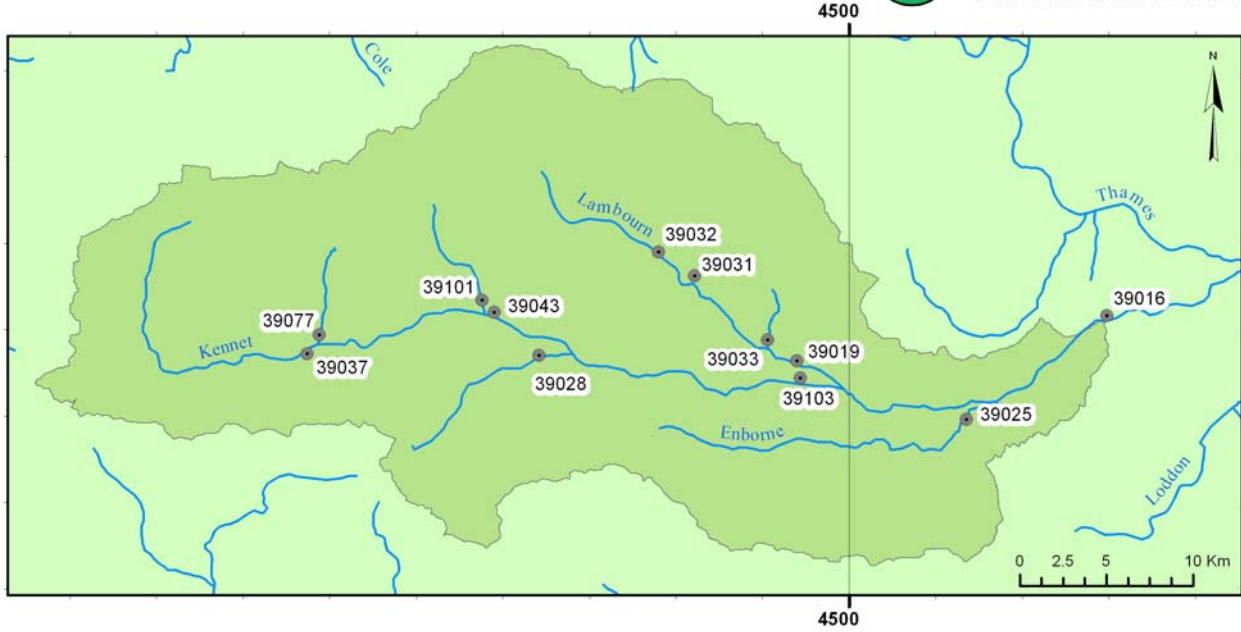
## Kennet Catchment Gauging Stations

National River Flow Archive



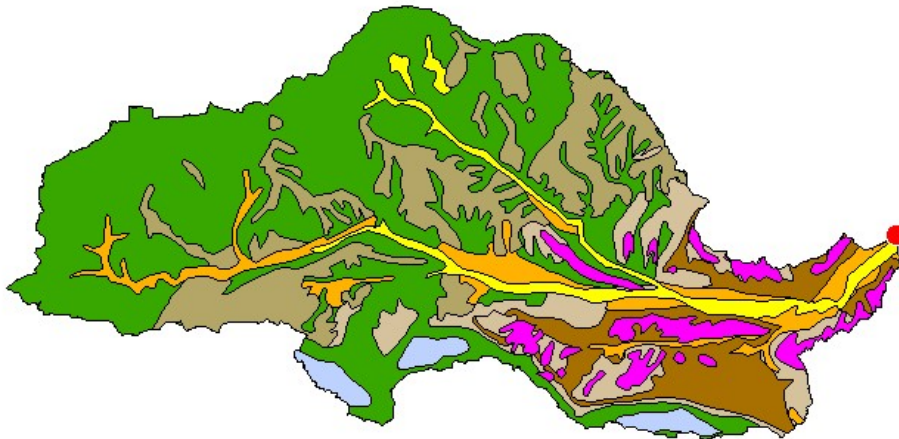
Centre for Ecology & Hydrology

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Station Number	River Name	Station Name	Grid Reference	Catchment Area	Measuring authority	Year Opened	Station Type	Base Flow Index	Mean Annual Rainfall	Mean annual runoff	Mean annual Loss	Mean Flow	Q95	Median ann. Flood (QMED)	Factors affecting runoff	Elevation	Bedrock	Superficial	Landuse												
39016	Kennet	Theale	SU649708	1033.4	EA-T	1961	C	.87	782	299	483	9.75	3.76	38.5	RGI	43	91	153	205	296	72	2	14	12	4	18	15	45	32	<1	2
39019	Lambourn	Shaw	SU470682	234.1	EA-T	1962	C	.96	742	234	508	1.73	0.76	3.6	RG	76	118	166	206	260	97	0	0	1	6	30	10	54	30	<1	1
39025	Enborne	Brimpton	SU568648	147.6	EA-T	1966	CC	.54	810	279	531	1.33	0.16	17.1	GI	59	83	113	164	296	11	5	53	24	<1	24	29	38	<1	2	
39028	Dun	Hungerford	SU321685	101.3	EA-T	1968	C	.95	797	222	575	0.71	0.27	2.3	GN	99	131	156	185	277	82	8	0	5	<1	33	25	49	22	0	0
39031	Lambourn	Welland	SU411731	176.0	EA-T	1962	CC	.98	759	179	580	1.00	0.39	1.9	G	96	136	178	213	260	100	0	0	<1	7	20	9	52	34	0	0
39032	Lambourn	East Shefford	SU390745	154.0	EA-T	1966	CC	.98	756	153	603	0.74	0.12	1.9	G	102	141	179	214	260	100	0	0	0	8	16	8	51	35	0	0
39033	Winterbourne St	Bagnor	SU453694	49.2	EA-T	1962	C	.96	727	110	617	0.17	0.05	0.4	RG	81	111	148	186	226	92	0	0	<1	0	58	12	67	17	<1	0
39037	Kennet	Marlborough	SU187686	142.0	EA-T	1972	C	.94	828	195	633	0.87	0.08	3.1	G	127	157	182	222	294	100	0	<1	7	0	11	7	56	32	0	1
39043	Kennet	Knighton	SU295710	295.0	EA-T	1962	CC	.95	807	276	531	2.56	0.60	7.1	G	105	149	181	226	294	100	0	<1	6	<1	15	9	52	32	0	1
39077	Og	Marlborough Poulton Fm	SU194897	59.2	EA-T	1980	FV	.95	820	177	643	0.33	0.01	1.0	G	125	153	179	239	276	100	0	<1	4	0	5	7	51	35	0	1
39101	Ailbourne	Ramsbury	SU388717	53.1	EA-T	1962	FV	.97	808	121	687	0.21	0.02	0.7	N	106	144	187	234	277	100	0	0	0	0	16	11	48	34	0	1
39103	Kennet	Newbury	SU472672	548.1	EA-T	1989	US	.93	817	262	555	4.88	1.83	10.9		70	116	166	213	294	89	3	<1	9	3	20	14	49	30	<1	1

## Hydrological Observatory description



### HYDROGEOLOGY

	High permeability (fissured)
	Moderate permeability (fissured)
	High permeability (intergranular)
	Moderate permeability (intergranular)
	Very low permeability
	Mixed permeability

### DRIFT

	Landslip		Raised Beach and marine deposits
	Blown sand		Glacial sand and gravel
	Peat		Boulder clay and morainic drift
	Lacustrine clays, silts and sands		Sand and gravel of uncertain age or origin
	Alluvium (including River Terrace Deposits in Scotland)		Clay with flints
	River Terrace deposits (mainly sand and gravel)		Brickearth, mainly loess
			Crags

## Research Activity and Outputs

- Catchment scale nutrient balances
- Nutrient loss from agriculture
- Macrophyte growth and management
- Sediment and nutrient dynamics

## Facilities

Because of the long running research activity in the Kennet catchment, CEH can provide access to many field sites through established relationships with land-owners.

## Hydrological Observatory description

In addition to this, CEH owns a 600m stretch of the River Lambourn near Boxford and an associated 10 hectare wetland. Groundwater-fed chalk streams drain large areas of southern and eastern England and the River Lambourn is an excellent example as it drains one of the least modified catchments, with high biological and chemical classifications. Water meadows adjacent to the Lambourn have been designated Sites of Special Scientific Interest (SSSI) and the river is nationally important for the diversity of its invertebrates.

In April 2008 an automatic water quality monitoring station was set up to measure water level, pH, electric conductivity, dissolved oxygen, water temperature and turbidity at 15 min resolution. A water sampler is also at the site and is triggered by water level to obtain samples for suspended sediment concentration analysis.



The site is also instrumented with boreholes and river piezometers. Chemistry samples are taken from the site on a weekly basis for nutrient and metal analysis (water and sediment phase). Water sampling will be reviewed after 1 year.

A weather station will be installed at the site in the summer of 2009, as will telemetry links for all automatically sampled data.

New technologies such as in situ spectrophotometers will be tested at the site during Autumn 2009.

### **Institutional support**

Despite changes to the organisations that monitor and curate the data, the lengths of the records demonstrate the commitment of all those involved at the observatory. Within CEH, the NRFA has maintained the national hydrological archives on behalf of the monitoring agencies since the 1980s and this is now recognised as part of CEH's National Capability.

The Boxford site is also part of CEH's national capability and its purchase demonstrates CEH's commitment to lowland catchment research. This complements upland monitoring and research established at Plynlimon in the 1960s and maintained to the present day.

### **Value to network**

The River Kennet is located in a region of low rainfall and high demand leading to pressures on the available water resources. Predicted impacts of climate change will exacerbate this situation.

## Hydrological Observatory description

The Kennet Observatory provides data for hydrological conditions that are common in its region but which are quite different from those monitored by many other observatories in the network. Some important distinguishing features of the Kennet catchment in the European context are: very permeable aquifers, low precipitation combined with a temperate climate, and high water abstraction for households and industry.

### Contact for further information

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### References

- 1) Changes in point and diffuse source phosphorus inputs to the River Frome (Dorset, UK) from 1966 to 2006 *Science of The Total Environment*, Volume 407, Issue 6, 1 March 2009, Pages 1954-1966 Michael J. Bowes, Jim T. Smith, Helen P. Jarvie, Colin Neal, Ruth Barden
- 2) Assessing the effectiveness of actions to mitigate nutrient loss from agriculture: A review of methods *Science of The Total Environment*, Volume 406, Issues 1-2, 15 November 2008, Pages 1-23 K.A. Cherry, M. Shepherd, P.J.A. Withers, S.J. Mooney
- 3) Over-parameterised, uncertain 'mathematical marionettes' -- How can we best use catchment water quality models? An example of an 80-year catchment-scale nutrient balance *Science of The Total Environment*, Volume 400, Issues 1-3, 1 August 2008, Pages 52-74 A.J. Wade, B.M. Jackson, D. Butterfield
- 4) Flow controls on lowland river macrophytes: A review *Science of The Total Environment*, Volume 400, Issues 1-3, 1 August 2008, Pages 369-378 Paul Franklin, Michael Dunbar, Paul Whitehead
- 5) Delivery and cycling of phosphorus in rivers: A review *Science of The Total Environment*, Volume 400, Issues 1-3, 1 August 2008, Pages 379-395 P.J.A. Withers, H.P. Jarvie
- 6) Modelling of phosphorus inputs to rivers from diffuse and point sources *Science of The Total Environment*, Volume 395, Issues 2-3, 1 June 2008, Pages 125-138 Michael J. Bowes, Jim T. Smith, Helen P. Jarvie, Colin Neal
- 7) Defining the sources of low-flow phosphorus transfers in complex catchments *Science of The Total Environment*, Volume 382, Issue 1, 15 August 2007, Pages 1-13 J. Arnscheidt, P. Jordan, S. Li, S. McCormick, R. McFaul, H.J. McGrogan, M. Neal, J.T. Sims
- 8) Sources and temporal dynamics of arsenic in a New Jersey watershed, USA *Science of The Total Environment*, Volume 379, Issue 1, 15 June 2007, Pages 56-74 Julia L. Barringer, Jennifer L. Bonin, Michael J. Deluca, Terri Romagna, Kimberly Cenno, Marzooq Alebus, Todd Kratzer, Barbara Hirst
- 9) A long-term view of nutrient transfers through the Seine river continuum *Science of The Total Environment*, Volume 375, Issues 1-3, 1 April 2007, Pages 80-97 G. Billen, J. Garnier, J. Nemery, M. Sebilo, A. Sferratore, S. Barles, P. Benoit, M. Benoit
- 10) Attenuation of mining-derived pollutants in the hyporheic zone: A review *Science of The Total Environment*, Volume 373, Issues 2-3, 15 February 2007, Pages 435-446 C.J. Gandy, J.W.N. Smith, A.P. Jarvis
- 11) Monitoring and modelling the impacts of global change on European freshwater ecosystems *Science of The Total Environment*, Volume 365, Issues 1-3, 15 July 2006, Pages 3-14 Andrew J. Wade
- 12) Nitrate concentrations in river waters of the upper Thames and its tributaries *Science of The Total Environment*, Volume 365, Issues 1-3, 15 July 2006, Pages 15-32 Colin Neal, Helen P. Jarvie, Margaret Neal, Linda Hill, Heather Wickham

## Hydrological Observatory description

- 13) How green is my river? A new paradigm of eutrophication in rivers Science of The Total Environment, Volume 365, Issues 1-3, 15 July 2006, Pages 66-83 John Hilton, Matthew O'Hare, Michael J. Bowes, J. Iwan Jones
- 14) Chlorophyll-a in the rivers of eastern England Science of The Total Environment, Volume 365, Issues 1-3, 15 July 2006, Pages 84-104 Colin Neal, John Hilton, Andrew J. Wade, Margaret Neal, Heather Wickham
- 15) Impacts of climate change on in-stream nitrogen in a lowland chalk stream: An appraisal of adaptation strategies Science of The Total Environment, Volume 365, Issues 1-3, 15 July 2006, Pages 260-273 P.G. Whitehead, R.L. Wilby, D. Butterfield, A.J. Wade
- 16) Factors influencing development of management strategies for the Abou Ali River in Lebanon: I: Spatial variation and land use Science of The Total Environment, Volume 362, Issues 1-3, 1 June 2006, Pages 15-30 May A. Massoud, Mutasem El-Fadel, Mark D. Scrimshaw, John N. Lester
- 17) A simulation-based interval two-stage stochastic model for agricultural nonpoint source pollution control through land retirement Science of The Total Environment, Volume 361, Issues 1-3, 15 May 2006, Pages 38-56 B. Luo, J.B. Li, G.H. Huang, H.L. Li
- 18) Sewage-effluent phosphorus: A greater risk to river eutrophication than agricultural phosphorus?
- 19) Science of The Total Environment, Volume 360, Issues 1-3, 1 May 2006, Pages 246-253 Helen P. Jarvie, Colin Neal, Paul J.A. Withers
- 20) The water quality of the River Thame in the Thames Basin of south/south-eastern England Science of The Total Environment, Volume 360, Issues 1-3, 1 May 2006, Pages 254-271 Colin Neal, Margaret Neal, Linda Hill, Heather Wickham
- 21) River water quality of the River Cherwell: An agricultural clay-dominated catchment in the upper Thames Basin, southeastern England Science of The Total Environment, Volume 360, Issues 1-3, 1 May 2006, Pages 272-289 Colin Neal, Margaret Neal, Linda Hill, Heather Wickham
- 22) An integrated modelling and multicriteria analysis approach to managing nitrate diffuse pollution: 2. A case study for a chalk catchment in England Science of The Total Environment, Volume 358, Issues 1-3, 1 April 2006, Pages 1-20 B.K. Koo, P.E. O'Connell
- 23) Net changes in nutrient concentrations below a point source input in two streams draining catchments with contrasting land uses Science of The Total Environment, Volume 347, Issues 1-3, 15 July 2005, Pages 217-229 Gora C. Merseburger, Eugenia Marti, Francesc Sabater
- 24) Linking landscape sources of phosphorus and sediment to ecological impacts in surface waters Science of The Total Environment, Volume 344, Issues 1-3, 15 May 2005, Pages 1-3 P.M. Haygarth
- 25) The phosphorus transfer continuum: Linking source to impact with an interdisciplinary and multi-scaled approach Science of The Total Environment, Volume 344, Issues 1-3, 15 May 2005, Pages 5-14 P.M. Haygarth, L.M. Condon, A.L. Heathwaite, B.L. Turner, G.P. Harris 25) The relative contribution of sewage and diffuse phosphorus sources in the River Avon catchment, southern England: Implications for nutrient management Science of The Total Environment, Volume 344, Issues 1-3, 15 May 2005, Pages 67-81 Michael J. Bowes, John Hilton, Gordon P. Irons, Duncan D. Hornby
- 26) Phosphorus concentrations in the River Dun, the **Kennet** and Avon Canal and the River **Kennet**, southern England Science of The Total Environment, Volume 344, Issues 1-3, 15 May 2005, Pages 107-128 Colin Neal, W. Alan House, Helen P. Jarvie, Margaret Neal, Linda Hill, Heather Wickham
- 27) Nutrient hydrochemistry for a groundwater-dominated catchment: The Hampshire Avon, UK Science of The Total Environment, Volume 344, Issues 1-3, 15 May 2005, Pages 143-158 Helen P. Jarvie, Colin Neal, Paul J.A. Withers, Chris Wescott, Richard M. Acornley
- 28) Sediment accumulation in newly constructed vegetative treatment facilities along a new major road Science of The Total Environment, Volumes 334-335, 1 December 2004, Pages 473-479 R. J. Hares, N. I. Ward

## Hydrological Observatory description

- 29) Solid-solution partitioning of plutonium in surface waters at the Atomic Weapons Establishment Aldermaston (UK) Science of The Total Environment, Volume 332, Issues 1-3, 1 October 2004, Pages 203-216 David McCubbin, Kinson S. Leonard, Richard C. Greenwood, Benjamin R. Taylor
- 30) Physico-chemical controls on phosphorus cycling in two lowland streams. Part 1 - the water column Science of The Total Environment, Volume 329, Issues 1-3, 15 August 2004, Pages 145-163 D. J. Evans, P. J. Johnes
- 31) Physico-chemical controls on phosphorus cycling in two lowland streams. Part 2-The sediment phase Science of The Total Environment, Volume 329, Issues 1-3, 15 August 2004, Pages 165-182 D. J. Evans, P. J. Johnes, D. S. Lawrence
- 32) Land-ocean interaction: processes, functioning and environmental management from a UK perspective: an introduction The Science of The Total Environment, Volumes 314-316, 1 October 2003, Pages 3-11 Colin Neal, Graham J. L. Leeks, Geoff E. Millward, John R. W. Harris, John M. Huthnance, John G. Rees
- 33) Seasonality and water quality trends in a maturing recreated reed bed The Science of The Total Environment, Volumes 314-316, 1 October 2003, Pages 233-254 M. P. McCartney, C. Stratford, C. Neal, R. Bradford, S. Mills, M. Johnson
- 34) A review of dissolved oxygen modelling techniques for lowland rivers The Science of The Total Environment, Volumes 314-316, 1 October 2003, Pages 303-334 B. A. Cox
- 35) Land Ocean Interaction: processes, functioning and environmental management: a UK perspective The Science of The Total Environment, Volumes 314-316, 1 October 2003, Pages 801-819 Colin Neal, Graham J. L. Leeks, Geoff E. Millward, John R. W. Harris, John M. Huthnance, John G. Rees
- 36) Phosphorus dynamics along a river continuum The Science of The Total Environment, Volume 313, Issues 1-3, 1 September 2003, Pages 199-212 Michael J. Bowes, William A. House, Robin A. Hodgkinson
- 37) Water quality functioning of lowland permeable catchments: inferences from an intensive study of the River **Kennet** and upper River Thames The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 1-2
- 38) Water quality functioning of lowland permeable catchments: inferences from an intensive study of the River **Kennet** and upper River Thames: an introduction The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 3-7 Colin Neal, Paul G. Whitehead
- 39) Agricultural nutrient inputs to rivers and groundwaters in the UK: policy, environmental management and research needs The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 9-24 Paul J. A. Withers, Eunice I. Lord
- 40) Phosphorus in rivers -- ecology and management The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 25-47 Chris P. Mainstone, William Parr
- 41) Controls on the discharge of Chalk streams of the Berkshire Downs, UK The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 65-80 Richard B. Bradford
- 42) A comparison of the macrophyte cover and macroinvertebrate fauna at three sites on the River **Kennet** in the mid 1970s and late 1990s The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 121-142 J. F. Wright, R. J. M. Gunn, J. M. Winder, R. Wiggers, K. Vowles, R. T. Clarke, I. Harris
- 43) Macrophyte and periphyton dynamics in a UK Cretaceous chalk stream: the River **Kennet**, a tributary of the Thames The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 143-157 N. J. Flynn, D. L. Snook, A. J. Wade, H. P. Jarvie 44) Regulation of surface water quality in a Cretaceous Chalk catchment, UK: an assessment of the relative importance of instream and wetland processes The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 159-174 H. Prior, P. J. Johnes
- 44) Phosphorus sources, speciation and dynamics in the lowland eutrophic River **Kennet**, UK The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 175-203 Helen

## Hydrological Observatory description

P. Jarvie, Colin Neal, Richard J. Williams, Margaret Neal, Heather D. Wickham, Linda K. Hill, Andrew J. Wade, Alan Warwick, John White

- 45) Diurnal and longer term patterns in carbon dioxide and calcite saturation for the River **Kennet**, south-eastern England The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 205-231 Colin Neal, Carol Watts, Richard J. Williams, Margaret Neal, L. Hill, H. Wickham
- 46) Patterns in nutrient concentrations and biological quality indices across the upper Thames river basin, UK The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 263-294 Helen P. Jarvie, Esther Lycett, Colin Neal, Alison Love
- 47) Phosphorus---calcium carbonate saturation relationships in a lowland chalk river impacted by sewage inputs and phosphorus remediation: an assessment of phosphorus self-cleansing mechanisms in natural waters The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 295-310 Colin Neal, Helen P. Jarvie, Richard J. Williams, Margaret Neal, Heather Wickham, Linda Hill 49) Calcite saturation in eastern UK rivers The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 311-326 Colin Neal
- 48) Calcite saturation in the River Dee, NE Scotland The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 327-340 A. J. Wade, C. Neal, R. P. Smart, A. C. Edwards
- 49) Total phosphorus content of river sediments in relationship to calcium, iron and organic matter concentrations The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 341-351 William A. House, Frank H. Denison
- 50) Phosphorus uptake into algal biofilms in a lowland chalk river The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 353-373 H. P. Jarvie, C. Neal, A. Warwick, J. White, M. Neal, H. D. Wickham, L. K. Hill, M. C. Andrews
- 51) On modelling the flow controls on macrophyte and epiphyte dynamics in a lowland permeable catchment: the River **Kennet**, southern England The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 375-393 A. J. Wade, P. G. Whitehead, G. M. Hornberger, D. L. Snook
- 52) On modelling the impacts of phosphorus stripping at sewage works on in-stream phosphorus and macrophyte/epiphyte dynamics: a case study for the River **Kennet** The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 395-415 A. J. Wade, P. G. Whitehead, G. M. Hornberger, H. P. Jarvie, N. Flynn
- 53) Steady state and dynamic modelling of nitrogen in the River **Kennet**: impacts of land use change since the 1930s The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 417-434 P. G. Whitehead, P. J. Johnes, D. Butterfield 56) Application of a model to predict cyanobacterial growth patterns in response to climatic change at Farmoor Reservoir, Oxfordshire, UK The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 459-469 Alan Howard, Mark P. Easthope
- 54) Water quality functioning of lowland permeable catchments: inferences from an intensive study of the River **Kennet** and upper River Thames The Science of The Total Environment, Volumes 282-283, 23 January 2002, Pages 471-490 Colin Neal, Helen P. Jarvie, Andrew J. Wade, Paul G. Whitehead
- 55) The water quality of UK rivers entering the North Sea The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 5-8 C. Neal, W. A. House, G. J. L. Leeks, B. A. Whitton, R. J. Williams
- 56) Suspended chlorophyll in the River Nene, a small nutrient-rich river in eastern England: long-term and spatial trends The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 401-421 David M. Balbi
- 57) The water quality of the River Thames at a rural site downstream of Oxford The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 441-457 Colin Neal, Richard J. Williams, Margaret Neal, Lal C. Bhardwaj, Heather Wickham, Martin Harrow, Linda K. Hill

## Hydrological Observatory description

- 58) The water quality of a tributary of the Thames, the Pang, southern England The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 459-475 Colin Neal, Margaret Neal, Heather Wickham, Martin Harrow
- 59) The water quality of the River **Kennet**: initial observations on a lowland chalk stream impacted by sewage inputs and phosphorus remediation The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 477-495 Colin Neal, Helen P. Jarvie, Sharon M. Howarth, Paul G. Whitehead, Richard J. Williams, Margaret Neal, Martin Harrow, Heather Wickham
- 60) Temporal and small-scale spatial variations of dissolved oxygen in the Rivers Thames, Pang and **Kennet**, UK The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 497-510 Richard J. Williams, Craig White, Martin L. Harrow, Colin Neal
- 61) Phosphate measurement in natural waters: two examples of analytical problems associated with silica interference using phosphomolybdic acid methodologies The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 511-522 Colin Neal, Margaret Neal, Heather Wickham
- 62) Assessing the potential impacts of various climate change scenarios on the hydrological regime of the River **Kennet** at Theale, Berkshire, south-central England, UK: an application and evaluation of the new semi-distributed model, INCA The Science of The Total Environment, Volumes 251-252, 5 May 2000, Pages 539-555 K. J. Limbrick, P. G. Whitehead, D. Butterfield, N. Reynard
- 63) The relation between phosphorus and eutrophication in the Thames catchment, UK The Science of The Total Environment, Volume 228, Issues 2-3, 5 April 1999, Pages 157-183 K. Young, G. K. Morse, M. D. Scrimshaw, J. H. Kinniburgh, C. L. MacLeod, J. N. Lester
- 64) Patterns of spatial and temporal variation in phytoplankton chlorophyll a in the River Trent and its tributaries Science of The Total Environment, Volumes 210-211, 24 March 1998, Pages 357-365 Richard E. Skidmore, Stephen C. Maberly, Brian A. Whitton
- 65) Quality simulation along river systems (QUASAR): model theory and development Science of The Total Environment, Volumes 194-195, 24 February 1997, Pages 447-456 P. G. Whitehead, R. J. Williams, D. R. Lewis
- 66) Radio-iodine in thyroid glands of swans, farm animals and humans, also in algae and river water from the Thames Valley, England Science of The Total Environment, Volume 48, Issues 1-2, January 1986, Pages 13-31 John R. Howe, Michael K. Lloyd
- 67) Incidence and variability of some elements in the non tidal region of the River Thames, and River **Kennet**, U.K. The Science of The Total Environment, Volume 22, Issue 3, February 1982, Pages 253-273 S. Habib, M. J. Minski